*European Journal of Taxonomy* 1039: 42–69
https://doi.org/10.5852/ejt.2026.1039.3177
europeanjournaloftaxonomy.eu
ISSN 2118-9773
2026 · Constant J.


*Received: 2 September 2025* • *Accepted: 2 December 2025* • *Published: 4 February 2026*
*Topic editor: Tony Robillard* • *Section editor: Christopher Dietrich* • *Desk editor: Eva-Maria Levermann*

**Research article**

urn:lsid:zoobank.org:pub:BF4C3D3E-78E1-4785-B4AE-C2E02F16CF6B

# Revision of the Eurybrachidae IXX. The Australian genus *Gelastopsis* Kirkaldy, 1906: two new species, new records, biological data and key (Hemiptera: Fulgoromorpha)

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**Abstract.** Two new species of the Australian genus of Eurybrachidae (Hemiptera, Fulgoromorpha) *Gelastopsis* Kirkaldy, 1906 are described from northern Queensland: *Gelastopsis croydonensis* sp. nov. from Croydon, and *Gelastopsis procyon* sp. nov. from Fairview and Fairlight near Laura, and from Normanton. Both species were found on *Acacia* sp. (Fabaceae). *Gelastopsis croydonensis* sp. nov. was recorded in trophobiotic interaction with ants of the genus *Camponotus* (Hymenoptera: Formicidae), providing the first record of this kind for the genus. New records of the three previously described species of *Gelastopsis* are presented. The male terminalia of the new species are illustrated and photographs of collection and live specimens, distribution maps, biological data and an identification key are provided. The genus *Gelastopsis* currently contains five species.

**Keywords.** Planthopper; Queensland; Acacia; trophobiosis; *Camponotus*.

Constant J. 2026. Revision of the Eurybrachidae IXX. The Australian genus *Gelastopsis* Kirkaldy, 1906: two new species, new records, biological data and key (Hemiptera: Fulgoromorpha). *European Journal of Taxonomy* 1039: 42–69. https://doi.org/10.5852/ejt.2026.1039.3177

## Introduction

The family Eurybrachidae is a small family of planthoppers (Fulgoromorpha Evans, 1946) distributed in the Old World tropics and subtropics, with few species reaching to the southeastern Palaearctics. It contains 40 genera and 212 species, representing only about 1.6% of the genera and 1.5% of the described species of the Fulgoromorpha (Bourgoin 2025). The Eurybrachidae from Australia are all endemic and the family counts 16 genera and 67 species in this country. Most Australian entomologists and naturalists are familiar with the conspicuous egg masses of Eurybrachidae, covered in white wax on the trunks of trees or on leaves. However, many aspects of the natural history in the group remain unknown; for example, the first cases of trophobiosis involving Australian Eurybrachidae were only reported recently, between *Gelastopsis insignis* Kirkaldy, 1906 and a cockroach (Blattodea Latreille, 1810), and between *Olonia hochae* Constant, 2018 and ants (Formicidae Latreille, 1809) (Bourgoin *et al.* 2023; Constant 2024). Among the Australian Eurybrachidae, the genus *Gelastopsis* Kirkaldy, 1906 is

one of the most distinctive due to its bicoloured frons divided into a dorsal, mainly shiny black half and a ventral brownish half with transverse weak ridges. The bright black dorsal half of the frons is divided by a median, sometimes incomplete, whitish line and each half shows a white waxy spot in middle. This is assumed to mimic the eyes of jumping spiders, and might play a defensive role to deter predators (Constant 2005; Moir & Fletcher 2012). The three species of *Gelastopsis* were treated in my revision of the genus (Constant 2005), but recent fieldwork in Queensland and study of collection material provided two species new to science and additional records of the known species.

As the 19th part of the ongoing revision of the family Eurybrachidae, the present paper aims to describe the two new species and provide additional new records of the other species, an updated illustrated key to the species of the genus, as well as an updated distribution map.

## Material and methods

The terminalia were extracted after boiling the abdomen for some minutes in a 10% solution of potassium hydroxide (KOH) and rinsing them thoroughly in 70% ethanol. The pygofer was separated from the abdomen and the aedeagus dissected with a needle blade for examination in 70% ethanol. The whole was then placed in glycerine for preservation in a tube attached to the pin of the corresponding specimen.

For routine identification, the abdomen was removed and the terminalia directly examined. In this case, the dry abdomen was placed in a gelatin capsule or glued on a cardboard, pinned under the specimen.

Posterior wings have also been mounted: they have been glued on white cardboard rectangles and pinned under the specimen.

The external morphological terminology follows O'Brien & Wilson (1985) and for the male genitalia Bourgoin & Huang (1990); the description of the wings venation follows Bourgoin *et al.* (2015).

The metatibiotarsal formula gives the number of spines on (the side of the metatibia) the apex of the metatibia / the apex of the first metatarsus / the apex of the second metatarsus.

The photographs of live specimens and habitats were taken with an Olympus Tough 6 camera, these of the collection specimens and male terminalia were taken with a Leica EZ4W stereo microscope with integrated camera, stacked with CombineZ software and optimized with Adobe Photoshop CS3. 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.

### Abbreviations used for measurements

The measurements were taken as in Constant (2004).

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**

*An* = anal tube
*bap* = basal apodeme of the lateroventral process of the periandrium
*cp* = corpus of the lateroventral process of the periandrium
*G* = gonostylus
*lpa* = lateral process of the aedeagus
*lvp* = lateroventral process of the periandrium
*Py* = pygofer

**Institutional abbreviations**

MFNB = Museum für Naturkunde – Leibniz Institute for Research on Evolution and Biodiversity, Berlin, Germany
QM = Queensland Museum, South Brisbane, Queensland, Australia
RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium

## 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 ***Gelastopsis*** Kirkaldy, 1906

*Gelastopsis* Kirkaldy, 1906: 447.
*Elthenus* Jacobi, 1928: 3. Type species: *Yarrana glaucops* Schmidt, 1908 (synonymized by Fennah 1964: 158).

*Elthenus* – Metcalf 1956: 69 (catalogued). — Fennah 1964: 159 (synonymized under *Gelastopsis*).
*Gelastopsis* – Metcalf 1956: 73 (catalogued). — Fennah 1964: 158 (synonymy of *Elthenus* Jacobi, 1928). — Constant 2005 (revision, new species, biology).

**Type species**

*Gelastopsis insignis* Kirkaldy, 1906.

**Diagnosis**

Small-sized, greyish-brown coloured. Immediately recognized by the frons that is divided into a dorsal, mainly black half and a ventral brownish half with transverse weak ridges.

**Species included**

*Gelastopsis croydonensis* sp. nov.
*Gelastopsis insignis* Kirkaldy, 1906
*Gelastopsis modesta* (Jacobi, 1928)
*Gelastopsis mulliganensis* Constant, 2005
*Gelastopsis procyon* sp. nov.

***Gelastopsis croydonensis*** sp. nov.
urn:lsid:zoobank.org:act:DED84640-173E-4C30-8DF9-FCF2A50F69CE
Figs 1–7

**Diagnosis**

The species can be recognized by the following combination of characters: (1) black band of upper portion of frons with incomplete, median, pale yellowish, narrow stripe limited to upper half of black area (Fig. 2B); (2) hind wings narrow (LW/BW = 2.3) with a narrow but distinct anal lobe, and vein A2 reaching to about ⅔ of lobe length (Fig. 2F); (3) anal tube in dorsal view strongly elongate and constricted in middle portion and with apical margin rounded (Fig. 3B); (4) gonostyli in lateral view with anterodorsal process partly covering pygofer, strongly, roundly downcurved and with apex directed ventrad (Fig. 3A).

**Etymology**

The species epithet refers to the town of Croydon in Queensland, where the species was collected.

**Type material**

**Holotype**

AUSTRALIA • ♂; Australia Qld, Croydon, Diehm's Lookout; 18°11′20″ S, 142°15′49″ E; 20–21 Mar. 2025; 150 m a.s.l.; J. Constant and L. Semeraro leg.; Leopold III Funds Expedition; QM.

**Paratypes**

AUSTRALIA • 2 ♀♀; same data as for holotype; QM • 1 ♂, 3 ♀♀; same data as for holotype; RBINS.

**Description**

Measurements and ratios. LT: ♂ (n = 2): 6.6 mm (6.4–6.7); ♀ (n = 4): 6.4 mm (6.3–6.5); BV/LV = 3.49; BF/LF = 1.98; LP+LM/BT = 0.66; LTg/BTg = 3.08; LW/BW = 2.27.

**Male**

Head (Figs 1A–D, 2A–C). Vertex weakly concave, brown with pale median stripe and darker on sides (more so anteriorly), often covered in golden-brown pruinose secretion; margins slightly carinate; anterior and posterior margins curved, subparallel. Dorsal half of frons black with oblique sublateral yellowish line; incomplete, median, pale yellowish, narrow stripe limited to upper half of black area; lower margin of black area bisinuate; two strong, coalescent, wrinkled impressions (carinate dorsally), each bearing central white waxy spot; pale yellowish, transverse band under black zone; ventral half of frons brown with irregular, darker markings, often covered in whitish-yellow pruinose secretion and bearing 2–3 transverse, irregular, darker carinae. Sides of head yellowish, turning brown in upper portion. Clypeus brown with sides blackish and laterodorsal angles yellowish; antennae blackish; scape short; pedicel subcylindrical, barrel-shaped.

Thorax (Figs 1A–D, 2A–C). Pro- and mesonotum brown with irregular, weakly darker patches, often covered in golden-brown pruinose secretion; group of obsolete, paler tubercles at each side. Pronotum

with anterior margin curved and posterior margin bisinuate. Mesonotum with distinct median and sublateral (peridiscal) carinae, median stopping before scutellum. Tegulae pale brown.

Tegmina (Figs 1A–D, 2E). Costal and sutural margins subparallel; slightly tapering along distal half; costal margin very weakly sinuate; often covered in golden-brown pruinose secretion (more so in anterior portion); dark brown with irregular, paler markings in distal half; apex dark brown with ante-apical, white, transverse stripe; paler costal patch (veins dark brown) before dark brown apical zone; apex sligthly obliquely, roundly truncate.

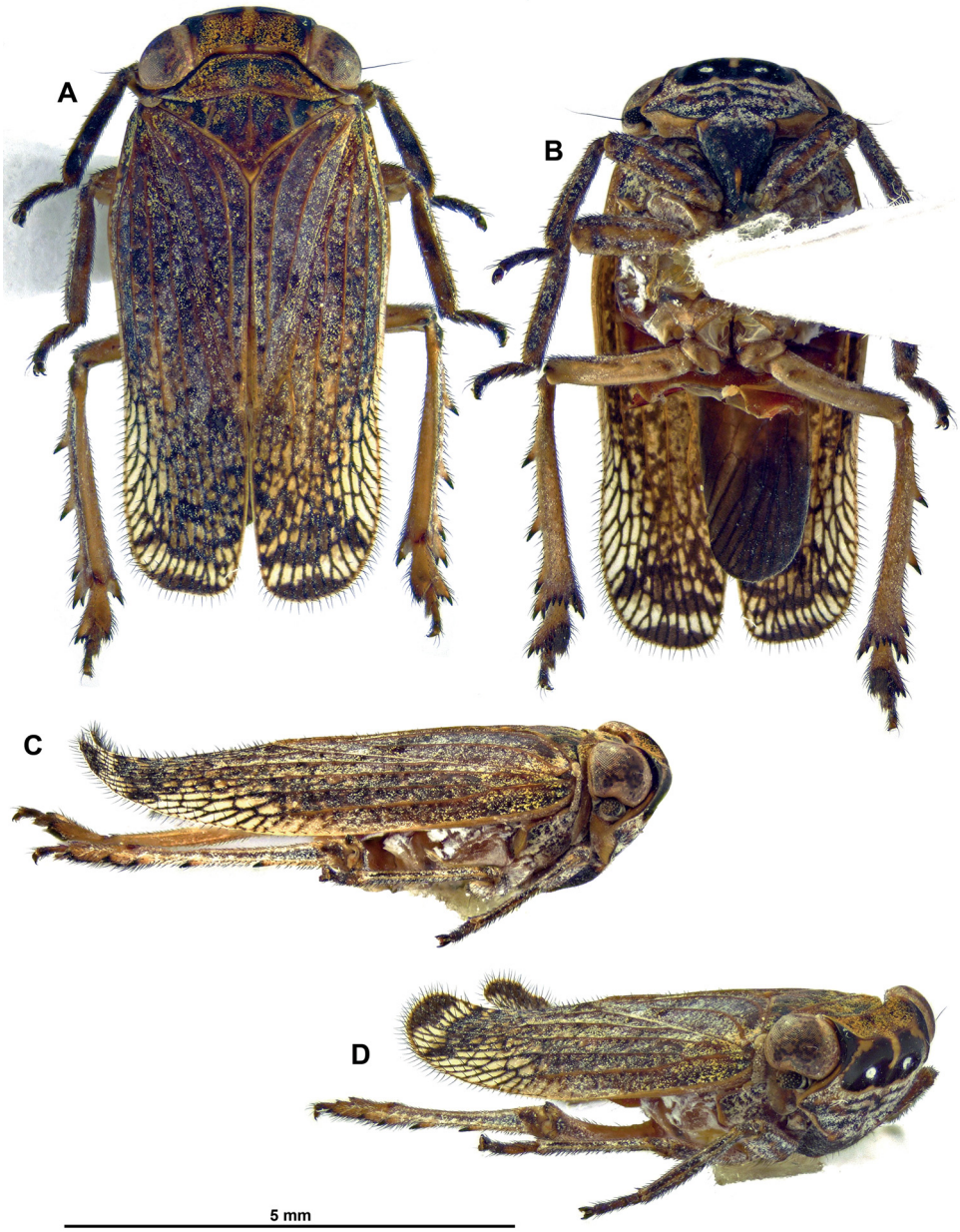


**Fig. 1.** *Gelastopsis croydonensis* sp. nov., paratype, ♂ (RBINS). **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Habitus, lateral view. **D**. Habitus, anterolateral view.

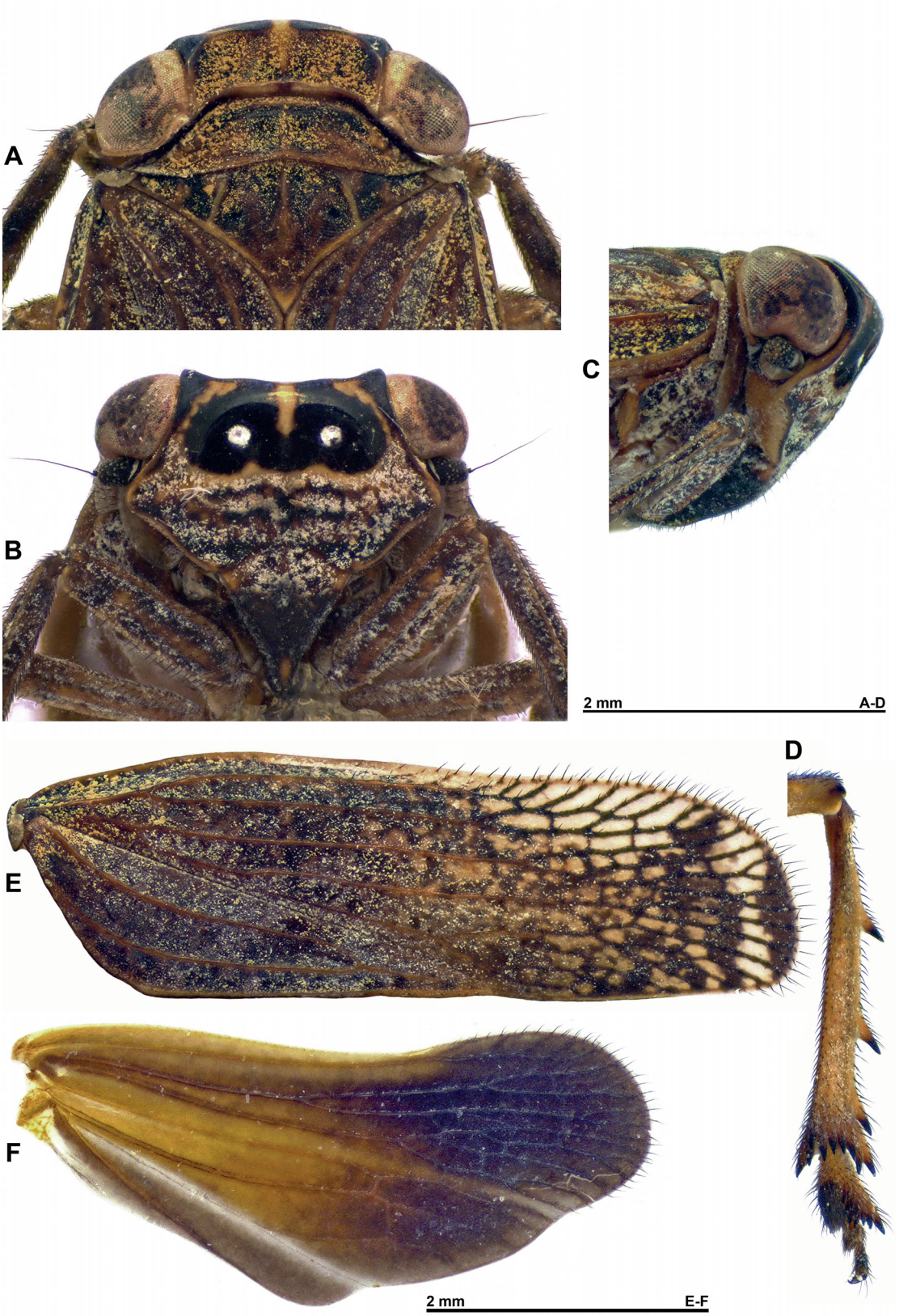


**Fig. 2.** *Gelastopsis croydonensis* sp. nov., paratype, ♂ (RBINS). **A–C**. Head and thorax. **A**. Dorsal view **B**. Lateral view. **C**. Perpendicular view of frons. **D**. Metatibia and metatarsus, ventral view. **E**. Right tegmen. **F**. Hind wing.

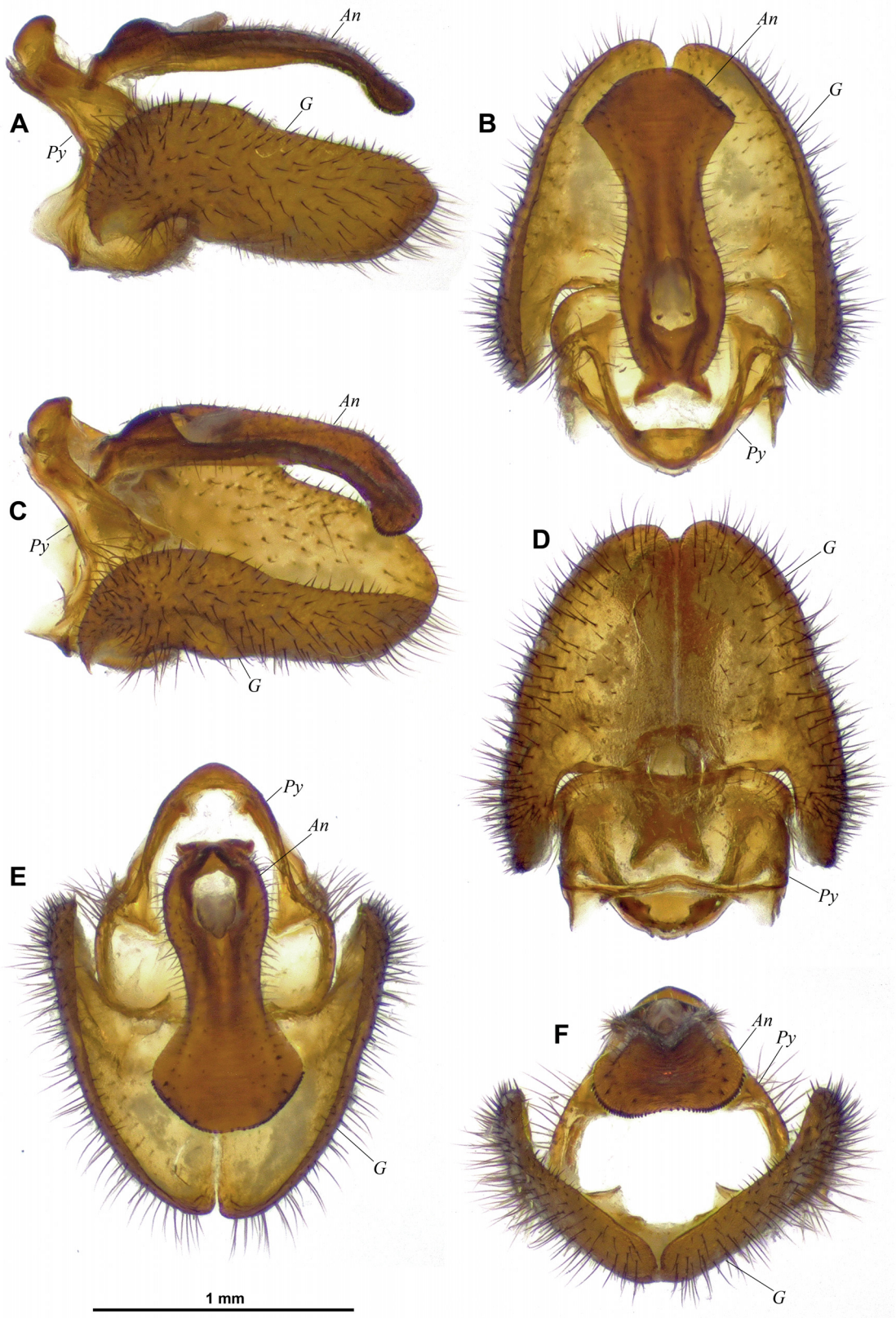


**Fig. 3.** *Gelastopsis croydonensis* sp. nov., holotype, ♂ (QM), terminalia: pygofer, anal tube and gonostyli. **A**. Left lateral view. **B**. Dorsal view. **C**. Laterodorsal view. **D**. Ventral view. **E**. Posterodorsal view. **F**. Caudal view. Abbreviations: see Material and methods.

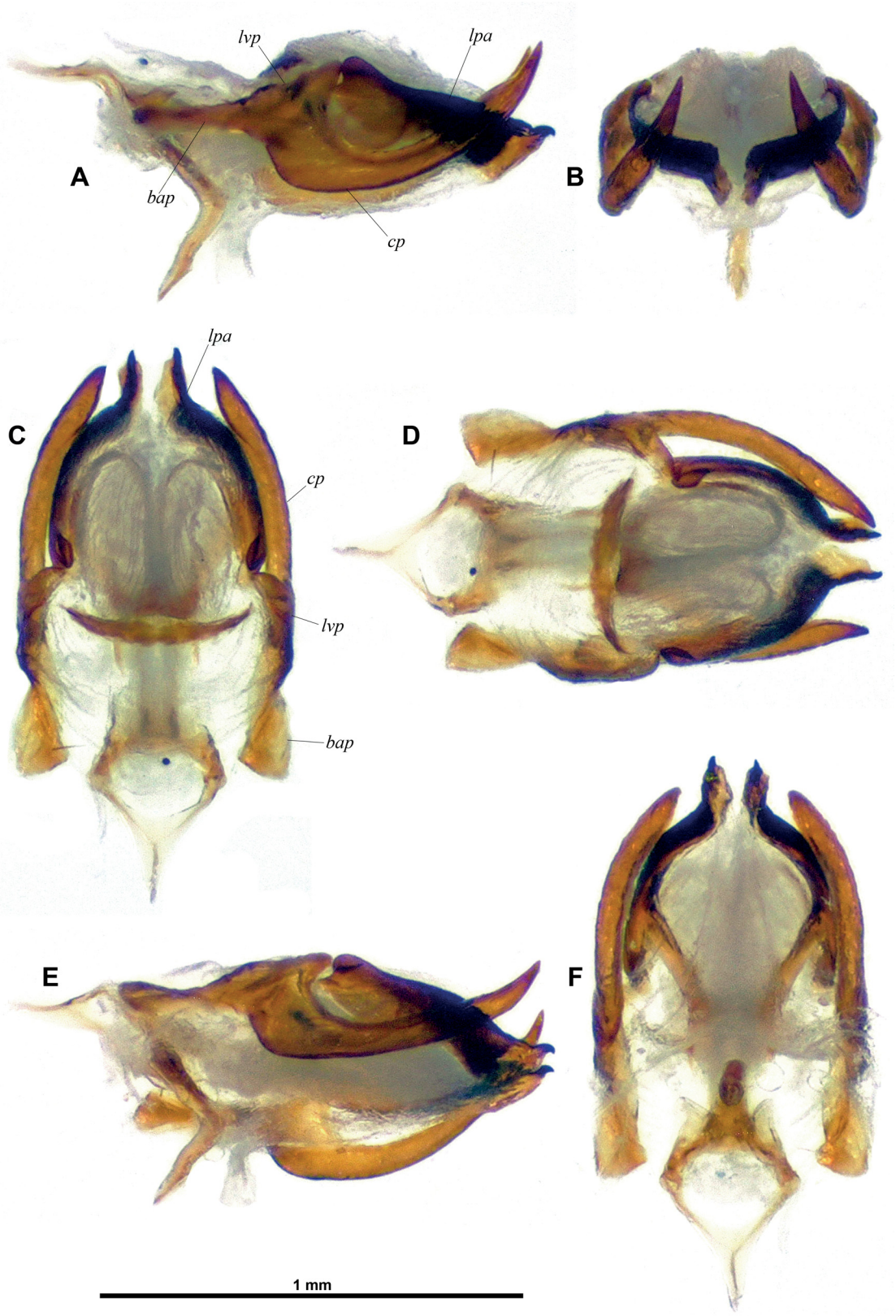


**Fig. 4.** *Gelastopsis croydonensis* sp. nov., holotype, ♂ (QM), terminalia: aedeagus. **A**. Left lateral view. **B**. Caudal view. **C**. Dorsal view. **D**. Laterodorsal view. **E**. Lateroventral view. **F**. Ventral view. Abbreviations: see Material and methods.


**Fig. 5.** *Gelastopsis croydonensis* sp. nov., in nature, on *Acacia* sp., Croydon, 20 Mar. 2025. **A**. Dorsal view. **B**. Anterolateral view. **C–F**. Trophobiotic interaction with ants, *Camponotus wiederkehri* Forel, 1894.

Venation. ScP+R forking close to base after rather short common stem, ScP+RA and RP running more or less parallel to costal margin; first fork of MP very basal, at level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about ¾ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimiting small elongate cells.

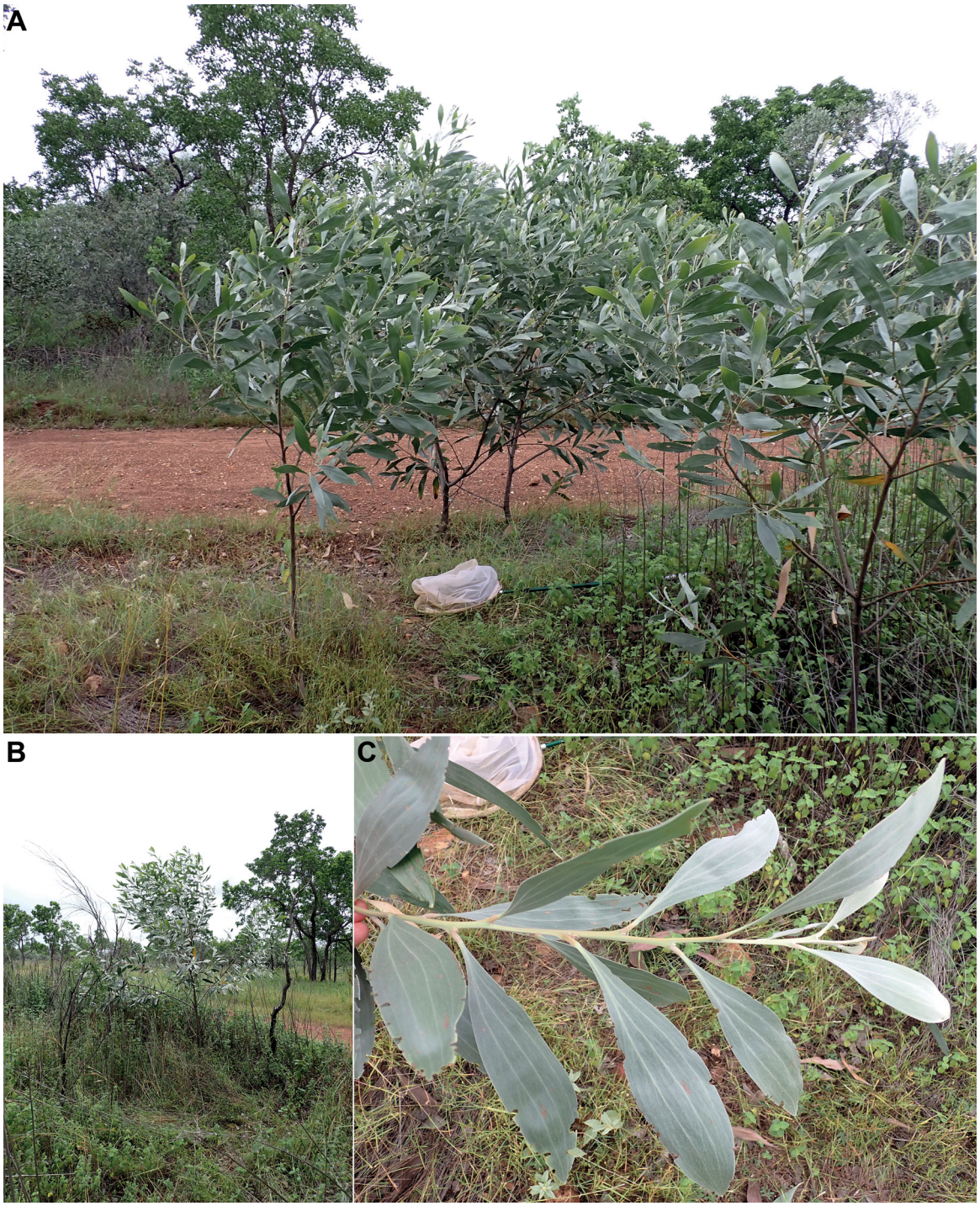


**Fig. 6.** Croydon, 20 Mar. 2025. **A–B**. Habitat of *Gelastopsis croydonensis* sp. nov. **C**. Detail of leaves of the host plant, *Acacia* sp.

Posterior wings (Fig. 2F). Narrow, about 2.3 × longer than broad, with a narrow but distinct anal lobe, and vein A2 reaching to about ⅔ of lobe length. All main veins visible from base, forked about nodal line, except MP forked before halflength, and forming a few closed cells; transverse veinlets delimiting elongate cells on distal ⅓.

Legs (Figs 1A–D, 2D). Pro- and mesofemora and tibiae yellowish-brown, more or less densely variegated with dark brown; pro- and mesotarsi slightly darker apically; posterior legs yellowish-brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender, tibiae more slender than corresponding femora; metatibiae with 3 lateral and 9 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and 9 spines more or less arranged in two rows. Metatibiotarsal formula: (3) 9/9/0.

Abdomen. Bright red with genital segments brown.

Male terminalia (Figs 3–4). Pygofer (Fig. 3: *Py*) in lateral view strongly sinuate, rather broad ventrally and tapering towards upper portion; in dorsal view, posterior margin excavate; in ventral view, posterior margin distinctly incurved. Anal tube (Fig. 3A–C, E–F: *An*) in dorsal view strongly elongate and constricted in middle portion, about 2.1 × as long as broad, with lateral margins strongly diverging in distal portion before rounded apical margin; distinctly grooved medially after anal opening, groove not reaching apical margin; more or less straight, then distinctly downcurved in distal portion in lateral view; row of minute teeth along apical margin; anal opening in basal ¼. Gonostyli (Fig. 3: *G*) fused on most of length, elongate in lateral and ventral views (distinctly longer than wide) with apex rounded, basally projecting into wide process projecting cephaloventrad, apically pointed (point directed ventrad), and largely covering pygofer in lateral view; in caudal view, gonostyli taken together forming a widely open 'V', with lateral portion upcurved. Aedeagus (Fig. 4) mostly membranous with lateral, semicircular, sclerotized process on each side, downcurved in distal portion and with apical hook, articulated to lateroventral process of periandrium; lateroventral process of periandrium with basal apodeme directed cephalad, corpus strongly but shortly projecting ventrad, then distinctly upcurved in lateral view and moderately curved mesad in dorsal view, apex pointed.

**Distribution and biology**

The species is currently recorded from a single locality, Croydon in the Gulf of Carpentaria area of Queensland, in the Gulf Plains bioregion (Fig. 7). The specimens were collected in March. They are cryptic when sitting on the branches of their host plant, *Acacia holosericea* A.Cunn. ex G.Don / *A. colei* Maslin & L.A.J. Thomson (Fabaceae) in open *Eucalyptus* L'Her. woodland (Figs 5–6). A specimen was observed at day time, in a trophobiotic interaction with ants collecting the honeydew produced by the planthopper. The ants were identified as *Camponotus wiederkehri* Forel, 1894 (Hymenoptera: Formicidae: Formicinae) (Fig. 5C–F) and the observed ant specimens belong to different casts; the behaviour of the ants included antennal, palpal and proleg contact / palpation which are regarded as a way to stimulate honeydew production by the planthopper (Bourgoin *et al.* 2023).

***Gelastopsis procyon*** sp. nov.
urn:lsid:zoobank.org:act:2856ACAD-87A6-4AF2-A95D-5A94F9C33B34
Figs 7–13

**Diagnosis**

The species can be recognized by the following combination of characters: (1) black band of upper portion of frons split in two parts by complete median pale yellowish narrow stripe, sometimes yellowish stripe incomplete and the two black parts remain narrowly joined ventrally (Figs 9B, 12C–D); (2) hind

wings narrow (LW/BW = 2.5) with a distinctly reduced anal lobe and vein A2 reaching to about ⅔ of lobe length (Fig. 9F); (3) anal tube in dorsal view moderately elongate, suboval (broadly spatulate) (Fig. 10B); (4) gonostyli in lateral view without distinct anterodorsal process (Fig. 10A).

### Etymology

The species epithet refers to the interrupted black band of the upper half of the frons of the new species, reminicent of the black facial mask of the racoon and allies in the genus *Procyon* Storr, 1780 (Mammalia, Carnivora, Procyonidae). It is used as a noun in apposition.

### Type material

#### Holotype

AUSTRALIA • ♂; Queensland, 26 km W of 'Fairview'; 15°35′ S, 144°04′ E; 20 Apr. 1989; G. and A. Daniels leg.; ex UQIC donated 2011; QM.

#### Paratypes

AUSTRALIA • 1 ♀; Queensland, sandstone ridge behind 'Fairlight' H.S.; 15°45′ S, 144°02′ E; 5 May 1989; G. and A. Daniels leg.; ex UQIC collection; QM • 1 ♂; Queensland, Normanton, near truck weighing station; 17°41′32″ S, 141°03′23″ E; 22–24 Mar. 2025; 10 m a.s.l.; J. Constant and L. Semeraro leg.; Leopold III Funds Expedition; RBINS • 1 ♀; Queensland, Normanton, near Lilyvale estate; 17°41′22″ S, 141°02′39″ E; 23–24 Mar. 2025; 15 m a.s.l.; J. Constant and L. Semeraro leg.; Leopold III Funds Expedition; RBINS.

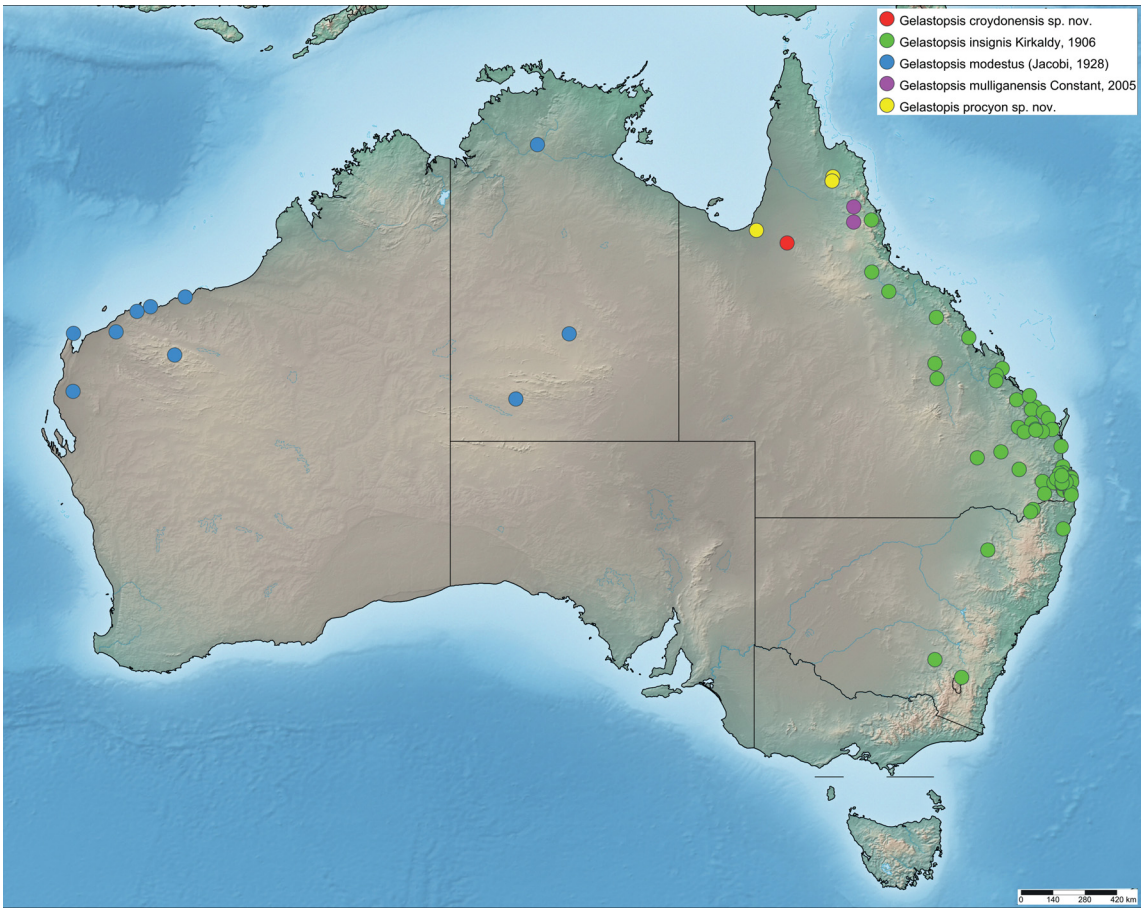


**Fig. 7.** Distribution map of the species of the genus *Gelastopsis* Kirkaldy, 1906.

**Description**

Measurements and ratios. LT: ♂ (n = 2): 6.0 mm (5.5–6.4); ♀ (n = 1): 6.6 mm; BV/LV = 3.74; BF/LF = 2.23; LP+LM/BT = 0.6; LTg/BTg = 2.91; LW/BW = 2.49.

Head (Figs 8A–D, 9A–C). Vertex weakly concave, variegated blackish and brown with incomplete pale median stripe, paler along lateral margins; often covered in golden-brown pruinose secretion; margins carinate; anterior and posterior margins moderately curved, subparallel. Dorsal half of frons black with oblique sublateral pale yellowish line with small blackish spots; complete median pale yellowish narrow stripe dividing black area; lower margin of black area bisinuate; two strong, coalescent, wrinkled

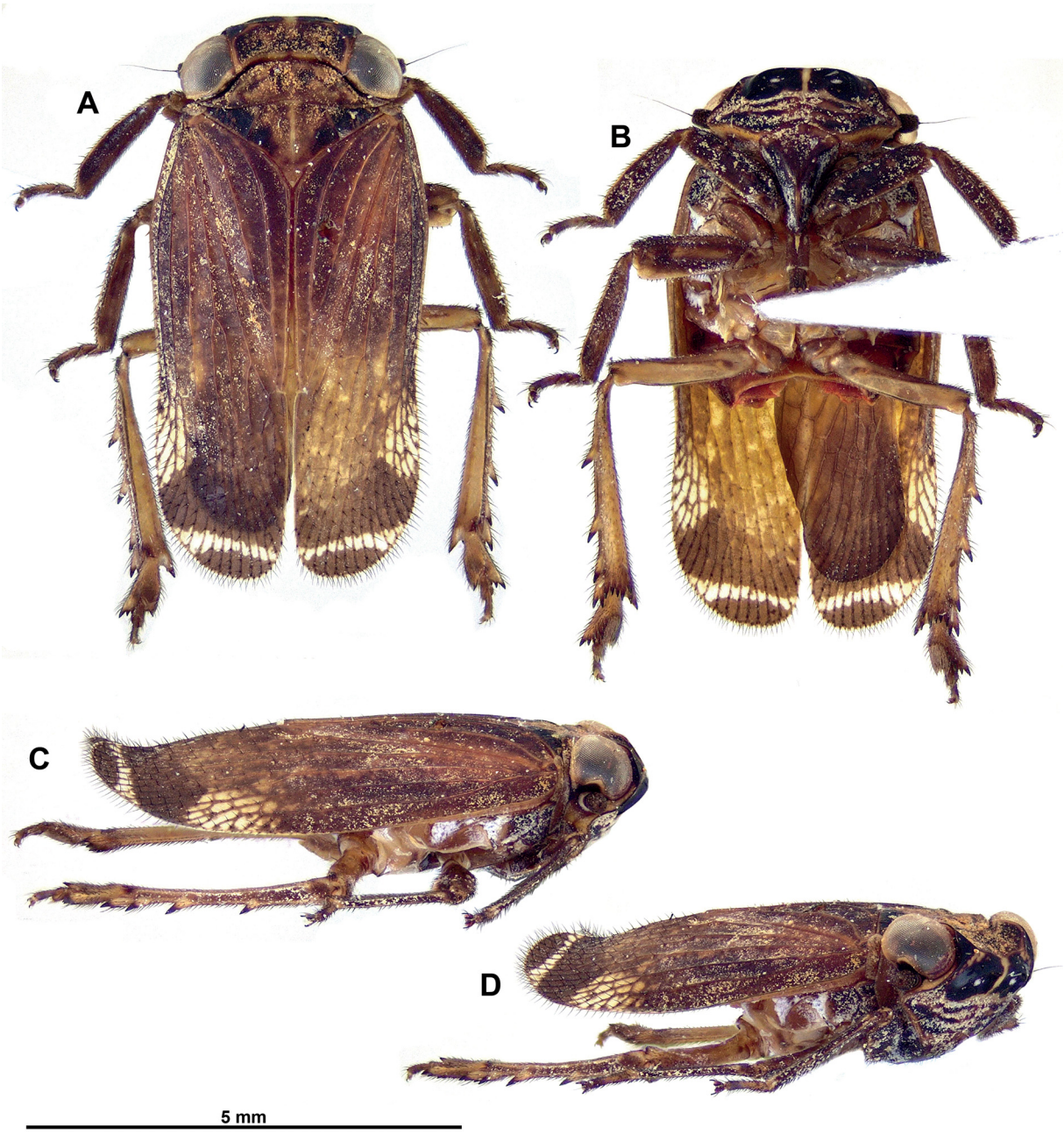


**Fig. 8.** *Gelastopsis procyon* sp. nov., holotype, ♂ (QM). **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Habitus, lateral view. **D**. Habitus, anterolateral view.


**Fig. 9.** *Gelastopsis procyon* sp. nov., holotype, ♂ (QM). **A–C**. Head and thorax. **A**. Dorsal view **B**. Lateral view. **C**. Perpendicular view of frons. **D**. Metatibia and metatarsus, ventral view. **E**. Right tegmen. **F**. Hind wing.

impressions (carinate dorsally) bearing each central white waxy spot; narrow pale yellowish, transverse band under black zone; ventral half of frons brown with irregular, darker markings, often covered in whitish-yellow pruinose secretion and bearing three transverse, irregular, darker carinae. Sides of head yellowish, turning brown in narrow upper portion. Clypeus dark brown, narrowly yellowish along fronto-clypeal suture and with sides blackish; antennae blackish; scape short; pedicel subcylindrical, barrel-shaped.

Thorax (Figs 8A–D, 9A–C). Pronotum brown with some irregular, darker markings, often covered in golden-brown pruinose secretion; group of obsolete, slightly paler tubercles at each side; anterior margin broadly curved and posterior margin bisinuate. Mesonotum brown with narrow pale median carina extending to base of scutellum; distinct blackish markings along posterolateral margins stopped at base of scutellum; often covered in golden-brown pruinose secretion; distinct sublateral (peridiscal) carinae. Tegulae brown.

Tegmina (Figs 8A–D, 9E). Costal and sutural margins more or less subparallel; costal margin very weakly sinuate; often covered in golden-brown pruinose secretion (more so in anterior portion); dark brown with irregular, whitish marking along costal margin in distal half; ante-apical, white, transverse stripe; apex sligthly obliquely, roundly truncate.

Venation. ScP+R forking close to base after rather short common stem, ScP+RA and RP running more or less parallel to costal margin; 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 ¾ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimiting small, elongate cells.

Posterior wings (Fig. 9F). Narrow, about 2.5 × longer than broad, with narrow, weakly distinct (no indentation on margin) anal lobe, and vein A2 reaching to about ⅔ of lobe length. All main veins visible from base, forked about nodal line, except MP forked before halflength, and forming few closed cells; transverse veinlets delimiting elongate cells in distal ⅓.

Legs (Figs 8A–D, 9D). Pro- and mesofemora and tibiae dark brown, more or less densely variegated with yellowish-brown (often along median line); pro- and mesotarsi slightly darker apically; posterior legs yellowish-brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender, tibiae distinctly more slender than corresponding femora; metatibiae with 3 lateral and 9 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and 9 spines more or less arranged in two rows. Metatibiotarsal formula: (3) 9/9/0.

Abdomen. Bright red with genital segments brown.

Male terminalia (Figs 10–11). Pygofer (Fig. 10: *Py*) in lateral view strongly sinuate, moderately broad ventrally and tapering towards upper portion; in dorsal view, posterior margin excavate; in ventral view, posterior margin nearly straight. Anal tube (Fig. 10A–C, E–F: *An*) in dorsal view moderately elongate, suboval (broadly spatulate), about 1.5 × as long in midline as broad, with rounded apical margin; in lateral view, distinctly downcurved in basal portion, then more or less straight; row of minute teeth along apical margin; anal opening in basal ⅓. Gonostyli (Fig. 10: *G*) fused on most of length, without distinct anterodorsal process; in lateral view elongate with posterior margin distinctly produced posteriad in middle; in ventral view moderately elongate with apex angularly rounded; in caudal view, gonostyli taken together forming a wide ‘U’, with lateral portion upcurved. Aedeagus (Fig. 11) mostly membranous with lateral, incurved, sclerotized process on each side, slightly downcurved in distal portion and apically blunt, articulated to lateroventral process of periandrium; lateroventral process of periandrium with basal

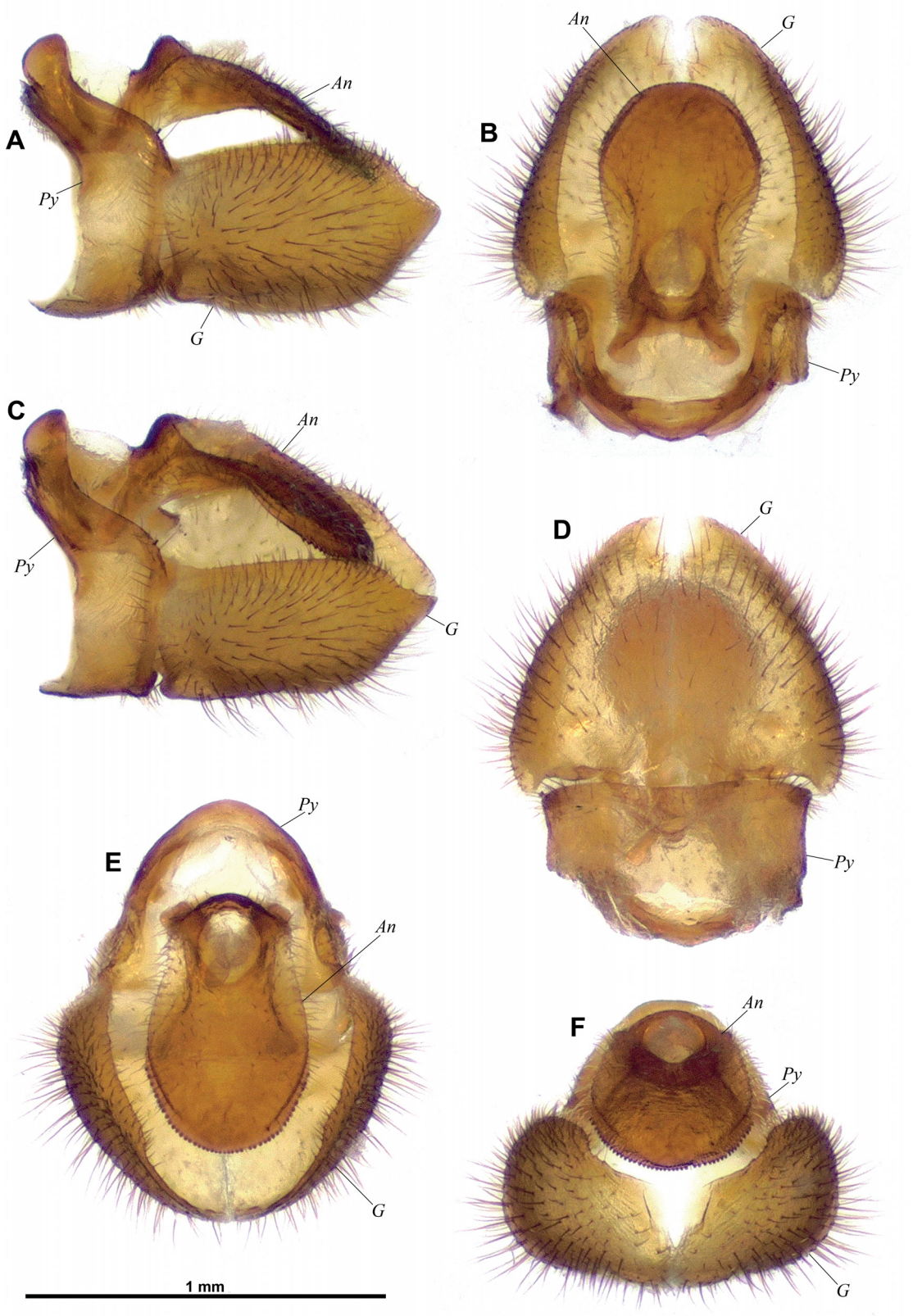


**Fig. 10.** *Gelastopsis procyon* sp. nov., holotype, ♂ (QM), terminalia: pygofer, anal tube and gonostyli. **A**. Left lateral view. **B**. Dorsal view. **C**. Laterodorsal view. **D**. Ventral view. **E**. Posterodorsal view. **F**. Caudal view. Abbreviations: see Material and methods.

apodeme directed cephalad, corpus strongly but shortly projecting ventrad, then distinctly upcurved in lateral view and moderately curved mesad in dorsal view, apex pointed.

**Distribution and biology**

The species is currently recorded from two areas: around Laura in the Cape York Peninsula (Cape York bioregion) and in Normanton in the Gulf of Carpentaria area of Queensland (Gulf Plains bioregion) (Fig. 7). The specimens were collected in March to May. They are cryptic when sitting on the branches of their host plant, *Acacia* sp. (Figs 12–13) in open *Eucalyptus* woodland.

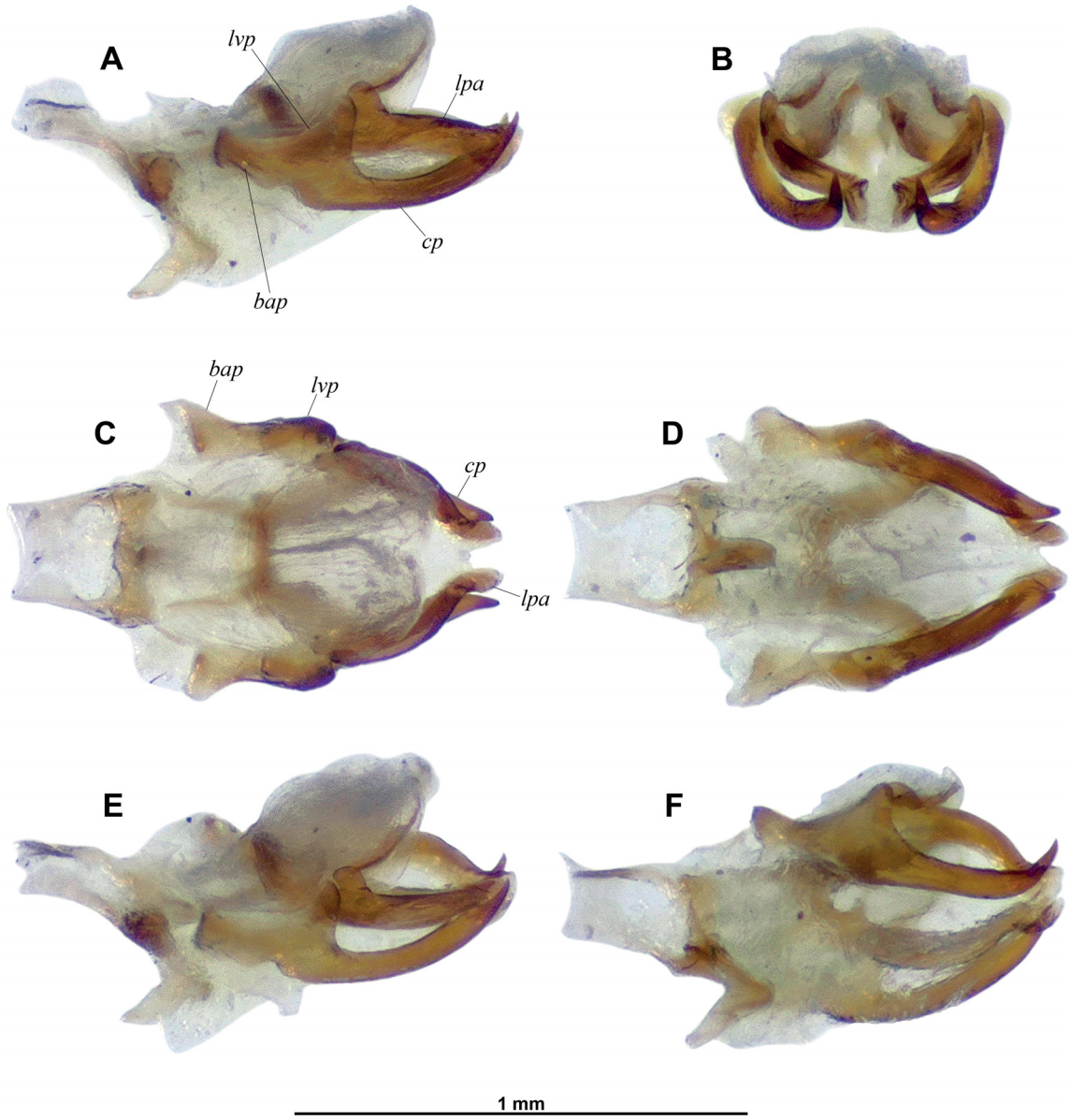


**Fig. 11.** *Gelastopsis procyon* sp. nov., holotype, ♂ (QM), terminalia: aedeagus. **A**. Left lateral view. **B**. Caudal view. **C**. Dorsal view. **D**. Ventral view. **E**. Laterodorsal view. **F**. Lateroventral view. Abbreviations: see Material and methods.


**Fig. 12.** *Gelastopsis procyon* sp. nov., live specimen. **A–D**. In cage, Normanton, 23 Mar. 2025. **E–F**. In nature, on tree trunk, Normanton, 23 Mar. 2025.


**Fig. 13. A–B**. Habitat of *Gelastopsis procyon* sp. nov., Normanton, 23 Mar. 2025.

***Gelastopsis insignis*** Kirkaldy, 1906
Figs 7, 14, 17A–E

**Diagnosis**

The species can be recognized by the following combination of characters: (1) black band of upper portion of frons with incomplete, median, pale yellowish, narrow stripe limited to upper half of black area (Fig. 14D); (2) hind wings wide (LW/BW = 1.6) with a well-developed anal lobe and vein A2 reaching to about ⅔ of lobe length (Fig. 14E); (3) anal tube in dorsal view strongly widening after basal ⅓, with two longitudinal strong ridges and with apical margin distinctly incurved (Fig. 17B); (4) gonostyli in lateral view with anterodorsal process upcurved and with distal hook (Fig. 17A).

**Material examined**

AUSTRALIA – **Queensland** • 1 ♂; Ransome Reserve; 27°29.6′ S, 153°11.1′ E; 10 m a.s.l.; 10 Nov. 2023; S. Wright leg.; sweeping *Casuarina* woodland; 51701; QM • 1 ♂; Illawena Station, Drewvale; 27°39′ S, 153°04′ E; 17 Feb. 2004; MV lamp; G. Monteith leg.; 11554; QM • 1 ♀; Gold Creek Reservoir; site 1; 27°27.9′ S, 152°52.5′ E; 23 Feb. 2004; 140 m a.s.l; QM party leg.; sweeping spotted gum open forest; 51879; QM • 1 ♀; same data as for preceding; 29 Mar. 2004; C.J. Burwell leg.; 51977; QM • 1 ♂; Sandy Creek Conservation Area, Mount Cotton; site 1; 27.597° S, 153.248° E; 9 Feb. 2010; 40 m a.s.l.; QM Party leg.; MV lamp, open ironbark forest; 19708; QM • 1 ♂; Karawatha Forest; site 6; 27°37.6′ S, 153°05.4′ E; 30 Apr. 2003; 60 m a.s.l.; E. Volschenk leg.; sweeping eucalypt woodland; 51167; QM • 1 ♀; Boondall Wetlands, site 1; 27°20.4′ S, 153°04.5′ E; 1 Nov. 2003; QM Party leg.; night hand collection, *Melaleuca* woodland; 51718; QM • 1 ♂; Redcliffe Tableland; site 1; 21.123° S, 148.140° E; 13–18 Apr. 2012; 430 m a.s.l.; G. Monteith leg.; Malaise trap, open forest; 35225; QM • ♀; Barakula State Forest; site 3; 26.415° S, 150.682° E; 23–30 Nov. 2009; 402 m a.s.l.; G. Monteith and F. Turco leg.; Malaise trap; 19217; QM • 1 ♀; Gregory Developmental Road, 0.8 km N of Mount Jack; 19°20.0′ S, 145°35.8′ E, 27 Sept.–17 Dec. 2006; 480 m a.s.l.; QM Party leg.; pitfall trap, open forest; 14708; QM • 2 ♂♂, 1 ♀, 3 nymphs; Mount Walsh National Park; 25°33′37″ S, 152°03′21″ E; 14 Dec. 2019; J. Constant leg.; on *Acacia* sp.; RBINS • 1 ♂, 3 nymphs; Eurimbulla N.P., Ganoonga Noonga Lookout; 24°12′05″ S, 151°48′11″ E; 9 Dec. 2019; J. Constant, F. Martoni, M. Moir and L. Semeraro leg.; on *Acacia* sp.; RBINS.

***Gelastopsis modesta*** (Jacobi, 1928)
Figs 7, 15, 17F–J

**Diagnosis**

The species can be recognized by the following combination of characters: (1) black band of upper portion of frons split in two parts by complete median pale yellowish narrow stripe (Fig. 15D); (2) hind wings wide (LW/BW = 2.2) with a well-developed anal lobe and vein A2 reaching to about ⅔ of lobe length (Fig. 15E); (3) anal tube in dorsal view strongly elongate and constricted slightly before midlength, and with apical margin incurved (Fig. 17G); (4) gonostyli in lateral view with anterodorsal process upcurved, then directed cephalad, and with distal tooth (Fig. 17F).

**Material examined**

AUSTRALIA – **Northern Territory** • 1 ♀; Katherine Gorge National Park, Lookout trail; [14°19′ S, 132°26′ E]; 21 Jun. 1987; M. Asche and H. Hoch leg.; MFNB. – **Western Australia** • 1 ♀; 6 km NE of Warramboo Creek Crossingon North West Coastal Highway, site OYW09; 21°41′21″ S, 115°50′35″ E; 14 May–29 Aug. 2006; CALM Pilbara Survey, ethylene glycol pitfalls; Reg. No. E 114797; WAM.

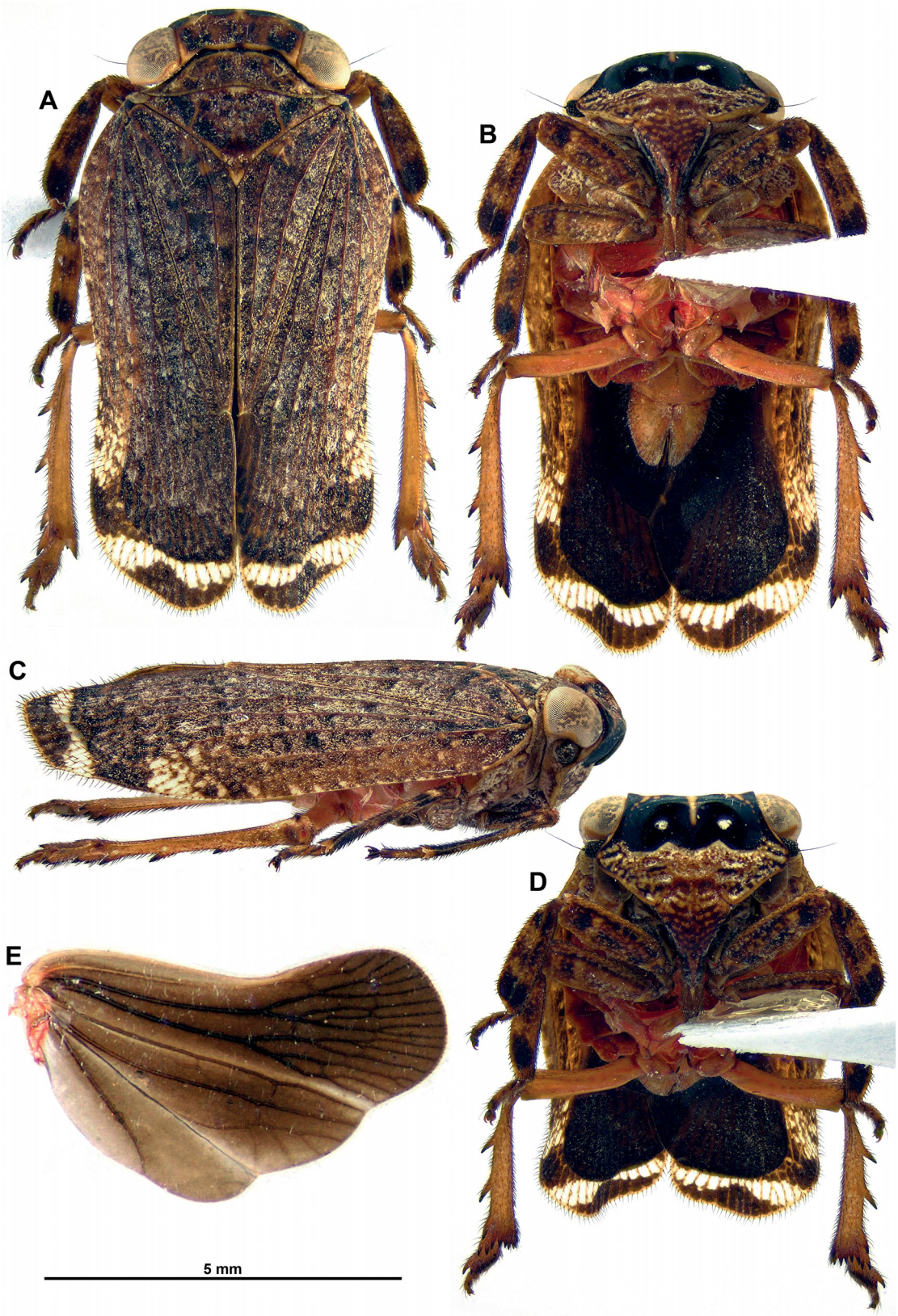


**Fig. 14.** *Gelastopsis insignis* Kirkaldy, 1906, ♂ (RBINS), from Mount Walsh National Park, Queensland. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Habitus, lateral view. **D**. Habitus, perpendicular view of frons. **E**. Hind wing.

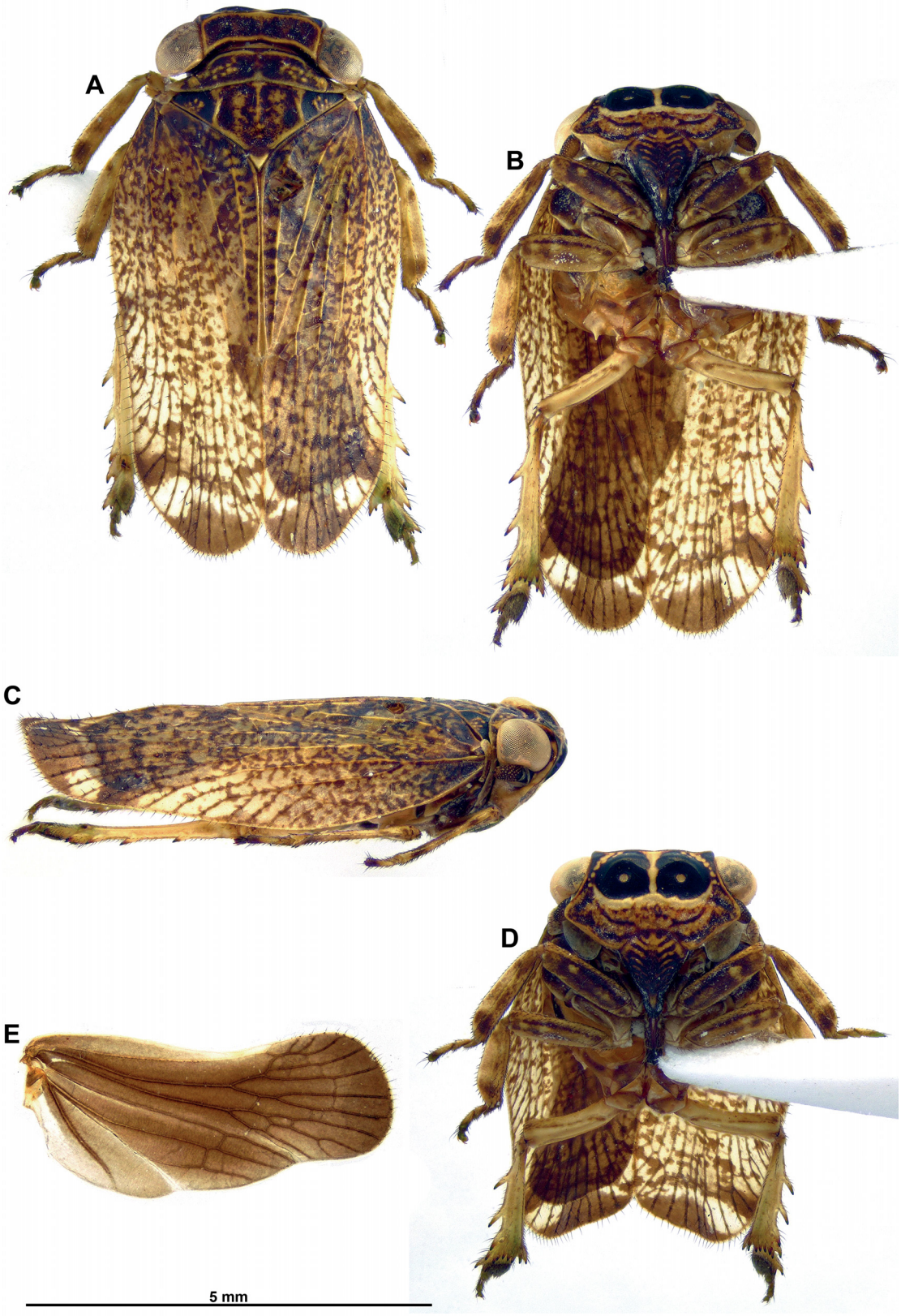


**Fig. 15.** *Gelastopsis modesta* (Jacobi, 1928), ♂ (RBINS), from Mount Bruce, Western Australia. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Habitus, lateral view. **D**. Habitus, perpendicular view of frons. **E**. Hind wing.

***Gelastopsis mulliganensis*** Constant, 2005
Figs 7, 16, 17K–O

**Diagnosis**

The species can be recognized by the following combination of characters: (1) black band of upper portion of frons with incomplete, median, pale yellowish, narrow stripe limited to upper half of black area (Fig. 16D); (2) hind wings very narrow (LW/BW = 2.7) with strongly reduced anal lobe and vein A2 reaching to about ⅓ of lobe length (Fig. 16E); (3) anal tube in dorsal view elongate, generally spatulate, weakly constricted slightly before midlength, and with apical margin rounded (Fig. 17L); (4) gonostyli in lateral view with anterodorsal process partly covering pygofer, slightly downcurved and with apex directed cephalad (Fig. 17K).

**Material examined**

AUSTRALIA – **Queensland** • 1 ♂, 1 ♀; West of Petford; [17°22′ S, 144°53′ E]; 11 Jun. 1987; M. Asche and H. Hoch leg.; MFNB • 1 ♂, 1 ♀; same data as for preceding; RBINS.

**Identification key to the species of *Gelastopsis* Kirkaldy, 1906**

1. Hind wings with anal lobe well developed (Figs 14E, 15E), LW/BW not more than 2.2 ..... 2
– Hind wings with anal lobe narrow or reduced (Figs 2F, 9F, 16E), LW/BW at least 2.3 ..... 3

2. Black band of frons with incomplete, median, pale yellowish, narrow stripe limited to upper half of black area (Fig. 14D); hind wings wide (Fig. 14E: LW/BW = 1.6); anal tube in dorsal view rather short, strongly widening after basal ⅓, with two longitudinal strong ridges (Fig. 17B) ..... ..... ***Gelastopsis insignis*** Kirkaldy, 1906
– Black band of frons split in two parts by complete median pale yellowish narrow stripe (Fig. 15D); hind wings more elongate (Fig. 15E: LW/BW = 2.2); anal tube in dorsal view strongly elongate and constricted slightly before midlength (Fig. 17G) ..... ***Gelastopsis modesta*** (Jacobi, 1928)

3. Black band of frons split in two parts by complete median pale yellowish narrow stripe, sometimes yellowish stripe incomplete and the two black parts remain narrowly joined ventrally (Figs 9B, 12C–D); anal tube in dorsal view moderately elongate, suboval (broadly spatulate) (Fig. 10B); gonostyli in lateral view without distinct anterodorsal process (Fig. 10A) ..... ***Gelastopsis procyon*** sp. nov.
– Black band of frons with incomplete, median, pale yellowish, narrow stripe limited to upper half of black area (Figs 2B, 16D); anal tube in dorsal view distinctly elongate (Figs 3B, 17L); gonostyli in lateral view with anterodorsal process partly covering pygofer (Figs 3A, 17K) ..... 4

4. Hind wings narrow (LW/BW = 2.3) with a narrow but distinct anal lobe (Fig. 2F); gonostyli in lateral view with anterodorsal process partly covering pygofer, strongly, roundly downcurved and with apex directed ventrad (Fig. 3A); anal tube in dorsal view strongly elongate and constricted in middle portion (Fig. 3B) ..... ***Gelastopsis croydonensis*** sp. nov.
– Hind wings very narrow (LW/BW = 2.7) with strongly reduced anal lobe (Fig. 16E); gonostyli in lateral view with anterodorsal process partly covering pygofer, slightly downcurved and with apex directed cephalad (Fig. 17K); anal tube in dorsal view elongate, generally spatulate, weakly constricted slightly before midlength (Fig. 17L) ..... ***Gelastopsis mulliganensis*** Constant, 2005

## Discussion

Including the two new species of the present study, there are now five species described in the genus *Gelastopsis*. Australia now counts 69 species in the family Eurybrachidae.

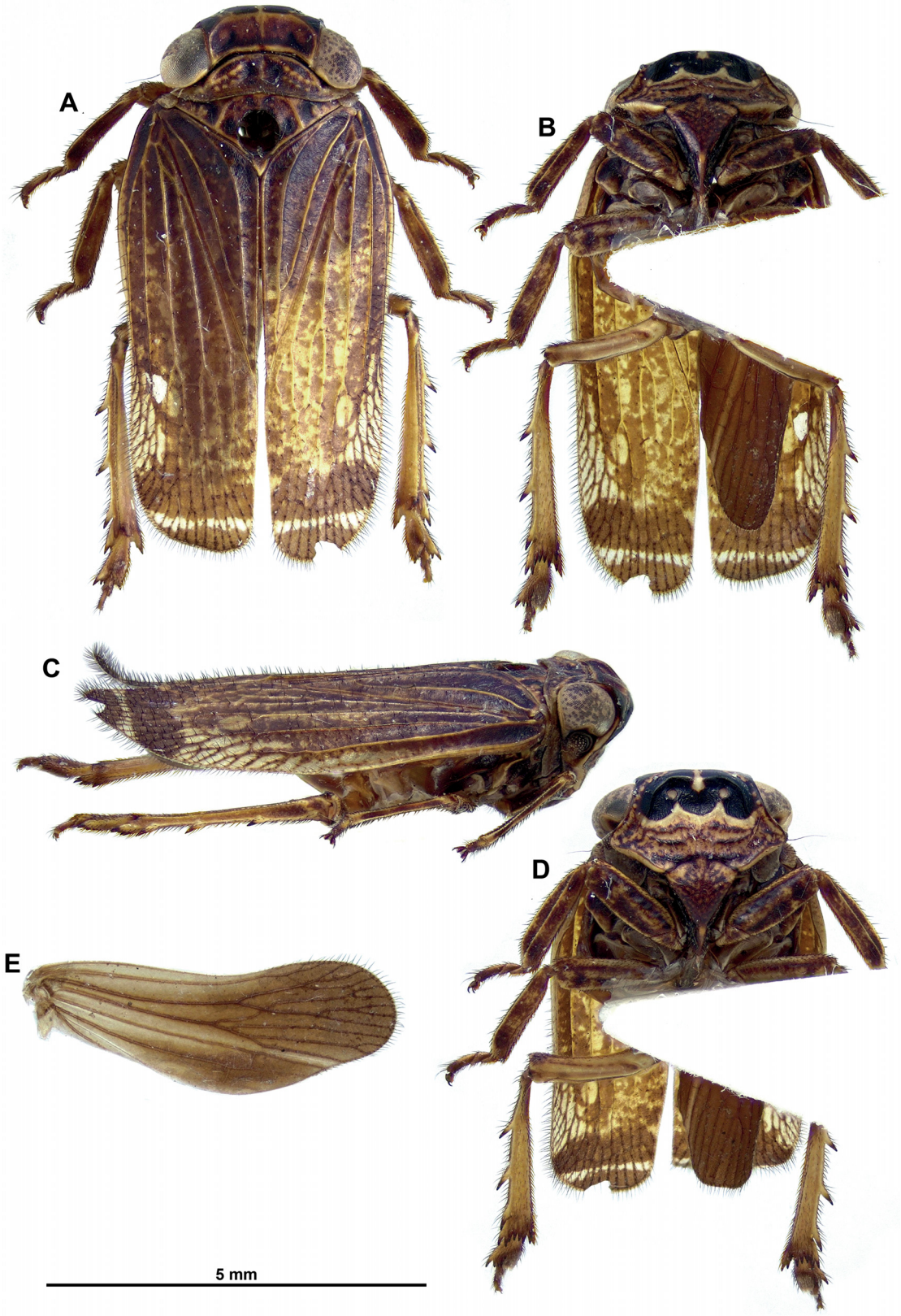


**Fig. 16.** *Gelastopsis mulliganensis* Constant, 2005, paratype, ♂ (QM) from Mount Mulligan, Queensland. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Habitus, lateral view. **D**. Habitus, perpendicular view of frons. **E**. Hind wing.

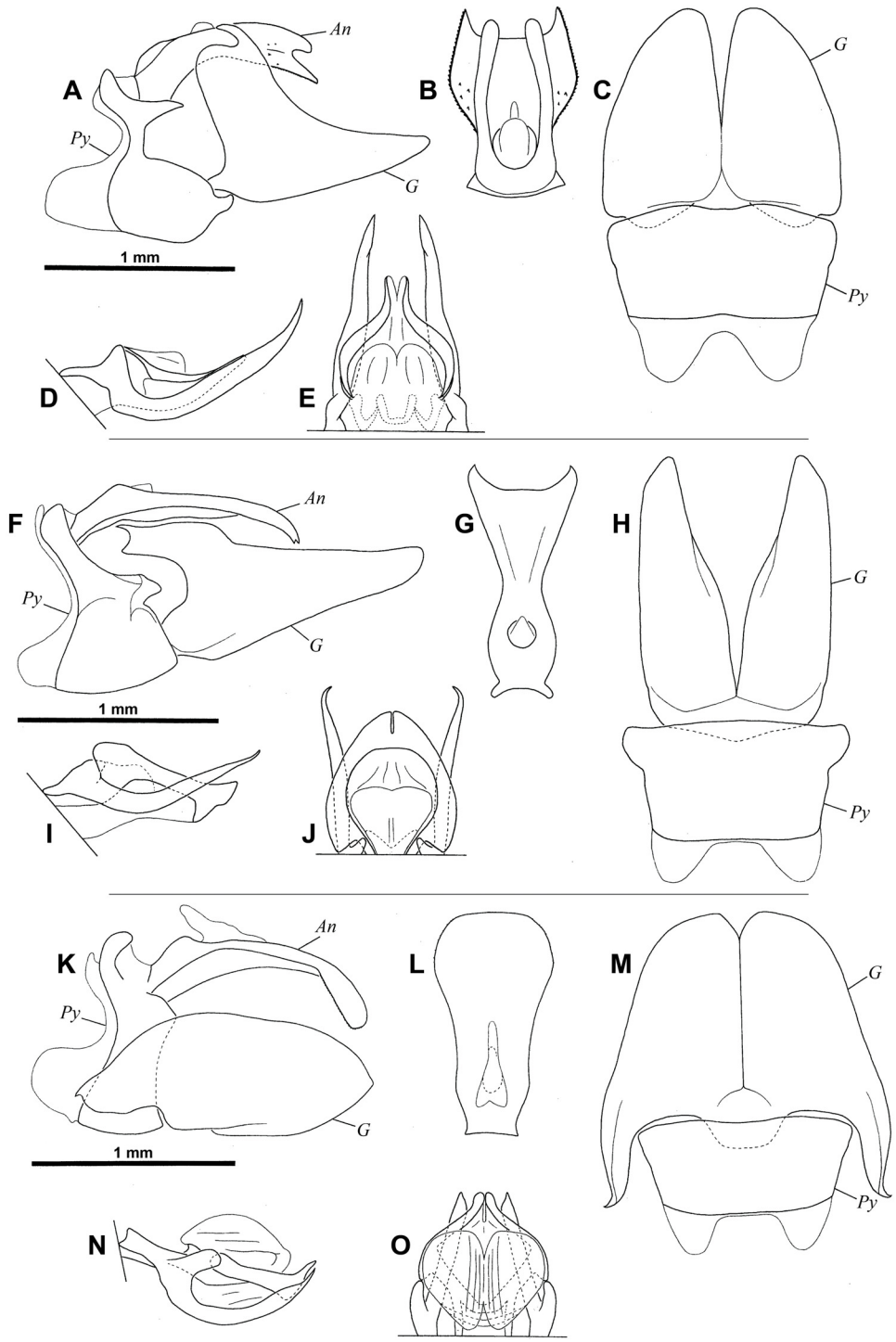


**Fig. 17.** Male terminalia (modified from Constant 2005). **A–E**. *Gelastopsis insignis* Kirkaldy, 1906. **A**. Pygofer, anal tube and gonostylus, lateral view. **B**. Anal tube, dorsal view. **C**. Pygofer and gonostyli, ventral view. **D**. Aedeagus, lateral view. **E**. Aedeagus, dorsal view. **F–J**. *Gelastopsis modesta* (Jacobi, 1928). **F**. Pygofer, anal tube and gonostylus, lateral view. **G**. Anal tube, dorsal view. **H**. Pygofer and gonostyli, ventral view. **I**. Aedeagus, lateral view. **J**. Aedeagus, dorsal view. **K–O**. *Gelastopsis mulliganensis* Constant, 2005. **K**. Pygofer, anal tube and gonostylus, lateral view. **L**. Anal tube, dorsal view. **M**. Pygofer and gonostyli, ventral view. **N**. Aedeagus, lateral view. **O**. Aedeagus, dorsal view. Abbreviations: see Material and methods.

In terms of the host plants, the species of *Gelastopsis* are associated with bushes and trees in the genus *Acacia* Mill., 1754 (Fabaceae) (Constant 2005; present study). Two species have been documented in trophobiotic interactions, *G. insignis* with a cockroach (Blattodea Latreille, 1810) and *G. croydonensis* sp. nov. with *Camponotus wiederkehri* Forel, 1894 (Formicidae Latreille, 1809) (Bourgoin *et al.* 2023; present study).

All species of the genus *Gelastopsis* show a characteristic pattern of the frons, reminiscent of the eyes of jumping spiders. This was first observed in the wild by Peter Chew around Brisbane (Constant 2005), and was confirmed by new observations of live specimens of *G. insignis* and for both new species (Figs 5E, 12C–D, F). A similar pattern is also recorded in the family Issidae Spinola, 1839, for example, in the Australian species *Chlamydopteryx mammoides* Gnezdilov & Fletcher, 2010; the Vietnamese species *Thabena frontocolorata* Gnezdilov, 2015 and the Indian species *Redarator bimaculatus* Distant, 1906 (Gnezdilov & Fletcher 2010; Moir & Fletcher 2012; Gnezdilov 2015). Another version of this feature, with a single ocular spot, is also known from several genera of the family Issidae, like the oriental genera *Tetricodes* Fennah, 1956 and *Cyclopissus* Constant & Pham, 2024 in the tribe Parahiraciini Cheng & Yang, 1991; the Australian species *Chlamydopteryx sidnicus* (Kirkaldy, 1906) in the tribe Sarimini Wang, Zhang & Bourgoin, 2016; the oriental genus *Eupilis* Walker, 1857 in the tribe Eupilisini Gnezdilov, 2020; and in species of the family Caliscelidae, like *Lasonia kirkaldyi* Melichar, 1903 from Sri Lanka (Constant & Pham 2024; Vanslembouck & Constant 2018; Gnezdilov 2020; Gnezdilov & Fletcher 2010; Chang *et al.* 2017). However, nothing is known about what happens when they are actually confronted by a real jumping spider or if any potential predator could be deterred by the fake eyes.

## Acknowledgements

I wish to thank my partner Linda Semeraro (scientific collaborator, RBINS) for her support and her enthusiastic involvement in our expeditions in Queensland; Christine Lambkin, Susan Wright and Karin Koch for all their help with the collecting permits and visits to the QM collections; Thierry Backeljau, Maarten Van Steenberge and Jackie Van Goethem (RBINS), Mark Blacket (Agriculture Victoria), Justin Bartlett and Mark Schultze (Queensland Department of Primary Industry, Brisbane, Australia), Scott Braiding and Mandy Mitchell (Museum of Tropical Queensland, Townsville, Australia) and David Britton and Sally Cowan (Department of Agriculture, Water and the Environment, Cairns, Australia) for their support to the fieldwork expeditions (2019–2025); Dr John Wainer (Agriculture Victoria) for his much appreciated help with plant and ant identifications; for granting the collecting permissions, the Croydon Shire and Carpentaria Shire councils, represented by Janette Neander and Andrew Shaw, respectively; for the loan of the material under their care, Nik Tatarnic (WAM) and Hannelore Hoch and Manfred Asche (MFNB). This paper is mostly a result of the Leopold III Funds project "Fulgoridae and Eurybrachidae of Australia" (2020–2025).

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