

# Revision of the Eurybrachidae (IV) The Australian genus *Gelastopsis* KIRKALDY, 1906 (Hemiptera: Fulgoromorpha: Eurybrachidae)

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## Abstract

The Australian genus of Eurybrachidae (Hemiptera, Fulgoromorpha) *Gelastopsis* KIRKALDY is redescribed and reviewed. A new species, *Gelastopsis mulliganensis* n. sp. is described and the following synonymy is proposed: *Yarrana glaucops* SCHMIDT, 1908 = *Gelastopsis insignis* KIRKALDY, 1906. The male genitalia are illustrated and photos of habitus, a distribution map and biological data are provided with the (re)description of all species. The nymph of *G. insignis* is described and illustrated. An identification key to the species is also proposed. The status of *Olonia* (= *Eurybrachys*) *transversa* (WALKER, 1858) is discussed and *O. transversa* is considered as *nomen nudum*. The synonymy between *O. transversa* and *O. picea* KIRKALDY, 1906 is then considered as erroneous.

## Résumé

Le genre australien d'Eurybrachidae (Hemiptera, Fulgoromorpha) *Gelastopsis* KIRKALDY est redécrit et révisé. Une nouvelle espèce, *Gelastopsis mulliganensis* n. sp. est décrite et la synonymie suivante est proposée: *Yarrana glaucops* SCHMIDT, 1908 = *Gelastopsis insignis* KIRKALDY, 1906. Les genitalia mâles sont illustrés et des photos d'habitue, une carte de répartition ainsi que des renseignements sur la biologie accompagnent les (re)descriptions de toutes les espèces. La larve de *G. insignis* est décrite et illustrée. Une clé de détermination des espèces est également proposée. Le statut de *Olonia* (= *Eurybrachys*) *transversa* (WALKER, 1858) est discuté et *O. transversa* est considéré comme *nomen nudum*. La synonymie entre *O. transversa* et *O. picea* KIRKALDY, 1906 est dès lors considérée comme erronée.

**Key words:** Australian region, Eurybrachidae, revision, identification key, *Gelastopsis*, *Gelastopsis mulliganensis* n.sp.

## 1. Introduction

This paper is the fourth one of a series intended to revise the family Eurybrachidae.

This study starts with the one-by-one revision and redefinition of the genera and will result in a proposal of a more natural classification in the family. This will also allow tentative understanding of the phylogeny and zoogeography of the family.

– Historical review of the genus *Gelastopsis* KIRKALDY, 1906

In 1906, KIRKALDY (1906) created the genus *Gelastopsis* for one new species, *G. insignis* and he proposed a key to

the Australian genera of Eurybrachidae. He stated that *Gelastopsis* is close to *Euronotobrachys* KIRKALDY, 1906 and *Dardus* STÅL, 1859 but differs from the first by its longer antennae, from the second by the shape of the tegmina and from both by the structure of the frons. The genus was not mentioned in the list of the Eurybrachidae of SCHMIDT (1908).

In 1928, JACOBI created the genus *Elthenus* for 2 species: *Yarrana glaucops* SCHMIDT, 1908 and a new species, *E. modestus*. It is interesting to mention that *Yarrana* DISTANT, 1906 was synonymized with *Euronotobrachys* KIRKALDY, 1906 by FENNAH (1964).

In his catalogue of the Eurybrachidae, METCALF (1956) placed *Gelastopsis* in the Dardini (together with the Australian genus *Dardus* STÅL, 1859 and the Afrotropical genus *Metoponitys* KARSCH, 1890) and *Elthenus* in the Platybrachyini.

In 1964, FENNAH proposed a key to the Platybrachyini with *Gelastopsis* and synonymized *Elthenus* with *Gelastopsis*.

The peculiar frons of *Gelastopsis modestus* was figured by JACOBI (1928) and FENNAH (1952) mentioned some similarity in the structure of the frons of *G. insignis* with the one of some Hildinae (Fulgoromorpha: Tettigometridae).

In 1923, MUIR figured the male genitalia of *Gelastopsis insignis* and stated that the shape of the aedeagus is unique among the Homoptera and in 1924, HACKER gave some biological data on *Gelastopsis insignis* under the erroneous name “*Gelastopsis transversa* Walk.”.

## 2. Materials and methods

The types of all described species have been studied and as much material as possible has been examined. The genitalia of all the males have been checked.

The dissection of the genitalia is proceeded after boiling the abdomen in glacial acetic acid for a few minutes. The pygofer is then separated from the abdomen and boiled for about one hour in a 10% solution of potassium hydroxide (KOH) with some drops of aqueous solution of chlorazol black. It is then placed in glycerin.

For routine identification, only the acetic acid boiling has been proceeded as the specific structures on the phallic complex are directly visible after removing the gonostyli. The genitalia have been placed under the specimen, dry (in a gelatin capsule or glued) or in glycerin.

The description of the female genitalia follows BOURGOIN (1993) with some additions from the study of SOULIER-PERKINS (1997) and SOULIER-PERKINS & BOURGOIN (1998) on the family Lophopidae.

Hind wings have also been mounted for a number of specimens: they have been glued on transparent plastic rectangles with water-soluble Hoyer's liquid.

Lectotypes have been designated when necessary. For the valid species described only on females, one specimen of the opposite sex has been chosen as reference for the species. Although the term has no value under taxonomic rules, MEDLER'S (1999) policy of labelling those reference specimens as "PLESIOTYPE" with blue labels, has been followed. The useful aspect of those designations for future workers seems evident.

Each species is redescribed and the genitalia as well as other characters useful for identification are figured. A distribution map and photos of habitus are also provided. The distribution map has been produced by the software CFF (BARBIER & RASMONT, 2000).

If necessary, the current name of the localities is mentioned in parentheses after the one transcribed from the label. For the labels of the types, each single label is limited by " ".

The few indications about the biology of the species are provided, as well as an identification key.

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

Acronyms used for the collections (names of the curator in parentheses):

AMS: Australian Museum, Sydney, New South Wales, Australia (M. Moulds).

ANIC: Australian National Insect Collection, CSIRO, Canberra, Australian Capital Territory, Australia (T.A. Weir).

ASCT: Agricultural Scientific Collections Unit, Orange Agricultural Institute, Orange, New South Wales, Australia (M.J. Fletcher)

BMNH: The Natural History Museum, London, United Kingdom (M. Webb)

BPBM: Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (A. Ramsdale)

CAS: California Academy of Sciences, San Francisco, California, U.S.A. (N. Penny)

IRSNB: Institut royal des Sciences naturelles de Belgique, Bruxelles, Belgium (P. Grootaert)

MAMU: Macleay Museum, University of Sydney, Sydney, New South Wales, Australia (M. Humphrey)

MJFC: Murray J. Fletcher private collection, Orange, New South Wales, Australia

MVMA: Museum of Victoria, Melbourne, Victoria, Australia (K. Walker)

NHRS: Naturhistoriska riksmuseet, Stockholm, Sweden (B. Viklund)

OSU: Ohio State University, Columbus, Ohio, U.S.A. (P.W. Kovarik)

QDPI: Queensland Department of Primary Industries, Indooroopilly, Queensland, Australia (J. Donaldson)

QM: Queensland Museum, South Brisbane, Queensland, Australia (G. Monteith)

QPIM: Department of Primary Industries, Mareeba, Queensland, Australia (R. Storey)

SAM: South Australian Museum, Adelaide, South Australia, Australia (J. Forrest)

UQIC: University of Queensland, St Lucia, Queensland, Australia (G. Daniels)

USNM: National Museum of Natural History, Washington D.C., U.S.A. (S. McKamey)

WAMP: Western Australian Museum, Perth, Western Australia, Australia (T. Houston)

ZIN: Russian Academy of Sciences, Zoological Institute, St Petersburg, Russia (A. Emeljanov)

ZMPA: Polish Academy of Sciences, Museum of the Institute of Zoology, Warsaw, Poland (J. Szwedko & A. Stroinski)

### 3. Taxonomic part

#### 3.1. Description of the taxa

##### Genus *Gelastopsis* KIRKALDY, 1906

*Gelastopsis* KIRKALDY, 1906: 447.

Type-species: *Gelastopsis insignis* KIRKALDY, 1906.

METCALF, 1956: 73 FENNAH, 1964: 158-159 (synonymy of *Elthenus* JACOBI, 1928).

*Elthenus* JACOBI, 1928: 3.

Type-species: *Yarrana glaucops* SCHMIDT, 1908.

METCALF, 1956: 69 FENNAH, 1964: 159 (synonymized with *Gelastopsis* KIRKALDY, 1906).

ETYMOLOGY: *gelastos* (Greek) = ridiculous, laughable; *opsis* (Greek) = appearance, face. The name was probably given after the peculiar markings of the frons.

*Elthenus*: despite considerable investigation, the etymology of this name is still unknown.

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

DESCRIPTION: *General coloration*: mainly greyish brown. *Head*: as broad as thorax; vertex 3.1-3.7 times broader than long, concave or concave with small median hump; fore and hind margins curved; hind margin carinate, fore

and lateral margins not or weakly carinate; frons 1.9-2.3 times broader than long, divided into ventral half brownish with irregular, transverse, weak ridges, and dorsal half mostly black, impressed on each side of median carina or pale stripe; frontal impressions with central white spot covered with waxy secretion; small part of frons visible in dorsal view; clypeus barely reaching median coxae; labium barely reaching hind coxae, with apical segment longer than broad and more slender than previous one; no infra-ocular spine; ocelli absent; antennae elongate, surpassing lateral angle of frons.

*Thorax*: about 1.5 times broader than length of pro- and mesonotum taken together; pronotum without carina, bearing one group of obsolete tubercles on each side of the disc; hind margin of pronotum concave; mesonotum with 3 longitudinal carinae.

*Tegmina*: nearly flat, about 2.5-3 times longer than broad; costal margin weakly curved; sutural margin straight; apex rounded or roundly truncate, dark with ante-apical transverse white stripe; clavus closed.

Venation: *C* absent; *Sc* & *R* with short common stem; first fork of *M* close to base; *A1* & *A2* fused before apex of clavus.

*Hind wings*: dark brown or pale brown with apex darker; no white marking; anal area developed or not; apex rounded or roundly truncate.

*Legs*: fore and median femur and tibia dorso-ventrally flattened, slender; tibia III with 3 lateral and 9 apical spines; ventral face of first hind tarsomere with pad of microsetae bordered externally with group of 6-9 spines.

*Genitalia* ♂: pygofer rather short, sinuate in lateral view; anal tube dorso-ventrally flattened; gonostyli laterally flattened, convex and elongate, with baso-dorsal process directed cephalad and ended with hook; phallic complex with elongate, externo-ventral, sclerified process on each side of median, mainly membranous part that is sclerified externally.

0.01>*Genitalia* ♀ [based on *G. insignis*]: anal tube elongate and narrow, dorso-ventrally flattened, slightly sinuate in lateral view, slightly laminate ventrally beyond anus; gonoplares unilobous, longer than high, not surpassing anal tube; gonocoxae IX of *Aspidonitys* type, elongate and scimitar-shaped; gonocoxae VIII looking like inflated pouch; gonapophysis VIII large, dorso-ventrally flattened, rounded at apex; anterior vagina positioned ventrally, weakly sclerified, very small compared to posterior vagina; spermatheca attached apically; posterior vagina large and strongly sclerified, about as broad as long, concave ventrally, bearing dorsally 2 longitudinal ridges on basal 2/3 and, on apical 1/3, 10-12 parallel ridges marking constriction of vagina before bursa copulatrix; bursa copulatrix oval-shaped, larger than the posterior vagina, with very weak, barely distinct ornamentation.

*Sexual dimorphism*: no evident sexual dimorphism has been observed among the genus.

*Size*: ♂: 6.3-8.9 mm; ♀♀: 6.3-9.2 mm

DISTRIBUTION: Australia.

BIOLOGY: Species of the genus seem to be associated with the tree genus *Acacia* (Mimosaceae).

### 1. *Gelastopsis insignis* KIRKALDY, 1906

Figs. 1 A-E, 2-7, 10-12, Map 1.

*Gelastopsis insignis* KIRKALDY, 1906: 448.

MUIR, 1923: 231 & Pl. V HACKER, 1924: 40 (under "*Gelastopsis transversa* Walk.") FENNAH, 1952: 245 METCALF, 1956: 73 FENNAH, 1964: 160.

*Yarrana glaucops* SCHMIDT, 1908: 245 **nov. syn.**

JACOBI, 1928: 3-4 (transferred to *Elthemus* JACOBI, 1928) METCALF, 1956: 69 FENNAH, 1964: 160.

*Note*: the specimens referred to as *Gelastopsis transversa* Walker in HACKER (1924) have been examined and identified as *G. insignis*. Furthermore the [erroneous] synonymy between *G. insignis* and *Olonia transversa* Walker has never been formally published.

ETYMOLOGY: *insignis* (Latin), remarkable, conspicuous. Probably related to the peculiar shape of the frons.

– *glaucops*: from *glaucus* (Latin), glaucous, grey and *ops* (Greek), aspect, appearance. Name surely given after the general colour of the species.

TYPES EXAMINED:

– LECTOTYPE ♂ of *Yarrana glaucops* SCHMIDT, 1908

**present designation**: "Queens-land" "Type" "*Yarrana glaucops* Schmidt ♂ Edm. Schmidt determ. 1908" "Mus. Zool. Polonicum, Warszawa, 12/45" "Lectotype ♂ *Yarrana glaucops* Schmidt, 1908, J. Constant des., 2004" "*Gelastopsis insignis* Kirk., Dét. Jérôme Constant 2004" *dissected, genitalia in glycerine; right hind wing mounted* [ZMPA].

– PARALECTOTYPE ♀ of *Yarrana glaucops* SCHMIDT, 1908

**present designation**: "Queens-land" "Type" "*Yarrana glaucops* Schmidt ♀ Edm. Schmidt determ. 1908" "Mus. Zool. Polonicum, Warszawa, 12/45" "Paralectotype ♀ *Yarrana glaucops* Schmidt, 1908, J. Constant des., 2004" "*Gelastopsis insignis* KIRK., Dét. Jérôme Constant 2004" [ZMPA].

– PARALECTOTYPE ♂ of *Yarrana glaucops* SCHMIDT, 1908

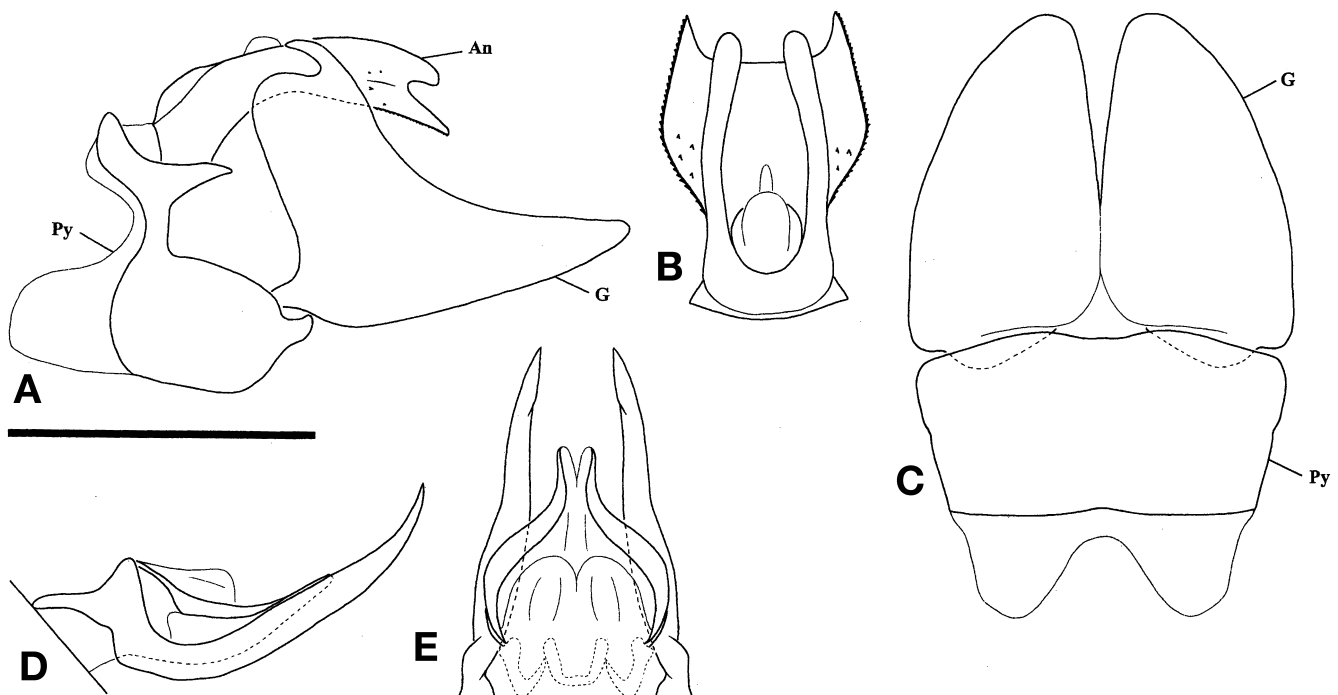
**present designation**: "Queens-land" "Co-Typus" "*Yarrana glaucops* Schmidt ♂ Edm. Schmidt determ. 1908" "Mus. Zool. Polonicum, Warszawa, 12/45" "Paralectotype ♂ *Yarrana glaucops* Schmidt, 1908, J. Constant des., 2004" "*Gelastopsis insignis* KIRK., Dét. Jérôme Constant 2004" [ZMPA].

*Note*: the Type(s?) of *Gelastopsis insignis* KIRKALDY have not been examined as they are currently not available in the collections of the BPBM (Alistair RAMSDALE, pers. comm.). Anyway, the identity of this species is sure as specimens identified by MUIR, who had access to the type material of the species and who figured the male genitalia (MUIR, 1923), have been examined.

As soon as the specimen(s) will be available, a Lectotype will be designated for this species.

OTHER MATERIAL EXAMINED: (82 ♂, 100 ♀, 4 nymphs)  
 AUSTRALIA: 1 ♀: 13 km N Dunwich, North Stradbroke Is., 18.III.1990, leg. G. Daniels [UQIC]; 1 ♂: 2 km S Carmila, 06.X.1988, leg. F.J.D. McDonald [MAMU]; 1 ♀: Amity (=Amity Point), 13.IX.1936, leg. A.J.S. [UQIC]; 1 ♂: Anzac Park, 30.XI.1969, leg. J.L. Wilson [QM]; 1 ♀: Aramara, 05.IV.1940, a. R.B. [QDPI]; Acacia sp.1 ♂: Biggenden, 01-07.I.1972, leg. H. Frauca [ANIC]; 1 ♂: idem, 12.I.1972 [ANIC]; 1 ♂ + 2 ♀: Bribie Island, 26.I.1922, leg. H. Hacker [QM]; 1 ♂ + 2 ♀: idem [USNM]; 1 ♂: idem, 26.IX.1984, leg. M.A. Schneider [UQIC]; 1 ♀: idem, 23.IV.1962, leg. I.C. Yeo [UQIC]; 2 ♀: Brisbane, leg. Illidge [AMS]; 1 ♂: idem, leg. H. Hacker [QM]; 1 ♂: idem, 02.XI.1925 [QM]; 1 ♀: idem, 05.II.1922 [QM]; 1 ♂: idem, 05.III.1922 [QM]; 2 ♀: idem [BMNH]; 1 ♀: idem [USNM]; 1 ♀: idem, 06.XI.1922 [QM]; 1 ♂ + 1 ♀: idem, 08.II.1922 [QM]; 1 ♂: idem, 08.III.1926 [QM]; 1 ♂: idem, 16.X.1920 [QM]; 1 ♂: idem, 25.X.1922 [QM]; 1 ♂: idem, 26.I.1922 [QM]; 1 ♀: idem, 27.III.1923 [QM]; 2 ♂ + 2 ♀: idem, I.1922 [QM]; 1 ♂ + 1 ♀: idem, 26.III.1922 [USNM]; 1 ♀: idem, 30.X.1921 [USNM]; 1 ♂: idem, 05.II.1922 [USNM]; 1 ♂: idem, 20.IV.1917 [USNM]; 1 ♀: idem, 10.X.1916 [USNM]; 1 ♂: idem, 04.X.1962, leg. G. Monteith [UQIC]; 1 ♀: idem, 06.X.1948, leg. C. Hoey [UQIC]; 1 ♀: idem, 07.IV.1949, leg. P. Huybers [UQIC]; 1 ♀: idem, 07.V.1953, leg. Y.P. Beri [UQIC]; 1 ♂: idem, 01.X.1962, leg. E.A. Bernays [UQIC]; 1 ♀: idem,

10.III.1956, leg. Kirkpatrick [UQIC]; 1 ♀: idem, 11.XII.1951, leg. Girqunart [UQIC]; 1 ♂: idem, 12.I.1963, leg. T. Brooks [UQIC]; 1 ♂: idem, 12.III.1960, leg. E.M. Exley [UQIC]; 1 ♂: idem, 14.I.1965, leg. E.B. Tay [UQIC]; 1 ♀: idem, 20.V.1956, leg. S. Sekon [UQIC]; 1 ♀: idem, 22.II.1951, leg. G. Saunders [UQIC]; 3 nymphs: idem, 08.IX.1951 [UQIC]; 1 ♂: idem, 23.IV.1956, leg. H.J. Lavery [UQIC]; 1 ♂: idem, 30.IV.1954, leg. K.L.S. Harley [UQIC]; 1 ♂: idem, XI.1954, leg. A.J. Cowan [UQIC]; 1 ♂: idem, 30.IX.1956, leg. T.A. Bull [UQIC]; 1 ♀: idem, XI.1924, leg.? [UQIC]; 1 ♀: idem, 01.X.1932 [UQIC]; 1 ♀: idem, 14.IV.1929, leg.? [QDPI]; 1 ♂: idem, X.1941, leg. H.M. [QDPI]; 1 ♀: idem [IRSNB]; 1 ♀: idem, 28.X.1980, leg. J.F. Donaldson [QDPI]; 1 ♂: idem, 25.III.1906, leg. W.W. Froggatt [ANIC]; 1 ♀: idem, 29.III.1906 [ANIC]; 1 ♂ + 2 ♀: idem, I.1923, leg. J.C. Hamlin [OSU]; 1 ♀: idem, 10.X.1943, on wattles, leg. N.D. Tindale (parasitized by Epipyropidae) [SAM]; 1 ♀: Bundaberg, 05.VIII.1971, leg. H. Frauca [ANIC]; 1 ♂ + 1 ♀: idem, 30.XI.1971 [IRSNB]; 1 ♂: idem, 31.VIII.1971 [ANIC]; 1 ♀: idem, IV.1971, on *Eucalyptus* [ANIC]; 1 ♂: idem, 30.I.1956, on grass, leg. I.C. Yeo [UQIC]; 2 ♂: idem, IX.1928, leg. R.W. Montgomery [USNM]; 1 ♀: Burleigh (=Burleigh Heads), 26.IX.1960, leg. A.N. Burns [MVMA]; 1 ♀: idem, II.1941, leg. H. Jarvis [QDPI]; 1 ♀: Camp Milo, Cooloolah, 29-30.X.1979, leg. Zaitzev [ZIN]; 1 ♂: C'ghams (=Cunninghams) Gap, 19.VIII.1959, leg. K. Korboot [UQIC]; 1 ♂: Dullacca (=Dulacca), 03.II.1955, leg. L.E. Jackson [UQIC]; 1 ♀: Emerald, 21.XII.1973, leg. G.K. Waite [QDPI]; 1 ♂: Fletcher, leg. E. Sutton [QDPI];



Figs. 1A-E — *Gelastopsis insignis* KIRKALDY: genitalia ♂. **A.** pygofer, anal tube and gonostyli, left lateral view (An anal tube; G gonostyli; Py pygofer). **B.** anal tube, dorsal view. **C.** pygofer and gonostyli, ventral view. **D.** phallic complex, left lateral view. **E.** phallic complex, dorsal view. Scale 1 mm.

1 ♀: Gaynah [BMNH]; 1 ♀: Gurgeena Plateau, 10.X-19.XII.1998, interception trap, open forest, 360m, leg. G. Monteith & C. Gough [QM]; 2 ♀: Jindalee, 14.VII.1970, leg. R.H.B. [QDPI]; 1 ♂ + 2 ♀: Lake Broadwater, 17.X.1985, leg. D.K. Yeates [UQIC]; 1 ♂ + 1 ♀: idem [IRSNB]; 1 ♀: Lawes, 03.V.1950, leg. F. Kieseker [UQIC]; 1 ♂: Maryborough, leg. E.W. Fisher [SAM]; 2 ♂: idem, XII.1959, leg. J.W. Evans [ASCT]; 1 ♀: idem, III.1958, leg. R. O'Brien [MJFC]; 1 ♀: M'boro, I.1951, leg. Lipsett [UQIC]; 1 ♀: Mid. Queensland [BMNH]; 1 ♂ + 2 ♀: Moffatt Beach, 02-15.III.1970, leg. O.M.W. Williams [ASCT]; 1 ♂ + 1 ♀: idem [IRSNB]; 1 ♀: Moggill, 01.II.1955, leg. F.A. Perkins [UQIC]; 1 ♂ + 1 ♀: Moore Pk, Bundaberg, 21.IV.1973, leg. K.R.B.-C.V. [AMS]; 1 ♀: Mt Cootha, 23.IV.1924, leg. H. Hacker [USNM]; 1 ♀: Mt Coot-tha (=Cootha) Park, 04.II.1987, leg. N.D. Penny [CAS]; 1 ♀: Mt Gavial, 3 km SSE, 14.III-29.VI.1999, interception trap, open forest, 450m, leg. D.J. Cook [QM]; 1 ♂: Mt Kaputar, 06.IX.1962, leg. C.W. Frazier [ASCT]; 1 ♀: Nagoorin, I.1955, leg. J.K. Leslie [UQIC]; 1 ♀: Newmarket, 15.X.1910, leg. H. Tryon [QDPI]; 1 ♂ + 2 ♀: One Tree Hill, Brisbane, 17.I.1923, leg. A. Musgrave [AMS]; 2 ♀: idem, II.1920, leg. F. Muir [BPBM]; 1 ♀: Petrie, 24.V.1930 [UQIC]; 1 ♂: Peak Downs [BMNH]; 1 ♂: Queensland [QDPI]; 2 ♂: Redcliffe, I.1943, leg. H. Jarvis [QDPI]; 1 ♂: Rockhampton [BMNH]; 1 ♀: idem, 12.XII.1954, leg. K.S. Chang [UQIC]; 2 ♂ + 1 ♂ + 1 nymph: South Brisbane, 03.X.1908, on *Acacia linifolia* [QDPI]; 1 ♂: idem [IRSNB]; 2 ♂ + 6 ♀: Southport, 19.IX.1926 [SAM]; 1 ex. (no abd.): idem, 24.X.1926, leg. H. Hacker [QM]; 1 ♂ + 1 ♀: idem, 26.I.1929 [USNM]; 1 ♀: Stanthorpe, 11.XI.1928, leg. E. Sutton [QDPI]; 1 ♂: Stanthorpe, Mount Marlay, 10-11.X.1998, leg. J. & A. Skevington [UQIC]; 2 ♂: Stradbroke Is., leg. Lea [SAM]; 1 ♀: Sunnybank, 03.IX.1919, leg. S. Hainsworth [ANIC]; 1 ♀: idem, 07.IX.1953, leg. Y.P. Beri [UQIC]; 1 ♀: idem, 09.X.1923, leg. H. Hacker [QM]; 1 ♂: idem, 11.II.1910, leg. E. Jarvis [QDPI]; 1 ♂: Surfers Paradise, 30.V.1988, leg. C. Hooi [MAMU]; 1 ♂: Tamborine Mount (=Hendersons Knob), 09.X.1955 [MVMA]; Tambourine, 02.IV.1911, leg. H. Hacker [USNM]; 5 ♂ + 7 ♀: Toowong (=Toowong Hill), 10.X.1920, leg. J.A. Beck [UQIC]; 1 ♂: idem, 21.VIII.1929, leg. J.A. Beck? [UQIC]; 1 ♂ + 1 ♀: idem, 15.IV.1941, leg. a. R.B. [QDPI]; 1 ♂: idem, 02.X.1920, leg. S. Hainsworth [UQIC]; 1 ♀: Virginia, 06.XII.1932, leg. J.A. Beck [UQIC]; 1 ♀: idem, 24.V.1942 [UQIC]; 1 ♂: idem, 26.I.1942 [UQIC]; 1 ♀: Watalgan, 12-13.VI.1971, leg. H. Frauca [ANIC]; 1 ♂: idem, XI.1971 [ANIC]; 2 ♂: Woodgate, 25.VIII.1977, leg. K.J. Lambkin [QM]; 1 ♂: idem [IRSNB]; 1 ♂ + 3 ♀: Yeerongpilly, 01-10.I.1982, Malaise trap [QDPI]; 1 ex.? (no abd.): Yeppoon, 30.VIII-09.IX.1986, leg. S. & S.G. Hunter [ASCT]; 1 ♂: idem, taken from spider web [ASCT]; 1 ♀: Yungaburra, 20.VIII.1966, leg. D. Smith [UQIC].

**DIAGNOSIS:** Immediately recognized by hind wings with anal area well developed and black zone of frons that is not separated into 2 patches.

**DESCRIPTION:** LT: ♂ (n = 61): 8.2 mm (7.2 to 8.9 2 very small specimen only 6.4 and 6.5); ♀ (n = 62): 8.2 mm (7.0 to 9.2).

**Head:** vertex concave, brown with irregular blackish markings; dorsal half of frons silky black, strongly impressed on each side of median carina with white stripe; impressions wrinkled, with white waxy spot in the middle; some whitish markings between peridiscal carina and dorsal margin of frons; the latter concave in normal view; ventral half of frons with blackish markings on carinae and on sides; pale line projecting dorsally at the level of waxy spots at limit between dorsal and ventral zones of frons; clypeus and labium brownish; antennae black; pedicel elongate; ratio BV/LV = 3.2-3.5; BF/LF = 2.1-2.3.

**Thorax:** brown with irregular blackish patches; ratio LP+LM/BT = 0.66.

**Tegmina:** costal and sutural margins subparallel; apex roundly truncate; colour from dark brown with pale brown spots to pale brown with dark spots; apex dark brown; ante-apical, transverse, white stripe; costal whitish patch before ante-apical stripe; sometimes small, oblique, white, humeral stripe; ratio LTg/BTg = 2.7.

**Hind wings:** uniformly dark brown; broad with anal area well developed; apex roundly truncate; sutural margin bisinuate.

**Legs:** I and II pale brown with numerous dark brown patches; hind legs pale brown with apex of spines darker.

**Abdomen:** red.

**Genitalia** ♂: pygofer with unique shape in lateral view, strongly constricted in middle; gonostyli with broad, dorsal process ended with hook (Fig. 1A), broad in ventral view and fused ventrally on nearly half of length (Fig. 1C); anal tube with 2 strong, longitudinal, dorsal ridges projecting posteriorly; external margins and sides of ridges furnished with strong teeth; apex pointed at each side (Fig. 1B); phallic complex: see Figs. 1D & E.

**BIOLOGY:** The species seems to be restricted to the Eastern part of Australia, with a distribution that roughly follows the Great Dividing Range.

The species seems to be associated with trees of the genus *Acacia* (Mimosaceae): it has been collected on *Acacia linifolia* (VENT.) WILLD., *Acacia cunninghami* HOOK (HACKER, 1924 [under *Gelastopsis transversa*]) and on unidentified species of *Acacia*. Two data refer to *Eucalyptus* and grass but those are likely to be only accidental supports. It has also been collected with interception traps in open forests.

According to the observations of Peter, Sandy and Tony Chew around Brisbane (Karawatha Park and Alexandra Hill) from December 2004, the species is quite common and can be found in groups on its host-plants: *Acacia leiocalyx* (DOMIN) PEDLEY *subsp. leiocalyx* PEDLEY and *A. l. subsp. herveyensis* PEDLEY and *Acacia fimbriata* A. CUNN. ex G. DON at that place, in a mixed forest of diverse species of *Eucalyptus* and *Acacia*.

The adults rest on stems of about 10 mm diameter. When disturbed, they walk sideways to the other side of

the stem. They jump and fly away when touched. The egg clutches, covered with waxy secretion, can be found on the leaves of the host plants.

It seems interesting to mention that all the species of *Acacia* that are reported to be host-plants of *G. insignis* are restricted to the Eastern part of Australia. It is possible that *G. insignis* feeds only on a small number of *Acacia* species and that its distribution is limited by that of its host-plants.

From his observations, Peter Chew also suggests that the pattern on the frons of *G. insignis* could be a mimicry with jumping spiders. He reports that he has himself confused both when looking at them from the front.

The species seems to be present all year round.

One of the specimens examined was parasitized by a larva of Lepidoptera Epipyropidae.

DESCRIPTION OF THE NYMPH (FIFTH INSTAR):  
(Fig. 2)

LT = 3.55 mm; stocky, convex bodied, brown coloured with paler patches.

*Head*: about as broad as pronotum; vertex broader than long; BV/LV = 2.7; frons with peridiscal and weak, median carina; group of tubercles between the peridiscal carina and each eye; frons divided by transverse pale stripe into dorsal, chocolate brown half and ventral, yellowish half; frons twice broader than long; clypeus elongate, reaching coxae II; labium reaching coxae III, with last segment narrower than previous one; ocelli absent; no subocular spines; antennae not visible in dorsal view; scape very short, pedicel cylindrical, little longer than broad.

*Thorax*: pronotum with weak, median carina and strong carina on each side, parallel and close to anterior margin;



Fig. 2 — *Gelastopsis insignis* KIRKALDY. Nymph, dorsal view.

behind strong carina, 10-12 tubercles in 2 rows; mesonotum and metanotum both with 3 longitudinal carinae and group of 8 tubercles on each side, close to anterior margin, tubercles smaller on the metanotum; small number of tubercles (4-6) also visible on wings; anterior margin of mesonotum and hind margin of metanotum and hind wings pale yellowish; rest of hind wings blackish. *Adbomen*: short, about as long as meso- and metanotum taken together; apex curved dorsad; furnished with apical, waxy tail and latero-ventral, waxy tuft at each segment. *Legs*: I and II with femur and tibia dorso-ventrally flattened, broad; tibiae much broader and roundly truncate apically; tarsi I and II with 2 segments; tibiae III with 3 lateral and 9 apical spines, and strong, dorsal carina; tarsi III with 3 segments; first hind tarsomere broad, bearing ventrally pad of microsetae bordered externally by group of 7-8 spines; hind face of trochanter III bearing transverse row of small teeth.

## 2. *Gelastopsis modestus* (JACOBI, 1928)

Figs. 8A-E, 13-15, Map 1.

*Elthenus modestus* JACOBI, 1928: 3.

METCALF, 1956: 69 FENNAH, 1964: 160 (transferred to *Gelastopsis* KIRKALDY, 1906).

ETYMOLOGY: *modestus* (Latin), modest. Probably named after its grey colour or its small size.

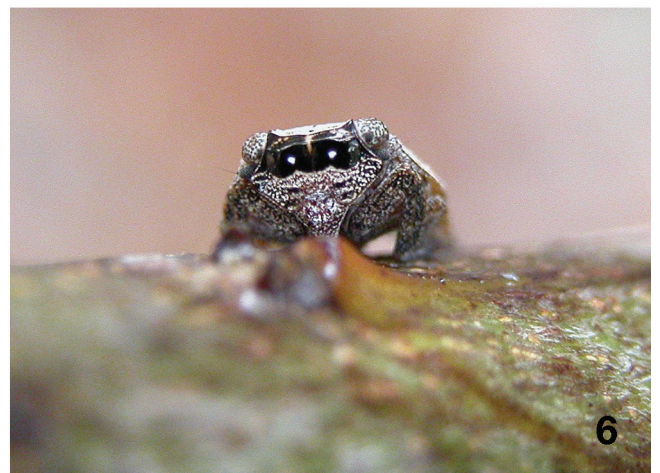
TYPES EXAMINED: HOLOTYPE ♀ of *Elthenus modestus* JACOBI, 1928: "Cossack" "V. Austr., Mjöberg" "okt." "Typus" "Typus" "*Elthenus modestus* Jac., A. Jacobi determ." "*Gelastopsis modestus* (Jacobi, 1928) ♀, Dét. Jérôme Constant, 2004" *left tegmen missing* [NHRS].

*Note*: the holotype has been erroneously described as a male by JACOBI (1928).

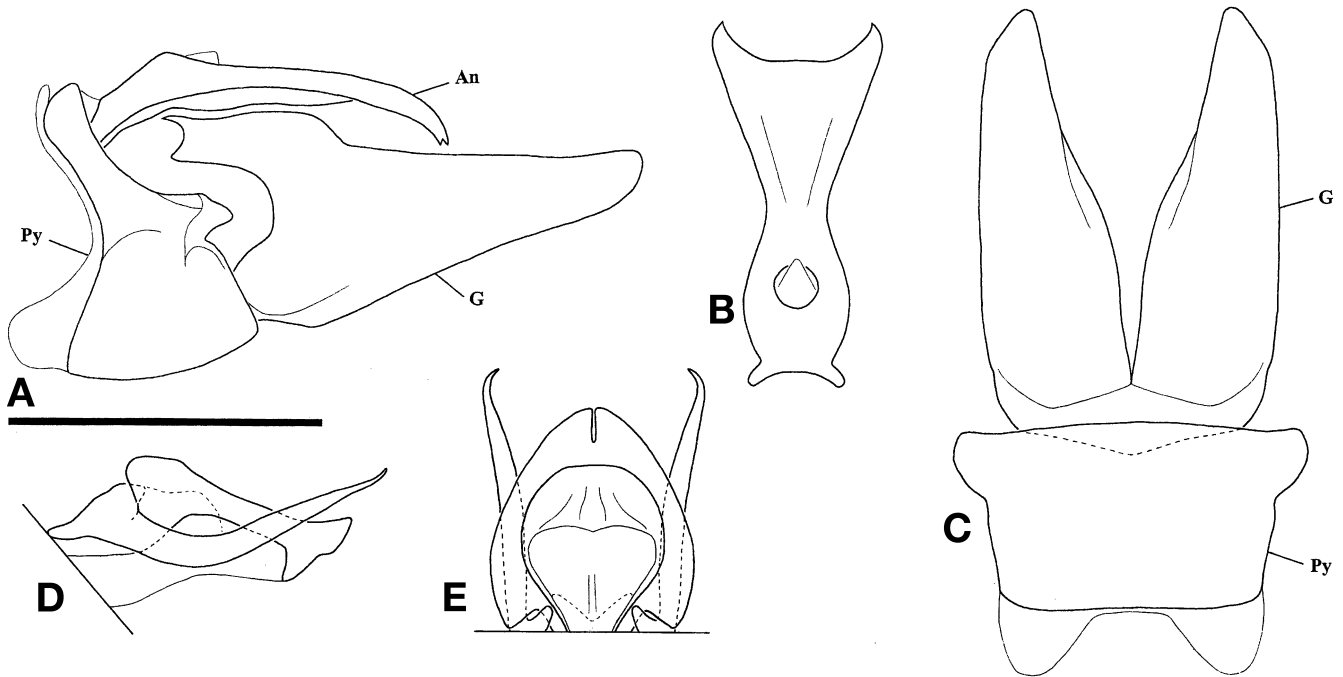
OTHER MATERIAL EXAMINED: (3 ♂, 9 ♀) AUSTRALIA: 1 ♂ + 1 ♀: Barrow Creek, 09.XI.1979, leg. G. Medvedev [ZIN]; 1 ♂: area of Mt Bruce, Hamersley Ra. N. Pk., 30.VI.1984, on *Eremophila*, leg. R.P. McMillan [IRSNB]; 1 ♀: Nr Reedy Rockhole, Amadeus Basin, 03.VII.1962, swept from low shrub, leg. P. Ranford [ANIC]; 1 ♀: North-West Cape, 08.VIII.1963, leg. A.M. Douglas [WAMP]; 1 ♀: 14 Mi. E of Manberry, 26.VII.1964, leg. L.E. Koch [WAMP]; 1 ♂ (PLESIOTYPE) + 1 ♀: Karratha, 14.IX.1985, leg. R.P. McMillan [WAMP]; 1 ♀: idem, 10.VIII.1988, on *Acacia bivenosa* [IRSNB]; 1 ♀: idem [WAMP]; 1 ♀: idem, 14.VIII.1985, parasitized by Epipyropidae [WAMP]; 1 ♀: Port Hedland, 30.VIII.1967, leg. F.H. Uther Backer [MJFC].

DIAGNOSIS: Immediately recognized by the 2 big black patches of frons separated by complete pale median stripe and hind wings with well developed anal area.





Figs. 3-7 — *Gelastopsis insignis* KIRKALDY. 3. group of adults on a branch of *Acacia* sp. 4. adult sitting on *Acacia* sp. 5. nymph on twig of *Acacia* sp. 6. adult on *Acacia* sp., frontal view. 7. clutch on leaf of *Acacia* sp. (Photos Peter Chew, Brisbane, Australia)



Figs. 8A-E — *Gelastopsis modestus* (JACOBI): genitalia ♂. **A.** pygofer, anal tube and gonostyli, left lateral view. **B.** anal tube, dorsal view. **C.** pygofer and gonostyli, ventral view. **D.** phallic complex, left lateral view. **E.** phallic complex, dorsal view. Scale 1 mm.

DESCRIPTION: LT: ♂ (n = 3): 6.4 mm (6.3 to 6.6); ♀ (n = 10): 6.8 mm (6.3 to 7.2).

**Head:** vertex pale brown with dark oblique stripe at each side, at hind margin, and often a number of irregular dark patches; dorsal margin of frons concave, bisinuate in normal view; dorsal half of frons with 2 big, black, impressed patches separated by longitudinal, whitish, weak carina; impressions longitudinally wrinkled, with central white waxy spot; upper angles dark brown, separated from black patches by a series of pale spots; whitish stripe running under the black patches; ventral half of frons pale brown with 2-3 transverse, weak, sometimes infuscate carinae; clypeus dark brown; antennae brown; scape very short; pedicel elongate and cylindrical; ratio BV/LV = 3.7; BF/LF = 2.1-2.2.

**Thorax:** pronotum brown with group of obsolete paler tubercles at each side, sometimes with median pale stripe and irregular darker patches; mesonotum brown with irregular dark brown markings; tegulae yellowish; ratio LP+LM/BT = 0.67.

**Tegmina:** costal margin curved; costal area quite broad; pale yellowish brown with reticulum of small, brown spots; apex rounded, dark brown with ante-apical, white, transverse stripe; ratio LTg/BTg = 2.5.

**Hind wings:** elongate; uniformly dark brown to pale brown with apex infuscate; anal area well developed; apex rounded; sutural margin bisinuate.

**Legs:** all legs pale yellowish, with a few spots on legs I and II and spines of III infuscate.

**Abdomen:** brown.

**Genitalia** ♂: pygofer with anterior margin strongly sinuate and hind margin with process directed posteriorly near

middle in lateral view; gonostyli very elongate with dorsal process directed anteriorly and ended dorsally with spine, ventrally with rounded process (Fig. 8A); gonostyli fused basally (Fig. 8C); anal tube dorso-ventrally flattened, constricted in middle and furcate at apex in dorsal view (Fig. 8B); 2 teeth apically at each side (Fig. 8A); phallic complex: see Figs. 8D & E.

**BIOLOGY:** The species has been collected on *Acacia bivenosa* DC. (Mimosaceae) and on *Eremophila* (Myoporaceae) but the latter is likely to be an accidental support. It has also been swept from low shrubs.

It seems interesting to mention that the distribution in Western and Central Australia of *Acacia bivenosa* and of *Gelastopsis modestus* are very similar.

The species has been collected in the months VI to XI but the low number of collections does not allow any conclusion about seasonality in the phenology.

One of the specimens examined was parasitized by a larva of Lepidoptera Epipyropidae.

### 3. *Gelastopsis mulliganensis* CONSTANT n. sp.

Figs. 9A-E, 16-18, Map 1.

**ETYMOLOGY:** Named after the Mount Mulligan, N Queensland, where the specimens have been collected.

**MATERIAL EXAMINED:**

– HOLOTYPE ♂: “Australia: n. Qld, Mt. Mulligan, plateau, 15-19.IV.1985, K. H. Halpapp 700m” “Holotype ♂ *Gelastopsis mulliganensis* n. sp., J. Constant 2005” –



dissected, genitalia in glycerine, right wings spread [QM].

– PARATYPE ♂: “Australia: n. Qld, Mt. Mulligan, plateau, 15-19.IV.1985, K. H. Halfpapp 700m” “Paratype ♂ *Gelastopsis mulliganensis* n. sp., J. Constant 2005” – dissected, genitalia in glycerine; right hind wing mounted [QPIM].

**DIAGNOSIS:** Immediately recognized by narrow hind wings with anal area obsolete and black zone of frons not separated into 2 patches.

**DESCRIPTION:** LT: ♂ (n = 2): 6.9 mm.

**Head:** vertex weakly concave, sometimes weakly humped in middle, brown with weak pale median stripe and darker oblique stripe at each side at hind margin; fore margin very weakly carinate; dorsal half of frons black with 2 strong, coalescent, wrinkled impressions bearing each central white waxy spot; median, weakly carinate, whitish stripe on upper half of black zone; upper angles dark brown, separated from black zone by a series of pale spots running along external margin; pale yellowish, transverse band under black zone, projecting into the latter up to white spots; ventral half of frons pale brown with irregular, darker markings, bearing 2-3 transverse, weak, infuscate carinae; clypeus brown with sides blackish; antennae blackish; scape short; pedicel elongate and cylindrical; ratio BV/LV = 3.3; BF/LF = 1.9.

**Thorax:** pro- and mesonotum brown with irregular, weakly darker patches; group of obsolete, paler tubercles at each side; tegulae pale brown; ratio LP+LM/BT = 0.66.

**Tegmina:** costal and sutural margins subparallel, costal margin very weakly curved; costal area narrow; dark brown with irregular, paler markings; apex dark brown with ante-apical, white, transverse stripe; paler costal patch before dark brown apical zone; apex obliquely, roundly truncate; ratio LTg/BTg = 3.0.

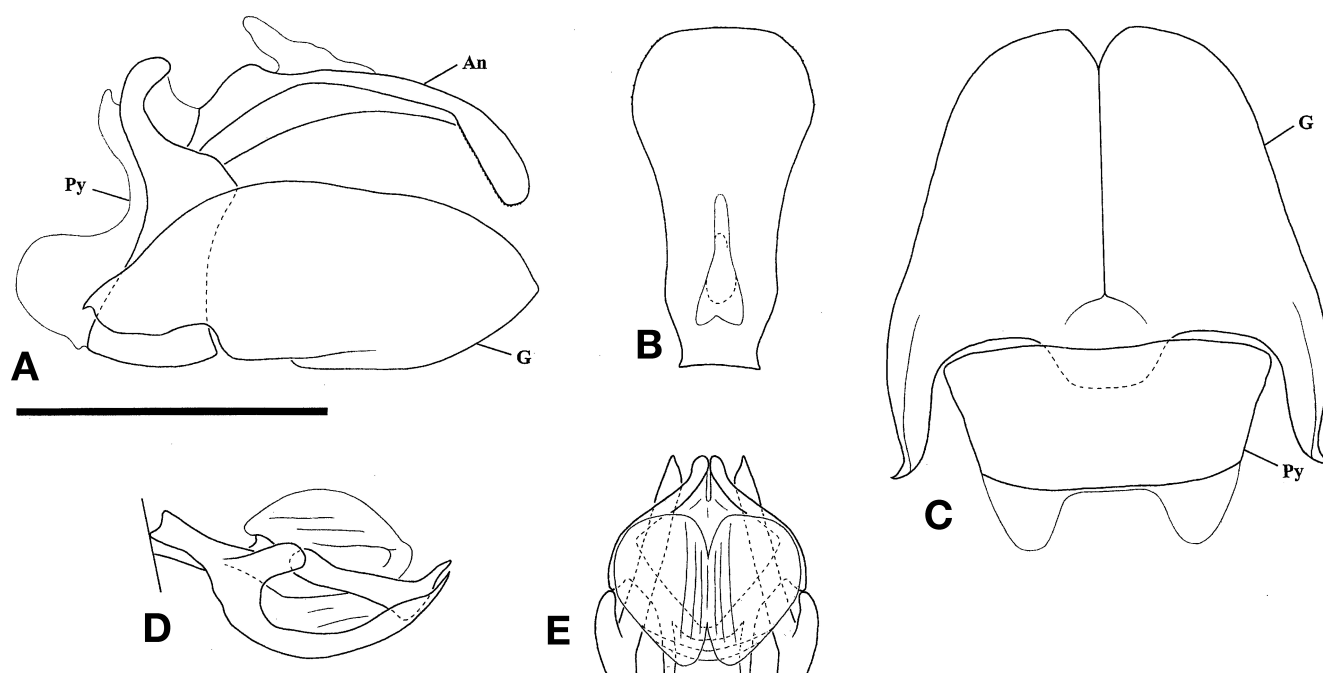
**Hind wings:** narrow and elongate, blackish brown; anal area obsolete; apex rounded; sutural margin weakly sinuate near apex.

**Legs:** all legs pale brown with irregular darker markings; spines of legs III apically infusate.

**Abdomen:** dark brown.

**Genitalia** ♂: pygofer strongly sinuate in lateral view, much constricted in dorsal third; gonostyli elongate and broad, with broad process directed anteriorly, partly covering pygofer in lateral view and ended with small hook directed externally (Fig. 9A); gonostyli fused ventrally on most of length; processes clearly visible, sinuate apically in ventral view (Fig. 9C); anal tube elongate, dorso-ventrally flattened, roundly truncate apically and somewhat constricted in middle; apical margin bearing a series of small teeth (Fig. 9B); phallic complex: see Figs. 9D & E.

**BIOLOGY:** The species is presently known from a single place in Northern Queensland. Nothing is known about the host-plant(s) although it can be suspected that *G. mulliganensis* is associated with some species of *Acacia* (Mimosaceae) like the 2 other species of the genus.



Figs. 9A-E — *Gelastopsis mulliganensis* CONSTANT: genitalia ♂. **A.** pygofer, anal tube and gonostyli, left lateral view. **B.** anal tube, dorsal view. **C.** pygofer and gonostyli, ventral view. **D.** phallic complex, left lateral view. **E.** phallic complex, dorsal view. Scale 1 mm.

### 3.2. Note on *Olonia transversa* (WALKER, 1858)

*Eurybrachys transversa* WALKER, 1858: 96.  
STÅL, 1862: 488 (transferred to *Olonia*) DISTANT, 1892: 282 (considered as *Platybrachys*) KIRKALDY, 1906: 445 (considered as *Olonia*) HACKER, 1922: 40 (considered as *Gelastopsis*) JACOBI, 1928: 4 (synonymized with *Olonia picea* KIRKALDY, 1906).

A specimen from the BMNH labeled as the type of *Eurybrachys transversa* WALKER, 1858 has been examined. It bears the following labels: “Type” “Moreton bay, [on the underside] 57, 1” “*Eurybrachys transversa*”.

The original description of the species is transcribed hereunder:

“*Nigra, subtus laete rufa; caput et thorax lituris paucis testaceis; frons et facies strigis plurimis transversis undulatis testaceis; frons trigona; facies minima; prothorax brevissimus; mesothorax tricarinatus; pedes rufo conspersi, femoribus posticis rufis; alae anticae lituris plurimis luridis, punctis costalibus albis, gutta costali exteriore fasciaque subapicali vitreis, vernis obscure rufis; posticae atrae.*”

Black, bright red beneath. Head and thorax with a few testaceous marks. Vertex very slightly arched, shining by the front; front and face with numerous transverse undulating testaceous streaks; front triangular; face very small. Prothorax very short. Mesothorax with three slight keels. Legs speckled with red; hind femora red. Fore wings thickly sprinkled with lurid marks, with white points along the costa, with a vitreous costal spot at two thirds of the length, and with a vitreous subapical band; veins dark red. Hind wings deep black. Length of the body 2 1/2 lines; of the wings 7 lines.

a. Moreton Bay. From Mr. Diggles' collection.”

The specimen is a male of *Gelastopsis insignis* KIRKALDY that has the head and pronotum separated from the rest of the body. Both parts are glued on a cardboard label.

This specimen is not recognized as the Type of *Eurybrachys transversa* WALKER as it does not match WALKER's description. The following main differences have been observed: (a) the specimen is not black, (b) the legs are not speckled with red and the hind femora are not red, (c) the veins of the fore wings are not dark red, (d) the hind wings are not deep black...

Furthermore, there is no mention of the peculiar pattern of the frons in the description of *E. transversa*.

For those reasons, *Eurybrachys transversa* WALKER, 1858 is here considered as *nomen nudum*. The synonymy between *E. transversa* and *Olonia picea* KIRKALDY, 1906 (JACOBI, 1928) is therefore regarded as erroneous.

### 3.3. Discussion

The genus *Gelastopsis* is one of the most recognizable genera among the Eurybrachidae. FENNAH (1964) placed the genus in the Platybrachyini and this is provisionally followed here although it is clear that the supra-generic classification of Eurybrachidae will have to be reviewed.

According to the shape of the male genitalia, the genus seems to be close to a number of Australian genera, e.g. *Navorillina* FENNAH, *Dardus* STÅL and a number of other, undescribed genera. It will be interesting to know if those genera are also associated with *Acacia* species (Mimosaceae).

### 3.4. Identification key to the species

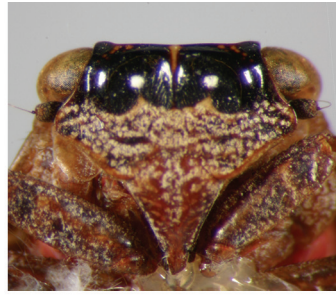
1. Dorsal half of frons with 2 big black patches separated by a complete, pale, median stripe; costal margin of tegmina curved; LTg/BTg = 2.5; recorded from Western and Central Australia. . . . . 2. *Gelastopsis modestus* (JACOBI)
  - Dorsal half of frons with a transverse black band not separated into 2 patches; costal margin of tegmina nearly straight; LTg/BTg = more than 2.6; recorded from Eastern Australia . . . . . 2.
2. Hind wings with anal area well developed, quite broad; abdomen red; LTg/BTg = about 2.7; recorded from Eastern Australia . . . . . 1. *Gelastopsis insignis* KIRKALDY
  - Hind wings narrow with anal area obsolete; abdomen brown; LTg/BTg = 3; recorded from North-Eastern Australia . . 3. *Gelastopsis mulliganensis* CONSTANT

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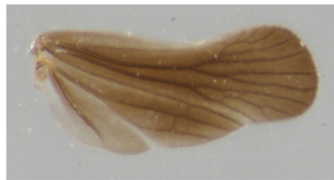
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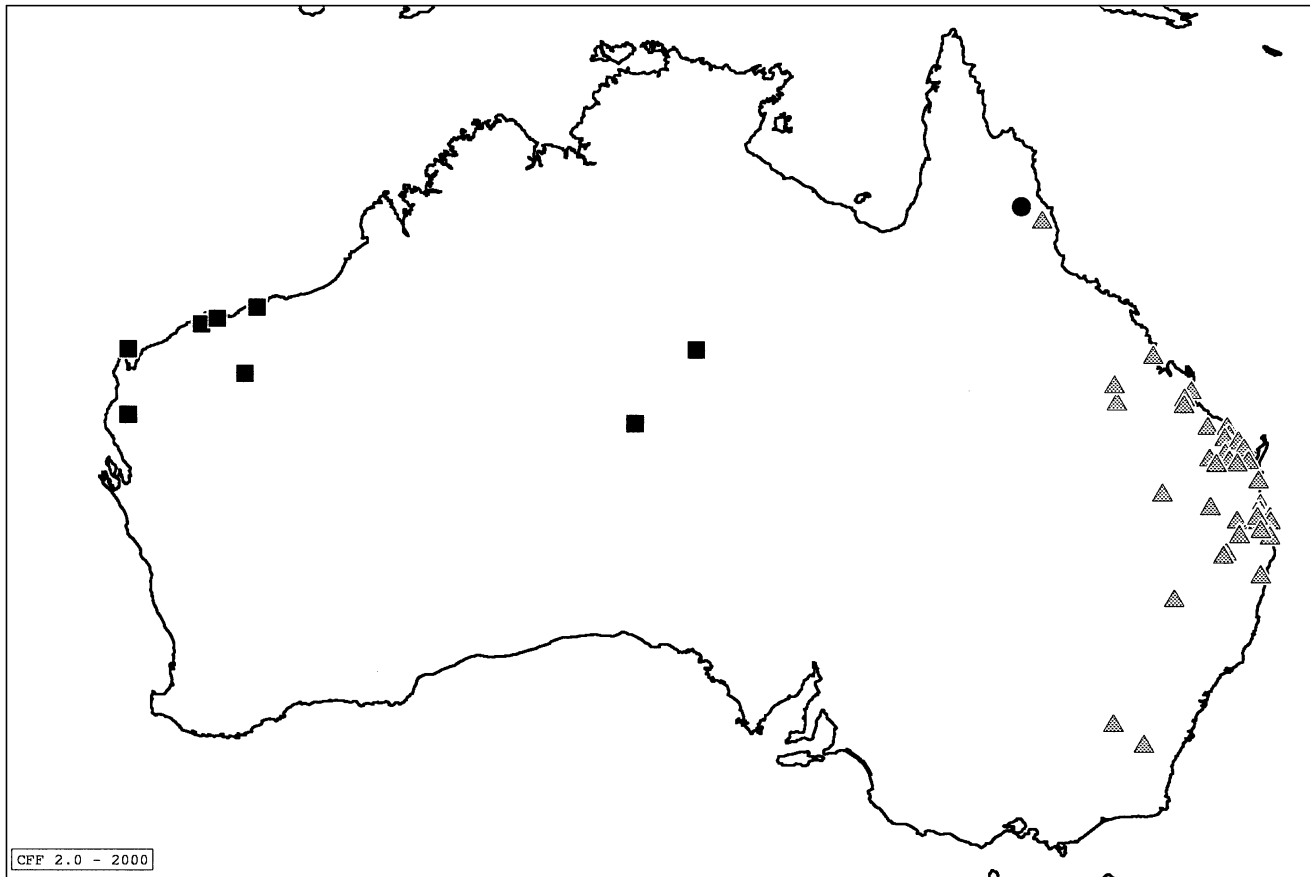


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Figs. 10-18 — The 3 species of *Gelastopsis* (10, 15, 16, habitus, dorsal view 11, 13, 17. frons, normal view 12, 14, 18. right hind wing, normal view). **10-12.** *G. insignis* KIRKALDY ♀ (LT = 11.1 mm). **13-15.** *G. modestus* (JACOBI) ♀ (LT = 9.3 mm). **16-18.** *G. mulliganensis* CONSTANT, Paratype ♂ (LT = 6.9 mm).



- *Gelastopsis mulliganensis* Constant
- ▲ *Gelastopsis insignis* Kirkaldy
- *Gelastopsis modestus* (Jacobi)

Map 1 — Distribution of the 3 species of *Gelastopsis*.

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