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# The Australian Pentastirini (Hemiptera: Fulgoromorpha: Cixiidae)

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## Abstract

The Australian Pentastirini are revised taxonomically. The fauna comprises 56 species, 38 of which are new to science. Species are classified into seven genera: *Cordoliarus* **gen. nov.**, *Miclucha* Emeljanov, *Oliarus* Stål, *Oteana* Hoch, *Ozoliarus* **gen. nov.**, *Pentastiridius* Kirschbaum and *Prosops* Buckton. All species are described and illustrated and identification keys to genera and species are provided. New species described are: *Cordoliarus mareebensis* **sp. nov.**, *Miclucha australiensis* **sp. nov.**, *Oliarus acanthopygophoris* **sp. nov.**, *O. cochleatus* **sp. nov.**, *O. cuberlii* **sp. nov.**, *O. globosus* **sp. nov.**, *O. gracilis* **sp. nov.**, *O. hamatus* **sp. nov.**, *O. hirsutus* **sp. nov.**, *O. lawlerorum* **sp. nov.**, *O. trispiralis* **sp. nov.**, *Ozoliarus alces* **sp. nov.**, *Oz. antennoides* **sp. nov.**, *Oz. bullocki* **sp. nov.**, *Oz. bumarangoides* **sp. nov.**, *Oz. catherinae* **sp. nov.**, *Oz. cuspidistylus* **sp. nov.**, *Oz. cynosurus* **sp. nov.**, *Oz. dedariensis* **sp. nov.**, *Oz. golgolensis* **sp. nov.**, *Oz. latifundus* **sp. nov.**, *Oz. maru* **sp. nov.**, *Oz. nourlangiensis* **sp. nov.**, *Oz. olene* **sp. nov.**, *Oz. pelecanus* **sp. nov.**, *Oz. pitta* **sp. nov.**, *Oz. poculum* **sp. nov.**, *Oz. quadratistylus* **sp. nov.**, *Oz. quercistylus* **sp. nov.**, *Oz. rotundistylus* **sp. nov.**, *Oz. semicircularis* **sp. nov.**, *Oz. serratus* **sp. nov.**, *Oz. smithi* **sp. nov.**, *Oz. taroomensis* **sp. nov.**, *Oz. triangularis* **sp. nov.**, *Oz. umbella* **sp. nov.**, *Oteana salicoides* **sp. nov.** and *Ot. tattendi* **sp. nov.** Lectotypes are designated for *Oliarus clipealis* Jacobi, *Oliarus dingkana* Distant, *Oliarus felis* Kirkaldy, *Oliarus incerta* Distant, *Oliarus laertes* Kirkaldy, *Oliarus latipennis* Jacobi, *Oliarus lubra* Kirkaldy, and *Oliarus sponsa* Kirkaldy. *Oliarus latipennis* Jacobi is synonymised with *Pentastiridius felis* (Kirkaldy) **syn. nov.**, and *Oliarus hackeri* Muir and *Miclucha morobensis* (Van Stalle) are synonymised with *Miclucha incerta* (Distant) **syn. nov.** and *Oliarus lubra* var. *vitiensis*, Kirkaldy is synonymised with *Oliarus lubra*, Kirkaldy **syn. nov.** New combinations proposed are: *Miclucha incerta* (Distant) **comb. nov.**, *Oteana lubra* (Kirkaldy) **comb. nov.**, *Oteana sponsa* (Kirkaldy) **comb. nov.**, *Ozoliarus asaica* (Kirkaldy) **comb. nov.**, *Ozoliarus clipealis* (Jacobi) **comb. nov.**, *Ozoliarus dingkana* (Distant) **comb. nov.**, and *Ozoliarus laertes* (Kirkaldy) **comb. nov.**, all from *Oliarus*. The following names are treated as *nomina dubia* since the only available types are females: *Oliarus alexanor* Kirkaldy, *O. doddi* Muir, *O. kampaspe* Kirkaldy, *O. lilinoe* Kirkaldy, *O. phelia* Kirkaldy, *O. talunia* Kirkaldy, *Ozoliarus asaica* (Kirkaldy), and *Prosops pedisequus* Buckton.

**Key words:** Auchenorrhyncha, Fulgoromorpha, Cixiidae, Pentastirini, *Cordoliarus*, *Miclucha*, *Oliarus*, *Oteana*, *Ozoliarus*, *Pentastiridius*, *Prosops*, Australia, **gen. nov.**, **sp. nov.**, **comb. nov.**, **syn. nov.**

## Introduction

Cixiidae Spinola, 1839 is one of the largest families in Fulgoromorpha and comprises the subfamilies Borystheninae Emeljanov, 1989, Bothriocerinae Muir, 1923, and Cixiinae

  

Spinola, 1839. The tribe Pentastirini Emeljanov, 1971, one of 16 tribes in the subfamily Cixiinae, is represented in all zoogeographical regions and comprises more than 35 genera with several hundred species worldwide. Some species are vectors of phytoplasmas causing yellows diseases such as *Phormium* yellows, which occurs in New Zealand and is transmitted by *Oliarus atkinsoni* Myers (Liefting *et al.* 1997, 1998). Another economically important species, *Hyalesthes obsoletus*, was recently identified as a vector of *Vergilbungskrankheit*, which occurs in viticultural areas of Germany (Maixner *et al.*1995) and *Bois noir* in France (Alma 2002). In addition to its impact on grapevines, this planthopper species also causes damage in vegetable crops such as potatoes and tomatoes (see literature compiled in Holzinger *et al.* 2002).

Emeljanov (1971) divided Pentastirini into two subtribes, Oliarina and Pentastirina. In 1992 Emeljanov added a third subtribe, Mnemosynina. This subtribe was raised to the level of a tribe by Szwedo (2004). Holzinger *et al.* (2002) synonymised Oliarina under Pentastirina. This means there are currently no subtribes recognised within the Pentastirini. Fossil evidence of the tribe Pentastirini is currently recorded from as early as the Lower Cretaceous (Grimaldi *et al.* 2002, Szwedo & Stroinski 2002, Szwedo 2004).

Significant contributions to the knowledge of the Pentastirini are available for certain regions of the world (Afrotropical region: Van Stalle 1985, 1986a, 1986b, 1986c, 1987; Indo-Malayan region: Van Stalle 1991; New Zealand: Larivière 1999; Taiwan: Tsaur *et al.* 1988; Nearctic Region: Emeljanov 2001a, Mead & Kramer 1982). In the framework of these revisions new genera have been created for species which were originally described within the *Oliarus sensu latu* complex in order to reflect the diversity within Pentastirini more effectively. Emeljanov (2001b) narrowed down the concept of *Oliarus* by establishing new genera for a number of oriental species. Hoch (2005) redescribed *Oliarus walkeri* (Stål), the type species of the genus, and pointed out some potential apomorphies.

The aim of this study is to provide a first taxonomic revision for the Pentastirini of Australia, including Christmas Island. This has never been done before and a straightforward faunistics treatment establishing the taxonomic basis for this large unique continental fauna is urgently needed, to provide new taxonomic concepts and hypotheses that can be tested by future researchers within the context of a world phylogeny once a basic taxonomic coverage of the fauna of all regions of the world is achieved.

Prior to this study 17 species were recorded from Australia, mostly in the genus "*Oliarus*". The first Australian species, *Prosops pedisequus*, was described by Buckton (1893) within a new genus which he created for the following reasons: "It has the mixed characters of *Cixius proper* and of *Oliarus*. It differs from the first in having five pronotal keels and a different elytral neuration, and from the second in having small setigerous bulbs on the principle veins, and a clouded staining of the membranes. From both genera it differs in the peculiar form of the tumid front with its transverse keel." Muir (1925) synonymised *Prosops* Buckton with *Oliarus* Stål. Due to the poor quality of the type specimens it is not possible to match this species reliably with any of the investigated

  

Australian Pentastirini. Therefore *P. pedisequus* is considered to be a *nomen dubium*. Buckton received the specimens upon which his description was based from French who in turn obtained them from an orchardist in Balwyn (nowadays a residential suburb 10 km east of Melbourne). In part IV of the Handbook of the destructive insects of Victoria, French (1909) described this species as 'the apple tree destroyer', damaging apple trees by laying its eggs in their branches. This observation is quite remarkable, because cixiids are believed to deposit their eggs in the soil. Because of the dubious identity of this species, it is impossible to verify this exceptional egg-laying behaviour.

In 1906 Kirkaldy described the following species, *Oliarus alexanor, O. asaica, O. felis, O. kampaspe, O. laertes, O. lubra, O. phelia, O. sponsa,* and *O. talunia*. One year later Kirkaldy (1907) added *O. lilinoe*. Other contributors to the taxonomic description of the Australian fauna were Distant (1907a, 1907b), describing *O. dingkana* and *O. incerta*; Muir (1931), describing *O. doddi* and *O. hackeri;* and Jacobi (1928), describing *O. clipealis* and *O. latipennis*. Unfortunately, none of these authors studied the male genitalia (except for some illustrations of the external view provided by Jacobi) and many species are known only from females. Our research concurs with research done elsewhere, i.e., it appears that genital structures evolve far more rapidly than structures of the external morphology, and thus provide a better means to differentiate taxa on the species level.

Holzinger *et al.* (2002) transferred the subgenus *Nesopompe* from the genus *Oliarus* to *Pentastiridius,* and thereby also its type species *O. felis*.

## Material & methods

*Preparation of male genitalia*

Male specimens were softened for 1–2 days in a humid chamber, a plastic box containing a paper towel soaked with vinegar to prevent mould. During softening, mounted specimens were pinned to a piece of styrofoam. After softening, specimens were demounted and the pygophore carefully removed using forceps and pins. Specimens were then remounted and the pygophore transferred to a beaker containing hot soapy water for few minutes to be softened further before examination. For the short term, genitalia were stored in cavity slides (square piece of plexiglass with a 14 mm hole drilled through it, glued onto a microscope slide) containing glycerol. For long term storage, male genitalia were transferred into micro-vials containing glycerol and re-associated with mounted specimens.

*Descriptions*

Within the genera *Oliarus sensu* Emeljanov, *Oteana,* and *Ozoliarus,* certain species which appear to be more closely related to each other are grouped. These groupings are based on morphological similarities. Phylogenetic analyses are needed to identify whether these represent synapomorphies on which subgenera or new genera could be based.

  

Specimen details of other material examined, where not provided within the descriptions, is listed in Appendix II: Other material examined.

Taxonomic descriptions are based primarily on male specimens. In most cases, females could only be assigned to generic level. However, females collected together with males during the same collecting event were assumed to be the same species if they matched the species description of associated males and if no males of similar species were collected during the same collecting event.

In the illustrations of the male genitalia, letters in lower case are used to identify spines (or pairs of spines) on the phallotheca, and letters in upper case identify spines on the flagellum. The position and arrangement of these spines vary among species, but in cixiid classification there is currently no basis to establish the homology of these structures. Consequently, letters identifying spines based on their structural position may or may not represent spines homologous among taxa.

The lateral spines on the hind tibia are usually of unequal length, the most proximal ones being the smallest.

*Terminology*

The morphological terms applied here are illustrated in Figs 1–2.
The nomenclature applied in this paper to the ventation of the tegmen follows Anufriev & Emeljanov (1988) and differs slightly from that applied in Löcker *et al.* (2006).

The following measurements were taken in this study:

- body length: tip of head to posterior margin of forewing
- width of vertex: width at level of tip of basal emargination
- total length of vertex: apical transverse carina to most caudal limits of vertex
- median length of vertex: apical transverse carina to tip of basal emargination
- width of forewing: at level of apex of clavus
- length of forewing: base to posterior margin of forewing

*Abbreviations*

States: ACT Australian Capital Territory; NSW New South Wales; NT Northern Territory; Qld Queensland; SA South Australia; Vic Victoria; WA Western Australia.

*Depositories*

**AMS** Australian Museum, Sydney; **ANIC** Australian National Insect Collection, CSIRO, Canberra; **ASCU** Agricultural Scientific Collections Unit, NSW Department of Primary Industries, Orange; **BMNH** The Natural History Museum, London; **BPBM** Bernice Pauahi Bishop Museum, Honolulu; **CAS** California Academy of Sciences, San Francisco; **GBP** Glenn Bellis Private Collection, Darwin; **IRSNB** Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel; **LBOB** Lois O'Brien private collection, United States of America; **MAGD** Northern Territory Museum, Darwin; **MAMU** Macleay Museum, University of Sydney; **MJF** Murray Fletcher private collection, Australia;

  

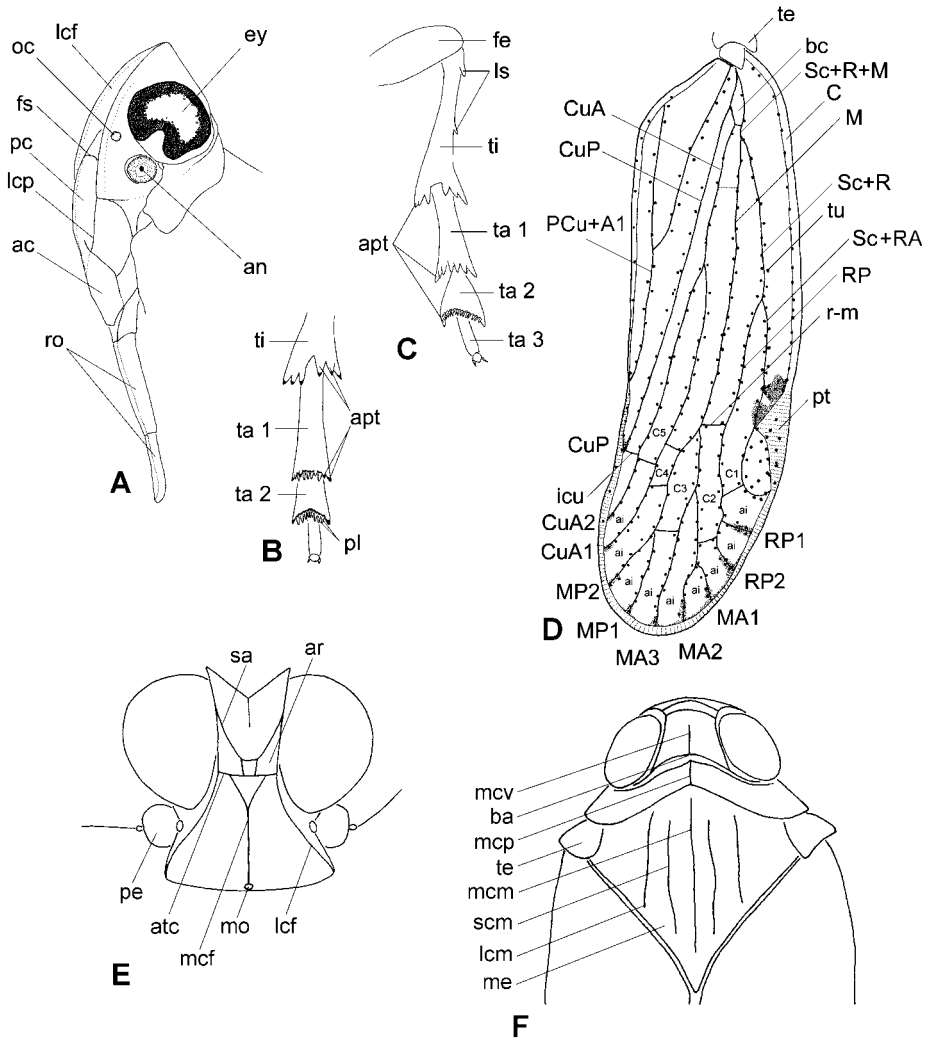


**FIGURE 1.** A head left lateral; B hind tibia and tarsomeres; C hind leg; D forewing; E head frontal; F head and thorax dorsal.

Abbreviations: ac = anteclypeus, an = antennae, ai = apical cell, apt = apical teeth, ar = areolets, atc = apical transverse carina, ba = basal emargination, bc = basal cell, C = Costa, C1–C5 = subapical cells 1–5, CuA = Cubitus anterior, CuA1 = Cubitus anterior 1, CuA2 = Cubitus anterior 2, CuP = Cubitus posterior, ey = eye, fe = femur, fs = frontoclypeal suture, icu = intercubitus, lcf = lateral carina of frons, lcm = lateral carina of mesonotum, lcp = lateral carina of postclypeus, ls = lateral spines of hind tibia, M = Media, MA1 = Media anterior 1, MA2 = Media anterior 2, MA3 = Media anterior 3, me = mesonotum, mcf = median carina of frons, mcm = median carina of mesonotum, mcp = median carina of pronotum, mcv = median carina of vertex, mo = median ocellus, MP1 = Media posterior 1, MP2 = Media posterior 2, oc = ocellus, pe = pedicellus, pc = postclypeus, Pcu+A1 = Postcubitus+Analis 1-stalk, pl = platellae, pt = pterostigma, r-m = crossvein between Radius and Media, RP = Radius posterior, RP1 = Radius posterior 1, RP2 = Radius posterior 2, ro = rostrum, sa = subapical carina, Sc = Subcosta, Sc+R = Subcosta+Radius-stalk, Sc+RA = Subcosta+Radius anterior-stalk, Sc+R+M = Subcosta+Radius+Media-stalk, scm = sublateral carina of mesonotum, ta 1 = 1st tarsomere, ta 2 = 2nd tarsomere, ta 3 = 3rd tarsomere, te = tegula, ti = tibia, tu = tubercle.

  

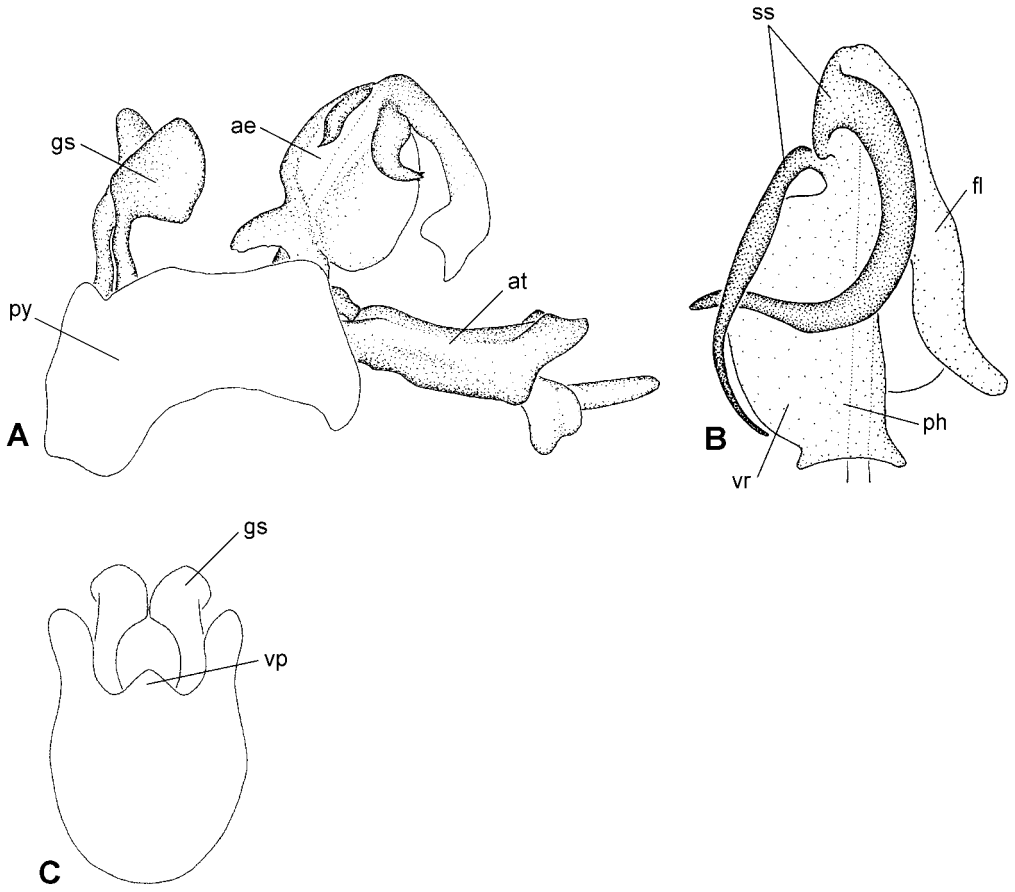


**FIGURE 2.** A male genitalia right lateral. B aedeagus right lateral. C pygophore and genital styles ventral. Abbreviations: ae = aedeagus, at = anal tube, fl = flagellum (moveable apical part of the aedeagus), gs = genital style, ph = phallotheca (periandrium; covering basal part of the aedeagus), py = pygophore, ss = sclerotised spine, vp = ventromedian process, vr = ventral ridge.

**MTD** Museum für Tierkunde, Staatliche Naturhistorische Sammlungen, Dresden; **NHRS** Naturhistoriska Riksmuseet, Stockholm; **QDPC** Queensland Department of Primary Industries, Brisbane; **QM** Queensland Museum, Brisbane; **SAM** South Australian Museum, Adelaide; **UQIC** University of Queensland Insect Collection, Brisbane; **WAMP** Western Australian Museum, Perth; **WADA** Department of Agriculture Western Australia, Perth; **ZMAN** Instituut voor Taxonomische Zoologie, Amsterdam.

*Biology and distribution*

Little information is available on the ecology of Australian Pentastirini, except for Hacker (1925) who provided a detailed account of the life history of *Oliarus felis*. He discovered large numbers of adults and nymphs in cracks in the soil of a *Sporobolus virginicus* var. *minor* Bail (Poaceae) patch in his garden. The nymphs were very sensitive

  

to light and seemed to live amongst the grass roots. Some information on the biology of *Prosops pedisequus* on apple is given by French (1909) but the identity of this species remains unclear. Very few other plant associations are known for the Pentastirini and none have been published until now. Table 1 summarises the plant association data currently available.

The geographic distribution section accompanying the descriptions of genera, lists the regions from which taxa have been recorded. Since vast parts of Australia have not been comprehensively surveyed, actual distributions may be much wider than indicated by the material available for study.

**TABLE 1.** Associated plant records. Numbers in round brackets give the number of specimens found on this host plant. In some cases only common names were found on the specimen labels. In the table we have provided latin names for these taxa in square brackets.

| Species | Plant family | Recorded species |
|---|---|---|
| *Pentastiridius felis* | Poaceae | *Sporobulus virginicus* (according to Hacker (1925) numerous adults and nymphs)<br>rice [*Oryza sp.*] (1) |
| | Solanaceae | tomato [*Lycopersicon sp.*] (3) |
| *Miclucha morobensis* | Mimosaceae | *Mimosa pigra* (3) |
| *Oliarus hamatus* | Myrtaceae | *Melaleuca quinquenervia* (1) |
| *Oliarus cuberlii* | Myrtaceae | *Eucalyptus sp* (1) |
| *Oteana lubra* | Fabaceae | Faba bean [*Vicia faba*] (2)<br>chickpeas [*Cicer arietinum*] (1) |
| | Myoporaceae | *Eremophila sturtii* (2)<br>*Eremophila mitchellii* (2) |
| | Myrtaceae | *Eucalyptus citriodora* (1) |
| | Poaceae | sugar cane [*Saccharum sp.*] (1)<br>rice [*Oryza sp.*] (1) |
| | Solanaceae | potato [*Solanum tuberosum*] (2) |
| *Oteana tattendi* | Anacardiaceae | *Mangifera indica* (6) |
| | Mimosaceae | *Mimosa pigra* (1) |
| | Myrtaceae | *Melaleuca sp.* (1) |
| | Poaceae | *Hymenachne acutigluma* (2) |
| *Ozoliarus laertes* | Proteaceae | *Banksia robur* (4) |
| *Ozoliarus poculum* | Asteraceae | *Pluchea baccharoides* (4) |
| | Fabaceae | *Acacia sp.* (1) |
| | Myoporaceae | *Eremophila mitchellii* (1) |
| | Myrtaceae | *Eucalyptus largiflorens* (1) |
| *Ozoliarus alces* | Campanulaceae | *Wahlenbergia sp.* (1) |

to be continued.

  

**TABLE 1** (continued).

| Species | Plant family | Recorded species |
|---|---|---|
| | Fabaceae | brigalow [*Acacia harpophylla*] (1) |
| *Ozoliarus olene* | Malvaceae | kenaf [*Hibiscus cannabinus*] (1) |
| *Ozoliarus pelecanus* | Fabaceae | *Acacia sp.* (1) |
| *Ozoliarus pitta* | Vitaceae | *Vitis vinifera* (1) |
| *Ozoliarus catherinae* | Myrtaceae | *Eucalyptus citriodora* (1) |
| *Ozoliarus cynosurus* | Sapindaceae | *Atalaya hemiglauca* (1) |
| | Fabaceae | brigalow [*Acacia harpophylla*] (1) |
| *Ozoliarus cuspidistylus* | Myrtaceae | *Eucalyptus crebra* (1) |

## Taxonomic results

Note: For a list of genera, groups and species of Australian Pentastirini see Appendix I.

## Key to genera of Australian Pentastirini Emeljanov

*Prosops pedisequus* Buckton, *nomen dubium* is excluded from the key to genera of Australian Pentastirini because important features could not be investigated because of the poor quality of the type specimens and original description.

1 Platellae on 2nd hind tarsomere absent ..... 2
- Platellae on 2nd hind tarsomere present ..... *Pentastiridius* Kirschbaum
2(1) 1st hind tarsomere with 7–8 (rarely 9) apical teeth, 2nd hind tarsomere with 5–6 apical teeth and hind tibia with 2–3 lateral spines ..... 3
- Chaetotaxic combinations not as above ..... 4
3(2) Hind tibia with 2 lateral spines; vertex narrow (1.7–3.9 times longer than wide); lateral carinae of vertex strongly elevated ..... *Oliarus* Stål *sensu* Emeljanov
- Hind tibia with 3 lateral spines; vertex wider (1.4–2.0 times longer than wide); lateral carinae of vertex slightly to moderately elevated ..... *Oteana* Hoch
4(2) Forewing with r-m crossvein distad of fork MA+MP; carination on tip of head as in Fig. 3C ..... *Cordoliarus* Löcker, **gen. nov.**
- Forewing with r-m crossvein basad of fork MA+MP; carination on tip of head not as above ..... 5
5(4) Males ..... 6
- Females ..... 7
6(5) Genital styles with long, sclerotised, spinelike, dorsal process (see Figs 31M–N, 32C, 32J–K) ..... *Miclucha* Emeljanov

  

- Genital styles without long, sclerotised, spinelike, dorsal process ..... ..... *Ozoliarus* Löcker, **gen. nov.**

7(5) Hind tibia apically with 6 large teeth; subapical carina of vertex forking from lateral margin 2/3 or less of total length of vertex (see Fig. 26B–C)..... 8

- Hind tibia apically with 5 large and 1 very small tooth; subapical carina of vertex forking from lateral margin at more than 3/4 of total length of vertex (see Figs 3F–G, 4F–G) .....*Miclucha* Emeljanov (part)

8(7) Vertex 3 times longer than wide (see Fig. 4B); 1st hind tarsomere with 8–9 apical teeth.....*Miclucha* Emeljanov (part)

- Vertex less than 2.4 times longer than wide (see Fig. 26B); 1st hind tarsomere with 7 (rarely 8) apical teeth ..... *Ozoliarus* Löcker, **gen. nov.**

**Genus *Cordoliarus* Löcker, gen. nov.**

Type species *Cordoliarus mareebensis* Löcker, **sp. nov.**

*Etymology*

The genus name is based on the Latin term ‘cordatus’ which means ‘heart-shaped’. It refers to the heart-shaped genital styles. Gender: masculine.

*Morphology*

Head: Vertex (total length) 1.7 times longer than wide; lateral carinae strongly elevated; subapical carina forking from lateral margin at more than 3/4 of total length of vertex; median carina 1/2–3/4 as long as median length of vertex. Position of maximum width of frons more or less around centre of frontoclypeal suture; lateral carinae of frons s-shaped. Anteclypeus with well-developed median carina.

Thorax: Forewing with fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein distad of fork MA+MP; RP apically trifid; MA apically trifid; MP apically bifid; fork of Pcu+A1 more or less central within clavus. Hind leg: tibia with 3–4 lateral spines; 5 large and 1 very small apical tooth; 1st tarsomere with 7 apical teeth and no platellae; 2nd tarsomere with 7 apical teeth and no platellae.

Male genitalia: Genital styles heart-shaped with long, sclerotised, spinelike, dorsal process.

*Distribution*

Queensland.

*Remarks*

The shape and carination of the head (Figs 3B–D), i.e. the carination on the tip of the head (Fig. 3C) and the heart-shaped genital styles (Fig. 31E) are diagnostic for this genus.

  

***Cordoliarus mareebensis* Löcker, sp. nov.**
(Figs 3A–D, 31A–G)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: 32 km W of Mareeba, D-vac, 31.i.1982 (J.F. Donaldson) (QM QMT123825, originally QDPC), *Paratypes*, 1 ♀, AUSTRALIA, Qld: 7 km W Petford, 24.ii.1997 (L.B. O'Brien) (LBOB).

*Etymology*

Named after Mareeba, the type locality.

*Colour*

Body dark brown, carinae paler, frons laterally with a pale mark; legs light to dark brown; forewing hyaline colourless with brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 6.2 mm, ♀ 5.6–7.3.

Head: Vertex (total length) 1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent carinae. Forewing 2.9 times longer than wide; costa with 20–28 tubercles; 10 apical cells.

Male genitalia: Anal tube as in Figs 31C–D, G; pygophore and genital styles as in Figs 31E–F. Aedeagus (Figs 31A–B): Phallotheca with a flattened bifurcate spine (a) left lateral; a short, rounded spine (b); a longer, rounded spine (c) ventral; and a very long flattened spine (d) right lateral. Flagellum sclerotised, unarmed.

## Genus *Miclucha* Emeljanov

*Miclucha* Emeljanov, 2001b: 72.
Type species *Oliarus laratensis* Muir, 1924, by original designation.

*Morphology*

Body length: ♂ 6.3–8.9 mm, ♀ 7.7–9.9 mm.

Head: Vertex (total length) 2.0–3.0 times longer than wide; lateral carinae strongly elevated; subapical carina forking from lateral margin at 2/3–3/4 of total length of vertex; median carina 1/4–3/4 as long as median length of vertex. Position of maximum width of frons more or less around centre of frontoclypeal suture; lateral carinae of frons s-shaped. Anteclypeus with well-developed median carina.

  

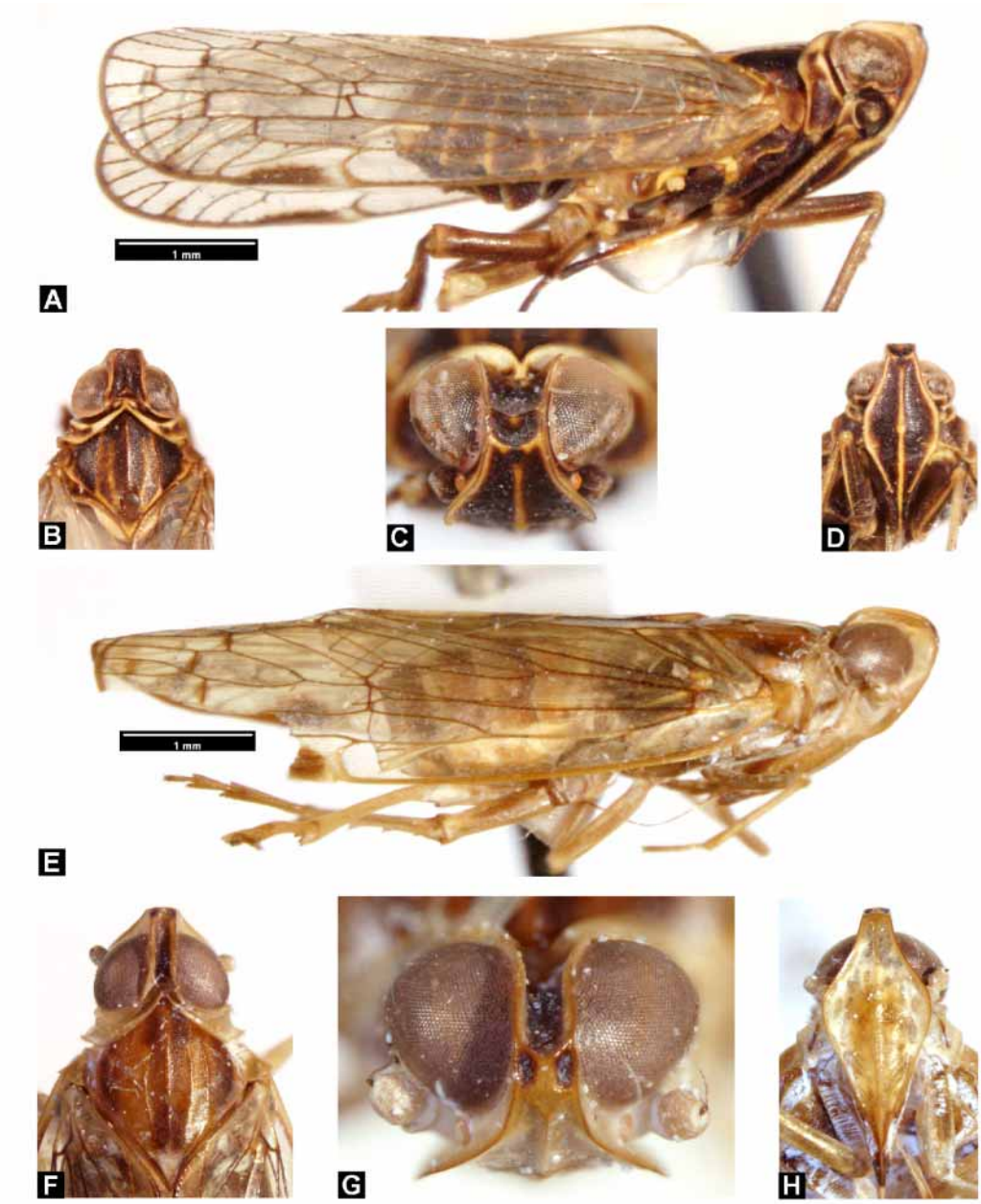


**FIGURE 3.** *Cordoliarus mareebensis*: A habitus; B, C, D head. *Miclucha laratensis*: E habitus; F, G, H head.

Thorax: Forewing with fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein basad of fork MA+MP; RP apically bifid or trifid; MA apically trifid; MP apically bifid; fork of Pcu+A1 distinctly basad of centre of clavus. Hind leg: tibia with 3–5 lateral spines; 5 large and 1 very small apical tooth (rarely 6 large apical teeth); 1st tarsomere with 8–9 (rarely 7) apical teeth and no platellae; 2nd tarsomere with 7–9 apical teeth and no platellae.

Male genitalia: Genital styles with long, sclerotised, spinelike, dorsal process (as in Figs 31M–N, 32C, J–K).

*Distribution*

Indonesia (Larat Island), Papua New Guinea, Australia (Northern Territory, Queensland, South Australia, Western Australia).

*Remarks*

*Miclucha laratensis* and *M. incerta* are shared between Australia and New Guinea. *M. australiensis* is only recorded from Australia and *M. niuginiensis* Van Stalle is only recorded in New Guinea. The definition of *Miclucha* provided by Emeljanov (2000) is based on his use of characters in the key to genera he provides. The description provided here incorporates other features derived from the Australian material.

**Key to species of *Miclucha***

1 Areolets short (subapical carina forking from lateral border at 3/4 or more of length of vertex) as in Figs 3F–G, 4F–G; hind tibia with 5 large and 1 very small apical tooth; phallotheca with 3 spines (Figs 31H, 32L–M) ..... 2

\- Areolets longer (subapical carina forking from lateral border around 2/3 of length of vertex) as in Fig. 4B–C; hind tibia with 6 large apical teeth; phallotheca with 4 spines (Fig. 32A)..... *M. australiensis* Löcker, **sp. nov.**

2(1) 1st and 2nd hind tarsomere with 8 (rarely 7) apical teeth; aedeagus with a large downwards curved spine (c) as in Fig. 32M ..... *M. incerta* (Distant)

\- 1st and 2nd hind tarsomere with 9 apical teeth; aedeagus without a large downwards curved spine as in Fig. 31I ..... *M. laratensis* (Muir)

***Miclucha laratensis* (Muir)**
(Figs 3E–H, 31H–O)

*Oliarus laratensis* Muir, 1924: 526 (Figs 20a–b).
*Miclucha laratensis* (Muir), Emeljanov, 2001b: 72.

*Type material*

*Holotype*, ♂, **INDONESIA**: Larat (BPBM); *Paratypes*, INDONESIA: 3 ♂, 6 ♀, same data as holotype.

*Other material examined*

**AUSTRALIA:** Qld (1 ♂, 5 ♀), WA (1 ♀).

  

*Colour*

Vertex mid to dark brown, carinae paler; face light brown or pale yellow, frons lateral with an indistinct light brown mark; pronotum light brown or pale yellow; mesonotum light to mid brown; legs light brown; forewing hyaline colourless, brown marks along crossveins and on apex of wing, veins mid brown, tubercles indistinct, concolorous with veins; pterostigma mid brown; abdominal sternites light brown.

*Morphology*

Body length: ♂ 8.9 mm, ♀ 8.2–9.9 mm.

Head: Vertex (total length) 3.0 times longer than wide; basal emargination acutely angled. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with all carinae evanescent or well-developed. Forewing 3.1 times longer than wide; costa with 0–4 tubercles; 10 apical cells. Hind leg: tibia with 4–5 lateral spines; 5 large and 1 very small apical tooth; 1st and 2nd tarsomere with 9 apical teeth and no platellae.

Male genitalia: Anal tube as in Figs 31J–K, O; pygophore and genital styles with long, slender, sclerotised, dorsal process as in Figs 31L–N. Aedeagus (Figs 31H–I): Phallotheca with a long, strongly curved spine (a) left lateral; a long, thick spine (b) ventral; and a very short spine (c) arising from base of spine (b); all spines pointing upwards (caudad). Flagellum membranous to slightly sclerotised, unarmed.

*Remarks*

Van Stalle (1991) makes the following comment in the remarks section of the species description of *O. laratensis*, "The reference "Type Nr 1096" in the original description is interpreted as a holotype designation."

***Miclucha australiensis* Löcker sp. nov.**
(Figs 4A–D, 32A–F)

*Type material*

Holotype, ♂, AUSTRALIA, NT: 9 km N by E of Mudginbarry HS, 12.31S 132.54E, 26.v.1973 (Upton, McInnes) (ANIC).

*Colour*

Vertex dark brown, carinae light brown; face light to mid brown, carinae light brown; pronotum light brown, carinae paler; mesonotum mid brown, carinae paler; legs light brown; forewing hyaline colourless with brown marks along crossveins and apices of apical veins, veins light to mid brown, tubercles concolorous with veins, pterostigma light to mid brown; abdominal sternites mid to dark brown.

  

*Morphology*

Body length: ♂ 6.3 mm.

Head: Vertex (total length) 3.0 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed median and sublateral carinae and evanescent to well-developed lateral carinae. Forewing 3.5 times longer than wide; costa with 9 tubercles; 9 apical cells. Hind leg: tibia with 3 lateral spines; 6 large apical teeth; 1st tarsomere with 8–9 apical teeth and no platellae; 2nd tarsomere with 7 apical teeth and no platellae.

Male genitalia: Anal tube as in Figs 32D–F; pygophore and genital styles with long, slender, sclerotised, dorsal process as in Figs 32B–C. Aedeagus (Fig. A): Phallotheca with a moderately curved spine (a); a slightly curved spine (b); an almost straight spine (c); and a very long, strongly curved spine (d); phallotheca ventrally with 3 sheetlike ridges. Flagellum sclerotised, unarmed.

*Remarks*

The general structure of the aedeagus and the shape of the genital styles is similar to those of *M. niuginiensis* (Van Stalle), a species described from Papua New Guinea. *M. australiensis* differs, however, in the forking of the subapical carina from the lateral margin which is about 2/3 of the total length in *M. australiensis* and more than 3/4 in *M. niuginiensis* and the two other species in *Miclucha*. Regarding the chaetotaxy of the hind legs, *M. australiensis* and *M. niuginiensis* share 7 apical teeth on the second tarsomere (7–8 in *M. incerta* and 9 in *M. laratensis*) but differ in the number of apical teeth on the first hind tarsomere which is 7 in *M. niuginiensis* and 8–9 in *M. australiensis* (7–8 in *M. incerta* and 9 in *M. laratensis*). Further features in which *M. australiensis* differs from other species in the genus are: median carina in *M. australiensis* 1/4–1/2 (in *M. laratensis* and *M. incerta* 1/2–3/4) as long as median length of vertex, and hind tibia with 6 large apical teeth (in *M. laratensis* and *M. incerta* 5 large and 1 very small apical tooth). Nevertheless, *M. australiensis* has been placed in *Miclucha*, because it has the characteristic feature of the genus as defined by Emeljanov (2001b): genital styles with a long, slender, sclerotised dorsal process. A similar process also occurs in the *acanthopygophoris* group of *Oliarus*, although slightly less sclerotised and shorter, and in *Cordoliarus*, where is mounted in a different position.

***Miclucha incerta* (Distant) comb. nov.**
(Figs 4E–H, 32G–M)

*Oliarus lubra* Distant, 1907a: 282.
*Oliarus incerta* Distant, 1907b: 415.

  

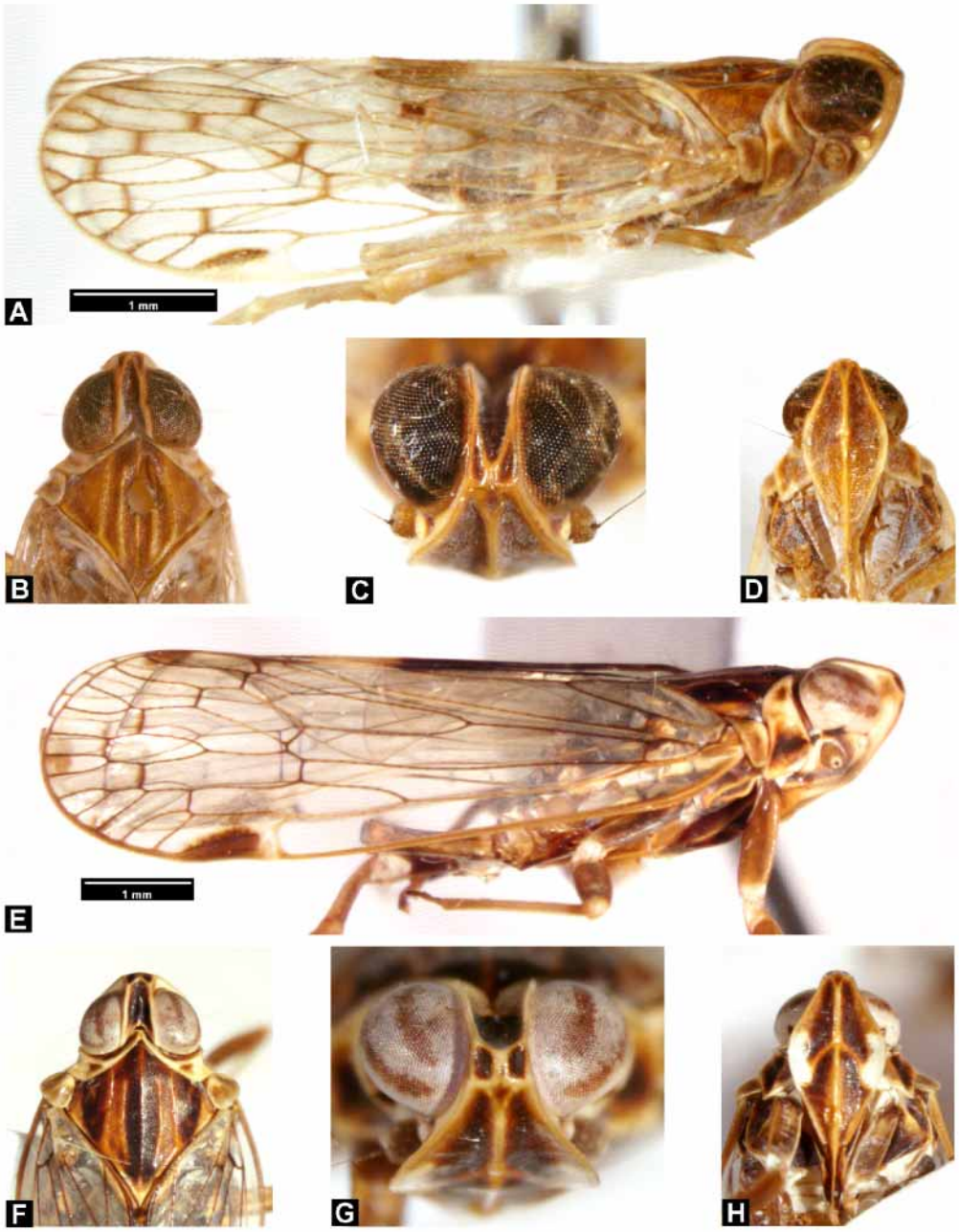


**FIGURE 4.** *Miclucha australiensis*: A habitus; B, C, D head. *Miclucha incerta*: E habitus; F, G, H head.

*Remarks*

The name *Oliarus lubra* was preoccupied by *Oliarus lubra* Kirkaldy 1906; therefore Distant (1907b) changed the name of his species to *Oliarus incerta*.

*Oliarus hackeri* Muir, 1931: 65 (Figs 3–4). **syn. nov.**
*Oliarus morobensis* Van Stalle, 1989: 174 (Figs 1–9). **syn. nov.**
*Miclucha morobensis* (Van Stalle), Emeljanov, 2001b: 72.

*Type material*

*Lectotype of Oliarus incerta*, here designated, ♀ (examined), **AUSTRALIA, Qld**: Peak Downs (BMNH), *Paralectotype*, AUSTRALIA, Qld: 1 ♂ or ♀ (abdomen missing) (examined), same data as lectotype (BMNH).

*Holotype of Oliarus hackeri*, ♂ (examined), AUSTRALIA, Qld: Brisbane, 5.viii.1913 (H. Hacker) (BMNH), *Paratypes*, AUSTRALIA, Qld: 5 ♀ (examined), Townsville, ix–xi.1902 (F.P. Dodd) (BMNH).

*Holotype of Miclucha morobensis*, ♂, **PAPUA NEW GUINEA**: Morobe prov., Bulolo, 20.v.1988 (IRSNB); *Paratypes*, PAPUA NEW GUINEA: 2 ♂, 1 ♀, same data as holotype; 1 ♂, same locality, 18.v.1988 (IRSNB); 1 ♂, 1 ♀, Port Moresby, 1–2.iv.1987 (N.D. Penny) (CAS); 3 ♂, 1 ♀, Central Province, Laloki Quarantine Station, 23.vi.1983, "collected from pawpaw trunk and fruits" (BMNH); 2 ♂, 1 ♀, Central Province, Laloki D.P.I., 24.x.1980, "ex L. pomoea", "batatas" (BMNH).

*Remarks*

A lectotype is designated here to give a diagnostic reference for the species.

*Other material examined*

**AUSTRALIA:** NT (64 ♂, 70 ♀), Qld (51 ♂, 62 ♀), SA (1 ♂, 1 ♀), WA (6 ♂, 9 ♀).

*Colour*

Vertex dark brown to black, carinae paler; face dark brown, frons lateral with a large pale mark, carinae light brown; pronotum light brown or pale yellow; mesonotum dark brown, mid brown between lateral and sublateral carinae; legs light brown to mid brown; forewing hyaline colourless, brown marks along crossveins and on apex of wing, veins mid to dark brown, tubercles indistinct, concolorous with veins; pterostigma mid or dark brown; abdominal sternites light brown.

*Morphology*

Body length: ♂ 6.9–8.9 mm, ♀ 7.7–8.9 mm.

Head: Vertex (total length) 2.0–2.7 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.0–3.2 times longer than wide; costa with 0–12 tubercles; 10 apical cells. Hind leg: tibia with 4 (rarely 3) lateral spines; 5 large and 1 very small apical tooth; 1st and 2nd tarsomere with 8 (rarely 7) apical teeth and no platellae.

  

Male genitalia: Anal tube as in Figs 32G–I; pygophore and genital styles with long, slender, sclerotised, dorsal process as in Figs 32J–K. Aedeagus (Figs 32L–M): Phallotheca with a long, strongly curved spine (a) left lateral; a long, flattened spine (b); and a long spine (c) ventral; spines (a) and (b) pointing upwards (caudal); spine (c) pointing downwards (cephalad). Flagellum membranous with sclerotised ridge, unarmed.

## Genus *Oliarus* Stål sensu Emeljanov

*Oliarus* Stål, 1862: 306.
Type species *Cixius walkeri* Stål, 1859.

*Morphology*

Body length: ♂ 3.7–9.1 mm, ♀ 4.1–7.4 mm.

Head: Vertex (total length) 1.7–3.9 times longer than wide; lateral carinae strongly elevated; subapical carina forking from lateral margin at around 1/4–1/2 of total length of vertex; median carina 1/4–2/3 as long as median length of vertex. Position of maximum width of frons more or less around centre of frontoclypeal suture; lateral carinae of frons convex (rectilinear apically) or s-shaped. Anteclypeus with well-developed median carina.

Thorax: Forewing with fork ScRA+RP distad or basad of fork CuA1+CuA2; r-m crossvein distad or basad of fork MA+MP; RP apically bifid (rarely trifid); MA apically bifid, trifid or tetrafid; MP apically bifid; fork of Pcu+A1 distinctly basad or more or less around centre of clavus. Hind leg: tibia with 2 lateral spines; 6 (rarely 7) large apical teeth; 1st tarsomere with 7–8 (rarely 9) apical teeth and no platellae; 2nd tarsomere with 5 (rarely 6) apical teeth and no platellae.

Male genitalia: Genital styles with or without medium sized, sclerotised, spinelike, dorsal process.

*Distribution*

Australia (Queensland, Northern Territory, Western Australia), Christmas Island, Indonesia, Papua New Guinea.

*Remarks*

Females (unless associated with males, see comments in Material & Methods section) could only be identified to generic level. The body length measurement given above is derived from females assigned to species level plus additional females which could only be identified to genus.

The fork of ScRA+RP in the forewing is distad of the fork CuA1+CuA2 in all species of the genus except for *O. busoensis*, where it lies basad. In the acanthopygophoris group the r-m crossvein is basad of the fork MA+MP, whereas in all other *Oliarus* it is distad. Typically in this genus RP is bifid apically; however, in some specimens of *O. busoensis* a

  

trifid RP was recorded. In *O. acanthopygophoris* and *O. lawlerorum* the nodus of the y-vein is more or less around the centre of the clavus, whereas in all other species of the genus it is shifted distinctly basad of the centre. The chaetotaxy of the hind legs in specimens of *O. kampaspe* varied from the typical chaetotaxy in this genus which is 6 large apical teeth on the tibia, 7 apical teeth on the 1st tarsomere, and 5 on the 2nd tarsomere. Most specimens of *O. kampaspe* had 7 large apical teeth on the tibia; all specimens had 8 apical teeth on the 1st tarsomere; and in some specimens we found 6 apical teeth on the 2nd tarsomere. Species of the *acanthopygophoris* group are unique within this genus in having a medium-sized, sclerotised, dorsal process.

As Hoch (2005) noted, "*Oliarus* Stål, 1862 has long been a notorious catch-all genus for Pentastirine Cixiidae from nearly all parts of the world." In recent years several attempts have been made to divide the complex *Oliarus s.l.* into more natural genera. Several new genera were created by authors such as Emeljanov (1992, 2001a), Mead & Kramer (1982) and Van Stalle (1985, 1986a, 1986b, 1986c, 1986d, 1987, 1991) to accommodate Palaearctic, Ethiopian, and Nearctic species previously described in *Oliarus*. Emeljanov also proposed a new concept for *Oliarus s. str.* (Emeljanov 2001b), "Typical members of *Oliarus s. str.* are characterised by the more or less narrow macrocoryphe ('vertex'); acuteangularly projecting forward anterior carina of the coryphe touching medially the anterior carina of the macrocoryphe (i.e. the acrometope subdivided into a pair of longitudinal triangles); elongate styles with thick medioventral heel tapering to the apical hook-like dilation; apical dilation usually with acute anterolateral angle and sometimes with blunt projections of posteromedial and posterolateral angle." Consequently, only 46 species from the Oriental and Australian region remained in *Oliarus sensu* Emeljanov. Our investigations of the Australian fauna revealed a distinct group, sharing the features of Emeljanov's concept of *Oliarus s. str.* They are further characterised by the presence of 5 spines on the second hind tarsomeres and only 2 lateral spines on the hind tibia (this feature separates them from all other Australian Pentastirini, which have 3–4 lateral spines). Hoch (2005) recently clarified the identity of the type series of *O. walkeri* Stål, the type species of *Oliarus*. She emphasised that the aedeagus of *O. walkeri* shows certain highly apomorphic characters, such as lack of articulation between phallotheca and flagellum and flagellum sheathed by processes of phallotheca which do not seem to be present in any other species of *Oliarus sensu* Emeljanov. In the Australian species, the flagellum shows various forms ranging from very small, hardly detectable and not articulated in *O. acanthopygophoris,* to large and more clearly articulated (e.g., in the *gracilis* group). Based on our investigations of the Australian Pentastirini fauna, we found that especially in the structure of the aedeagus there is an enormous amount of diversity. For this reason, we have retained these Australian species within the genus *Oliarus.* Comprehensive phylogenetic analyses of the Pentastirini fauna are needed to clarify whether there are more genera lurking within *Oliarus sensu* Emeljanov.

  

## Key to species of *Oliarus* Stål *sensu* Emeljanov

The following taxa are excluded from the identification key to species of *Oliarus* Stål, because no male genitalia were available for those species; they are therefore listed as *nomina dubia*: *O. alexanor* Kirkaldy, *O. doddi* Muir, *O. kampaspe* Kirkaldy, *O. lilinoe* Kirkaldy, *O. phelia* Kirkaldy, and *O. talunia* Kirkaldy.

1 Body length of male 8.7 mm or more; forewing with fork ScRA+RP basad of fork MA+MP; aedeagus in ventral view as in Fig. 35Q..... *O. busoensis* Van Stalle

\- Body length of male 7.7 mm or less; forewing with fork ScRA+RP distad of fork MA+MP; aedeagus in ventral view not as above ..... 2

2(1) Genital styles with a large (rarely small) spinelike process directed dorsad as in Figs 32Q, 33D, H, R–S; aedeagus with one ventral and one dorsal spine and a ventral sclerotised flap (in *O. lawlerorum* indistinct) as in Figs 32N–O, 33E–F, P; forewing with 8 apical cells..... *acanthopygophoris* group…3

\- Genital styles without a spinelike process directed dorsad; aedeagus in ventral view not as above; forewing with 8–10 apical cells ..... 5

3(2) Pygophore dorsolaterally with an outwardly curving, spinelike process on each side as in Fig. 32N; aedeagus ventrally with a large, sclerotised flap as in Fig. 32N–O; phallotheca with a long spine (b), protruding past the apex of phallotheca as in Fig. 32N–O..... *O. acanthopygophoris* Löcker, **sp. nov.**

\- Pygophore without long, spinelike processes; phallotheca ventrally with a medium sized or reduced, sclerotised flap as in Figs 33E, P; phallotheca with a short spine (b), not protruding past the apex of phallotheca ..... 4

4(3) Phallotheca with a long spine (a); spine (b) bifurcated (Fig. 33F)..... ..... *O. cuberlii* Löcker, **sp. nov.**

\- Phallotheca with a short spine (a); spine (b) not bifurcated (Fig. 33P)..... ..... *O. lawlerorum* Löcker, **sp. nov.**

5(2) Phallotheca with a spine (a) arising right lateral near apex, passing phallotheca ventrally and crossing over to dorsal side apically as in Figs 34A, H..... ..... *acuminatus* group…6

\- Phallotheca without a spine curved as above described..... 7

6(5) Forewing with tubercles concolorous with veins (Fig. 6E); vertex (total length) 2.9–3.9 times longer than wide (Fig. 6F); face light brown (Fig. 6H); anal tube in caudal view with a triangular process (Fig. 34G); aedeagal spine (b) in ventral view without a large globular base (Fig. 34A) ..... *O. acuminatus* Muir

\- Forewing with dark brown tubercles contrasting with light brown veins (Fig. 7A); vertex (total length) 1.7–2.1 times longer than wide (Fig. 7B); face dark brown to black with paler carinae (Fig. 7D); anal tube in caudal view without a triangular process (Fig. 34O); aedeagal spine (b) in ventral view with a large globular base (Fig. 34H) ..... *O. globosus* Löcker, **sp. nov.**

  

7(5) Forewing with tubercles concolorous with veins; phallotheca with long strongly (spirally) curved spines (Figs. 36D, M); body length 5.6 mm or more ..... 8

- Forewing with mid or dark brown tubercles contrasting with light brown veins; phallotheca without long strongly (spirally) curved spines; body length 5.3 mm or less .. .....*gracilis* group...9

8(7) Phallotheca with two very long, strongly (spirally) curved spines (a, b) and a short, almost straight spine (c) as in Figs 36D–E; flagellum slightly sclerotised, one large spine on apex..... *O. cochleatus* Löcker, **sp. nov.**

- Phallotheca with three long strongly (spirally) curved spines (a, b, c), without a short almost straight spine (Figs 36M–N); flagellum membranous, unarmed. ..... ..... *O. trispiralis* Löcker, **sp. nov.**

9(7) Phallotheca with three spines (Fig. 35B–C)..... *O. gracilis* Löcker, **sp. nov.**

- Phallotheca with two spines (Figs 35D–E, P)..... 10

10(9) Phallotheca with a very small, strongly curved, hookshaped spine (b) as in Figs 35D–E ..... *O. hamatus* Löcker, **sp. nov.**

- Phallotheca with a larger slightly curved spine (b) as in Fig. 35P ..... ..... *O. hirsutus* Löcker, **sp. nov.**

***acanthopygophoris* group**

These three species share the following character states and are therefore grouped together as the *acanthopygophoris* group: Forewing with 8 apical cells; genital styles with a large (rarely small) spinelike process directed dorsad (see Figs 32Q, 33D, H, R–S); aedeagus with one ventral and one dorsal spine and a ventral sclerotised flap; flagellum very small and indistinct.

*O. acanthopygophoris* Löcker, **sp. nov.**

*O. cuberlii* Löcker, **sp. nov.**

*O. lawlerorum* Löcker, **sp. nov.**

***Oliarus acanthopygophoris* Löcker, sp. nov.**
(Figs 5A–D, 32N–R, 33A–D)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: Kununurra, 7.xii.1983 (A. Postle) (ASCU HE 005978), *Paratypes*, AUSTRALIA, WA: 1 ♂, Argyle Diamond Mine, ca. 110 km SSW Kununurra, 6.xii.1983 (A. Postle) (WAMP), 1 ♂, same data, 9.v.1985 (A. Postle).

*Etymology*

The Greek term ‘akantha’ means ‘thorn’. Named after the spinelike processes on the pygophore.

  

*Colour*

Body dark brown, carinae and pronotum paler; legs light brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins light brown apically darker, tubercles slightly darker than veins, pterostigma light to mid brown; abdominal sternites light to mid brown.

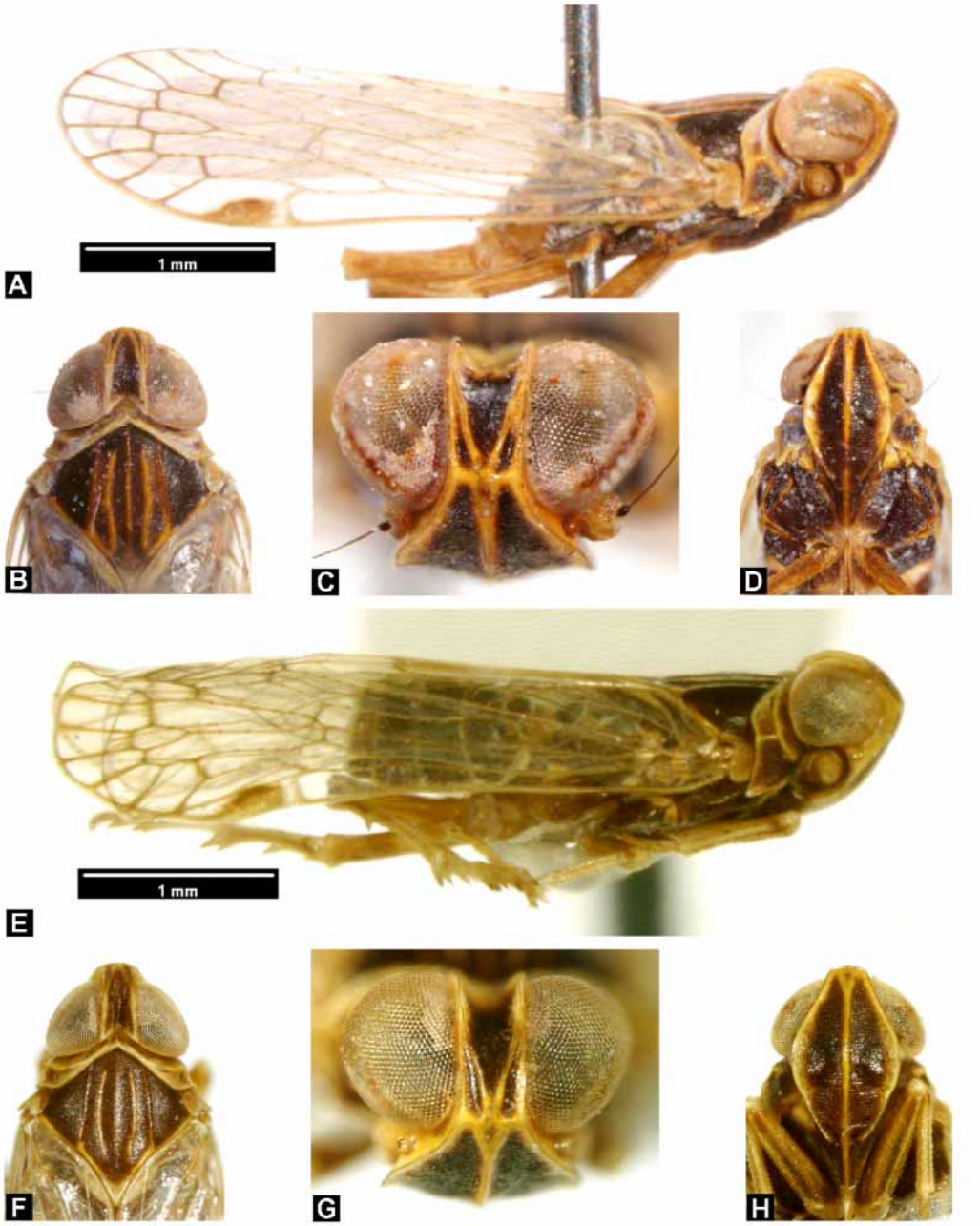


**FIGURE 5.** *Oliarus acanthopygophoris*: A habitus; B, C, D head. *Oliarus cuberlii*: E habitus; F, G, H head.

*Morphology*

Body length: ♂ 4.0–4.6 mm.

Head: Vertex (total length) 1.9–2.2 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.4–4.1 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 33A–C; pygophore dorsolaterally on each side with long, outwardly curving, spinelike process as in Fig. 32N, genital styles with large spinelike process directed dorsad as in Figs 32Q–R, 33D. Aedeagus (Figs 32N–P): Phallotheca with a long, strongly curved spine (a) arising ventrally; a long, strongly curved spine (b) arising dorsally; and a large sclerotised flap ventrally. Flagellum membranous, unarmed, very small.

*Remarks*

This species can be distinguished from all other Australian Pentastirini by the presence of a long dorsolateral, outwardly curving, spinelike process on each side of the pygophore (see Fig. 32N).

***Oliarus cuberlii* Löcker, sp. nov.**
(Figs 5E–H, 33E–L)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Arnhem Land, Maningrida, 5 m, *Eucalyptus*, 17.iii.1961 (J.L. & M. Gressitt) (BPBM 16615).

*Etymology*

Named in honour of the first author's friend Lucio Cuberli.

*Colour*

Body mid brown, carinae and pronotum paler; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown apically darker, tubercles concolorous with veins, pterostigma light to mid brown; abdominal sternites mid brown.

*Morphology*

Body length: ♂ 4.6 mm.

Head: Vertex (total length) 2.5 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.5 times longer than wide; costa with 3–5 tubercles; 8 apical cells.

  

Male genitalia: Anal tube as in Figs 33J–L; pygophore dorsolaterally on each side without long, outwardly curving, spinelike process; pygophore as in Fig. 33H, genital styles with large spinelike process directed dorsad as in Figs 33H–I. Aedeagus (Figs 33E –G): Phallotheca with a long, moderately curved spine (a) arising ventrally at apex; a short, strongly curved, bifurcated spine (b) dorsally; and a medium sized, sclerotised flap ventrally. Flagellum slightly sclerotised, unarmed, very small.

***Oliarus lawlerorum* Löcker, sp. nov.**
(Figs 6A–D, 33M–U)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Cooper Creek, 11 km S by W of Nimbuwah Rock, 12.17S 133.20E, 1.xi.1972 (T. Weir, T. Angeles) (MAGD 7413), Paratypes, AUSTRALIA, NT: 1 ♂, same data as holotype, (MAGD), 1 ♂, Limestone Gorge, 16.02S 130.23E, 23.–26.vi.1986 (M. Malipatil) (MAGD), 1 ♂, Bullita Outstation, 16.07S 130.26E, 21.vii.1969 (M. Mendum) (ANIC), 1 ♂, same data, 23.vii.1969 (ANIC), 1 ♂, C.P.R.S., in light trap in *Mimosa pigra*, 4.x.1985 (C. Wilson) (ASCU), **AUSTRALIA, Qld**: 1 ♂, 1 ♀, Heathlands, 11.45S 142.35E, malaise trap, 25.vii–18.viii.1992 (P. Zborowski, J. Cardale) (ANIC), 1 ♂, same data, 19.viii.–18.ix.1992 (P. Zborowski, L. Miller) (ANIC), 1 ♂, same data, vi.–25.vii.1992 (P. Zborowski, E.S. Nielsen), 2 ♂, Hann River, 15.11S 143.53E, 20.iii.–24.iv.1994 (P. Zborowski, G. Turner) (ANIC), 11 ♂, 4 ♀, 4 km NE Batavia Downs, 12.39S 142.42E, malaise trap, 24.x.–23.xi.1992 (P. Zborowski, A. Calder) (ANIC), **AUSTRALIA, WA**: Carson escarpment, 14.49S 126.49E, 9.–15.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC).

*Etymology*

Named in honour of the first author's friends Cecilia and Darryl Lawler and their family.

*Colour*

Body dark brown, carinae and pronotum paler; legs light to mid brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins light brown apically darker, tubercles slightly darker than veins, pterostigma light to mid brown; abdominal sternites mid to dark brown.

*Morphology*

Body length: ♂ 4.2–5.9 mm, ♀ 4.3–5.0 mm.

Head: Vertex (total length) 2.0–2.9 times longer than wide; basal emargination acutely angled, rectangular or obtusely angled. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

  

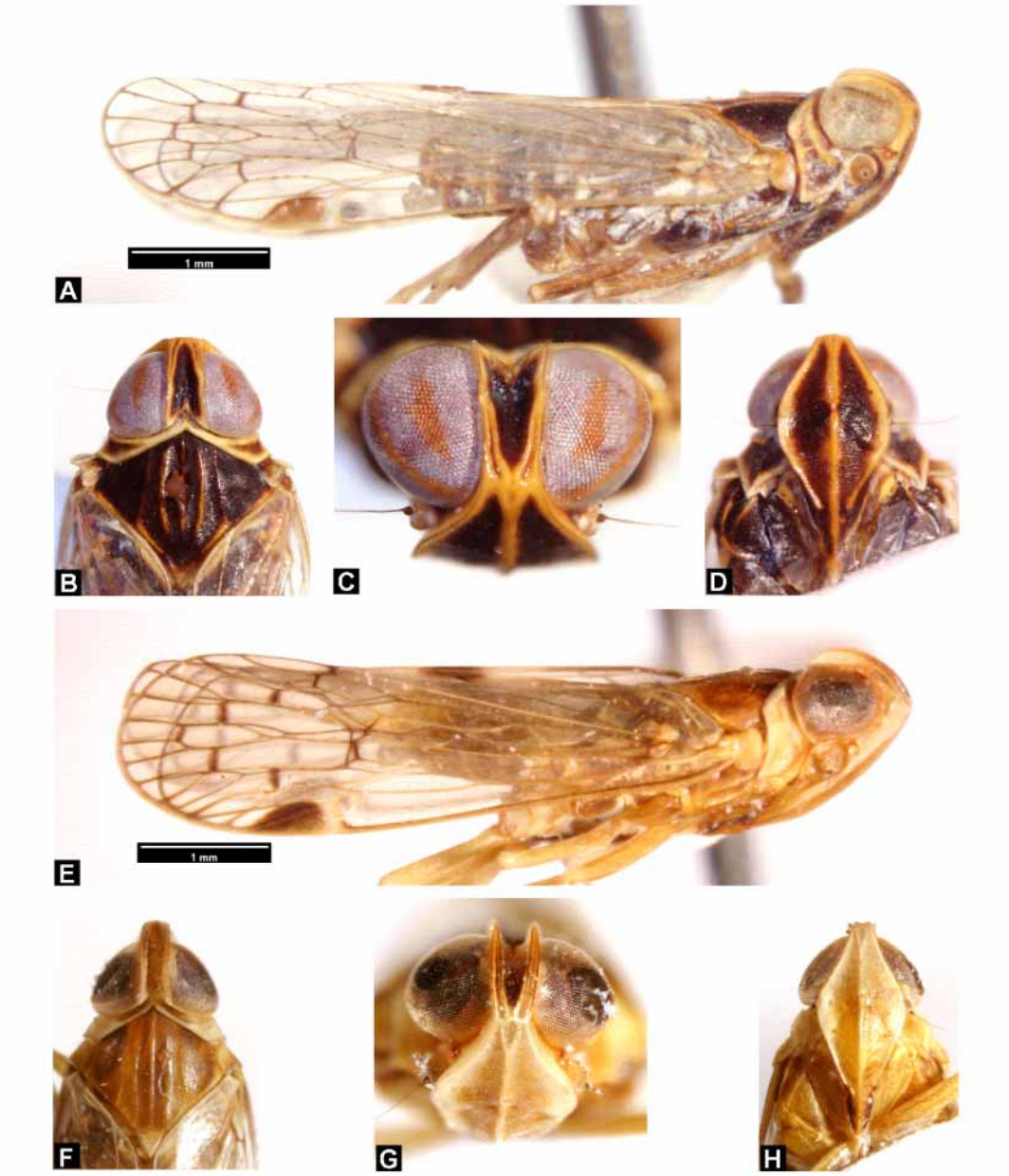


**FIGURE 6.** *Oliarus lawlerorum*: A habitus; B, C, D head. *Oliarus acuminatus*: E habitus; F, G, H head.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with well-developed median and lateral carinae and evanescent or well-developed sublateral carinae. Forewing 3.3–3.8 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 33M–O; pygophore dorsolaterally on each side without long, outwardly curving, spinelike process as in *O. acanthopygophoris*, pygophore as in Fig. 33T, genital styles with large (sometimes small) spinelike process

  

directed dorsad as in Figs 33R–U. Aedeagus (Figs 33P–Q): Phallotheca with a short, moderately curved spine (a) ventrolaterally; a short, moderately curved spine (b) dorsally; and a very reduced sclerotised flap ventrally. Flagellum membranous, unarmed, very small.

### *acuminatus* group

These two species share the following character states and are therefore grouped together as the *acuminatus* group: Fork of Pcu+A1 distinctly basad of centre of clavus; aedeagus configuration (i.e. with a long spine (a) arising right lateral near apex, passing the phallotheca ventrally, crossing over to the dorsal side apically).

*O. acuminatus* Muir

*O. globosus* Löcker, **sp. nov.**

### *Oliarus acuminatus* Muir

(Figs 6E–H, 34A–G)

*Oliarus acuminatus* Muir, 1924: 524 (Figs 17a–b).

*Type material*

*Holotype*, ♂ (examined), **INDONESIA**: Larat Island, x.1907 (F. Muir) (BPBM); *Paratypes*, INDONESIA: 1 ♂, 2 ♀ (examined), same data as holotype.

*Other material examined*

**AUSTRALIA:** NT (31 ♂, 9 ♀), Qld (7 ♂, 2 ♀).

*Colour*

Vertex light brown; face light brown, lateral margins paler, anteclypeus darker, frons lateral with a pale mark; pronotum light brown; mesonotum light to mid brown; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles concolorous with veins, pterostigma mid brown to dark brown; abdominal sternites light brown.

*Morphology*

Body length: ♂ 5.2–6.4 mm, ♀ 6.4–7.3 mm.

Head: Vertex (total length) 2.9–3.9 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or

  

well-developed carinae. Forewing 3.0–3.2 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube in caudal view with a triangular process as in Figs 34E–G; pygophore and genital styles as in Figs 34C–D. Aedeagus (Figs 34A–B): Phallotheca with a long spine (a) arising right lateral near apex, passing phallotheca ventrally, crossing over to dorsal side apically; a short spine (b); and two long spines (c, d) dorsal. Flagellum membranous, unarmed.

*Remarks*

In the original description Muir (1924) states that the type series consists of 3 males and 4 females. However, we can only confirm the presence of 2 males and 2 females in the collection of the BPBM.

Van Stalle (1991) makes the following comment in the remarks section of the species description of *O. busoensis*, "The reference "Type Nr 1092" in the original description is considered as a holotype designation."

***Oliarus globosus* Löcker, sp. nov.**
(Figs 7A–D, 34H–O)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Nourlangie Creek, 8 km E of Mt Cahill, 12.52S 132.47E, 17.xi.1972 (T. Weir, A. Allwood) (MAGD I002151, originally NTDPI), *Paratypes*, AUSTRALIA, NT: 1 ♂, same data as holotype (MAGD), 1 ♂, same data as holotype, 7.x.1975 (A. Allwood, T. Angeles) (MAGD), 1 ♂, 1 km S of Cahills Crossing, E ast Alligator R., 12.26S 132.58E, 3.xi.1972 (Upton, Barrett) (ANIC), 1 ♂, 1 ♀, Tindal, at light, 1.–20.xii.1967 (W. Vestjens) (ANIC), 2 ♂, 9 km N by E of Mudginberry HS, 12.31S 132.54E, 30.x.1972 (Upton, Barrett) (ANIC).

*Etymology*

The Latin term 'globosus' means 'round as a ball'. Named after the large globular base of a spine on the phallotheca.

*Colour*

Body dark brown to black, carinae and pronotum paler; legs light brown; forewing hyaline white with brown marks along crossveins, veins light brown, apically darker, tubercles dark brown (contrasting with veins), pterostigma mid brown; abdominal sternites light to dark brown.

*Morphology*

Body length: ♂ 4.5–4.8 mm, ♀ 4.7–4.8 mm.

  

Head: Vertex (total length) 1.7–2.1 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.2–3.5 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 34M–O; pygophore and genital styles as in Figs 34K–L. Aedeagus (Figs 34H–J): Phallotheca with a long spine (a) curved as in *O. acuminatus*; a moderately curved spine (b) with very large globular base; and two dorsal spines (c, d) as in *O. acuminatus*. Flagellum membranous, unarmed.

### *gracilis* group

These three species share the following character states and are therefore grouped together as the *gracilis* group: Dark tubercles contrasting with brighter coloured veins; fork of Pcu+A1 distinctly basad of centre of clavus; aedeagus configuration, i.e., phallotheca with a long, slightly curved spine arising left lateral at apex, a smaller curved spine arising ventrally about midlength, and in one species a long slender spine arising dorsolaterally at apex; flagellum unarmed.

*O. gracilis* Löcker, **sp. nov.**

*O. hamatus* Löcker, **sp. nov.**

*O. hirsutus* Löcker, **sp. nov.**

### *Oliarus gracilis* Löcker sp. nov.

(Figs 7E–H, 34P–S, 35A–C)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld:** Horn Island, 10.37S 142.17E, at light, 2.–5.xii.1986 (K. Houston, K. Sadler) (QM QMT123830, originally QDPC), *Paratypes*, AUSTRALIA, Qld: 2 ♂, 2 ♀, West Claudie River, 4 km SW road junction, 12º44'S 143º15'E, mv lamp, 1.xii.1986 (G. Daniels, M.A. Schneider) (UQIC).

*Etymology*

The Latin term 'gracilis' means 'slender'. Named after a long, slender spine on the phallotheca.

*Colour*

Body mid to dark brown, carinae paler; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown apically darker, tubercles dark brown (contrasting with veins), pterostigma light to mid brown; abdominal sternites light to mid brown.

  

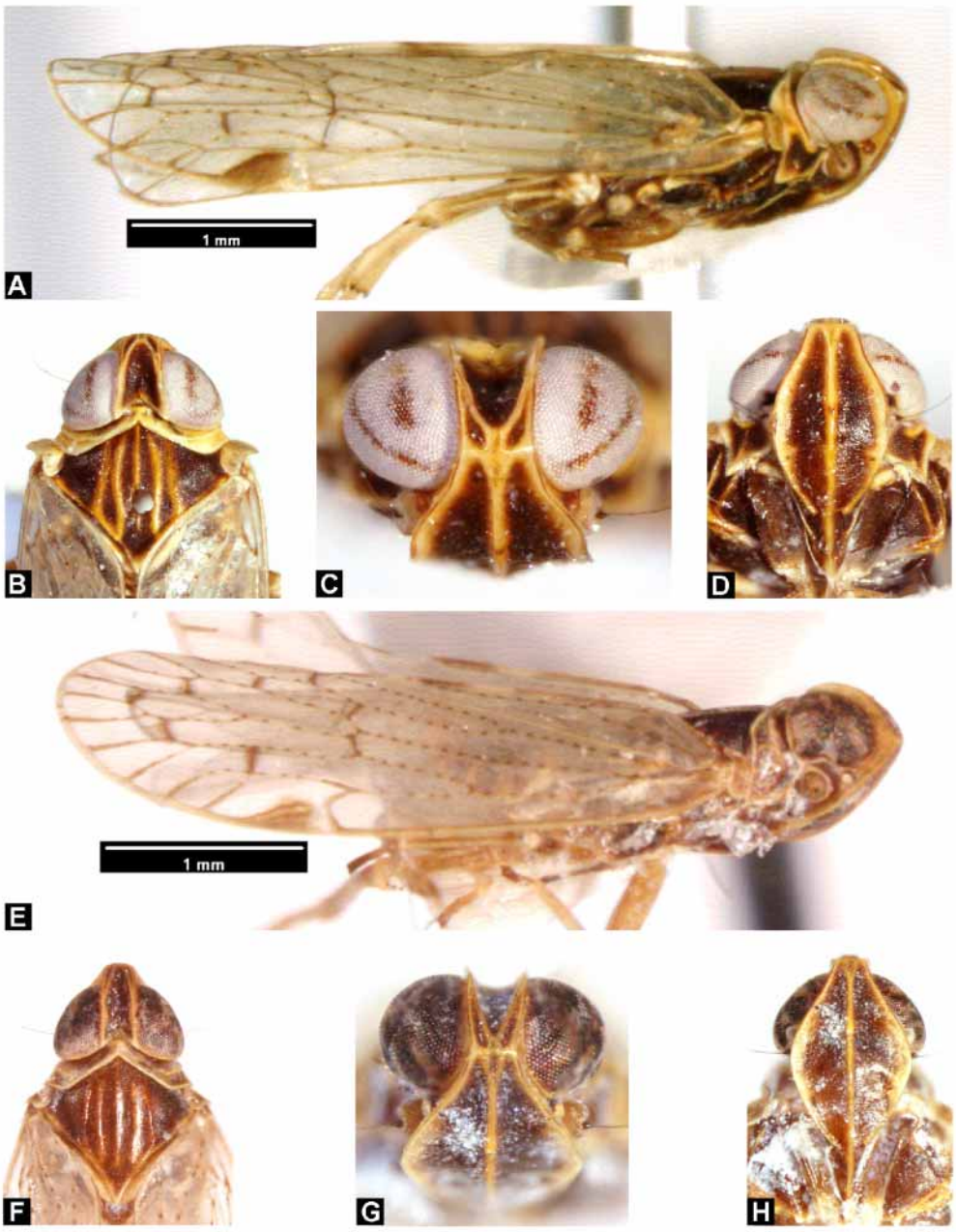


**FIGURE 7.** *Oliarus globosus*: A habitus; B, C, D head. *Oliarus gracilis*: E habitus; F, G, H head.

*Morphology*

Body length: ♂ 3.7–4.4 mm.

Head: Vertex (total length) 2.3–2.5 times longer than wide; basal emargination acutely angled, rectangular or obtusely angled. Postclypeus with well-developed median carina. Rostrum surpassing, reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed

  

carinae. Forewing 3.0–3.3 times longer than wide; costa with 0–1 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 34P–R; pygophore and genital styles as in Figs 34S, 35A. Aedeagus (Figs 35B–C): Phallotheca with a long, slightly curved spine (a) arising left lateral at apex; a slightly curved spine (b) arising ventrally about midlength; and a long slender spine (c) arising dorsolaterally at apex. Flagellum membranous, unarmed.

***Oliarus hamatus* Löcker, sp. nov.**
(Figs 8A–D, 35D–J)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld:** Ingham, light trap, 15.iii.1961 (K.L. Harley) (ANIC), *Paratypes*, AUSTRALIA, Qld: 9 ♂, same data as holotype (ANIC), 1 ♂, same data as holotype, 29.iii.1961 (ANIC), 1 ♂, same data as holotype, 7.iv.1961 (ANIC), 2 ♂, same data as holotype, 17.ii.1961 (R. Straatman) (ANIC), 6 ♂, St. Pauls, Moa Island, 10.11S 142.26E, at light, 10.–18.ii.1986 (K. Houston, E. Hamacek) (QDPC), 3 ♂, Horn Island, 10.37S 142.17E, at light, 2.–5.xii.1986 (K. Houston, K. Sadler) (QDPC), Statton R. nr Inkerman HS, at light, 29.vii.1982 (J.F. Donaldson, J.W. Turner) (QDPC), 1 ♂, Bathurst Head, i.1927 (Hale, Tindale) (SAM), 1 ♂, Coen Aerodrome, 6.vi.1960 (C.N. Smithers) (AMS), 4 ♂, Norman R., Karumba, malaise trap, mangrove-salt marsh boundary, 3.–17.xi.1979 (W.A. Houston) (QDPC), 2 ♂, 2 ♀, Julatten, nr Mt Molloy, 16.i.1962 (E.B. Britton) (BMNH), 1 ♂, Mt Molloy, 16.i.1962 (E.B. Britton) (BMNH), 4 ♂, 2 ♀, Rimbija Island, Wessel Islands, 11.01S 136.45E, 20.i.1977 (E.D. Edwards) (ANIC), 1 ♂, 3 ♀, Burbank, grasslands, 9.xi.1989 (C.W. & L.B. O'Brien) (LBOB), 1 ♂, same data, 15.i.1977 (ANIC), 1 ♂, Townsville, James Cook Uni ABCL SH, on *Melaleuca quinquenervia*, 18.vii.1991 (J.R. Makinson) (ASCU), 1 ♂, 'Eclectus', Iron Range, 12º45'46"S 143º17'10"E, 20 m, malaise trap, 14.ix.2000 (G. & A. Daniels) (UQIC), 1 ♀, 'Eclectus', Iron Range, 12º45'46"S 143º17'10"E, 20 m, 11.vii.1997 (G. & A. Daniels) (UQIC), 1 ♂, 1 ♀, W. Normanby R., 40 miles W of Cooktown, 2.i.1964 (G. Monteith) (UQIC), 1 ♂, O'Connel River, 12 miles S Proserpine, 18.xii.1961 (McAlpine, Lossin) (AMS), 1 ♂, Hammond Island, Torres Strait, sweep of long grass beside road, 5.vii.1974 (Heatwole) (AMS), 1 ♂, Hammond Island, Torres Strait, 4.–8.vii.1974 (Heatwole) (AMS), 1 ♂, Saibai Island, Pand. savannah sweep, 13.vii.1975 (AMS), 1 ♂, Murray (Mer) Island, Torres Strait, pitfall trap in forest litter, 22.vii.1974 (Heatwole), **AUSTRALIA, NT**: 3 ♂, Leila Lagoon, McArthur R., 4 km N of McArthur R. Stn, at light, 25.ix.1977 (J.A. Forrest) (SAM), 1 ♂, 1 ♀, Adelaide R. Flood Plain, at night, 5.xi.1989 (C.W. & L.B. O'Brien) (LBOB), 1 ♂, Cooper Creek, 11 km S by W of Nimbuwah Rock, 12.17S 133.20E, 1.xi.1972 (T. Weir, T. Angeles) (MAGD).

  

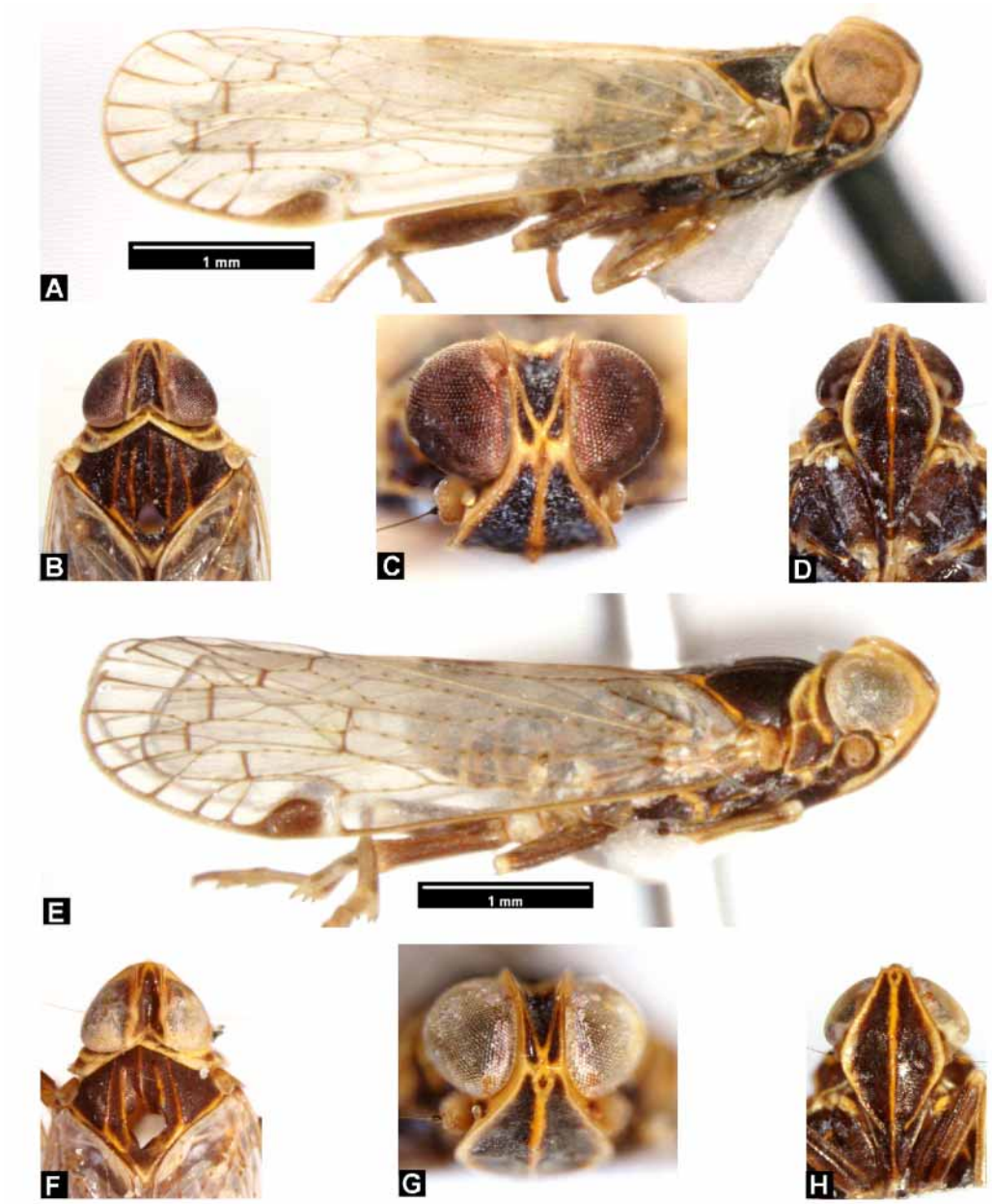


**FIGURE 8.** *Oliarus hamatus*: A habitus; B, C, D head. *Oliarus hirsutus*: E habitus; F, G, H head.

*Etymology*

The Latin term 'hamus' means 'hook'. Named after a hook-like spine on the phallotheca.

*Colour*

Body mid to dark brown, carinae paler; legs light to mid brown; forewing hyaline

  

colourless with brown marks along crossveins, veins light brown apically darker, tubercles mid brown (usually contrasting with veins), pterostigma light to mid brown; abdominal sternites light to mid brown.

*Morphology*

Body length: ♂ 3.7–4.6 mm, ♀ 4.7–5.4 mm.

Head: Vertex (total length) 1.7–2.5 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.2–3.5 times longer than wide; costa with 0–3 tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 35H–J; pygophore and genital styles as in Figs 35F–G Aedeagus (Figs 35D–E): Phallotheca with a long, slightly curved spine (a) arising left laterally at apex (sometimes with strong base); and a small hook-like spine (b) ventrally about midlength. Flagellum sclerotised, unarmed.

***Oliarus hirsutus* Löcker, sp. nov.**
(Figs 8E–H, 35K–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld:** Ingham, light trap, 15.iii.1961 (K.D. Harley) (ANIC), *Paratypes*, AUSTRALIA, Qld: 2 ♂, same data as holotype (ANIC), 1 ♂, same data, 14.iii.1961 (R. Straatman) (ANIC), 1 ♂, bank 6 mile Ck, 18 km N Proserpine, in grass, D-Vac, 8.xi.1975 (I.D. Galloway) (QDPC), 1 ♂, Nolan Ck Crossing, SW Wrotham Park, 23.iv.1983 (J.F. Donaldson, J.F. Grimshaw) (QDPC), 1 ♂, 2 ♀, Brisbane, 5.xi.1941 (H. Hacker) (BMNH), 1 ♂, Mackay, 26.viii.1954 (R. Jones) (UQIC), 1 ♂, 5 km E Elimbah, 22.ii.1978 (J.F. Donaldson) (QDPC), 1 ♂, Walker Ck, N of Normanton, at light, 30.vii.1982 (J.F. Donaldson, J.W. Turner) (QDPC), 1 ♂, 1 km E Kimba, 15.37S 143.30E, 28.x.1993 (P. Zborowski, D. Rentz) (ANIC), 1 ♂, Archer River, 9.i.1988 (M.S. & B.J. Moulds) (ASCU), 2 ♂, Boyne Island, via Gladstone, 23º55'S 151º20'E, 1995 (C.Q. University) (QM), 1 ♂, Thornlands, at light, 28.ii.1973 (J.F. Donaldson) (QDPC), **AUSTRALIA, NT**: 1 ♂, Goose Lagoon, 11 km SW by S of Borroloola, 16.10S 136.15E, 31.x.1975 (M.S. Upton), 1 ♂, Nourlangie, 11 km S by W of Nimbuwah Rock, 12.17S 133.20E, 1.xi.1972 (Upton, Barrett) (ANIC), 1 ♂, Lake Woods, 15 km SW Eliot, at light, 5.x.1977 (G.F. Gross, J.A. Forrest) (SAM), 1 ♂, Darwin (SAM), 1 ♂, Jabiru Park Lake, at night, 4.ix.1989 (C.W. & L.B. O'Brien) (LBOB), 1 ♂, Stuart Hwy, Coomalie Ck, 50m, 24.x.1962 (CAS), 1 ♂, 15 km E of Mt Cahill, 12.52 132.50E, 9.iii.1973 (M.S. Upton) (ANIC), **AUSTRALIA, WA**: 1 ♂, Old Doongan, 2.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC), 2 ♂, Drysdale River, 15.02S 126.55E, 3.–8.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC), 1 ♂, Carson escarpment, 14.49S 126.49E, 9.–15.viii.1975 (I.F.B.

  

Common, M.S. Upton) (ANIC), 1 ♂, Morgan Falls, 15.02S 126.40E, 16.–17.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC).

*Etymology*

The Latin term 'hirsutus' means 'hairy, rough, shaggy'. Named after the shaggy surface of the flagellum.

*Colour*

Body mid, dark brown or black, carinae paler; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins, some specimens with 3 brown transverse bands across the wing, veins light brown apically darker, tubercles dark brown (contrasting with veins), pterostigma mid to dark brown; abdominal sternites light to mid brown.

*Morphology*

Body length: ♂ 4.7–5.3 mm.

Head: Vertex (total length) 1.8–2.6 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.1–3.5 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 35K–M; pygophore and genital styles as in Figs 35N–O. Aedeagus (Fig. 35P): Phallotheca with a long, slightly curved spine (a) arising left lateral at apex; and a slightly curved spine (b) arising ventrally about midlength. Flagellum hirsute, unarmed.

## Other species within *Oliarus sensu* Emeljanov

The following species are not affiliated with recognisable groups of species within the genus.

### *Oliarus busoensis* Van Stalle

(Figs 9A–D, 35Q–T, 36A–C)

*Oliarus busoensis* Van Stalle, 1989: 176 (Figs 20–26).

*Type material*

*Holotype*, ♂, **PAPUA NEW GUINEA**: Morobe Prov., Buso, ix–xi.1979 (J. Martin)

  

(BMNH); *Paratypes*, PAPUA NEW GUINEA: 1 ♂, Upper Fly River, Aimbak–Omo Area, 19.x.1972 (BMNH); NEW GUINEA: 1 ♂, Oranjegebergte, 1927 (A. Kalthofen) (ZMAN).

*Other material examined*

**AUSTRALIA:** Qld (1 ♂).

*Colour*

Head and pronotum light brown; mesonotum mid brown, paler between lateral and sublateral carinae; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites mid brown.

*Morphology*

Body length: ♂ 9.1 mm.

Head: Vertex (total length) 1.9 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent carinae. Forewing 3.0 times longer than wide; costa without tubercles; 10 apical cells.

Male genitalia: Anal tube as in Figs 36A–C; pygophore and genital styles as in Figs 35S–T. Aedeagus (Figs 35Q–R): Phallotheca with a very long, strongly curved spine (a); and two short, almost straight, upwards (caudad) pointing spines (b, c). Flagellum partly sclerotised, unarmed.

***Oliarus cochleatus* Löcker, sp. nov.**

(Figs 9E–H, 36D–J)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: Gordon Creek, Claudie River district, 12º42'S 143º17'E, mv lamp, 6.xii.1986 (G. Daniels, M.A. Schneider) (QM QMT123831, originally UQIC).

*Etymology*

Named after a spine on the phallotheca, which is curved like the spiral shell of a snail.

*Colour*

Vertex mid brown; face light brown, anteclypeus darker; pronotum light brown; mesonotum dark brown, carinae paler; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light to mid brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites mid to dark brown.

  

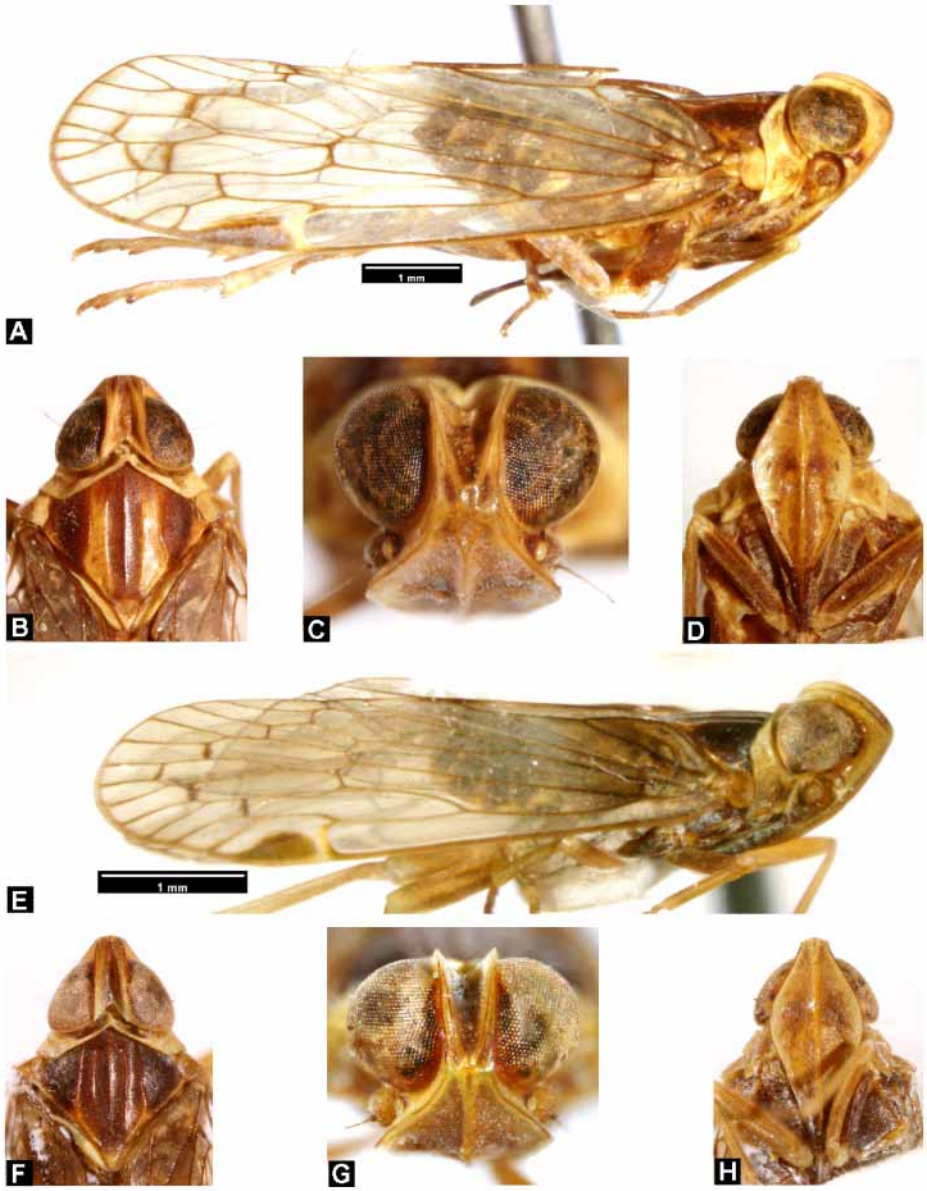


**FIGURE 9.** *Oliarus busoensis*: A habitus; B, C, D head. *Oliarus cochleatus*: E habitus; F, G, H head.

*Morphology*

Body length: ♂ 5.6 mm.

Head: Vertex (total length) 2.7 times longer than wide; basal emargination acutely angled. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.1 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 36H–J; pygophore and genital styles as in Figs

36F–G. Aedeagus (Figs 36D–E): Phallotheca with two very long, strongly (spirally) curved spines (a, b); and a short, almost straight spine (c). Flagellum slightly sclerotised, one large spine on apex.

***Oliarus trispiralis*** **Löcker, sp. nov.**
(Figs 10A–D, 36K–Q)

*Type material*

*Holotype*, ♂, **CHRISTMAS ISLAND**: Jedda, x.1983 (L. Hill) (ANIC).

*Etymology*

Named after the three strongly (spirally) curved spines on the phallotheca.

*Colour*

Vertex mid to dark brown; face mid brown, carinae and portions of clypeus paler; pronotum light brown; mesonotum mid brown, paler between lateral and sublateral carinae; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light to mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites light to mid brown.

*Morphology*

Body length: ♂ 6.6 mm.

Head: Vertex (total length) 3.2 times longer than wide; basal emargination acutely angled. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.0 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 36O–Q; pygophore and genital styles as in Figs 36K–L. Aedeagus (Figs 36M–N): Phallotheca with three long strongly (spirally) curved spines (a, b, c). Flagellum membranous, unarmed.

***Oliarus alexanor*** **Kirkaldy nom. dub.**
(Figs 10E–H)

*Oliarus alexanor* Kirkaldy, 1906: 399.

*Type material*

*Syntype*, ♂ or ♀ (abdomen missing) (examined), **AUSTRALIA, Qld**: Cairns, viii.1904 (BPBM).

  

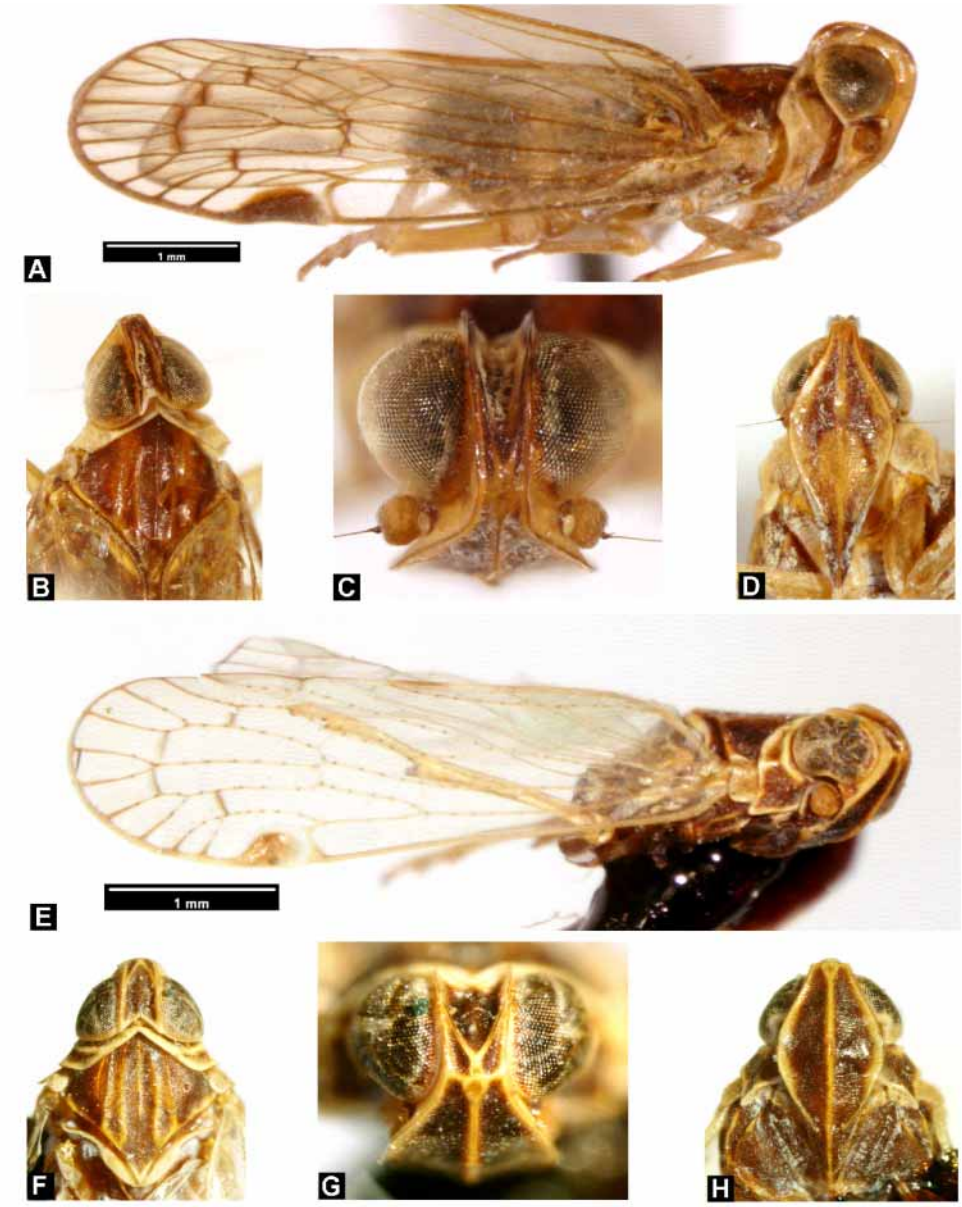


**FIGURE 10.** *Oliarus trispiralis*: A habitus; B, C, D head. *Oliarus alexanor*: E habitus; F, G, H head.

*Colour*

Body mid brown to dark brown, carinae paler; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, tubercles and pterostigma mid brown.

*Morphology*

Body length: 5.0 mm (gender unknown since abdomen of specimen is missing).

Head: Vertex (total length) 1.8 times longer than wide; basal emargination obtusely angled to rectangular. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent median carina and well-developed sublateral and lateral carinae. Forewing 3.3 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Unknown (only known specimen is lacking its abdomen).

*Remarks*

The narrow vertex and the chaetotaxy of the hind leg (2 lateral spines on the tibia, 7 apical teeth on the 1st tarsomere, and 5 apical teeth on the 2nd tarsomere) verify the placement within the genus *Oliarus*. Because of the absence of male specimens this species cannot be reliably identified. For this reason *O. alexanor* is regarded as a *nomen dubium*.

***Oliarus doddi* Muir nom. dub.**
(Figs 11A–D)

*Oliarus doddi* Muir, 1931: 64.

*Type material*

*Holotype* by monotypy, ♀ (examined), **AUSTRALIA, Qld**: Townsville, 24.x.1903 (BPBM).

*Colour*

Vertex dark brown, carinae and lateral portions light brown; frons light brown; clypeus dark brown, carinae light brown; pronotum pale yellow; mesonotum light brown, with dark brown marks; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins and three brown transverse bands across wing, veins and tubercles concolorous with cells, pterostigma light to dark brown; abdominal sternites mid brown.

*Morphology*

Body length: ♀ 6.6 mm.

Head: Vertex (total length) 1.6 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.1 times longer than wide; costa with 0–1 tubercle; 8 apical cells.

Male genitalia: Unknown (only known specimen is a female).

*Remarks*

The narrow vertex and the chaetotaxy of the hind leg (2 lateral spines on the tibia, 7 apical teeth on the 1st tarsomere, and 5 apical teeth on the 2nd tarsomere) verify the

  

placement within the genus *Oliarus*. Because of the absence of male specimens this species cannot be reliably identified. For this reason *O. doddi* is regarded as a *nomen dubium*.

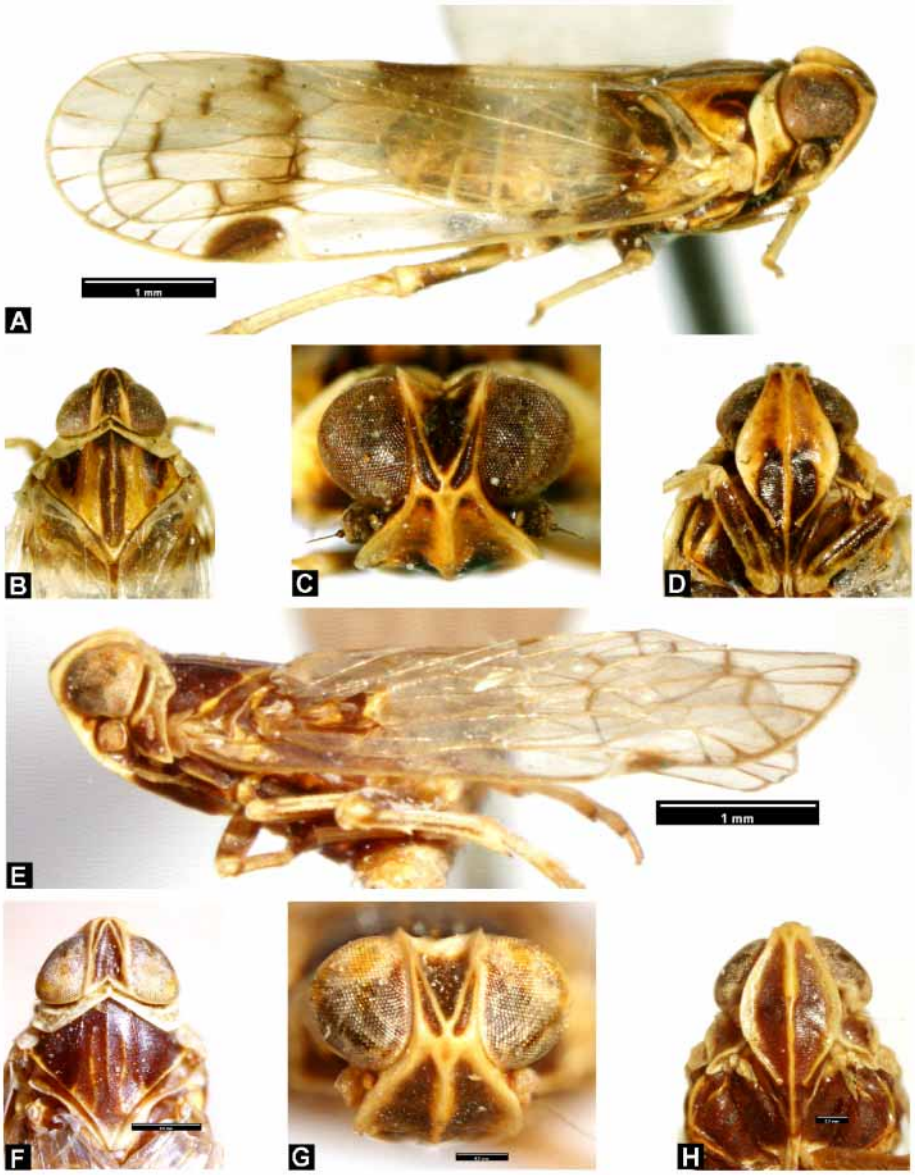


**FIGURE 11.** *Oliarus doddi*: A habitus; B, C, D head. *Oliarus kampaspe*: E habitus; F, G, H head.

***Oliarus kampaspe* Kirkaldy nom. dub.**
(Figs 11E–H)

*Oliarus kampaspe* Kirkaldy, 1906: 398.

  

*Type material*

*Syntype*, ♂ (examined), **AUSTRALIA, Qld**: Kuranda, viii.1904 (BPBM).

*Remarks*

The abdomen of the syntype is missing, but the data label bears a male symbol. We have therefore presumed that specimen is a male.

*Colour*

Body mid brown, carinae paler except for some carinae on mesonotum; legs light brown to mid brown; forewing hyaline white, with brown marks along crossveins, veins light brown, apically darker, tubercles indistinct, concolorous with veins, pterostigma light to mid brown.

*Morphology*

Body length: ♂ 5.5 mm.

Head: Vertex (total length) 1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with evanescent to well-developed carinae. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent carinae. Forewing 3.1 times longer than wide; costa with 2 tubercles; 9 apical cells.

Male genitalia: Unknown (only known specimen is lacking its abdomen).

*Remarks*

The narrow vertex and the chaetotaxy of the hind leg (2 lateral spines on the tibia and 5 apical teeth on the 2nd tarsomere) verify the placement within the genus *Oliarus sensu* E meljanov. The presence of 8 apical teeth on the 1st tarsomere, however, is unusual within the genus; this feature is only shared with *O. phelia*. See comments in remarks section of *O. phelia*.

Jacobi (1928) presents a redescription of *O. kampaspe* Kirkaldy based on specimens from the Kimberley district. One male and two females of this material (located in the NHRS and MTD) were available to us for examination. They showed 4 lateral spines on the hind tibia and 7 apical teeth on the 1st and 2nd tarsomere, which indicates that these specimens belong to *Ozoliarus* Löcker and not to *Oliarus sensu stricto* which is characterised by the presence of 2 lateral spines on the hind tibia and five apical teeth of the 2nd hind tarsomere. Jacobi's species therefore cannot be *O. kampaspe* and is recognised here as a new species, *Ozoliarus poculum*.

***Oliarus lilinoe* Kirkaldy nom. dub.**
(Figs 12A–D)

*Oliarus lilinoe* Kirkaldy, 1907: 108.

  

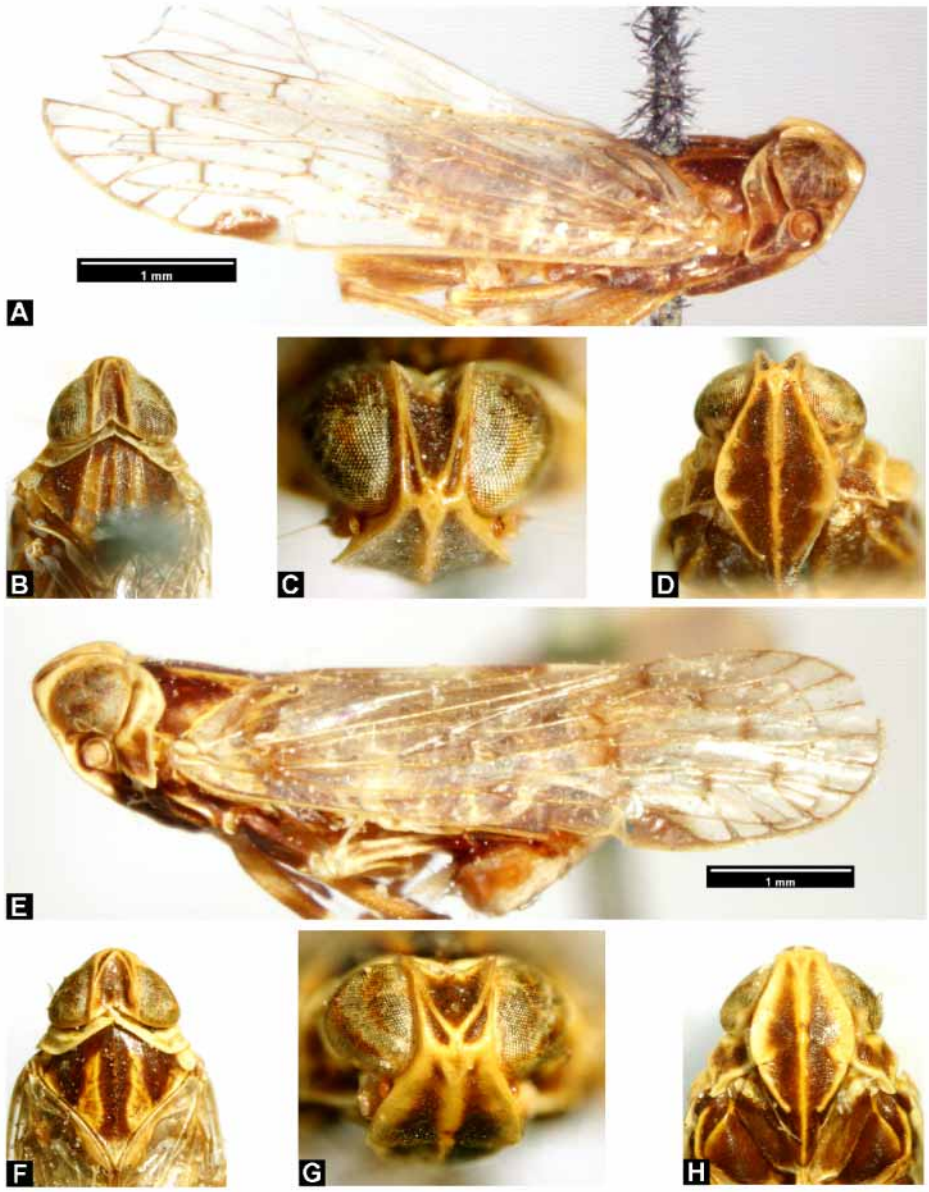


**FIGURE 12.** *Oliarus lilinoe*: A habitus; B, C, D head. *Oliarus phelia*: E habitus; F, G, H head.

*Type material*

*Syntype*, ♀ (examined), **AUSTRALIA, Qld**: Cairns, vii.1904 (Perkins) (BPBM).

*Colour*

Body mid brown, carinae and area between lateral and sublateral carinae on mesonotum paler, frons lateral with a pale mark; legs light brown; forewing hyaline colourless, with brown marks along crossveins, veins light brown, apically darker, tubercles mid brown (contrasting with veins), pterostigma mid brown; abdominal sternites

  

mid brown.

*Morphology*

Body length: ♀ 5.5 mm.

Head: Vertex (total length) 2.0 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.4 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Unknown (only known specimen is a female).

*Remarks*

The narrow vertex and the chaetotaxy of the hind leg (2 lateral spines on the tibia, 7 apical teeth on the 1st tarsomere, and 5 apical teeth on the 2nd tarsomere) verify the placement within the genus *Oliarus*.

***Oliarus phelia* (Kirkaldy), nom. dub.**
(Figs 12F–H)

*Oliarus phelia* Kirkaldy, 1906: 400.

*Type material*

*Syntypes*, **AUSTRALIA, Qld**: 2 ♀ (examined), Kuranda, viii.1904 (BPBM); 1 ♀ (examined), Nelson, vii.1904 (BPBM).

*Colour*

Head light brown or mid brown with light brown carinae; pronotum light brown; mesonotum mid brown, paler between lateral and sublateral carinae; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles indistinct, concolorous with veins, pterostigma mid brown; abdominal sternites mid brown..

*Morphology*

Body length: ♀ 6.2–6.3 mm.

Head: Vertex (total length) 1.5–1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.1 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Unknown (only known specimens are females).

  

*Remarks*

The narrow vertex and the presence of 2 lateral spines on the hind tibia verify the placement within the genus *Oliarus sensu* Emeljanov. The apical chaetotaxy on the hind leg (7 on tibia, 8–9 on 1st tarsomere and 5–6 on 2nd tarsomere), however, is uncommon within this genus.

Examination of the type series (3 females) of *O. phelia* showed that two females key to *O. phelia* in the identification keys provided by Kirkaldy (1906, 1907), whereas one female keys to *O. kampaspe*, based on the character "axillary vein of clavus running into anal vein basal of the middle of the latter." The original descriptions do not give any characters that allow those species to be distinguished. All the characters coded for our study show identical character states for both species. Moreover, 7 large apical teeth were recorded on the specimens of *O. phelia* and on one leg of the only specimen of *O. kampaspe* (all other Australian Pentastirini have 5–6 large apical teeth on the hind tibia). A chaetotaxy of 8 (rarely 9) apical teeth on the 1st tarsomere is also unusual within the genus *Oliarus*. The syntype of *O. kampaspe* was collected at the same collecting event as two specimens of *O. phelia*. All this suggests that these specimens belong to one species. However, in the absence of male genitalia to confirm these assumptions, both species are regarded as *nomina dubia*.

***Oliarus talunia* Kirkaldy nom. dub.**
(Figs 13A–D)

*Oliarus talunia* Kirkaldy, 1906: 398.

*Type material*

*Syntype*, ♀ (examined), **AUSTRALIA, Qld**: Cairns, viii.1904 (BPBM).

*Colour*

Body including legs pale yellow except for light brown mesonotum; forewing hyaline white with brown marks along crossveins and apices of apical veins; veins white, tubercles mid to dark brown (contrasting with veins).

*Morphology*

Body length: ♀ 5.3 mm.

Head: Vertex (total length) 1.9 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.4 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Unknown (only known specimen is a female).

  

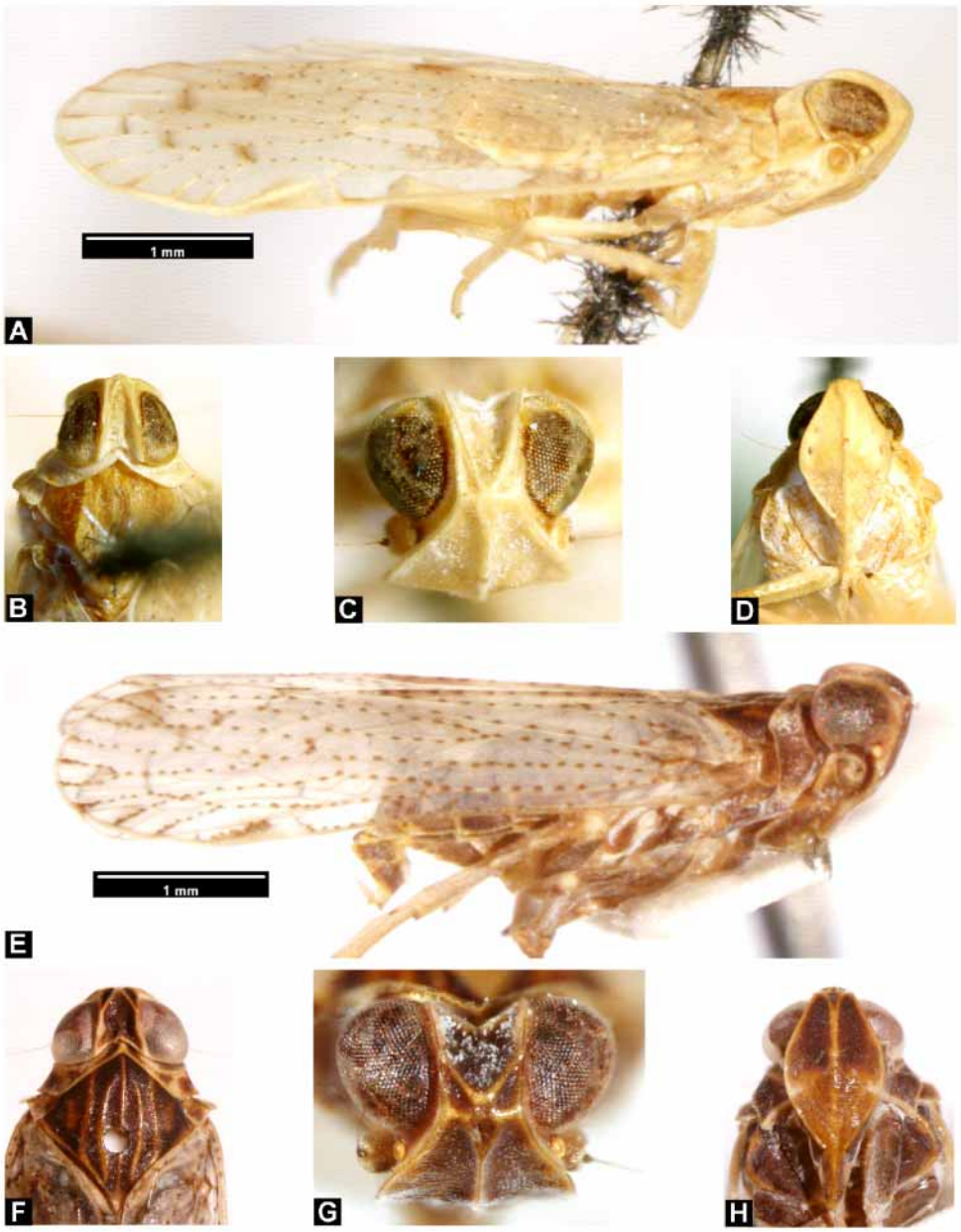


**FIGURE 13.** *Oliarus talunia*: A habitus; B, C, D head. *Ozoliarus bullocki*: E habitus; F, G, H head.

*Remarks*

The narrow vertex and the chaetotaxy of the hind leg (2 lateral spines on the tibia, 7 apical teeth on the 1st tarsomere, and 5 apical teeth on the 2nd tarsomere) verify the placement within the genus *Oliarus sensu* Emeljanov. The pale yellow colour except for a light brown mesonotum, mid brown tubercles, and brown marks along crossveins and apices of apical veins, together discriminate this specimen from all other Australian

  

Pentastirini. Whether this represents the typical coloration of this species or is an artefact cannot be determined because only one specimen is currently available. For this reason and because of the absence of male genitalia, *O. talunia* is regarded as a *nomen dubium*.

**Genus *Ozoliarus* Löcker, gen. nov.**

Type species *Oliarus laertes* Kirkaldy, 1906.

*Etymology*

The genus is named after Australia, which is commonly called 'Oz'. Gender: masculine.

*Morphology*

Body length: ♂ 4.1–7.7 mm, ♀ 5.0–9.3 mm.

Head: Vertex (total length) 1.2–2.3 times longer than wide; lateral carinae slightly to strongly elevated; subapical carina forking from lateral margin at 1/3–2/3 of total length of vertex; median carina 1/4–3/4 as long as median length of vertex. Position of maximum width of frons more or less around or distinctly distad centre of frontoclypeal suture; lateral carinae of frons convex (evenly rounded or rectilinear apically) or s-shaped. Anteclypeus with well-developed, evanescent or without median carina.

Thorax: Forewing with fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein basad of fork MA+MP; RP apically bifid; MA apically trifid (rarely bifid); MP apically monofid, bifid or trifid; fork of Pcu+A1 distinctly basad or more or less around centre of clavus. Hind leg: tibia with 3–4 lateral spines; 6 large apical teeth; 1st tarsomere with 7 (rarely 8) apical teeth and no platellae; 2nd tarsomere with 7 (rarely 6) apical teeth and no platellae.

Male genitalia: Genital styles without long, sclerotised, spinelike, dorsal process.

*Distribution*

Australia (Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia, Victoria, Western Australia), Fiji, Rennell Island.

*Remarks*

Fennah recorded *Ozoliarus laertes* from Fiji (Fennah 1950) and from Rennell Island (Fennah 1970). This material has not been examined to confirm this distribution.

Females (unless associated with males, see comments in Material & Methods section) could only be identified to genus level.

The chaetotaxy of the hind legs varies slightly within species from the typical arrangement of 7 apical teeth on the 1st and 2nd tarsomere seen in this genus. In some

  

specimens of *Oz. quadratistylus* 8 apical teeth were recorded on the 1st tarsomere and some specimens of *Oz. poculum*, *Oz. antennoides*, and *Oz. maru* showed only 6 apical teeth on the 2nd tarsomere. A well-developed median carina of the anteclypeus was recorded in all species, except for *Oz. dedariensis* (evanescent) and *Oz. cynosurus* (absent or evanescent median carina).

**Key to species of *Ozoliarus* Löcker, gen. nov. (based mostly on males)**

*Ozoliarus asaica* (Kirkaldy) *nomen dubium* is excluded from the key to species of *Ozoliarus*, since male genitalia of this species were not available for examination.

1 Phallotheca with two simple (not bi-or trifurcated) spines, a spine (a) arising right laterally below midlength and a large, flattened spine (b) arising ventrally near apex of phallotheca (Figs 38M, 39H); forewing with fork of Pcu+A1 more or less central within clavus ..... *cuspidistylus* group...2

- Phallotheca with only one spine or three or more spines, if two spines, then at least one of them bi- or trifurcated 3

2(1) Flagellum with long, very slender, sclerotised spine (A) as in Fig. 38M arising left lateral near base of flagellum; spine (a) of phallotheca thick, pointing outwards (Fig. 38M); genital styles asymmetrical, left genital style apically more or less rounded, right genital style with a pointed tip as in Fig. 38O; forewing with 10 to 20 tubercles along costa; tubercles dark brown, contrasting with lighter veins ..... *Oz. cuspidistylus* Löcker, **sp. nov.**

- Flagellum without spine near base; spine (a) of phallotheca thinner, almost parallel (Fig. 39H); genital styles symmetrical, apically rounded, without a pointed tip (Fig. 39F); forewing with or without 1 tubercle along costa; tubercles concolorous with veins..... *Oz. rotundistylus* Löcker, **sp. nov.**

3(1) Apex of anal tube in lateral view rounded, without any lobes or processes (Figs 42E, O, S, 43H, L, U) ..... 4

- Apex of anal tube in lateral view with lobes or processes (Figs 37K, 38H, 39O, S, 40I, M, 41F, J, 42A, 44E, O, S, 45I, M, 46D, H, 47D, H)..... 9

4(3) Phallotheca with one bi- or trifurcated ventral spine (Figs 42F, L, T–U, 43C)..... *triangularis* group...5

- Phallotheca with three spines simple (not bi- or trifurcated) (Figs 43M, Q)..... *umbella* group...8

5(4) Phallotheca dorsally without any spines..... 6

- Phallotheca dorsally with a short, moderately curved spine (b) as in Fig. 43D ..... *Oz. triangularis* Löcker, **sp. nov.**

6(5) Phallotheca ventrally with only one spine as in Figs 42L, T–U. ..... 7

- Phallotheca ventrally with a large spine (a) and a pair of smaller spines (b) as in

  

Fig. 42F–G.....*Oz. dingkana* (Distant)

7(6) Flagellum with a very long, sclerotised spine (A) arising from its base as in Fig. 42L–M; apical part of genital styles in ventral view as long as wide (Fig. 42J)..... .....*Oz. quadratistylus* Löcker, **sp. nov.**

- Flagellum without sclerotised spines (Fig. 42T–U); apical part of genital styles in ventral view longer than wide (Fig. 43A).....*Oz. semicircularis* Löcker, **sp. nov.**

8(4) Phallotheca dorsolaterally with a very large, umbrella-shaped, grossly serrated process as in Fig. 43Q; right laterally with a slender, apically narrowing spine (c) as in Fig. 43Q; ventrally with a small rounded process below midlength..... .....*Oz. umbella* Löcker, **sp. nov.**

- Phallotheca dorsolaterally with a very small, triangular process as in Fig. 43M; right laterally with a more robust, apically widening spine (c) as in Fig. 43N; ventrally with a large, sheetlike, bifurcated process about midlength ..... ..... *Oz. taroomensis* Löcker, **sp. nov.**

9(3) Genital styles irregularly lobed (like leaf margin of certain oak species) as in Figs 37D–E, 38A–B, 38I–J; phallotheca ventrally below midlength with a hookshaped spine (a) directed ventrad as in Figs 37C, Q, 38K ; forewing with dark tubercles contrasting with brighter coloured veins .....*bullocki* group (part)...10

- Genital styles shaped differently; phallotheca ventrally below midlength without a hookshaped spine; forewing with dark tubercles contrasting with brighter coloured veins or tubercles concolorous with veins..... 12

10(9) Flagellum left lateral or ventral with a long rounded spine (A) as in Figs. 37A–C, 38K ..... 11

- Flagellum without a long rounded spine (A)...*Oz. nourlangiensis* Löcker, **sp. nov.**

11(10) Spine (A) arising ventrally at base of flagellum (Fig. 37A); spine (b) of phallotheca short and flattened (Fig. 37A–B).....*Oz. bullocki* Löcker, **sp. nov.**

- Spine (A) arising left lateral at midlength of flagellum (Fig. 38K); spine (b) of phallotheca very long, reaching apex of aedeagus, rounded (Fig. 38K) ..... .....*Oz. quercistylus* Löcker, **sp. nov.**

12(9) Phallotheca with serrated spines surpassing apex of phallotheca as in Figs 47K–L. .....*Oz. poculum* Löcker, **sp. nov.**

- Phallotheca without serrated spines surpassing apex of phallotheca..... 13

13(12) Phallotheca with a large spine (c) arising right lateral, passing phallotheca ventrally and curving upwards as in Figs 46K–L, N–P .....*Oz. olene* Löcker, **sp. nov.**

- Phallotheca without such curved spine..... 14

14(13) Phallotheca ventrally with an apically serrated spine (Figs 41C–D, K–M, Q). ..... .....*pitta* group (part)...15

- Phallotheca ventrally without any serrated spines..... 20

15(14) Phallotheca with two spines with serrated tips, one ventral one right lateral as in Fig. 41M (spine b, c), Fig. 39M (spine a, c)..... 16

  

- Phallotheca with only one spine with a serrated tip ..... 17

16(15) Phallotheca right lateral with a very wide (about as long as wide), sheetlike spine (a) as in Fig. 39M; phallotheca ventrally with a long spine (e) with a hookshaped tip near apex of phallotheca as in Fig. 39L; aedeagus as in Figs 39L–M ..... .....*Oz. catherinae* Löcker, **sp. nov.**

- Phallotheca right lateral with two flattened spines (a, b) (much longer than wide) as in Figs 41M; phallotheca ventrally without a spine with a hookshaped tip near apex; aedeagus as in Figs 42K–M. .....*Oz. serratus* Löcker, **sp. nov.**

17(15) Ventral spine (c) on phallotheca with a serrated tip sickleshaped as in Figs 39U, 40A; aedeagus as in Figs 39T–U, 40A..... *Oz. cynosurus* Löcker, **sp. nov.**

- Ventral spine on phallotheca with a serrated tip not sickleshaped; aedeagus not as above..... 18

18(17) Phallotheca ventrally with a rounded spine with a flattened, serrated tip. ..... 19

- Phallotheca ventrally with a short spine, flattened and serrated throughout; aedeagus as in Figs 40P–R ..... *Oz. maru* Löcker, **sp. nov.**

19(18) Phallotheca ventrally with a long, curved spine (e) with a tip shaped like a bird head as in Fig. 41B; aedeagus as in Figs 41B–D..... *Oz. pitta* Löcker, **sp. nov.**

- Phallotheca without a spine shaped like a bird head; aedeagus as in Figs 41P–R. .. .....*Oz. smithi* Löcker, **sp. nov.**

20(14) Forewings with dark tubercles contrasting with brighter veins (Fig. 14A); aedeagus as in Figs 37N–O..... *bullocki* group (part)... *Oz. clipealis* (Jacobi)

- Forewings with tubercles concolorous with veins (Fig. 23E); aedeagus not as above..... 21

21(20) Costa of forewing with more than 20 tubercles; body length of male 7.5 mm or more; aedeagus as in Figs 44J–K. ..... *Oz. alces* Löcker, **sp. nov.**

- Costa of forewing with less than 10 tubercles; body length of male 6.7 mm or less; aedeagus not as above..... 22

22(21) All spines of phallotheca surpassing apex of phallotheca as in Figs 45C–D. ..... .....*Oz. bumarangoides* Löcker, **sp. nov.**

- No spines or only some spines surpassing apex of phallotheca. ..... 23

23(22) Apical part of genital styles globular (as long as wide) as in Fig. 46Q; aedeagus as in Figs 46S, 47A–B .....*Oz. pelecanus* Löcker, **sp. nov.**

- Apical part of genital styles longitudinal (longer than wide); aedeagus not as above..... 24

24(23) Apex of anal tube in caudal and ventral view asymmetrical, right lobe larger than left lobe (Figs 40H, J, 45K–L)..... 25

- Apex of anal tube in caudal and ventral view symmetrical (Figs 44Q, 46E, 44C) .. ..... 26

25(24) Genital styles in ventral view triangular, narrowing towards apex as in Fig. 40F; aedeagus as in Figs 40D–E..... *pitta* group (part)...*Oz. golgolensis* **sp. nov.**

  

- Genital styles widening towards apex as in Figs 45Q–R; aedeagus as in Figs 45N–P ..... *Oz. dedariensis* Löcker, **sp. nov.**

26(24) Phallotheca ventrally below midlength with a large triangular ridge (fold) pointing upwards (caudad) as in Fig. 45A ..... *Oz. antennoides* Löcker, **sp. nov.**

- Phallotheca without a ventral ridge ..... 27

27(26) Phallotheca dorsally without a very long, apically flattened spine; genital styles apically very long and slender (Fig. 45S); aedeagus as in Figs 46A–B ..... ..... *Oz. latifundus* Löcker, **sp. nov.**

- Phallotheca dorsally with a very long, apically flattened spine (d) as in Figs 44F–G; genital styles apically wider and more rounded (Fig. 44H); aedeagus as in Figs 44F–G ..... *Oz. laertes* Löcker, **sp. nov.**

### ***bullocki* group**

These four species share the following character states and are therefore grouped together as the *bullocki* group: Arrangement of spines on aedeagus, i.e., aedeagus ventrally below midlength with a hookshaped (in *Oz. clipealis* not hookshaped but straight) spine (a) directed ventrad as in Figs 37A, C, Q, 38K; genital styles irregularly lobed (like leaf margin of certain oak species); forewing with dark tubercles contrasting with brighter coloured veins.

*Oz. bullocki* Löcker, **sp. nov.**
*Oz. nourlangiensis* Löcker, **sp. nov.**
*Oz. quercistylus* Löcker, **sp. nov.**
*Oz. clipealis* (Jacobi, 1928)

### ***Ozoliarus bullocki* Löcker, sp. nov.**

(Figs 13E–H, 37A–H)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: 26 miles E of Timber Ck, 8.i.1986 (M.S. & B.J. Moulds) (ASCU HE025955), Paratypes, AUSTRALIA, NT: 2 ♂, same data as holotype (ASCU), 1 ♂, Tindal, at light, 1.–20.xii.1967 (W. Vestjens) (ANIC), 1 ♂, 12 km NNE of Borroloola, 15.58S 136.21E, 1.xi.1975 (M.S. Upton) (ANIC), 2 ♂, 46 km SSW of Borroloola, 16.28S 136.09E, 28.x.1975 (M.S. Upton) (ANIC), 1 ♂, Surprise Ck, 45 km SW by S of Borroloola, 16.23S 136.05E, 5.xi.1975 (M.S. Upton) (ANIC).

*Etymology*

Named in honour of the first author's friends Ros and David Bullock.

  

*Colour*

Body mid to dark brown, carinae and pronotum paler; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins and on apex of wing, veins light brown, tubercles dark (contrasting with veins), pterostigma mid to dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.3–6.0 mm.

Head: Vertex (total length) 1.5–1.9 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.5–4.0 times longer than wide; costa with 10–19 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 37F–H; pygophore and genital styles as in Figs 37D–E. Aedeagus (Figs 37A–C): Phallotheca with a large hookshaped spine (a) directed ventrad arising ventrally below midlength; a short, flattened spine (b) ventral at midlength; and two medium sized spines (c, d) right lateral; and a very short spine (e) dorsal. Flagellum partly sclerotised, with a very long, basally strongly curved (rarely bifurcated) spine (A) ventral at base of flagellum; a shorter, rounded spine (B); and a large, bifurcated, flattened spine (C).

***Ozoliarus clipealis* (Jacobi), comb. nov.**
(Figs 14A–D, 37I–O)

*Oliarus clipealis* Jacobi 1928: 33 (Figs 20a, b)

*Type material*

*Lectotype*, here designated, 1 ♂ (examined), AUSTRALIA, WA: Kimberley district (Mjöberg) (NHRS); *Paralectotypes*, AUSTRALIA, WA: 2 ♂, same data as lectotype (MTD).

*Remarks*

A lectotype is designated here to give a diagnostic reference for the species.

*Other material examined*

AUSTRALIA: WA (2 ♂, 1 ♀), NT (1 ♂).

*Colour*

Body dark brown to black, carinae, clypeus and pronotum paler, frons lateral with a

  

white mark; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, tubercles dark brown (contrasting with veins), pterostigma mid to dark brown; abdominal sternites mid brown.

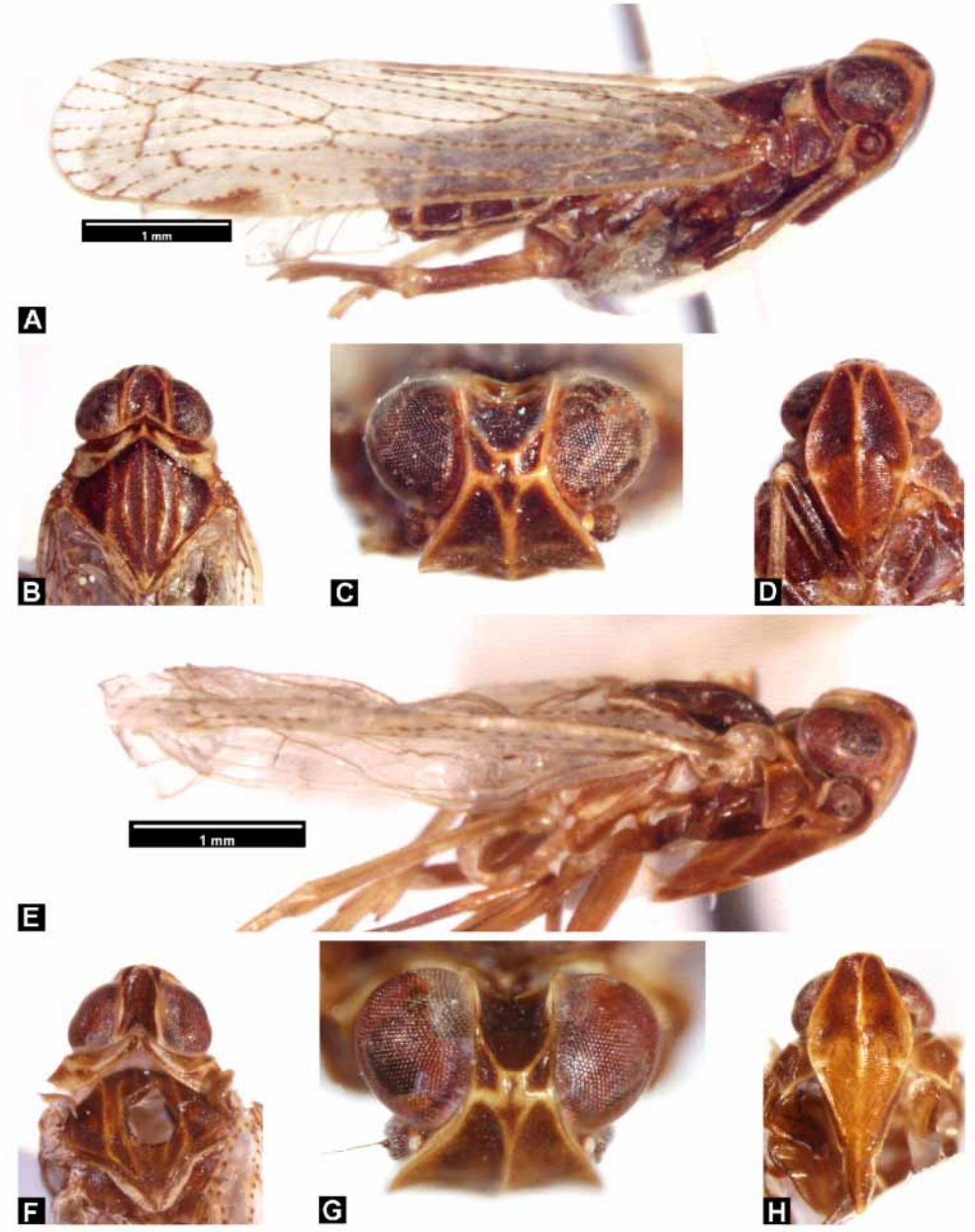


**FIGURE 14.** *Ozoliarus clipealis*: A habitus; B, C, D head. *Ozoliarus nourlangiensis*: E habitus; F, G, H head.

*Morphology*

Body length: ♂ 6.1–6.4 mm, ♀ 7.1–7.7 mm.

Head: Vertex (total length) 1.2–1.6 times longer than wide; basal emargination obtusely

  

angled. Postclypeus with well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.5–3.8 times longer than wide; costa with 8–16 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 37I–K; pygophore and genital styles as in Figs 37L–M. Aedeagus (Figs 37N–O): Phallotheca with an almost straight, slender, not hookshaped spine (a) directed ventrad arising ventrally below midlength; a short spine (b) arising ventrally below midlength; a medium sized spine (c) right lateral; a medium sized spine (d); and a very short spine (e) dorsal. Flagellum partly sclerotised, with two large, flattened spines.

***Ozoliarus nourlangiensis* Löcker, sp. nov.**
(Figs 14E–H, 37P–Q, 38A–E)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Nourlangie Creek, 8 km E of Mt Cahill, 12.52S 132.47E, 17.xi.1972 (T. Weir, A. Allwood) (MAGD Nr 7401), *Paratype*, AUSTRALIA, NT: 1 ♂, same data as holotype (MAGD).

*Etymology*

Named after Nourlangie, the type locality.

*Colour*

Body mid to dark brown, carinae and pronotum paler; legs mid brown; forewing hyaline colourless without brown marks along crossveins and on various parts of the wing, veins light brown, tubercles dark brown (contrasting with veins), pterostigma mid to dark brown; abdominal sternites mid brown.

*Morphology*

Body length: ♂ 5.4 mm.

Head: Vertex (total length) 1.8–2.1 times longer than wide; basal emargination rectangular. Postclypeus with evanescent median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.6–3.8 times longer than wide; costa with 4–14 tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 38C–E; pygophore and genital styles as in Figs 38A–B. Aedeagus (Figs 37P–Q): Phallotheca with a large hookshaped spine (a) directed ventrad arising ventrally below midlength; a short spine (b) arising ventrally below midlength; a medium sized spine (c) right lateral; a short spine (d); and a very short spine or ridge (e) dorsal. Flagellum partly sclerotised, with three large, flattened spines.

  

***Ozoliarus quercistylus* Löcker, sp. nov.**
(Figs 15A–D, 38F–L)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: 8 km SW Walsh Point, 14.37S 125.48E, at light, 17.v.1983 (I.D. Naumann, J.C. Cardale) (ANIC), *Paratypes*, AUSTRALIA, WA: 1 ♂, same data as holotype (ANIC), 1 ♂, escarpment, 8 km SW of Walsh Point, Admiralty Gulf, 14.37S 125.48E, 10.v.1983 (D.C.F. Rentz, J. Balderson) (ANIC), 1 ♂, Kimberley Research Stn via Wyndham, 14.vii.1956 (E.C.B. Langfield) (ANIC), 1 ♂, Old Doongan, 15.19S 126.32E, 2.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC), **AUSTRALIA, NT**: 1 ♂, Goose Lagoon, 11 km SW by S of Borroloola, 16.05S 136.15E, 31.x.1975 (M.S. Upton) (ANIC), 1 ♂, 6.4 km S by SW of Victoria River Downs, along Wickham River, 17.vi.1973 (L.P. Kelsey) (ANIC), 1 ♂, 1 ♀, 8 km ENE of Victoria River Downs, 12.vii.1973 (L.P. Kelsey) (ANIC), 3 ♂, 18 ♀, Tindal, at light, 1.–20.xii.1967 (W. Vestjens) (ANIC), **AUSTRALIA, Qld**: 1 ♂, 14 miles SE Normanton, 40 m, 3.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1 ♂, 17 miles W Monto, 500 m, 21.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 3 ♂, 9 ♀, 37 miles NW Bowen, 20 m, 14.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS).

*Etymology*

Named after the genital styles, which rounded like the leaf margin of certain oak species of the genus *Quercus*.

*Colour*

Body mid to dark brown, carinae and pronotum paler; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins and sometimes on various parts of the wing, veins light brown, tubercles dark brown (contrasting with veins), pterostigma mid to dark brown; abdominal sternites mid to dark brown.

*Morphology*

Body length: ♂ 5.4–6.1 mm, ♀ 6.4–7.9 mm

Head: Vertex (total length) 1.2–1.6 times longer than wide; basal emargination obtusely. Postclypeus with evanescent or well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.4–3.7 times longer than wide; costa with 12–20 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 38F–H; pygophore and genital styles as in Figs 38I–J. Aedeagus (Figs 38K–L): Phallotheca with a large hookshaped spine (a) directed ventrad arising ventrally below midlength; a very long, rounded spine (b) arising ventrally below midlength reaching apex of aedeagus; two medium sized spines (c, d) right lateral;

  

and a very short spine (e) dorsal. Flagellum partly sclerotised, with a long, strongly curved spine (A) left lateral at midlength of flagellum; and two large, bifurcated, flattened spines (C, D).

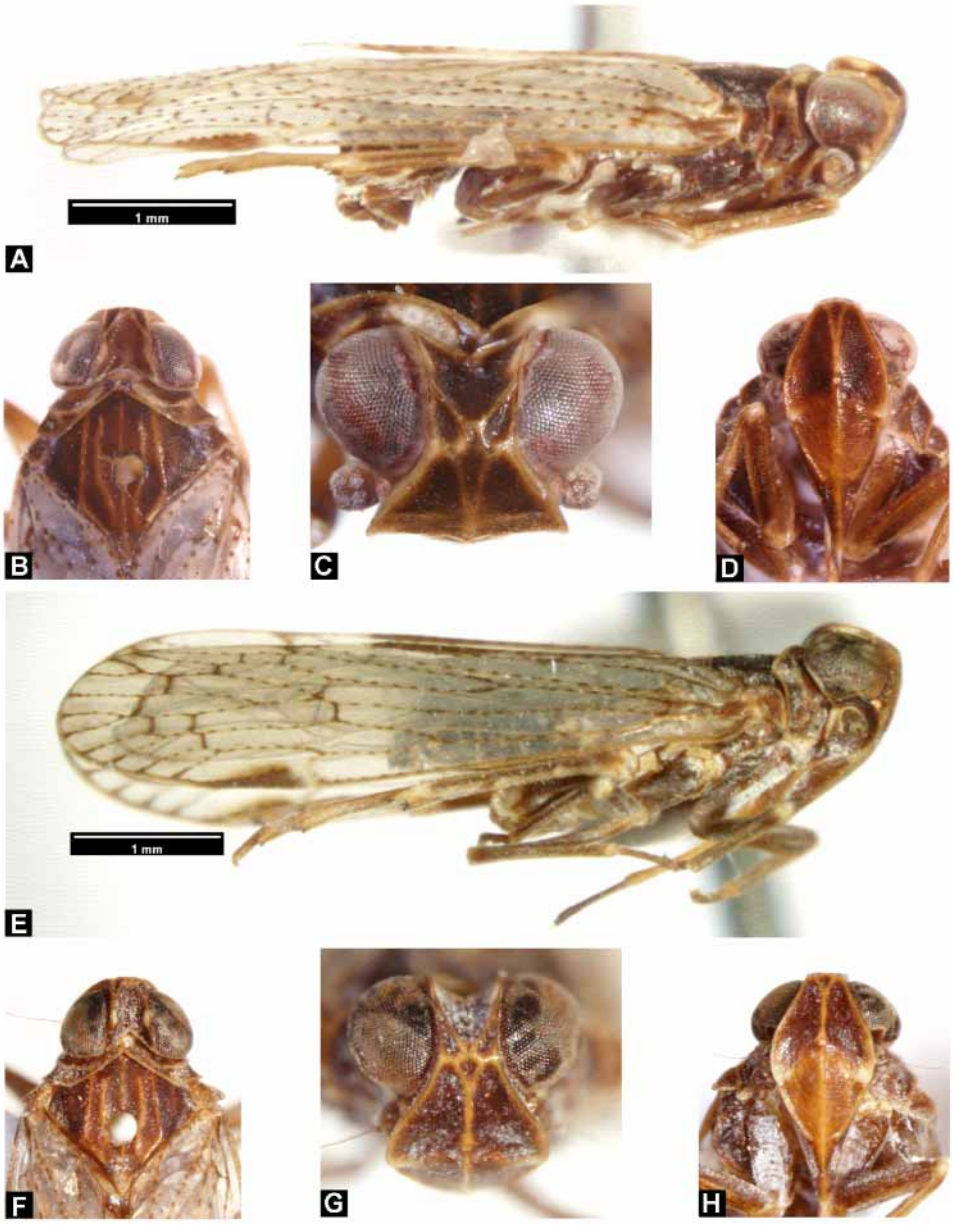


**FIGURE 15.** *Ozoliarus quercistylus*: A habitus; B, C, D head. *Ozoliarus cuspidistylus*: E habitus; F, G, H head.

***cuspidistylus* group**

These two species share the following character states and are therefore grouped together as the *cuspidistylus* group: Phallotheca with two simple spines, a spine arising right laterally below midlength and a large, flattened spine arising ventrally near apex of phallotheca; forewing with fork of Pcu+A1 more or less central within clavus; 9 apical cells.

*Oz. cuspidistylus* Löcker, **sp. nov.**

*Oz. rotundistylus* Löcker, **sp. nov.**

***Ozoliarus cuspidistylus* Löcker, sp. nov.**
(Figs 15E–H, 38M–Q, 39A–B)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NSW**: Cabramatta, near Sydney, sweeping in orchard, 28.xii.1965 (M.I. Nikitin) (ASCU HE029347), *Paratypes*, AUSTRALIA, NSW: 1 ♂, same data as holotype (MJF), 1 ♂, Cabramatta, 28.xii.1965 (M.I. Nikitin) (MJF), 1 ♂, Minto SW of Sydney, 19.–25.ii.1983 (R. Morrison) (ASCU), 1 ♀, same data, 25.xii.1982–7.i.1983 (ASCU), 1 ♂, Tatura, 140 km N of Melbourne, at water trap, 30.i.1981 (J. Osmelak) (ASCU), 3 ♂, Rydalmere, 21.ii.1978 (M.J. Fletcher) (ASCU), 1 ♂, Blacktown, 9.x.1981 (G.R. Brown) (ASCU), 1 ♂, 1 ♀, same data, 26.ii.1983 (ASCU), 1 ♂, Wee Waa, 14.v.1990 (J. Clancy) (ASCU), 1 ♂, Moree, 1.x.1951 (A. Dyce) (MJF), 1 ♂, Bogan R. (J. Armstrong) (AMS), 1 ♂, Scheyville, pyrethrum knockdown, *Eucalyptus crebra*, i.1988 (H.F. Recher) (ASCU), 14 ♂, 4 ♀, Nyngan district, 1.–9.ii.1960 (T.E. Woodward), 4 ♂, 1 ♀, Tottenham district, 9.ii.1960 (T.E. Woodward), **AUSTRALIA, Qld**: 1 ♂, Roma, 28.iii.1957 (E.F. Rick) (ANIC), 1 ♂, Gatton, 26.ix.1931 (UQIC), 1 ♂, Cairns, 1942 (QM), 2 ♂, Rockhampton (SAM), 1 ♂, same data, 1.x.1922 (BPBM), 1 ♂, Eidsvold, 6.x.1929 (ANIC), 1 ♂, Mt Robert, 5 km SW, 21.24S 148.27E, 800 m, brigalow, mv light, 23.x.2000 (S. Wright) (QM), 1 ♂, Gatton, 6.xi.1933 (F. A. Perkins) (UQIC), 3 ♂, 6 km N Taroom, 25.36S 149.46E, 200 m, 11.ix.1992 (G. Daniels) (UQIC), 1 ♂, Mungindi, 1.i.1972 (B. Cantrell) (UQIC), 1 ♂, 1 ♀, Biloela, 17.i.1947 (F. Kleinschmidt) (UQIC), 2 ♂, 5.3 km W Miles, 26.39.14S, 150.07.46E, dry creek, malaise trap, 15.–17.x.2001 (C. Lambkin, N. Starick) (ANIC), **AUSTRALIA, SA**: 2 ♂, Berri, ex sticky trap, 17.ii.–5.iii.2004 (P. Magarey) (ASCU), 1 ♂, Loxton, ex sticky trap, 11.ii.–8.iii.2005 (P. Magarey) (ASCU), 5 ♂, 1 ♀, Adelaide (N.B. Tindale) (SAM), 1 ♂, Musgrave Ra., 12.5 km E Mitchell Knob, 26.08.02S 131.56.58E, malaise trap, 18.–21.x.1994 (Pitjantjatjara Lands survey) (SAM), **AUSTRALIA, WA**: 1 ♂, Northam, light trap, 28.ii.1983 (E.A. Henty) (WADA).

*Etymology*

The Latin term ‘cuspido’ means ‘make pointed’. Named after the pointed tip of the

  

right genital style.

*Colour*

Body dark brown to black, carinae and clypeus paler, frons lateral with a white mark; legs mid brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, tubercles dark brown (contrasting with veins), pterostigma mid to dark brown; abdominal sternites dark brown..

*Morphology*

Body length: ♂ 4.3–6.1 mm, ♀ 7.1–7.4 mm.

Head: Vertex (total length) 1.5–2.1 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching or surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed median and sublateral carinae and evanescent or well-developed lateral carinae. Forewing 3.2–3.6 times longer than wide; costa with 10–20 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 38Q, 39A–B; pygophore and genital styles as in Figs 38O–P. Aedeagus (Figs 38M–N): Phallotheca right lateral with a thick spine (a) pointing outwards; a large, flattened spine (b) ventral. Flagellum partly membranous with a long, very slender, sclerotised spine (A) arising left lateral near base of flagellum; and a slightly sclerotised spine (B) at apex of flagellum.

***Ozoliarus rotundistylus* Löcker, sp. nov.**
(Figs 16A–D, 39C–I)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: 6 km N Taroom, 25.36S 149.46E, 200 m, 1.x.1991 (G. Daniels) (QM QMT123834, originally UQIC), *Paratype*, AUSTRALIA, Qld: 1 ♂, same data as holotype, 2.x.1992 (UQIC).

*Etymology*

The Latin term ‘rotundus’ means ‘round’. Named after the rounded tip of the genital styles.

*Colour*

Body dark brown to black, carinae paler, frons lateral with a white mark; legs light to dark brown; forewing hyaline colourless with brown marks along crossveins and sometimes on apex of wing, veins dark brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown..

  

*Morphology*

Body length: ♂ 5.4–5.9 mm.

Head: Vertex (total length) 1.6–1.9 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.2–3.6 times longer than wide; costa with or without 1 tubercle; 9 apical cells.

Male genitalia: Anal tube as in Figs 39C–E; pygophore and genital styles as in Figs 39F–G. Aedeagus (Figs 39H–I): as in *Oz. cuspidistylus*, except for spine (a) of phallotheca more slender and parallel; and spine (A) of flagellum missing.

*pitta* group

These seven species share the following character states and are therefore grouped together as the *pitta* group: Arrangement of spines on the aedeagus, i.e., phallotheca ventrally with a spine with a serrated tip (not present in *Oz. golgolensis*) and right laterally with an upwards curved (mostly u-shaped) spine.

*Oz. catherinae* Löcker, **sp. nov.**
*Oz. cynosurus* Löcker, **sp. nov.**
*Oz. golgolensis* Löcker, **sp. nov.**
*Oz. maru* Löcker, **sp. nov.**
*Oz. pitta* Löcker, **sp. nov.**
*Oz. serratus* Löcker, **sp. nov.**
*Oz. smithi* Löcker, **sp. nov.**

***Ozoliarus catherinae* Löcker, sp. nov.**
(Figs 16E–H, 39J–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: Cunnamulla, x.1943 (N. Geary) (AMS K209383), Paratypes, AUSTRALIA, Qld: 1 ♂, same data as holotype, ii.1942 (AMS), 1 ♂, Cunnamulla Caravan Park, at light, 27.xii.1973 (G.F. Gross) (SAM), 1 ♂, 1 ♀, Dalby, 27.ii.1937 (N. Geary) (AMS), 2 ♂, Moranbah, 4 km S, 22.02S 148.03E, mv light, 3.x.2003 (G.B. Monteith) (QM), 1 ♂, Mangindi, 1.i.1972 (B. Cantrell) (UQIC), 1 ♂, Lake Broadwater near Dalby, 27.21S 151.06E, mv lamp, 27.ix.1986 (G. & A. Daniels) (UQIC), **AUSTRALIA, NSW**: 1 ♂, 19 km S of Moree, on *Eucalyptus citriodora*, 1.xii.1976 (E.M. Exley, T. Low) (UQIC), **AUSTRALIA, SA**: 1 ♂, 1 ♀, Mt Serle, N Flinders Ra. (Hale, Tindale) (SAM).

  

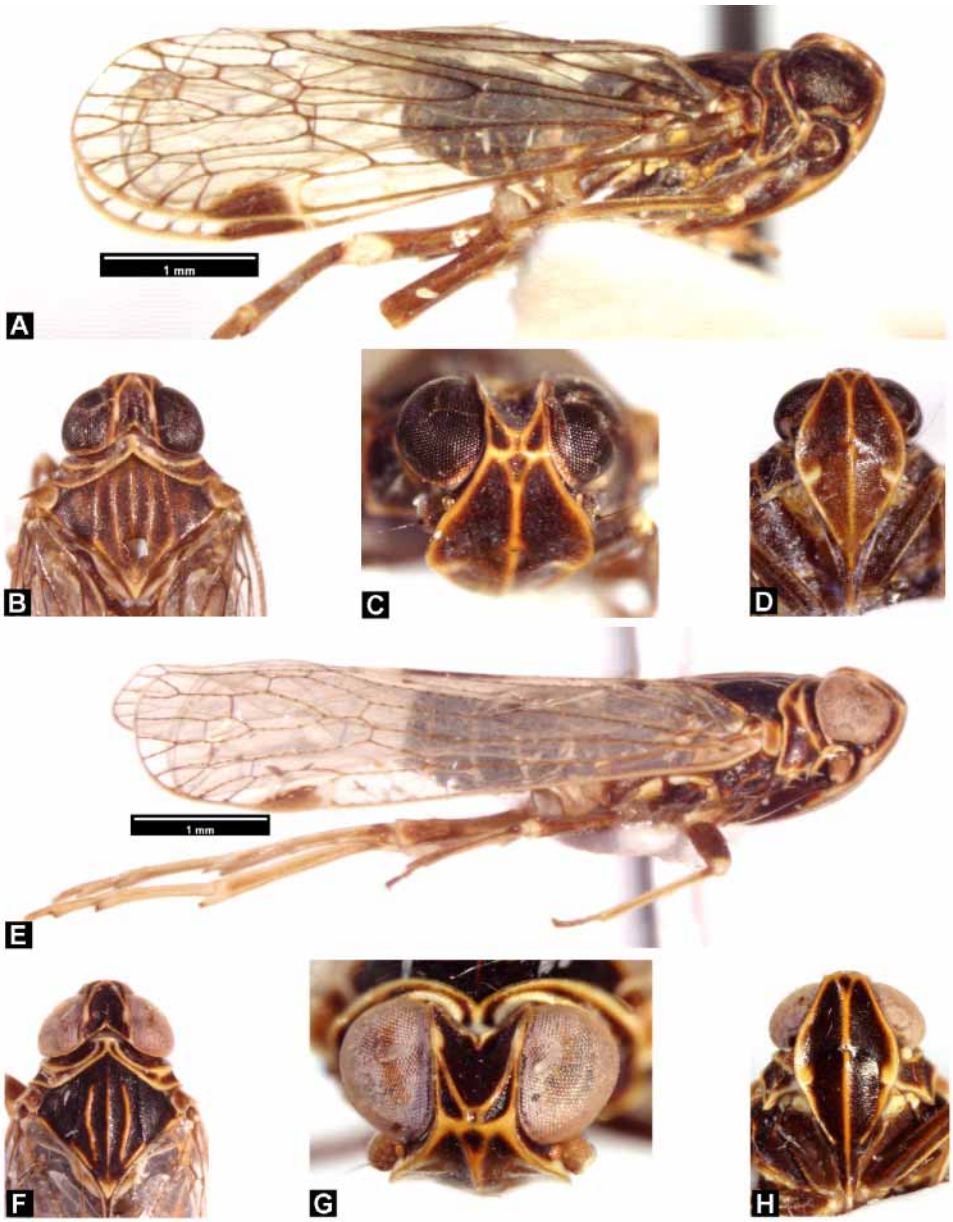


**FIGURE 16.** *Ozoliarus rotundistylus*: A habitus; B, C, D head. *Ozoliarus catherinae*: E habitus; F, G, H head.

*Etymology*

Named in honour of the first author's friend Catherine Read.

*Colour*

Body dark brown to black, carinae (except for some carinae on mesonotum) paler, frons lateral with a more or less distinct light brown mark; legs light to mid brown;

  

forewing hyaline colourless without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.8–6.2 mm, ♀ 6.7 mm.

Head: Vertex (total length) 1.6–1.7 x longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.3–3.6 x longer than wide; costa with 2–12 tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 39N–P; pygophore and genital styles as in Figs 39J–K. Aedeagus (Figs 39L–M): Phallotheca with a large u-shaped, very wide, sheetlike spine (a) with slightly serrated tip right lateral; two rounded, dorsal spines (b, d) arising from same base; a flattened, triangular spine (c) with serrated tip; and a rounded spine (e) with strongly curved tip ventral. Flagellum membranous with sclerotised blades and a very small spine.

***Ozoliarus cynosurus* Löcker, sp. nov.**
(Figs 17A–D, 39Q–U, 40A–C)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: Eidsvold, 6.x.1929 (ANIC), *Paratypes*, AUSTRALIA, Qld: 1 ♂, 6 km W Ban Ban Springs, via Gayndah, on *Atelaya hemiglauca*, 8.xi.1981 (E.M. Exley, J. King) (UQIC), 1 ♂, Noondoo, 28.37S 148.26E, 26.ii.1963 (A.L. Dyce, M.D. Murray) (ANIC).

*Etymology*

The Greek term ‘kyon’ means ‘dog’, and ‘oura’ ‘tail’. Named after spine (b) on the phallotheca, which is shaped like the tail of a dog.

*Colour*

Body dark brown to black, carinae paler, frons lateral with a light brown mark; legs light to mid brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites mid brown.

*Morphology*

Body length: ♂ 5.2–6.2 mm.

Head: Vertex (total length) 1.6–2.3 times longer than wide; basal emargination obtusely

  

angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with well-developed carinae. Forewing 3.3–3.7 times longer than wide; costa without tubercles; 9 apical cells.

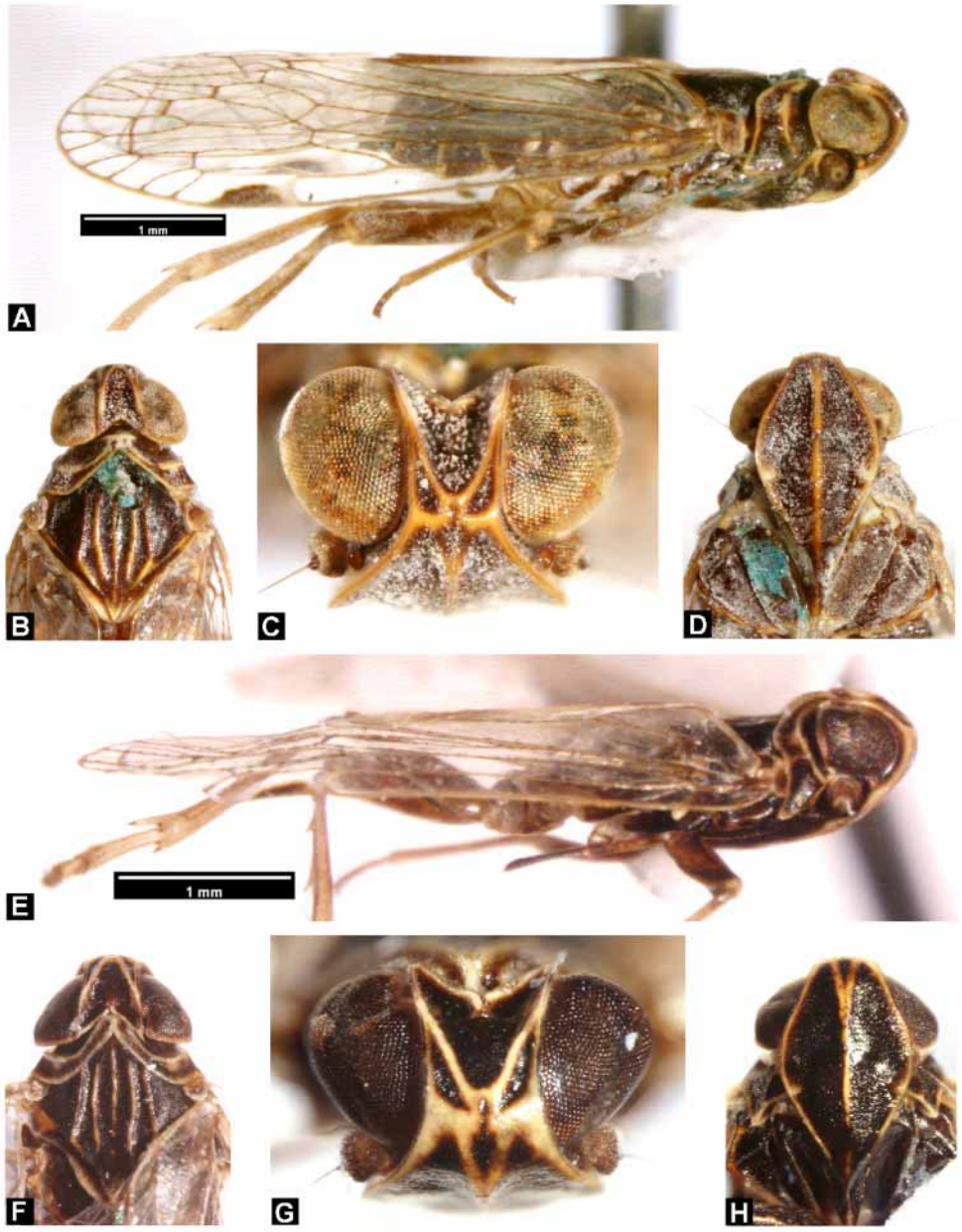


**FIGURE 17.** *Ozoliarus cynosurus*: A habitus; B, C, D head. *Ozoliarus golgolensis*: E habitus; F, G, H head.

Male genitalia: Anal tube as in Figs 39Q–S; pygophore and genital styles as in Figs 40B–C. Aedeagus (Figs 39T–U, 40A): Phallotheca with a large u-shaped, sheetlike spine (a) right lateral; a short, slender spine (b) arising from same base; a flattened, sickleshaped, serrated spine (c) ventrally; a rounded spine (d); and a bifurcated, flattened spine (e) arising dorsally from the same base; a moderately curved spine (f) left lateral; and a bifurcated spine (g) left lateral at apex. Flagellum membranous with sclerotised blades.

***Ozoliarus golgolensis* Löcker, sp. nov.**
(Figs 17E–H, 40D–J)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Vic**: Gol Gol, on sticky trap in vineyard, 12.x.1999 (VAIC Nr 030543).

*Etymology*

Named after Gol Gol (34.11S 142.13E), the type locality.

*Colour*

Body black, carinae paler, frons lateral with a light brown mark; legs light to dark brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown.

*Morphology*

Body length: ♂ 4.9 mm.

Head: Vertex (total length) 1.4 times longer than wide; basal emargination obtusely angled. Postclypeus with evanescent median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum rectangular. Mesonotum with well-developed carinae. Forewing 3.5 times longer than wide; costa with 0–3 tubercles; 7 apical cells.

Male genitalia: Anal tube as in Figs 40H–J; pygophore and genital styles as in Figs 40F–G. Aedeagus (Figs 40D–E): Phallotheca with an u-shaped spine (a) with a wide, sheetlike tip right lateral; a bifurcated spine (b) arising from the same base; a slightly curved spine (c) dorsal; and a bifurcated spine (d) right lateral at apex. Flagellum membranous with sclerotised blades and a very small spine.

***Ozoliarus maru* Löcker, sp. nov.**
(Figs 18A–D, 40K–R)

*Type material*

*Holotype*, ♂, **AUSTRALIA, VIC**: Extreme N.W. Vic., 21.ii.1927 (BMNH),

  

*Paratypes*, AUSTRALIA, VIC: 1 ♂, 4 ♀, same data as holotype, (BMNH), **AUSTRALIA, SA**: 1 ♂, Loxton, ex sticky trap, 6.–21.i.2005 (P. Magarey) (ASCU).

*Etymology*

The term 'maru' means 'black' in Diyari, an aboriginal language spoken in South Australia (Thieberger & McGregor 1994), and refers to the ascending (caudally directed) spines on the phallotheca.

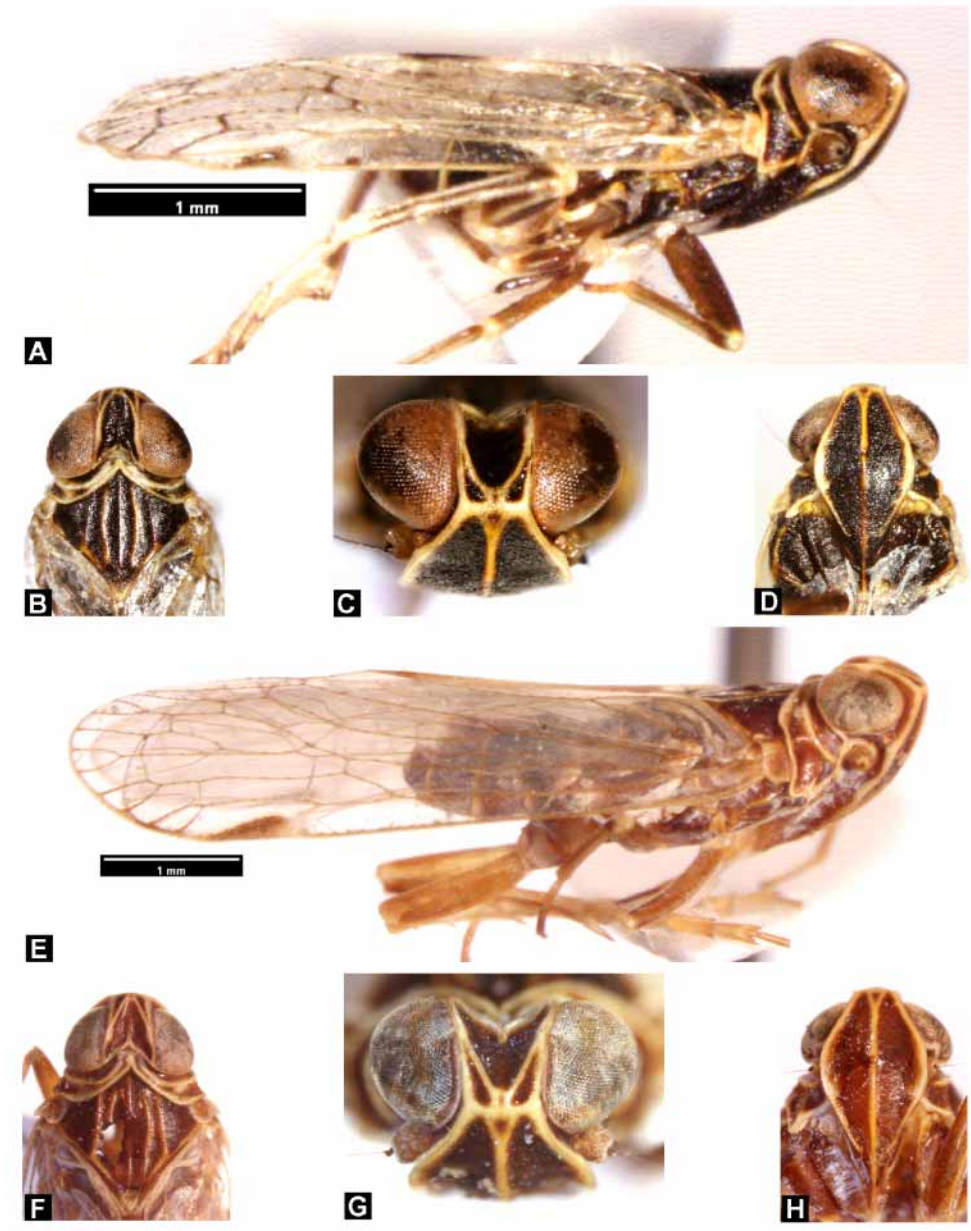


**FIGURE 18.** *Ozoliarus maru*: A habitus; B, C, D head. *Ozoliarus pitta*: E habitus; F, G, H head.

*Colour*

Body black, carinae paler, frons lateral with an indistinct light brown mark; legs light to dark brown; forewing hyaline colourless without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 4.1 mm.

Head: Vertex (total length) 1.8 times longer than wide; basal emargination rectangular. Postclypeus with evanescent median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.7 times longer than wide; costa with 10 tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 40K–M; pygophore and genital styles as in Figs 40N–O. Aedeagus (Figs 40P–R): Phallotheca with a bifurcated spine (a) right lateral; a bifurcated spine (b) dorsal; a short, flattened, serrated spine (c); a long, flattened spine (d) ventral; a slender spine (e) right lateral; a strongly curved spine (f) left lateral; and an almost straight spine (g) left lateral at apex. Flagellum membranous with sclerotised blades.

***Ozoliarus pitta* Löcker, sp. nov.**
(Figs 18E–H, 40S, 41A–G)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Anthony's Lagoon, Barkly Tablelands, 23.vi.1987 (C. Wilson) (ASCU HE016965), *Paratypes*, **AUSTRALIA, NSW**: 1 ♂, Graman, 16.i.1961 (T.V. Bourke) (ASCU), 2 ♂, 1 ♀, Acacia pendula patch, Moppin – Aveymore Rd, approx. 400 m S of junction at Dolgelly Bore, 28.53.26S 149.51.30E, 19.xii.1999 (R. Harris, T. Moulds) (AMS), 1 ♂, on bank of Darling River, 20 miles SSW of Bourke, at light, 26.xii.1973 (G.F. Gross) (SAM), **AUSTRALIA, Qld**: 1 ♂, Cambooya, 12.ii.1948 (J.C. Galletly) (UQIC), 1 ♂, 1 ♀, Brigalow Development Area Moura, 14.iii.1968 (F.D. Page, L. Rigby) (QDPC), 1 ♂, Gatton, 6.xi.1933 (F.A. Perkins) (UQIC), **AUSTRALIA, SA**: 1 ♂, Springbank, from light housing, i.–iii.1960 (R.V. Southcott) (SAM), 1 ♂, Adelaide, iii.1961 (Harris) (SAM), **AUSTRALIA, Vic**: Nangiloc, near Mildura, ex *Vitis vinifera*, 31.x.1983 (J.A. Osmelak) (ASCU).

*Etymology*

The term 'pitta' means 'goose' in Kaurna, an aboriginal language spoken in South Australia (Thieberger & McGregor 1994), and refers to a spine on the phallotheca which is shaped like a goose-head.

  

*Colour*

Body mid, dark brown or black, carinae paler; legs light to mid brown; forewing hyaline colourless with or without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.3–6.4 mm, ♀ 6.0–6.8 mm.

Head: Vertex (total length) 1.4–2.0 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.4–3.7 times longer than wide; costa with 10–20 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 41E–G; pygophore and genital styles as in Figs 40S, 41A. Aedeagus (Figs 41B–D): Phallotheca with a large u-shaped, bifurcated spine (a) right lateral; a curved, slender spine (b) arising from the same base as spine (a); a rounded spine (c) with a flattened, serrated tip ventral about midlength; a straight, slender spine (d) right lateral; a curved spine (e) with a tip shaped like a bird head ventral; a moderately curved spine (f) left lateral; and a bifurcated spine (g) at apex of aedeagus. Flagellum membranous with a triangular ridge and a sclerotised blade.

***Ozoliarus serratus* Löcker, sp. nov.**
(Figs 19A–D, 41H–O)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: Cadjeput Rockhole, 21.31.55S 119.08.57E, UV light, 29.ix.1988 (B.P. Hanich *et al*.) (WAMP Nr 34365), *Paratype*, AUSTRALIA, WA: 1 ♂, same data as holotype (WAMP).

*Etymology*

The Latin term ‘serratus’ means ‘toothed like a saw’. Named after the serrated spines on the phallotheca.

*Colour*

Body dark brown to black, carinae paler, frons lateral with an indistinct light brown mark; legs light to mid brown; forewing hyaline colourless without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown..

  

*Morphology*

Body length: ♂ 5.7–6.5 mm.

Head: Vertex (total length) 1.9–2.2 times longer than wide; basal emargination rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching hind coxae.

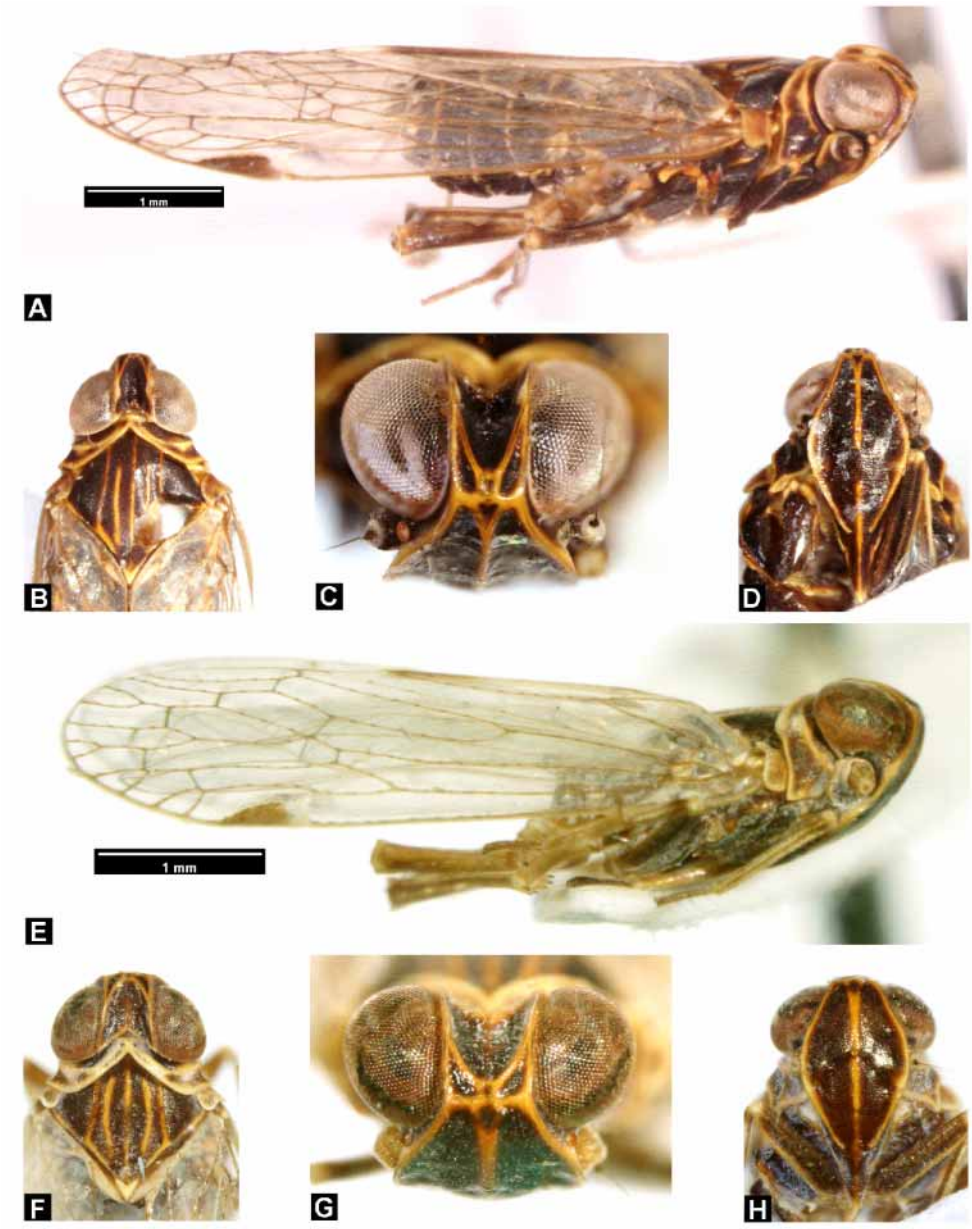


**FIGURE 19.** *Ozoliarus serratus*: A habitus; B, C, D head. *Ozoliarus smithi*: E habitus; F, G, H head.

  

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.6–3.7 times longer than wide; costa with 1–3 tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 41H–J; pygophore and genital styles as in Figs 41N–O. Aedeagus (Figs 41K–M): Phallotheca with three flattened, upwards (caudad) curved spines (a, b, c); all three arising from same base right lateral; spines (b and c) serrated; an upwards (caudad) curved spine (d) dorsal; a slender, slightly curved spine (e); and a bifurcated spine (f) left lateral at apex. Flagellum membranous with sclerotised blades and a small sclerotised spine (A).

***Ozoliarus smithi* Löcker, sp. nov.**
(Figs 19E–H, 41P–U, 42A–B)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: near Brookdale, 10 m, 2.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS Nr 18197), *Paratypes*, AUSTRALIA, Qld: 11 ♂, same data as holotype (CAS), 2 ♂, same data as holotype (ASCU).

*Etymology*

Named in honour of the first author's friend Tony Smith.

*Colour*

Body mid to dark brown, carinae and pronotum paler, frons lateral with or without a light brown mark; legs light to mid brown; forewing hyaline colourless without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 4.9–5.7 mm.

Head: Vertex (total length) 1.5–1.7 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with well-developed carinae. Forewing 3.4–3.7 times longer than wide; costa with 5–9 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 41U, 42A–B; pygophore and genital styles as in Figs 41S–T. Aedeagus (Figs 41P–R): Phallotheca as in *Oz. pitta* except for the following: spine (a) shorter, spines (a, b, c) arising from same base, spine (e) absent and branch (g2) longer; flagellum as in *Oz. pitta*.

  

***triangularis* group**

These four species share the following character states and are therefore grouped together as the *triangularis* group: Ventral ridge of phallotheca with two or three humps; presence of a large bi- or trifurcate spine ventral on phallotheca; left lobe of pygophore larger than right lobe; genital styles spoon-shaped in ventral view; fork of Pcu+A1 distinctly basad of the centre of clavus.

*Oz. dingkana* (Distant)
*Oz. quadratistylus* Löcker, **sp. nov.**
*Oz. semicircularis* Löcker, **sp. nov.**
*Oz. triangularis* Löcker, **sp. nov.**

***Ozoliarus dingkana* (Distant) comb. nov.**
(Figs 20A–D, 42C–I)

*Oliarus dingkana* Distant 1907a: 282.

*Type material*

*Lectotype*, here designated (examined), ♂, **AUSTRALIA, Qld**: Peak Downs (BMNH), *Paralectotypes* (examined), AUSTRALIA, Qld: 1♀, 1♂ or ♀ (abdomen missing), same data as lectotype (BMNH).

*Remarks*

A lectotype is designated herein in order to clarify the identity of the species.

*Other material examined*

**AUSTRALIA:** Qld (2 ♂, 3 ♀).

*Colour*

Body black, carinae and clypeus paler, frons lateral with a white mark; legs light to dark brown; forewing hyaline colourless with brown marks along crossveins, veins light brown and in some portions of the wing dark brown, tubercles dark brown, pterostigma dark brown; abdominal sternites dark brown..

*Morphology*

Body length: ♂ 6.1–6.5 mm, ♀ 6.4–8.1 mm.

Head: Vertex (total length) 1.8 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.3–3.6 times longer than wide; costa with 11–25 tubercles; 9 apical

  

cells.

Male genitalia: Anal tube as in Figs 42C–E; pygophore and genital styles as in Figs 42H–I. Aedeagus (Figs 42F–G): Phallotheca with a large, bi- or trifurcated spine (a) ventral; and a ventral ridge with two less distinct humps, one of them bearing pair of short spines (b) fused together, their tips pointing in opposite directions. Flagellum membranous with a slightly sclerotised spine at apex of flagellum.

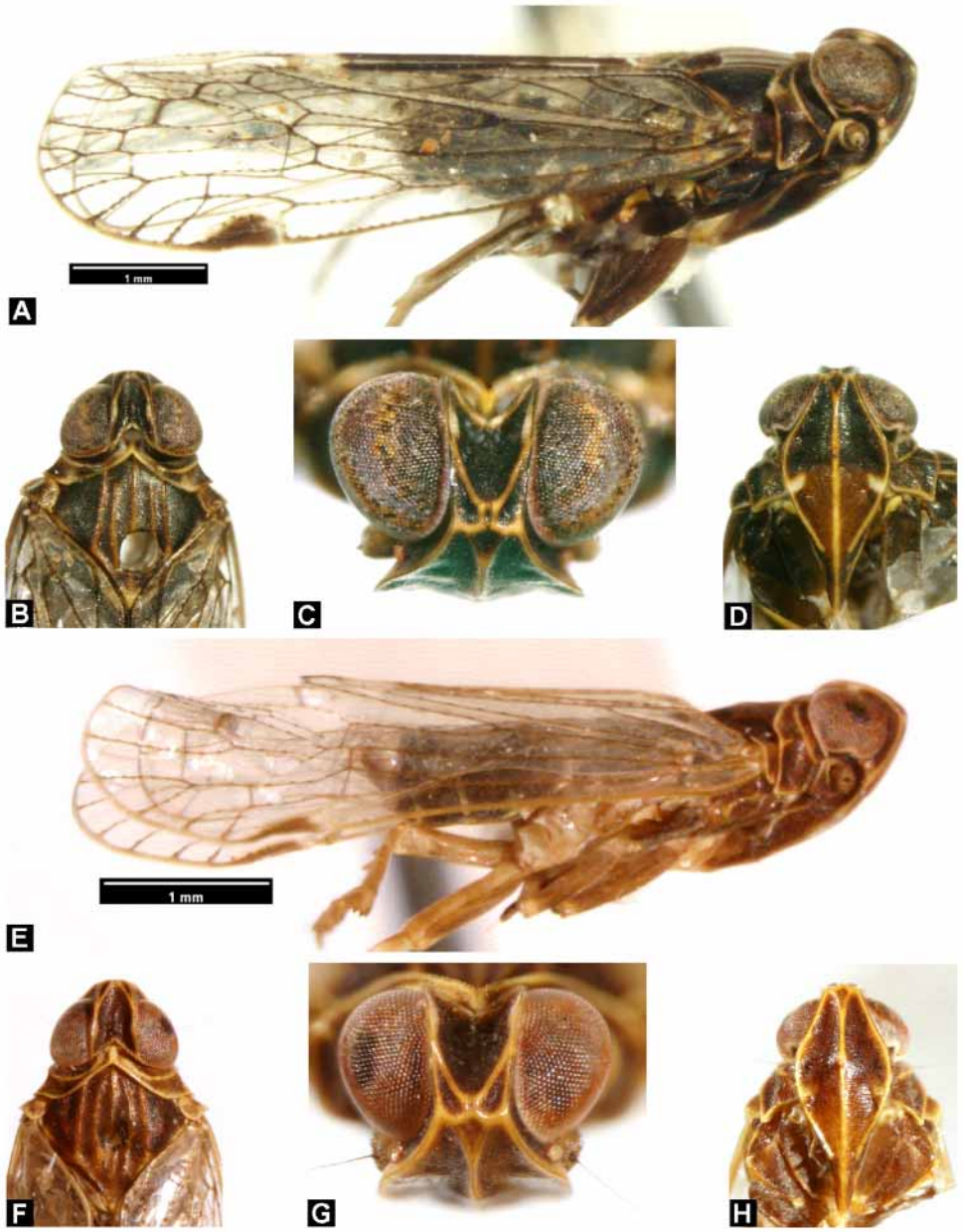


**FIGURE 20.** *Ozoliarus dingkana*: A habitus; B, C, D head. *Ozoliarus quadratistylus*: E habitus; F, G, H head.

*Remarks*

*Oz. dingkana* differs from *Oz. triangularis* in the absence of and spine (A) and a dorsal spine (b). In *Oz. triangularis*, however, there is an additional set of spines (b) arising from the ventral ridge.

***Ozoliarus quadratistylus* Löcker, sp. nov.**
(Figs 20E–H, 42J–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: 8 miles ENE of Millstream, 20.x.1970 (D.H. Colless) (ANIC), *Paratypes*, **AUSTRALIA, Qld**: Noondoo, 28.37S 148.26E, 26.ii.1963 (A.L. Dyce, M.D. Murray) (ANIC), 1 ♂, 149 km E of Quilpie, 26.33S 145.38E, 20.ix.1990 (M.P. Zalucki, G.V. Maynard) (UQIC).

*Etymology*

Named after the top part of the genital styles, which forms a square.

*Colour*

Body dark brown to black, carinae paler, frons lateral with a light brown mark; legs mid to dark brown; forewing hyaline colourless with brown marks along crossveins, veins mid to dark brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown..

*Morphology*

Body length: ♂ 5.2–5.8 mm.

Head: Vertex (total length) 1.3–1.7 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum reaching or surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed median carina and evanescent or well-developed sublateral and lateral carinae. Forewing 3.4–3.6 times longer than wide; costa with 2–10 tubercles; 7–9 apical cells.

Male genitalia: Anal tube as in Figs 42N–P; pygophore and genital styles as in Figs 42J–K. Aedeagus (Figs 42L–M): Phallotheca with a large, bi- or trifurcated spine (a) ventral; and a ventral ridge with two or three humps. Flagellum membranous with a very long, sclerotised spine (A) arising from base of flagellum; and a long, less sclerotised spine at apex of flagellum.

*Remarks*

Oz. quadratistylus differs from Oz. triangularis in the absence of spine (b).

  

***Ozoliarus semicircularis* Löcker, sp. nov.**
(Figs 21A–D, 42Q–U, 43A–B)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: 7 km W Petford, 24.ii.1997 (L.B. O'Brien) (ASCU HE029567).

*Etymology*

Named after the semicircular shape of the ventromedian process of the pygophore.

*Colour*

Body black, carinae paler, frons lateral with a light brown mark; legs mid to dark brown; forewing hyaline colourless with brown marks along crossveins, veins dark brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.1 mm.

Head: Vertex (total length) 2.1 times longer than wide; basal emargination rectangular (rarely acutely angled). Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.2x longer than wide; costa with 4–6 tubercles; 7–8 apical cells.

Male genitalia: Anal tube as in Figs 42Q–S; pygophore and genital styles as in Figs 43A–B. Aedeagus (Figs 42T–U): Phallotheca with a large trifurcated spine (a) ventral; and a ventral ridge with two humps. Flagellum membranous without sclerotised spines.

*Remarks*

*Oz. semicircularis* differs from *Oz. triangularis* in the absence of spine (b) and spine (A).

***Ozoliarus triangularis* Löcker, sp. nov.**
(Figs 21E–H, 43C–I)

*Type material*

*Holotype*, ♂, **AUSTRALIA, SA**: Murray River (F.R. Zietz) (SAMA I 21724).

*Colour*

Body dark brown, carinae paler; legs light to mid brown; forewing hyaline colourless without brown marks along crossveins, veins light to mid brown, tubercles concolorous

  

with veins, pterostigma light to mid brown.

*Etymology*

Named after the triangular ventromedian process of the pygophore.

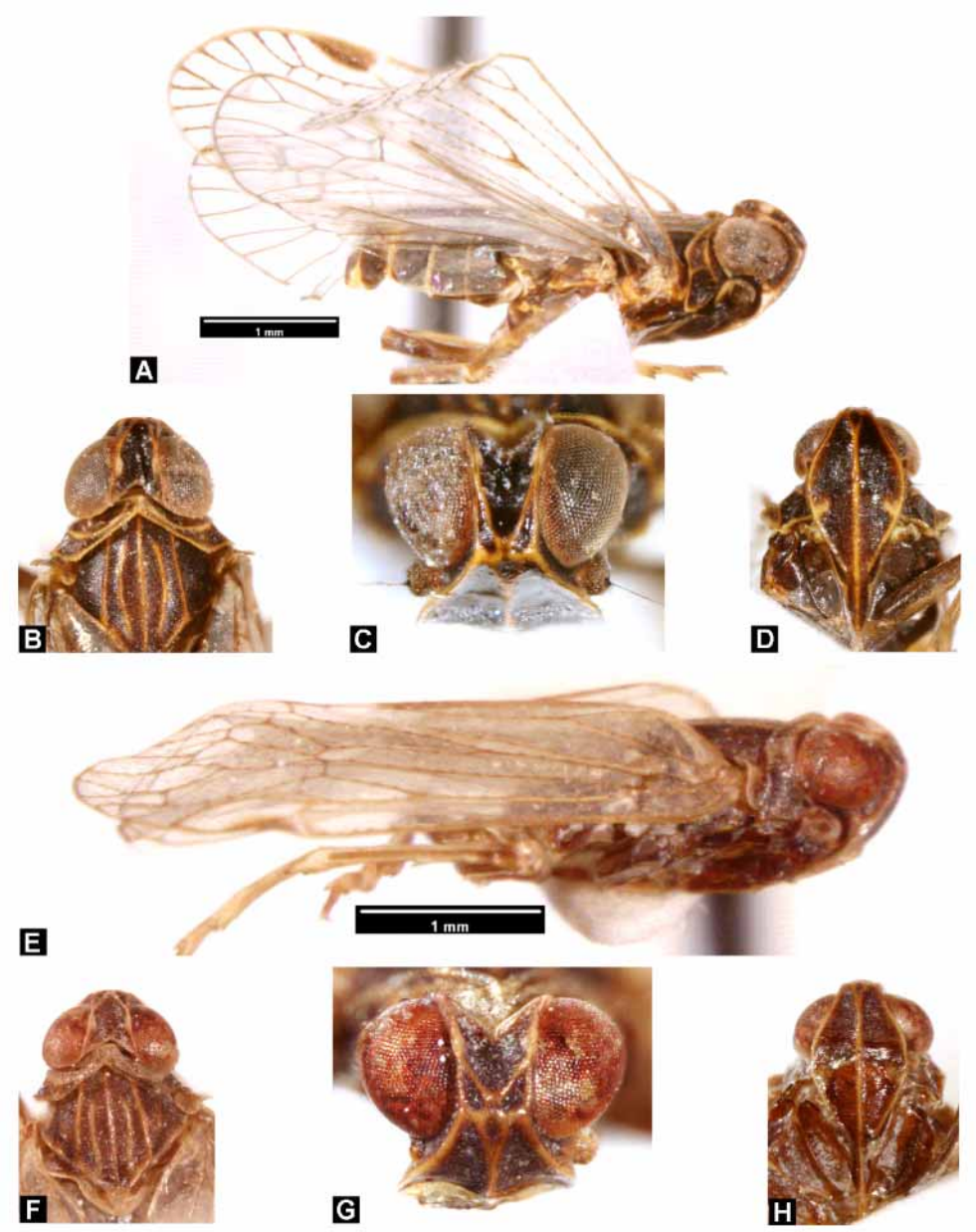


**FIGURE 21.** *Ozoliarus semicircularis*: A habitus; B, C, D head. *Ozoliarus triangularis*: E habitus; F, G, H head.

  

*Morphology*

Body length: ♂ 4.7 mm.

Head: Vertex (total length) 1.5 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.0 times longer than wide; costa with 11–13 tubercles; 8–9 apical cells.

Male genitalia: Anal tube as in Figs 43G–I; pygophore and genital styles as in Figs 43E–F. Aedeagus (Figs 43C–D): Phallotheca with a large, bifurcated spine (a) ventral; a short, moderately curved spine (b) dorsal; and a ventral ridge with two humps. Flagellum membranous with a very long, sclerotised spine (A) arising from base of flagellum; and a long, less sclerotised spine at apex of flagellum.

### *umbella* group

These two species share the following character states and are therefore grouped together as the *umbella* group: Arrangement of spines on aedeagus, i.e., aedeagus with three spines, a long spine left lateral, a long, s-shaped spine ventral, and a shorter spine right lateral, all spines curved as in Figs 43M, Q; genital styles apically rounded; forewing with fork of Pcu+A1 distinctly basad of centre of clavus; 9 apical cells; costa without tubercles.

*Oz. taroomensis* Löcker, **sp. nov.**

*Oz. umbella* Löcker, **sp. nov.**

### *Ozoliarus taroomensis* Löcker, sp. nov.

(Figs 22A–D, 43J–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: 6 km N Taroom, 25.36S 149.46E, 200 m, 11.ix.1992 (G. Daniels) (QM QMT123835, originally UQIC), *Paratypes*, AUSTRALIA, Qld: 1 ♂, same data as holotype (UQIC), 2 ♂, same data as holotype, 1.xi.1991 (UQIC), 1 ♂, 1 ♀, Expedition Ra NP, 'Amphitheatre' scrub, 25.13S 148.59E, 520 m, intercept, 25.ix.–17.xii.1997 (Cook, Monteith) (QM).

*Etymology*

Named after Taroom, the type locality.

*Colour*

Body dark brown to black, carinae, clypeus and pronotum paler, frons lateral with an light brown mark; legs mid to dark brown; forewing hyaline colourless with brown marks along crossveins, veins dark brown, tubercles concolorous with veins, pterostigma dark

  

brown; abdominal sternites dark brown..

*Morphology*

Body length: ♂ 6.4–6.9 mm, ♀ 7.9 mm.

Head: Vertex (total length) 2.0–2.1 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

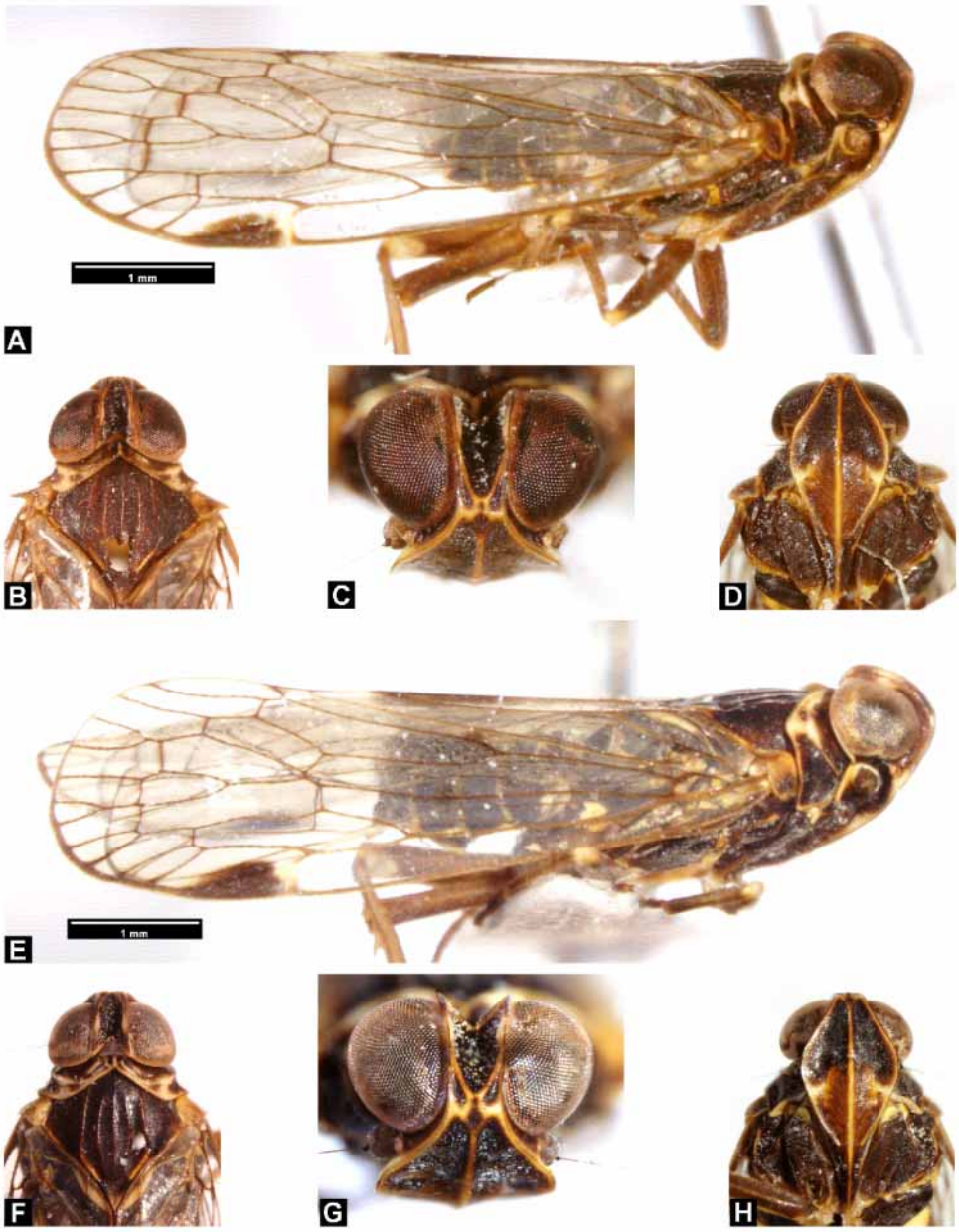


**FIGURE 22.** *Ozoliarus taroomensis*: A habitus; B, C, D head. *Ozoliarus umbella*: E habitus; F, G, H head.

  

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.1 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 43J–L; pygophore and genital styles as in Figs 43O–P. Aedeagus (Figs 43M–N): Phallotheca with a very long, moderately curved spine (a) left lateral; a long, strongly curved, s-shaped spine (b) ventral; a more robust, apically widening spine (c) right lateral; a large, sheetlike, bifurcated process ventral about midlength; and a very small, triangular, sheetlike process dorsolateral. Flagellum membranous with one or two sclerotised spines apically; and a sclerotised, finger-shaped process near base.

***Ozoliarus umbella* Löcker, sp. nov.**
(Figs 22E–H, 43Q–U, 44A–B)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: National Pk, xii.1923 (H. Hacker) (QM QMT123829), *Paratypes*, AUSTRALIA, Qld: 5 ♂, 6 ♀, same data as holotype (QM), 1 ♂, Nanango District, xi.1927 (H. Hacker) (QM), 1 ♂, Brisbane, 11.xi.1958 (J. Martin) (UQIC), 1 ♂, 16 km N Boonalh, 27.54S 152.41E, 6.–7.ix.1997 (C.J. Burwell) (QM), **AUSTRALIA, NSW**: 1 ♂, South West Rocks, Trial Bay, xii.1929 (A. Musgrave) (AMS).

*Etymology*

The latin term ‘umbella’ means ‘sunshade’. Named after a process on the phallotheca, which is shaped like a sunshade.

*Colour*

Body dark brown, carinae and clypeus paler, frons lateral with a white mark; legs light to mid brown; forewing hyaline colourless with or without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites mid brown..

*Morphology*

Body length: ♂ 6.6–7.3 mm, ♀ 7.1–8.2 mm.

Head: Vertex (total length) 2.0–2.3 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed median carina. Rostrum reaching or surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed median carina and evanescent or well-developed sublateral and lateral carinae. Forewing 2.9–3.2 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 43U, 44A–B; pygophore and genital styles as in Figs 43S–T. Aedeagus (Figs 43Q–R): Phallotheca with a slightly curved, very long spine

  

(a) left lateral; a long, strongly curved, s-shaped spine (b) ventral; a slender, apically narrowing spine (c) right lateral; a small rounded ventral process below midlength; and a very large, umbrella-shaped, coarsely serrated, sheetlike process dorsolateral. Flagellum membranous with slightly sclerotised spines.

**Other species within *Ozoliarus***

The following species are not affiliated with recognisable groups of species within the genus.

***Ozoliarus laertes* (Kirkaldy), comb. nov.**
(Figs 23A–D, 44C–I)

*Oliarus laertes Kirkaldy, 1906: 398.*

*Type material*

*Lectotype*, here designated ♂ (examined), **AUSTRALIA, NSW**: Mittagong, i.1905 (Koebele) (BPBM, nr 1188).

*Remarks*

Kirkaldy's (1906) original description does not specify whether the type series consists of more than one specimen. Only one specimen has been found in the BPBM and it is here designated as lectotype in order to clarify the identity of the species.

*Other material examined*

**AUSTRALIA:** ACT (1 ♂), NSW (17 ♂, 5 ♀), Qld (1 ♂).

*Distribution*

Australia (Australian Capital Territory, New South Wales, Queensland), Fiji, Rennell Island.

*Colour*

Body dark brown to black, carinae paler, clypeus sometimes mid brown; legs mid brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.3–6.4 mm, ♀ 6.8–7.9 mm.

Head: Vertex (total length) 1.7–2.1 times longer than wide; basal emargination acutely

  

angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching (rarely surpassing) hind coxae.

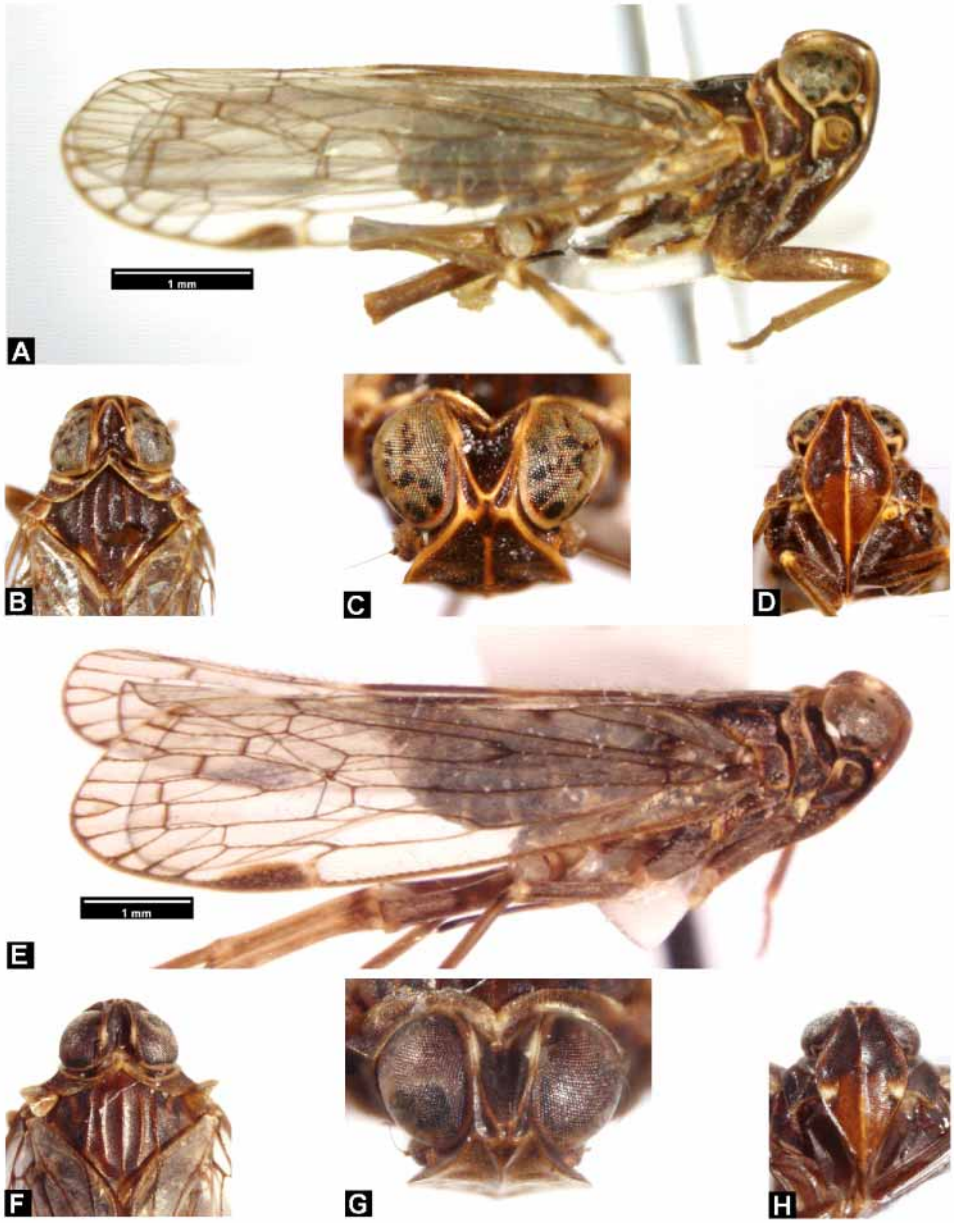


**FIGURE 23.** *Ozoliarus laertes*: A habitus; B, C, D head. *Ozoliarus alces*: E habitus; F, G, H head.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with evanescent or well-developed median and lateral carinae and well-developed sublateral carinae. Forewing 3.1–3.4 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 44C–E; pygophore and genital styles as in Figs

44H–I. Aedeagus (Figs 44F–G): Phallotheca with three long spines (a, b, d) pointing downwards (cephalad); and a shorter spine (c) curved upwards (caudad). Flagellum membranous, sometimes with membranous or slightly sclerotised spines.

***Ozoliarus alces* Löcker, sp. nov.**
(Figs 23E–H, 44J–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld:** Mt Robert, 5 km SW, 21.24S 148.27E, 300 m, mv light, brigalow, 23.x.2000 (S. Wright) (QM QMT123827), *Paratypes*, AUSTRALIA, Qld: 1 ♀, same data as holotype (QM), 1 ♀, same data as holotype, pitfall trap, 22.x.–18.xii.2000 (Cook, Monteith) (QM), 1 ♂, Brigalow Res. Stn, 24.48S 149.47E, 170 m, pyrethrum, brigalow trunks, 12.x.2001 (Monteith, Burwell) (QM), 2 ♀, Brigalow Res. Stn, 24.49S 149.45E, 170 m, pyr. trunks, logs, 12.x.2001 (Burwell, Monteith) (QM), 1 ♀, same data, vine scrub (QM), 1 ♂, Mitchell District, ix.1942 (N. Geary) (AMS), 1 ♂, 6.5 km S Moonie, 27.46S 150.21E, on *Wahlenbergia*, 20.ix.1991 (G. Daniels) (UQIC).

*Etymology*

Named after a spine on the phallotheca which is shaped like the large palmate antlers of the male elk (*Alces alces* Linnaeus).

*Colour*

Body mid to dark brown, carinae and clypeus paler, frons lateral with a white mark; legs mid brown; forewing hyaline colourless with brown marks along crossveins, veins dark brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 7.5–7.7 mm, ♀ 8.0–9.3 mm.

Head: Vertex (total length) 1.5–1.9 times longer than wide; basal emargination acutely angled or rectangular. Postclypeus with well-developed (rarely evanescent) median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.0–3.1 times longer than wide; costa with 21–33 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 44N–P; pygophore and genital styles as in Figs 44L–M. Aedeagus (Figs 44J–K): Phallotheca with a rounded spine (a) left lateral; a rounded spine (b) pointing upwards (caudad) right lateral; a large, flattened, bifurcated spine (c) dorsal, shaped like antlers of male elk; and a large, rounded ventral ridge. Flagellum partly sclerotised with a long spine.

  

***Ozoliarus antennoides* Löcker, sp. nov.**
(Figs 24A–D, 44Q–U, 45A–B)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NSW:** Moree, xii.1917 (ASCU HE029225), *Paratypes*, AUSTRALIA, NSW: 2 ♂, Narrabri, by sweeping around cultivated fields, 15.iii.1960 (M.I. Nikitin) (BMNH), **AUSTRALIA, Qld**: 1 ♂, Gatton, 6.xi.1933 (F.A. Perkins) (UQIC).

*Etymology*

Named after a spine on the phallotheca which points almost straight upwards.

*Colour*

Body mid to dark brown, carinae paler, frons lateral with an indistinct pale mark; legs light to mid brown; forewing hyaline colourless without brown marks along crossveins, veins light to mid brown, tubercles concolorous with veins, pterostigma light to mid brown; abdominal sternites mid brown.

*Morphology*

Body length: ♂ 5.5–5.7 mm.

Head: Vertex (total length) 1.3–1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.3–3.5 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 44Q–S; pygophore and genital styles as in Figs 44T–U. Aedeagus (Figs 45A–B): Phallotheca with a long, moderately curved spine (a) left lateral; a long, moderately curved spine (b) ventral; a long, almost straight spine (c) pointing upwards (caudal); a very short spine (d) dorsal at apex of aedeagus; and a triangular ventral ridge (fold) pointing upwards (caudad) below midlength. Flagellum slightly sclerotised with one long and one very short spine.

***Ozoliarus bumarangoides* Löcker, sp. nov.**
(Figs 24E–H, 45C–K)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NSW:** Woodenbong, 1.xi.1958 (I.C. Yeo) (QM QMT123832, originally UQIC), *Paratypes*, AUSTRALIA, NSW: 1 ♂, same data as holotype (UQIC).

  

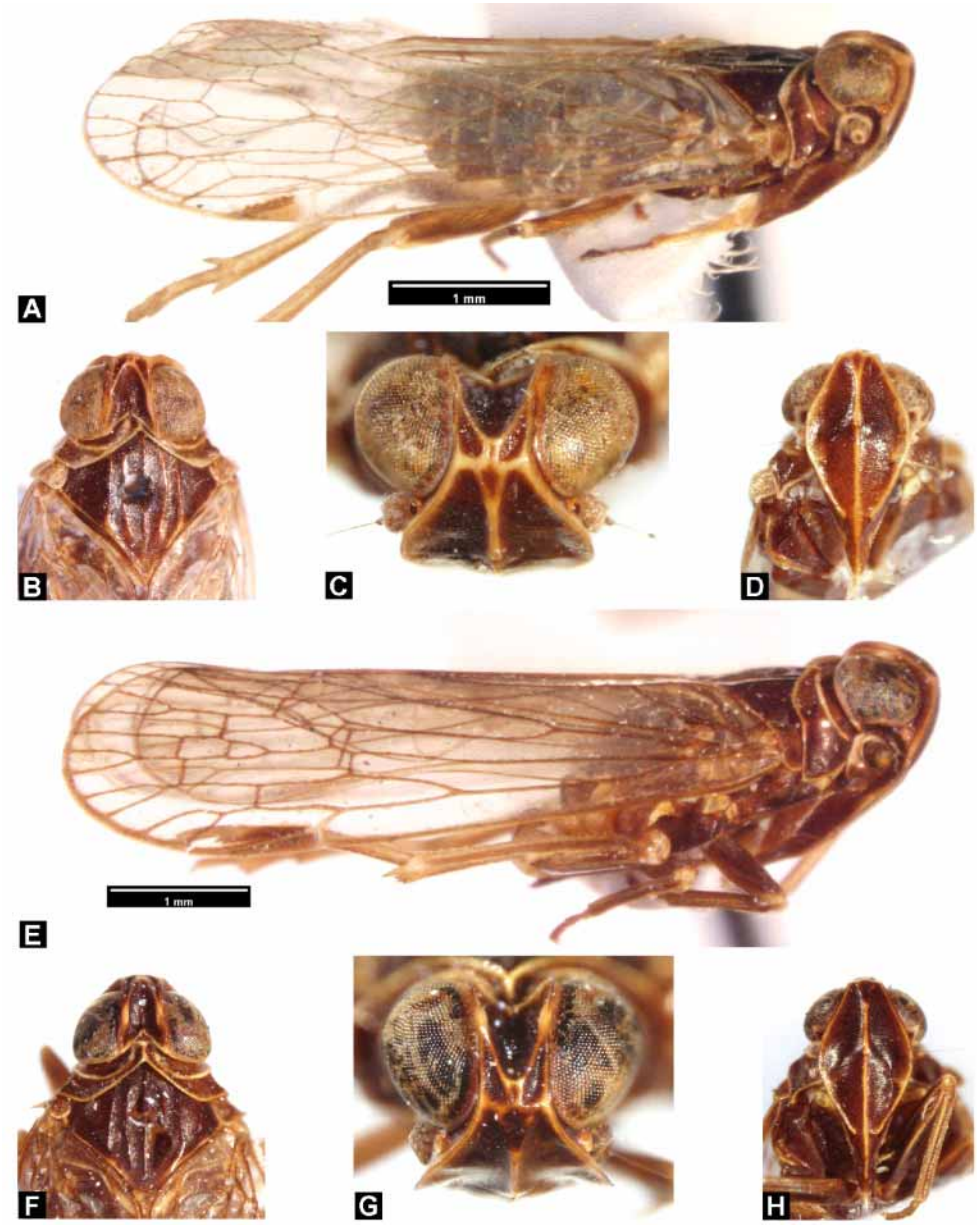


**FIGURE 24.** *Ozoliarus antennoides*: A habitus; B, C, D head. *Ozoliarus bumarangoides*: E habitus; F, G, H head.

*Etymology*

The term ‘bumarang’ means boomerang in an aboriginal language spoken in the Sydney region (Thieberger & McGregor 1994). Named after a boomerang-shaped spine on the phallotheca.

*Colour*

Body dark brown, carinae paler, frons lateral with an indistinct pale mark; legs mid brown; forewing hyaline colourless without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid to dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 6.5–6.7 mm.

Head: Vertex (total length) 1.9–2.0 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.0–3.1 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 45H–J; pygophore and genital styles as in Figs 45F–G. Aedeagus (Figs 45C–E): Phallotheca with a very long, strongly curved spine (a); a shorter, almost straight spine (b); and a large, flattened, boomerang-shaped spine (c). Flagellum membranous, with two short spines at apex.

***Ozoliarus dedariensis* Löcker, sp. nov.**
(Figs 25A–E, 45K–R)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: Dedari, 40 miles W of Coolgardie, 11.–21.i.1936 (R.E. Turner) (BMNH), *Paratypes*, AUSTRALIA, WA: 3 ♂, 1 ♀, same data as holotype (BMNH).

*Etymology*

Named after Dedari, the type locality.

*Colour*

Body dark brown, carinae paler; legs light to mid brown; forewing hyaline colourless with indistinct or without brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 4.6–4.9 mm, ♀ 5.0 mm.

Head: Vertex (total length) 1.6–1.8 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent or well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with

  

evanescent or well-developed median and lateral carinae and well-developed sublateral carinae. Forewing 3.6 times longer than wide; costa with 5–9 tubercles; 8 apical cells.

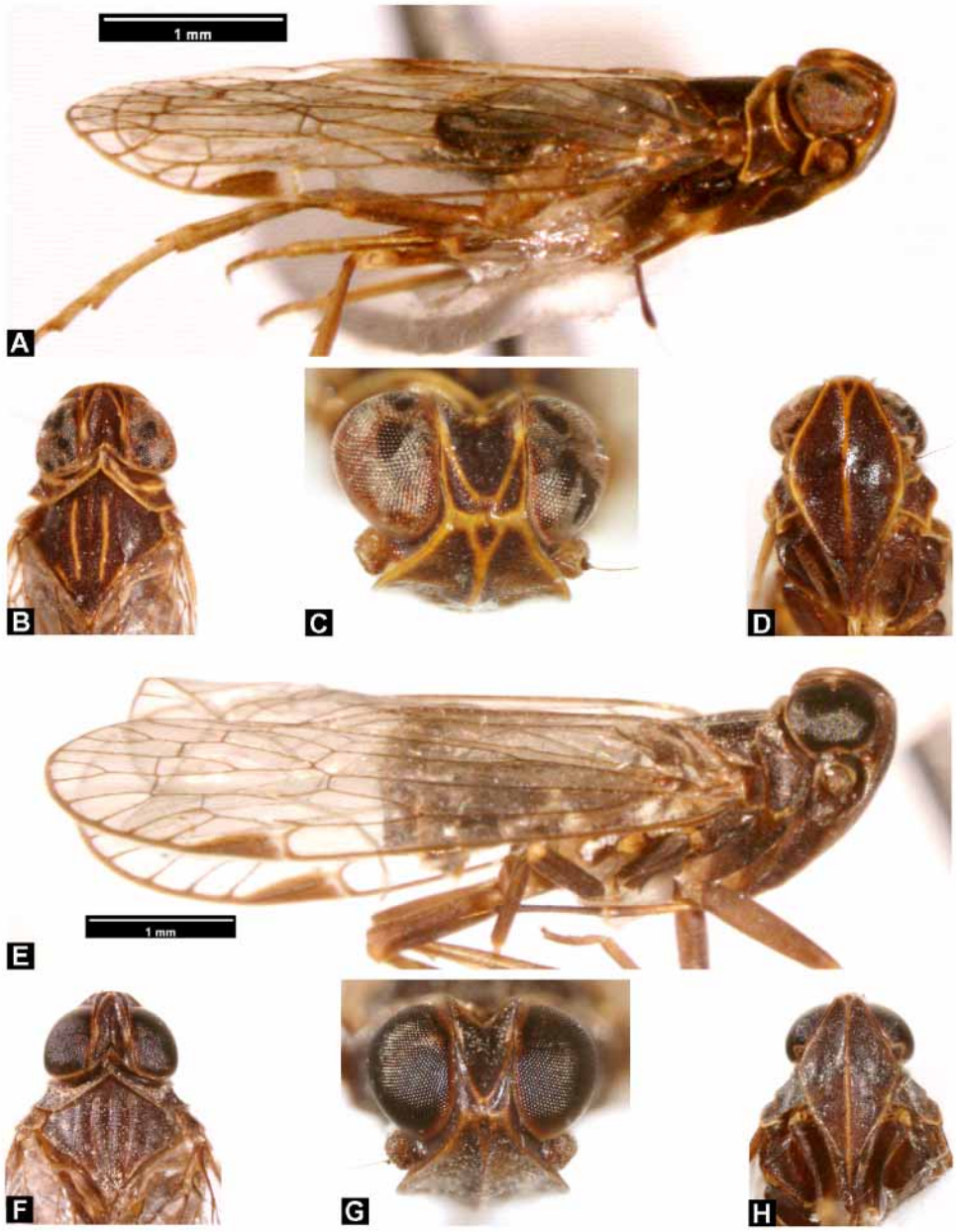


**FIGURE 25.** *Ozoliarus dedariensis*: A habitus; B, C, D head. *Ozoliarus latifundus*: E habitus; F, G, H head.

Male genitalia: Anal tube as in Figs 45K–M; pygophore and genital styles as in Figs 45Q–R. Aedeagus (Figs 45N–P): Phallotheca with a long, bifurcated spine (a) dorsolateral; a shorter spine (b) left lateral; a flattened bifurcated spine (c) ventral; a long,

  

flattened bifurcated spine (d) right lateral; a rounded spine (e) right lateral; a short spine (f); and a very short spine (g) dorsal. Flagellum membranous with two sclerotised blades and one sclerotised spine.

***Ozoliarus latifundus*** **Löcker, sp. nov.**
(Figs 25E–H, 45S–T, 46A–E)

*Type material*

*Holotype*, ♂, **AUSTRALIA, Qld**: Isla Gorge NP, 25.11S 149.58E, 320 m, 2.xi.1991 (G. Daniels) (QM QMT123833, originally UQIC).

*Etymology*

The Latin term 'latus' means 'broad' and 'fundus' means 'base'. Named after the very wide base of the phallotheca.

*Colour*

Body dark brown to black, carinae paler; legs mid brown; forewing hyaline colourless without brown marks along crossveins, veins dark brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 6.0 mm.

Head: Vertex (total length) 2.0 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.2 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 46C–E; pygophore and genital styles as in Figs 45S–T. Aedeagus (Figs 46A–B): Phallotheca with a very wide base; a long, moderately curved spine (a) left lateral; a strongly curved spine (b) right lateral; and a bifurcated spine (c) dorsal. Flagellum partly sclerotised with one sclerotised spine.

***Ozoliarus olene*** **Löcker, sp. nov.**
(Figs 26A–D, 46F–P)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: 110 miles E of Daly Waters, 11.i.1986 (M.S. & B.J. Moulds) (ASCU HE025958), *Paratypes*, AUSTRALIA, NT: 1 ♂, 8 km ENE of Victoria River Downs, 11.ix.1973 (L.P. Kelsey) (ANIC), 1 ♂, Warlock Ponds, 23.viii.1964 (T.E.

  

Woodward) (UQIC), **AUSTRALIA, Qld**: 1 ♂, Clare, sweeping kenaf, 2.ix.1986 (I. Kay) (QDPC), 1 ♂, 37 miles NW Bowen, 20 m, 14.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1 ♂, near Brookdale, 10 m, 2.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS).

*Material excluded from type series*

**AUSTRALIA, NT:** 1 ♂, 8 km ENE of Victoria River Downs, at light, 12.vii.1973 (L.P. Kelsey) (ANIC), 1 ♂, same data, 11.ix.1973 (ANIC), AUSTRALIA, Qld: 1 ♂, Carnarvon Rge, 14.xii.1938 (N. Geary) (AMS), **AUSTRALIA, NSW**: 1 ♂, 1.05 km ESE Murrawombie Bridge, 'Quinine Park', *Eucalyptus largiflorens* patch, 31.10.21S 147.08.08E, 13.xii.1999 (R. Harris, T. Moulds) (AMS), 1 ♂, 1 ♀, Brewarrina, 21.iv.1997 (V.T. Glover) (ASCU), 1 ♂, 3 ♀, Nyngan district, 1.–9.ii.1960 (T.E. Woodward) (UQIC).

*Etymology*

The Greek term 'olene' means 'elbow'. Named after a spine on the phallotheca which is bent like an elbow.

*Colour*

Body mid, dark brown or black, carinae paler; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles dark brown (contrasting with veins), pterostigma light to mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 4.4–5.1 mm, ♀ 5.2–6.6 mm.

Head: Vertex (total length) 1.6–2.0 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with absent, evanescent or well-developed median carina, well-developed sublateral carinae and evanescent or well-developed lateral carinae. Forewing 3.3–4.0 times longer than wide; costa with 11–31 tubercles; 7–8 apical cells.

Male genitalia: Anal tube as in Figs 46F–H; ventromedian process of pygophore and genital styles as in Figs 46I–J. Aedeagus (Figs 46K–M): Phallotheca with a short, almost straight spine (a); and a moderately curved spine (b) left lateral; a large strongly curved spine (c) with flattened, serrated processes; a very long, flattened spine (d); a very slender spine (e); a membranous spine (f); and a very short, dorsal spine (g). Flagellum partly sclerotised with 2–3 spines.

*Remarks*

The material listed above as being excluded from the type series shows a minor

  

variation from the type material. The phallotheca differs from the type in the absence of spine (e and g) and a rounded instead of a flattened spine (d) as in Figs 46N–P. Spine (f) is stronger in the variant than in the type. Further research is needed to clarify whether this variant represents a distinct species.

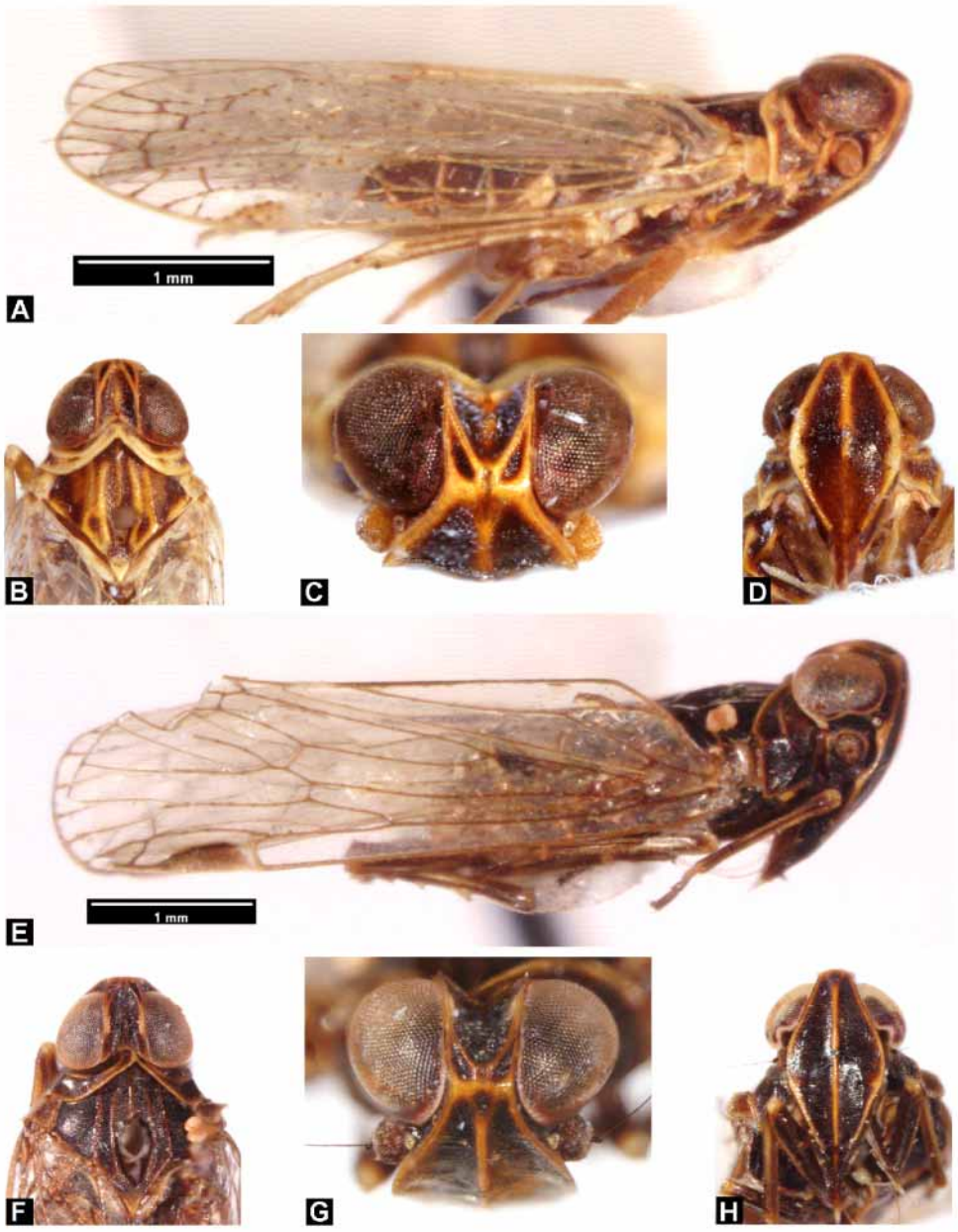


**FIGURE 26.** *Ozoliarus olene*: A habitus; B, C, D head. *Ozoliarus pelecanus*: E habitus; F, G, H head.

***Ozoliarus pelecanus* Löcker, sp. nov.**
(Figs 26E–H, 46Q–S, 47A–E)

*Type material*

*Holotype*, ♂, **AUSTRALIA, WA**: Tambrey, on *Acacia*, 7.viii.1987 (R.P. McMillan) (WAMP Nr 34374).

*Etymology*

Named after a spine on the phallotheca which is shaped like the head and neck of a pelican.

*Colour*

Body black, carinae paler; legs dark brown; forewing hyaline colourless with indistinct brown marks along crossveins, veins mid brown, tubercles concolorous with veins, pterostigma dark brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.7 mm.

Head: Vertex (total length) 2.1 times longer than wide; basal emargination rectangular. Postclypeus with well-developed median carina.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.7 times longer than wide; costa without tubercles; 8 apical cells.

Male genitalia: Anal tube as in Figs 47C–E; pygophore and genital styles as in Figs 46Q–R. Aedeagus (Figs 46S, 47A–B): Phallotheca with a very short, slightly curved spine (a) dorsal at apex; two long, strongly curved spines (c, d) ventral; a spine (c) shaped like head and neck of a pelican; a shorter, strongly curved spine (d) right lateral; and a rounded sclerotised process dorsal. Flagellum sclerotised with 3 spines.

*Remarks*

The legs of the only known specimen of this species are missing and therefore the chaetotaxy of the hind legs cannot be determined. This means the specimen cannot be assigned to an existing genus with certainty. Based on the shape of the head, anal tube, genital styles, and aedeagus, it is tentatively placed in *Ozoliarus*.

***Ozoliarus poculum* Löcker, sp. nov.**
(Figs 27A–D, 47F–L)

*Oliarus kampaspe* Kirkaldy *sensu* Jacobi 1928:32, misidentification of *O. kampaspe* Kirkaldy, 1906: 398.

*Remarks*

Jacobi (1928) presents a redescription of *O. kampaspe* Kirkaldy based on specimens

  

from the Kimberley district, which were available to us for examination. These specimens were misidentified by Jacobi (see further details in the remarks section of *O. kampaspe* Kirkaldy) and represent a new species described herein as *Ozoliarus poculum*.

*Type material*

*Holotype*, 1 ♂, **AUSTRALIA, NSW**: 20 km W of White Cliffs, 23.–24.ii.1981 (B.J. Loudon) (ASCU HE016869), *Paratypes*, AUSTRALIA, NSW: 3 ♂, 1 ♀, same data as holotype (ASCU), 2 ♂, 4 ♀, 7 km N Tibooburra, dry creek bed, mv lamp, 24.ii.1981 (B.J. Loudon, R. Pigott) (ASCU), 1 ♂, same data, 12.iv.1979 (B.J. Loudon) (ASCU), 1 ♂, 2 ♀, Wanaaring, 25.ii.1981 (B.J. Loudon, R. Pigott) (ASCU), 1 ♂, bank of Merri Merri Ck, 2.5 km N of Quambone, 30.54.38S 147.51.56E, ex *Eucalyptus largiflorens*, 14.xii.1999 (R. Harris, T. Moulds) (AMS), 1 ♂, Lord Howe Island, UV lamp, 24.ix.1991 (G. Brown) (ASCU), **AUSTRALIA, NT**: 4 ♂, Blast site camp, Fossil area on Camfield Station, 16.ix.1985 (I. Archibald) (MAGD), 1 ♂, Alroy Downs Station, 19.18S 136.04E, 5.iii.1980 (G. Gow, P. Horner) (MAGD), 1 ♂, Junction WH, 16 km SW Austral Downs, at light, 22.ix.1977 (G.F. Gross) (SAM), 1 ♂, 10 miles S Dunmara, 200 m, 26.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1 ♂, Devil's Marbles, 350 m, 27.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), **AUSTRALIA, Qld**: 1 ♀, Cunnamulla (N. Geary) (AMS), 3 ♂, 4 ♀, same data, x.1941 (AMS), 1 ♂, 4 ♀, same data, ii.1942 (AMS), 2 ♂, 3 ♀, same data, i.1943 (AMS), 1 ♂, 9 km WSW of Adavale, 25.54.39S 144.30.51E, 270 m, *Eremophila mitchellii*, xi.2002 (Schuh, Cassis, Silveira) (AMS), 1 ♂, Moranbah, 4 km S, 22.02S 148.03E, mv lamp, 3.x.2003 (G.B. Monteith) (QM), 1 ♂, Dynevor Lakes, 88 km W Eulo, 28.05S 144.12E, 150 m, 28.ix.1991 (G. Daniels) (UQIC), 2 ♂, 1 ♀, Paroo River, Eulo, 28.09S 145.02E, 150 m, on *Pluchea baccharoides*, 25.ix.1991 (G. Daniels) (UQIC), 1 ♀, same data, 23.ix.1991 (UQIC), **AUSTRALIA, SA**: 2 ♂, New Kalamurina St., Warburton R., 9.iii.1972 (E.G. Matthews, T. Houston) (SAM), 1 ♂, Billeroo Dam, 14 km E Frome Dawns Stn HS, at light, 20.xi.1975 (G.F. Gross, V. Peterny) (SAM), 1 ♂, Frome River crossing of Birdsville Track, near Marree, at light, 25.x.1966 (G.F. Gross) (SAM), 1 ♂, near Clifton Hills OS, 26.30S 139.29E, malaise trap, 18.–20.xi.1993 (J.A. Forrest, D. Hirst) (SAM), 2 ♂, Clifton Hills OS, sand hills with triodia, 26,30S 139.29E, malaise trap, 18.–20.xi.1993 (J.A. Forrest, D. Hirst) (SAM), 1 ♂, South Gap, 3.6 km ESE Lake Dam, 31.42S 137.40E, 4.–9.xi.1996 (Stony Des. Sur. Bacamp) (SAM), 1 ♂, Abminga WH, 26.08S 134.51E, at light, 17.iii.1993 (J.A. Forrest, D. Hirst) (SAM), 1 ♂, 11.5 km NE of Wooltana Homestead, 30.20.14S 139.29.36E, 180 m, 6.xi.1998 (Schuh, Cassis, Silveira) (AMS), 1 ♂, 36 km ESE of Curdimurka, W of Marree, 21.ix.1972 (Z. Liepa) (ANIC), 1 ♂, Mirra Mitta Bore, Birdsville Track, 18.ix.1972 (Z. Liepa) (ANIC), 1 ♂, Old Alton Downs, Simpson Desert, 19.ix.1972 (Z. Liepa) (ANIC), 1 ♂, 40 km N Innamincka on Cordillo Downs Rd, at light on gibber plains, 2.ix. (F.J. Mitchell) (SAM), 1 ♂, Owieandana, N Flinders Range (Hale, Tindale) (SAM), 2 ♂, 4 ♀, Minnie Downs, NE Corner of South Australia (L. Reese) (SAM), 1 ♂, Lake Palankarinna, 3.iii.1972 (E. Matthews) (SAM),

  

**AUSTRALIA, WA**: 2 ♂, Langi Crossing, 10 m, 13.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1 ♂, 15 miles W Louisa Downs, 250 m, 18.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1 ♂, 12 miles S of Minderoo, 17.x.1970 (D.H. Colless) (ANIC), 1 ♂, 8 miles ENE of Millstream, 20.x.1970 (D.H. Colless) (ANIC), 1 ♂, W of Welbourne Hill, 24.x.1953 (N.B. Tindale) (SAM), 1 ♂, Tambrey, on *Acacia*, 7.viii.1987 (R.P. McMillan) (WAMP), 1 ♂, Kimberley District, ii (Mjöberg) (NHRS), 1 ♀, same data (MTD), 1 ♀, same data, iii (NHRS).

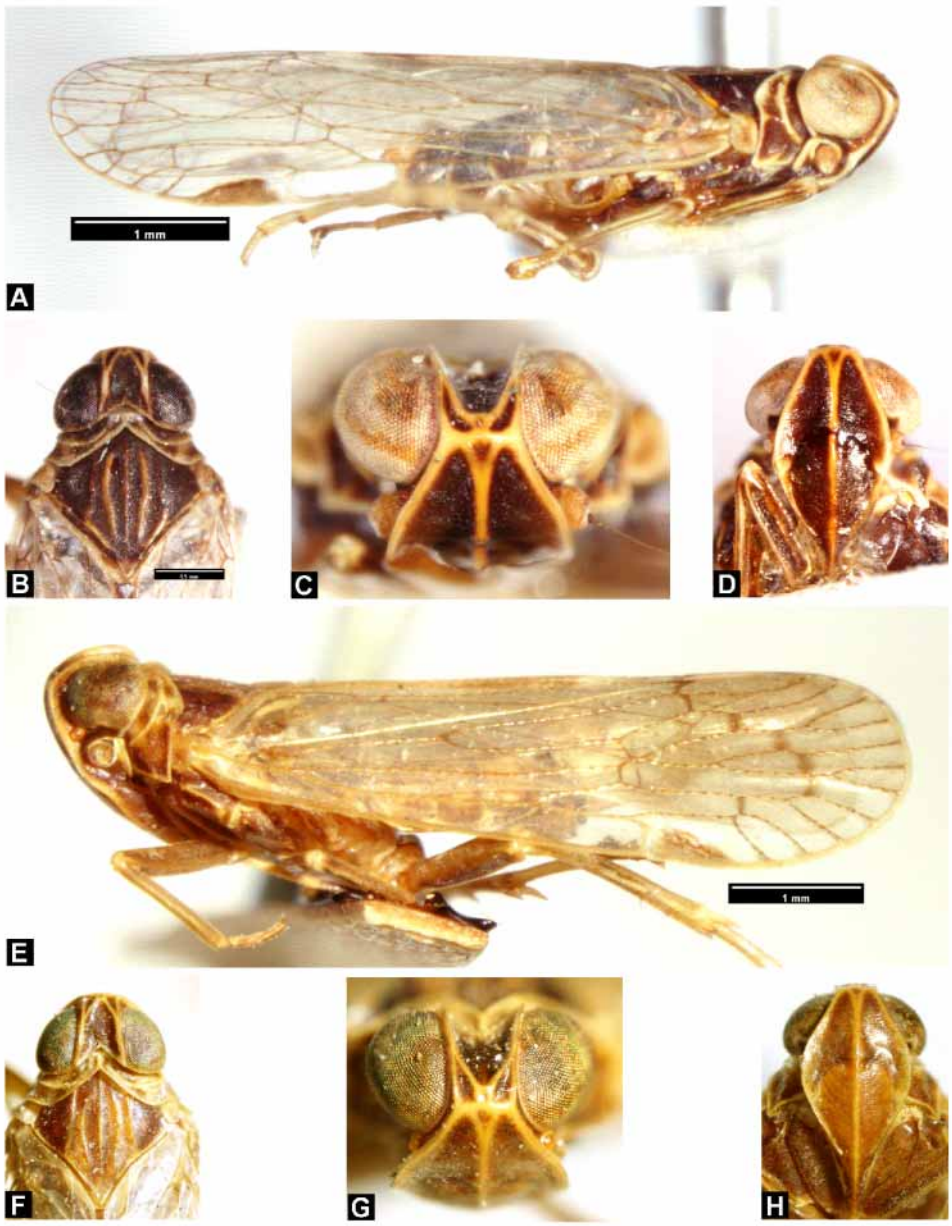


**FIGURE 27.** *Ozoliarus poculum*: A habitus; B, C, D head. *Ozoliarus asaica*: E habitus; F, G, H head.

  

*Etymology*

The Latin term ‘poculum’ means ‘cup, goblet’. Named after a spine on the phallotheca which, in ventral view, is shaped like a cup.

*Colour*

Body dark brown to black, carinae paler, frons lateral with a white mark; legs light to mid brown; forewing hyaline colourless with indistinct or without brown marks along crossveins, veins light to mid brown apically darker, tubercles concolorous with veins, pterostigma mid brown; abdominal sternites dark brown.

*Morphology*

Body length: ♂ 5.2–7.3 mm, ♀ 5.7–7.0 mm.

Head: Vertex (total length) 1.4–1.8 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with evanescent median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.3–3.7 times longer than wide; costa with 0–6 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 47F–H; pygophore and genital styles as in Figs 47I–J. Aedeagus (Figs 47K–L): Phallotheca with two short, rounded spines (a, b) left lateral; a flattened, serrated spine (c) ventral; a long, slender spine (d) ventral; a large, flattened, grossly serrated spine (e) shaped like cup in ventral view; a long, flattened spine (f) dorsal; a very long, flattened, bifurcated spine (g) right lateral; and a very small spine (h) dorsal below midlength. Flagellum sclerotised with one or two spines.

***Ozoliarus asaica* (Kirkaldy), comb. nov., nom. dub.**
(Figs 27E–H)

*Oliarus asaica* Kirkaldy, 1906: 399.

*Type material*

*Syntype*, ♀ (examined), **AUSTRALIA, NSW**: Sydney, i.1905 (BPBM).

*Colour*

Body mid brown, carinae paler; legs light to mid brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, tubercles concolorous, pterostigma mid brown; abdominal sternites mid brown.

  

*Morphology*

Body length: ♀ 6.9 mm.

Head: Vertex (total length) 1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with well-developed carinae. Forewing 3.4 times longer than wide; costa without tubercles; 9–10 apical cells.

Male genitalia: Unknown (only known specimen is a female).

*Remarks*

Based on the chaetotaxy of the hind leg (3 lateral spines on tibia, 7 apical teeth on 1st and 2nd tarsomere) this species is transferred to the genus *Ozoliarus*. Because of the absence of male genitalia *O. asaica* cannot be reliably matched with any species within this genus; therefore, it regarded as a *nomen dubium*.

## Genus *Oteana* Hoch

*Oteana* Hoch, 2006: 3.
Type species *Oliarus euphranor* Fennah, 1958: 131, by original designation.

*Morphology*

Body length: ♂ 6.2–7.7 mm, ♀ 7.2–10.1 mm.

Head: Vertex (total length) 1.4–2.0 times longer than wide; lateral carinae slightly to moderately elevated; subapical carina forking from lateral margin at 1/3–1/2 (in *Ot. sponsa* 1/3–1) total length of vertex; median carina 1/2–3/4 as long as median length of vertex. Position of maximum width of frons more or less around centre of frontoclypeal suture; lateral carinae of frons convex (evenly rounded or rectilinear apically) or s-shaped. Anteclypeus with well-developed median carina.

Thorax: Forewing with fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein basad of fork MA+MP; RP apically bifid; MA apically trifid; MP apically bifid; fork of Pcu+A1 distinctly basad of (sometimes more or less around *Ot. lubra* and *Ot. sponsa*) centre of clavus. Hind leg: tibia with 3 lateral spines; 6 large apical teeth; 1st tarsomere with 7 apical teeth and no platellae; 2nd tarsomere with 5 apical teeth and no platellae.

Male genitalia: Genital styles without long, sclerotised, spinelike, dorsal process.

*Distribution*

Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria, Western Australia), Fiji, New Caledonia, Society Islands, Cook Islands.

  

*Remarks*

Fennah recorded *Oteana lubra* from Fiji (Fennah 1950) and New Caledonia (Fennah 1969). This material has not been examined to confirm this distribution.

Females (unless associated with males, see comments in Material & Methods section) could only be identified to genus. The body length measurement given above is derived from females assigned to species level plus additional females which could only be identified to genus.

*Oteana* differs from all other Australian pentastirine genera in the unique combination of the following features: 2 lateral spines on the hind tibia, 7 apical teeth on the 1st hind tarsomere and 5 apical teeth on the 2nd hind tarsomere.

Twelve species of *Oteana* are recorded from the Society Islands and one species from the Cook Islands (Hoch 2006), none of which is conspecific with the Australian species. The arrangement of spines on the phallotheca of the Polynesian species shows some similarities to species of the *lubra* group. In general, they can be differentiated from the Australian species by the presence of a sclerotised distal spine on the flagellum (the flagellum of Australian species is unarmed). The body length of species of *Oteana* from the Cook and Society Islands (males 4.9–8.0 mm, females 5.5–9.0 mm) is also similar to that of the Australian species.

**Key to species of *Oteana* Hoch**

1 Phallotheca very short and wide as in Figs 49A–B; aedeagus with flattened spines as in Figs 49A–B ..... *Ot. sponsa* (Kirkaldy)

- Phallotheca narrower (Figs 47P, 48A, N–O); aedeagus with rounded spines ..... ..... *lubra* group...2

2 Phallotheca with spine (b) forking into three branches (Figs 47O–P)..... .....*Ot. lubra* (Kirkaldy)

- Phallotheca without any spine forking into three branches ..... 3

3(2) Phallotheca with spine (a) forking into two branches (Fig. 48A); tips of spine (a) pointing downwards (cephalad) as in Fig. 48A ..... *Ot. salicoides* Löcker, **sp. nov.**

- Phallotheca with spine (a) unforked (Figs 48M–O); tip of spine (a) pointing upwards (caudad) as in Figs 48M–O..... *Ot. tattendi* Löcker, **sp. nov.**

***lubra* group**

These three species have a similar arrangement of the spines on the aedeagus and are grouped together as the *lubra* group:

*Ot. lubra* (Kirkaldy)

*Ot. salicoides* Löcker, **sp. nov.**

  

*Ot. tattendi* Löcker, **sp. nov.**

The following species from the Society and Cook Islands are also part of the *lubra* group:

*Oteana euphranor* (Fennah, 1958), *Ot. iaorana* Hoch, 2006, *Ot. tiare* Hoch, 2006, *Ot. aorai* Hoch, 2006, *Ot. mato* Hoch, 2006, *Ot. ata* Hoch, 2006, *Ot. moana* Hoch, 2006, *Ot. pouvana* Hoch, 2006, *Ot. eurynome* (Fennah, 1958), *Ot. aimeho* Hoch, 2006, *Ot. omai* Hoch, 2006, *Ot. temehani* Hoch, 2006, and *Ot. gemellar* (Fennah 1958).

***Oteana lubra* (Kirkaldy), comb. nov.**
(Figs 28A–D, 47M–S)

*Oliarus lubra* Kirkaldy, 1906: 400.
*Oliarus lubra* var. *vitiensis* Kirkaldy, 1907: 109 **syn. nov.**

*Type material*

*Lectotype*, here designated, ♂ (examined), **AUSTRALIA, Qld**: Bundaberg, ix.–xii.1904 (Koebele) (BPBM), *Paralectotypes* (examined), **AUSTRALIA, Qld**: 2 ♀ same data as holotype (Koebele) (BPBM); 1 ♀ Bundaberg, xi.1904 (BPBM); 1 ♀ Brisbane, xi.1904 (BPBM).
*Type of O. lubra* var. *vitiensis*, 1 ♂ (examined), **FIJI**: Navua, ii.1906 (BPBM, Nr 1194).

*Remarks*

A lectotype is designated herein in order to clarify the identity of the species.

*Other material examined*

**AUSTRALIA:** NSW (57 ♂, 55 ♀), NT (24 ♂, 11 ♀), Qld (76 ♂, 59 ♀), SA (24 ♂, 5 ♀), VIC (2 ♂).

*Distribution*

Australia (Queensland), Fiji, New Caledonia.

*Remarks*

Fennah recorded this species from Fiji (Fennah 1950) and New Caledonia (Fennah 1969). This material has not been examined to confirm this distribution.

*Colour*

Vertex light to mid brown, carinae paler; face light brown, carinae paler, anteclypeus darker; pronotum light brown; mesonotum mid to dark brown, paler between lateral and sublateral carinae; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles concolorous with veins, pterostigma light to mid brown; abdominal sternites light to mid brown.

  

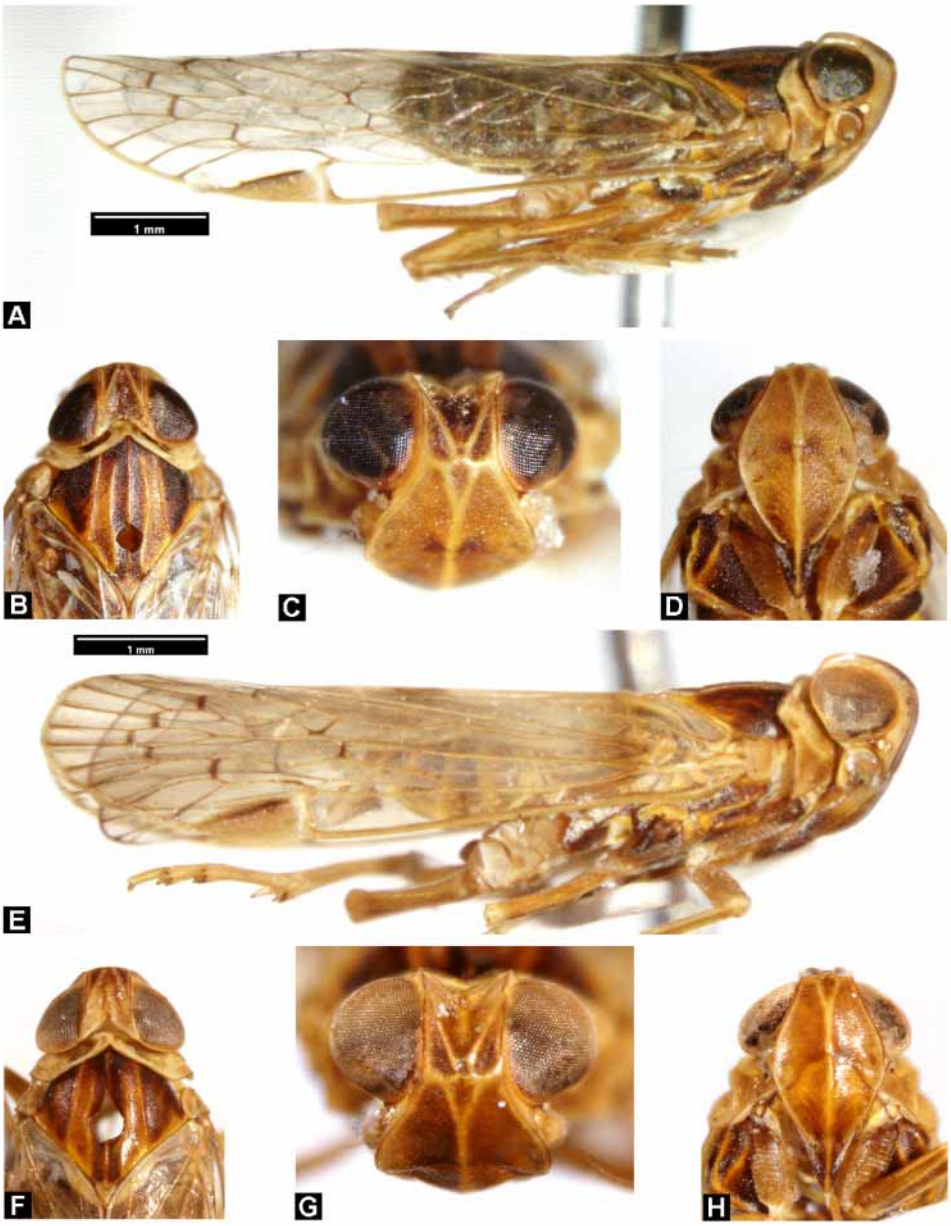


**FIGURE 28.** *Oteana lubra*: A habitus; B, C, D head. *Oteana salicoides*: E habitus; F, G, H head.

*Morphology*

Body length: ♂ 6.4–7.7 mm, ♀ 8.4–10.0 mm.

Head: Vertex (total length) 1.4–1.6 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or

  

well-developed carinae. Forewing 3.1–3.9 times longer than wide; costa with 0–1 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 47Q–S; pygophore and genital styles as in Figs 47M–N. Aedeagus (Figs 47O–P): Phallotheca with a spine (a) forking into a short branch (a1) and a very long curved branch (a2); a spine (b) forking into three branches (b1, b2, b3); a very short spine (c); and sometimes with a very slender spine (d); phallotheca with a sclerotised rounded flap dorsally. Flagellum membranous, unarmed.

*Remarks*

In his original description of *Oliarus lubra*, Kirkaldy (1906) gave the body lengths of male (8.5 mm) and female (8.5–9.25 mm) specimens. Kirkaldy (1907) described *O. lubra* var. *vitiensis* based on male specimens with a body size "as little as 6 mm" from Fiji. The smaller body size is the only character he provides for differentiation of the two varieties. A specimen from Navua, Fiji (the only specimen of *O. lubra* var. *vitiensis* available to us for examination) had a body length of 6.5 mm which is still within the range of body length of Australian specimens of *Ot. lubra*. The morphological configuration of the specimen assigned by Kirkaldy to *O. lubra* var. *vitiensis* does not support the assumption that this taxon is differentiated from *Ot. lubra* from Australia. Consequently, *O. lubra* var. *vitiensis* is synonymised with *Ot. lubra*.

***Oteana salicoides* Löcker, sp. nov.**
(Figs 28E–H, 48A–G)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Snake Bay, Melville Island, light trap, 8.xii.1982 (C. Wilson) (MAGD 4750), *Paratypes*, **AUSTRALIA, Qld**: 1 ♂, Booby Island, at light, 21.–22.xii.1977 (ANIC), 1 ♂, 7941 Yule Point, Cairns-Mossman Road, 27.x.1966 (E.B. Britton) (ANIC), 1 ♂, Horn Island, Torres Strait, sweep of arborescent veg. in mangroves, 26.vii.1975 (H. Heatwole) (AMS).

*Etymology*

Named after the arrangement of spines on the phallotheca which resembles the hanging branches of some trees of the genus *Salix*.

*Colour*

Head light brown, carinae paler, anteclypeus darker; pronotum light brown; mesonotum mid brown (sometimes paler between lateral and sublateral carinae); legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles concolorous with veins, pterostigma light to mid brown; abdominal sternites light brown.

  

*Morphology*

Body length: ♂ 6.1–7.0 mm.

Head: Vertex (total length) 1.6–2.0 times longer than wide; basal emargination acutely angled, rectangular or obtusely angled. Postclypeus with well-developed median carina. Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.0–3.3 times longer than wide; costa with 0–1 tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 48E–G; pygophore and genital styles as in Figs 48C–D. Aedeagus (Figs 48A–B): Phallotheca with a spine (a) forking into a short branch (a1) and a long branch (a2); a spine (b) forking into two long branches (b1, b2); a very short spine (c); and a slender spine (d). Flagellum sclerotised, unarmed.

*Remarks*

The general arrangement of spines on the phallotheca resembles that of *Ot. lubra*; it differs from *Ot. lubra* in the presence of only two branches of spine (b), instead of three branches.

***Oteana tattendi* Löcker, sp. nov.**
(Figs 29A–D, 48H–O)

*Type material*

*Holotype*, ♂, **AUSTRALIA, NT**: Woolner Homestead, 12.22.48S 131.27.01E, sweeping *Mangifera indica*, 20.i.2000 (G. Bellis) (MAGD I002152, originally NTDPI), *Paratypes*, AUSTRALIA, NT: 2 ♂, same data as holotype (NTDPI), 2 ♂, Wildman River, Cashew Plantation, 17.i.1990 (W. Houston) (NTDPI), 1 ♂, 1 km N of Cahills Crossing, E ast Alligator River, 12.25S 132.58E, 7.vi.1973 (R.L. Kitching) (ANIC), 1 ♂, same data, 9.vi.1973 (ANIC), 1 ♂, Tortilla Flats, 8.ii.1985 (I. Cook) (NTDPI), 1 ♂, same data, 20.ii.1985 (NTDPI), 2 ♂, Brook Creek, Burnside (T.G. Campbell) (ANIC), 1 ♂, Darwin, Black Jungle, *Melaleuca*, 23.ix.1958 (J.L. Gressitt) (BPBM), 1 ♂, 1 ♀, Djaburluku Billabong, 4.xi.1989 (C.W. & L.B O'Brien) (LBOB), 2 ♂, Yellow Waters, Kakadu NP, sweeping *Hymenachne acutigluma*, 4.xii.2003 (G. Bellis) (ASCU), 2 ♂, Magela Ck, 1 km NNW of Mudginberri H.S., 12.36S 132.52E, 25.v.1973 (T. Weir, N. Forrester) (MAGD).

*Other material examined*

Specimens with branch (b1) reduced to a small knob: AUSTRALIA, NT: 3 ♂, same data as holotype (NTDPI), 1 ♂, Finniss River Stn, on *Mimosa pigra*, 24.xi.1987 (C. Wilson) (ASCU), 1 ♂, Jabiru, at light, 4.xi.1989 (C.W. & L.B. O'Brien) (LBOB), 1 ♂, Yellow Waters, Kakadu NP, sweeping *Hymenachne acutigluma*, 4.xii.2003 (G. Bellis)

  

(GBP), 1 ♂, Island Billabong, Mudginberri Station via Jim Jim, 20.viii.1971 (T. Weir, A. Allwood) (MAGD), 2 ♂, Black Jungle, nr Humpty-doo, 24.ix.1958 (J.L. Gressitt) (BPBM).

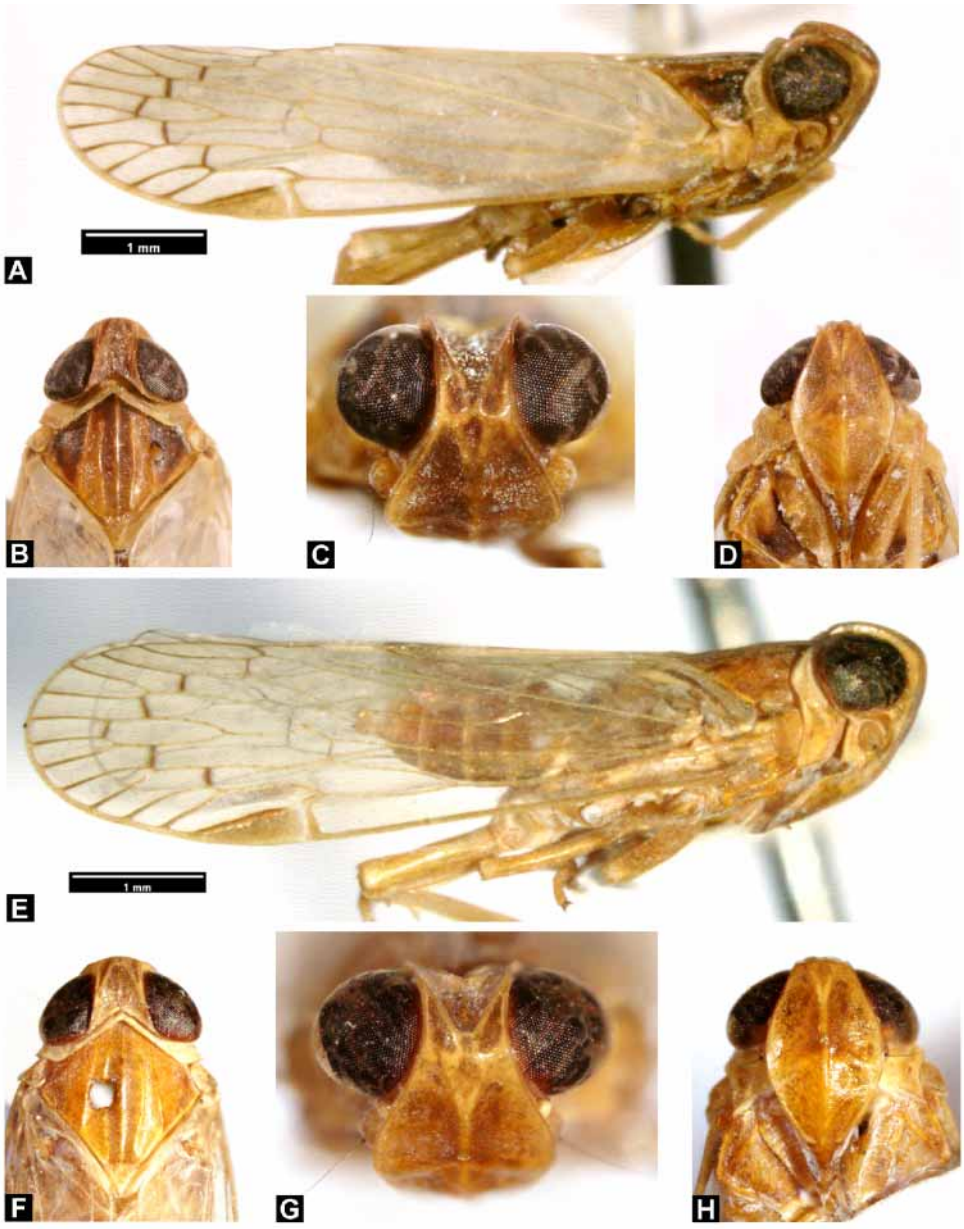


**FIGURE 29.** *Oteana tattendi*: A habitus; B, C, D head. *Oteana sponsa*: E habitus; F, G, H head.

*Etymology*

The name is based on 'tattendi', which means 'to ascend, climb up, to go towards' in Kaurna, an aboriginal language in South Australia (Thieberger & McGregor 1994) and refers to the ascending (caudally directed) spines on the phallotheca.

  

*Colour*

Head light to mid brown, carinae paler; pronotum light brown; mesonotum mid to dark brown, paler between lateral and sublateral carinae; legs light brown; forewing hyaline colourless with brown marks along crossveins, veins light brown, apically darker, tubercles indistinct, concolorous with veins, pterostigma light brown; abdominal sternites light brown.

*Morphology*

Body length: ♂ 6.3–7.6 mm, ♀ 8.3–8.8 mm.

Head: Vertex (total length) 1.5–1.9 times longer than wide; basal emargination obtusely angled or rectangular. Postclypeus with well-developed median carina. Rostrum not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed carinae. Forewing 3.0–3.3 times longer than wide; costa with 0–1 tubercles; 9 (rarely 8) apical cells.

Male genitalia: Anal tube as in Figs 48H–J; pygophore and genital styles as in Figs 48K–L. Aedeagus (Figs 48M–N): Phallotheca with a long spine (a); a long spine (b) forking into a strong branch (b1) and a slender branch (b2); a short spine (c); and a slender spine (d). Flagellum membranous, unarmed.

*Remarks*

In the male genitalia of some specimens, branch (b1) is reduced to a small knob as in Fig. 48O. It is possible that these specimens once possed branch (b1), but it broke off at some stage in their life (perhaps during copulation). Because the significance of this variation is unclear, these specimens have been excluded from the type series of *Ot. tattendi.*

## Other species within *Oteana*

The following species is not part of the *lubra* group.

### *Oteana sponsa* (Kirkaldy), comb. nov.

(Figs 29E–H, 48P–R, 49A–D)

*Oliarus sponsa* Kirkaldy, 1906: 400.

*Type material*

*Lectotype*, here designated, ♂ (examined), **AUSTRALIA, Qld**: Cairns, viii.1904 (BPBM, nr 1205).

  

*Remarks*

A lectotype is designated herein in order to clarify the identity of the species.

*Other material examined*

**AUSTRALIA:** NT (118 ♂, 74 ♀), Qld (25 ♂, 22 ♀), WA (1 ♂, 1 ♀).

*Colour*

Body including legs light brown (with a yellow or orange tinge), pronotum paler; forewing hyaline white or light brown with brown marks along crossveins, veins light brown apically darker, tubercles concolorous with veins, pterostigma light brown; abdominal sternites light brown.

*Morphology*

Body length: ♂ 6.2–7.4 mm, ♀ 7.2–8.6 mm.

Head: Vertex (total length) 1.4–1.7 times longer than wide; basal emargination obtusely angled. Postclypeus with well-developed median carina. Rostrum reaching or not reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled or rectangular. Mesonotum with evanescent or well-developed carinae. Forewing 3.0–3.5 times longer than wide; costa without tubercles; 9 apical cells.

Male genitalia: Anal tube as in Figs 49A–D; pygophore and genital styles as in Figs 48P–Q. Aedeagus (Figs 48R, 49A–B): Phallotheca very short and wide with a long, flattened spine (a) left lateral; a long, flattened spine (b) right lateral; and often with 1–3 small spines (c). Flagellum membranous with sclerotised ridge, unarmed.

## Genus *Pentastiridius* Kirschbaum

*Pentastiridius* Kirschbaum, 1868: 45.
Type species *Flata pallens* Germar, 1821.

*Morphology*

Head: Vertex (total length) 1.0–1.3 times longer than wide; lateral carinae slightly elevated; subapical carina forking from lateral margin at 1/2–2/3 of total length of vertex; median carina 1/4–3/4 as long as median length of vertex. Position of maximum width of frons more or less around centre of frontoclypeal suture; lateral carinae of frons convex (evenly rounded or rectilinear apically). Anteclypeus with well-developed median carina.

Thorax: Forewing with fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein basad of fork MA+MP; RP apically bifid (rarely trifid); MA apically trifid; MP apically bifid; fork of Pcu+A1 more or less central within clavus. Hind leg: tibia with 3 (rarely 2) lateral spines; 6 large apical teeth; 1st tarsomere with 12–16 apical teeth and 10–14

  

platellae; 2nd tarsomere with 8–12 apical teeth and 6–10 platellae.

Male genitalia: Genital styles without long, sclerotised, spinelike, dorsal process.

*Distribution*

Cosmopolitan genus, Australian distribution: Queensland, New South Wales.

*Remarks*

The structure of the aedeagus is very uniform within this cosmopolitan genus and descriptions of some species are based on minute differences in the length or curvature of spines on the phallotheca. Examination of the aedeagus of a large number of specimens of *P. felis* Kirkaldy revealed a certain degree of variability. A very slight bent in the curvature of spine (a) was noticed in some specimens; however, the degree and position of this bend varied, and it was therefore interpreted as intraspecific variation. The length of spines varied as well, but spine (a) was always the longest of the three spines. *P. felis* closely resembles species described from the Indo-Malayan region, such as *P. pachyceps* (Matsumura) and *P. fuscoapicatus* (Metcalf) and the African species *P. sudanicus* (Lallemand). A revision of the genus *Pentastiridius* Kirschbaum on a world-wide scale is needed to investigate the degree of intraspecific variation and examine the validity of many species described in *Pentastiridius*.

This genus can be distinguished from all other Australian Pentastirini by the presence of platellae on the first and second hind tarsomere.

***Pentastiridius felis* (Kirkaldy)**
(Figs 30, 49E–K)

*Oliarus felis* Kirkaldy, 1906: 399.
*Oliarus (Nesopompe) felis* Kirkaldy, 1907: 107.
*Pentastiridius (Nesopompe) felis* (Kirkaldy), Holzinger *et al.* 2002: 130.
*Oliarus latipennis* Jacobi 1928:34 (Fig. 21) **syn. nov.**

*Type material*

*Lectotype of P. felis*, here designated, ♂ (examined), **AUSTRALIA, Qld**: Cairns, viii.1904 (BPBM, nr 1181); *Paralectotype*, AUSTRALIA, Qld: 1 ♂ (examined), same data as lectotype.
*Lectotype of O. latipennis*, here designated, ♂, AUSTRALIA, Qld: Yarrabah (Mjöberg) (NHRS), *Paralectotypes*, AUSTRALIA, Qld: 4 ♂, 2 ♀, same data as lectotype (3 ♂ examined) (MTD).

*Remarks*

Examination of the type series of *Oliarus latipennis* Jacobi revealed that this species is

  

a junior synonym of *Pentastiridius felis* Kirkaldy. Because of the similarity of this species to species in Asia and Africa, lectotypes are designated to fix the identities of the species with which these names are associated.

*Other material examined*

**AUSTRALIA:** NSW (3 ♂), Qld (69 ♂, 25 ♀).

*Distribution*

Australia (New South Wales, Queensland), Fiji, New Caledonia, Samoa.

*Remarks*

Fennah recorded this species from Fiji (Fennah 1950), New Caledonia (Fennah 1969), and Samoa (Fennah 1967). This material has not been examined to confirm this distribution.

*Colour*

Body dark brown or black, carinae light brown; legs light brown to mid brown; forewing hyaline colourless apically sometimes darker, veins and tubercles concolorous with cells.

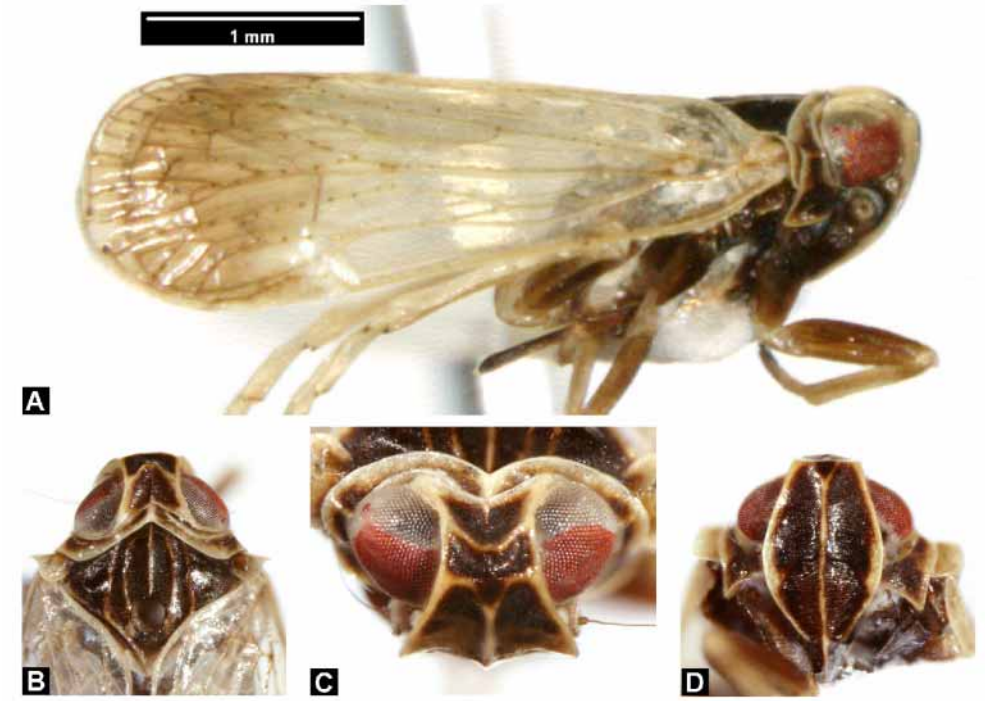


**FIGURE 30.** *Pentastiridius felis*: A habitus; B, C, D head.

  

*Morphology*

Body length: ♂ 3.9–4.5 mm, ♀ 5.2–5.8 mm.

Head: Vertex (total length) 1.1–1.3 times longer than wide; basal emargination obtusely angled. Postclypeus with evanescent or well-developed median carina. Rostrum reaching or surpassing hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with evanescent or well-developed median and lateral carinae and well-developed sublateral carinae. Forewing 2.6–2.8 times longer than wide; costa with 0–1 tubercles; 9 (rarely 10) apical cells.

Male genitalia: Anal tube as in Figs 49E–G; pygophore and genital styles as in Figs 49H–I. Aedeagus (Figs 49J–K): Phallotheca with two long spines (a longer than b) arising apically curving moderately towards left lateral; a short, moderately curved spine (c) arising ventrally about midlength; and a large process, shaped like bird head, right lateral. Flagellum membranous, unarmed.

**Incertae sedis**

***Prosops pedisequus* Buckton nom. dub.**

*Prosops pedisequus* Buckton 1893:50

*Type material*

*Syntypes* (examined), **AUSTRALIA, VIC**: 3 ♀, Melbourne, on apple trees (BPBM).

*Morphology*

Body length: ♀ 6.1–6.3 mm.

Head: Vertex (total length) 1.1 times as long as wide; lateral carinae slightly elevated; basal emargination obtusely angled. Lateral carinae of frons convex (rectilinear apically). Rostrum reaching hind coxae.

Thorax: Hind margin of pronotum obtusely angled. Mesonotum with well-developed carinae. Forewing 3.4 times longer than wide; fork ScRA+RP distad of fork CuA1+CuA2; r-m crossvein basad of fork MA+MP; RP apically bifid; MA apically trifid; MP apically bifid; costa with 0–19 tubercles; 9 apical cells. Hind leg: tibia with 3 lateral spines; 6 large apical teeth; 1st and 2nd tarsomere with 7 apical teeth and no platellae.

Male genitalia: Unknown (only known specimens are females).

*Remarks*

Muir (1925) placed this species in *Oliarus sensu lato* which at that time accommodated most of the Pentastirini species worldwide. As discussed in the introduction, several authors have since split the *Oliarus sensu lato* complex into a number

  

of smaller genera. Three new genera for the Australian fauna are proposed in this study. *Prosops* closely resembles *Ozoliarus* **gen. nov.** in having 3 lateral spines and 6 large apical teeth on the hind tibia and 7 apical teeth on the first and second tarsomere, and may in fact be congeneric with it. Because of the poor quality of the type specimens (microscope slides in very bad condition) and the original description, important features such as the carination of the head cannot be investigated. The syntypes are females, which makes it impossible to match them reliably with other Australian species based on male genitalia. *Prosops pedisequus* was described as "the apple tree destroyer" (French 1909). Cixiids, however, are currently not known to be pests on apples in Australia (pers. comm. Graham Thwaite, 2005) and investigation of the Australian Pentastirini material failed to discover any specimens collected on apple trees (except for the syntypes). Therefore *Prosops pedisequus* is regarded as a *nomen dubium*. If at some stage it is confirmed that *Prosops* is congeneric with *Ozoliarus*, then the name *Prosops* will have priority over *Ozoliarus*.

*Prosops pedisequus* differs from *Cordoliarus* in the shape of the head, from *Oteana* in the presence of 7 apical teeth on the 2nd tarsomere, from *Oliarus sensu stricto* as proposed herein in the presence of three lateral spines on the hind tibia and 7 apical teeth on the 2nd tarsomere, and from species of *Miclucha* in the number of apical teeth on the hind legs/and or shape of the areolets.

## Concluding remarks

The tribe Pentastirini has never been revised on a world wide scale, so the monophyly of this tribe has not been tested and synapomorphies remain unclear. However, there were several attempts to determine synapomorphies for the tribe, based on phylogenetic studies of a subset of world taxa and/or taxa from a particular region. Emeljanov (1971) listed the following characters in his key to discriminate the tribe Pentastirini from the tribe Cixiini: mesonotum with five carinae; ovipositor reduced, short, or if long, valvula I (gonapophysis VIII) not corrugated and valvulae II (gonapophyses IX) cleft to the base. Van Stalle (1986b) confirmed these characters based on his studies of the Afrotropical fauna and added another important character, the connection of the aedeagus to the pygophore. This means the following synapomorphies are currently recognised for Pentastirini: reduced ovipositor, only valvulae III completely developed; valvulae II not corrugated; 5 longitudinal carinae on mesonotum; aedeagus laterally connected to pygophore. Our investigations of the Australian fauna underlined the following features: aedeagus laterally connected to pygophore and 5 longitudinal keels (however, the carinae are sometimes evanescent and, in some specimens of *Ozoliarus olene*, the median carina is obsolete). Characters based on female genitalic characters cannot be commented on, as female genitalia were not investigated in this study. During the recording of morphological characters the following character states were observed in all taxa of Australian

  

Pentastirini: median ocellus present; two transverse carinae between vertex and clypeus; median carina of vertex present but incomplete; frons invisible in dorsal view; median carina of frons complete; frontoclypeal suture semicircular, median part reaching at least lower margin of antennal scape; lateral carinae of frons foliaceous, distinctly extending laterally, concealing base of antennae; lateral carinae of postclypeus well-developed; medium carina of pronotum present; concavity at costal border of forewing absent; Sc+R+M forming a very short common stem or only Sc+R forming a common stem and M emerging separately from basal cell; position of icu at CuA and CuP distad of apex of clavus; aedeagus connected to pygophore. Whether these character states represent synapomorphies or symplesiomorphies cannot be determined without a comprehensive phylogenetic analysis.

Female genitalia were not studied in detail in this project. However, it was observed that the length and shape of the ovipositor varied considerably within the Australian Pentastirini. In general, females of *Cordoliarus*, *Miclucha*, *Oliarus*, *Oteana*, and *Pentastiridius* possess a short ovipositor (0.75–2 times as long as anal tube). Within *Ozoliarus* some species have a relatively short ovipositor (about 1.5–2 times as long as anal tube) while others have an elongated ovipositor (2.5–4 times as long as anal tube). In some species of *Ozoliarus* the ovipositor nearly reaches or even surpasses the tips of the wings, whereas in all other species and genera the ovipositor is well short of the tip of the wings. These are probably adaptations to different types of substrates in or on which females lay their eggs.

The variability and consistency of certain morphological features are noteworthy among and within genera. For example, within the genera *Oteana*, *Oliarus*, and *Ozoliarus* the shape and carination of the head are very consistent within each genus, whereas the structure of the genitalia varies quite remarkably between included species. In *Pentastiridius*, however, the male genitalia are very consistently configured (Van Stalle 1986, 1991), showing only minor differences in the length and arrangement of spines, although this genus is spread over different parts of the world. In contrast the width of the vertex and the carination show major differences between included species.

It was also noted that *Pentastiridius* is represented by only one species in Australia. In comparison, there are about 20 Palaearctic species, 16 Afrotropical, and 9 Indo-malayan species. This raises interesting questions. Is *Pentastiridius felis* an introduced species in Australia? Arguments supporting this hypothesis are its apparent close relationship with, or morphological similarity to some Indo-malayan species, e.g., *P. pachyceps* and *P. fuscoapicatus*, and the current distribution of *P. felis* within Australia, which is restricted to Queensland and New South Wales. On the other hand, the uniformity of male genitalic structures among world species of *Pentastiridius* suggests that the genus may be a monophyletic group whose ancestor existed prior to the break up of the supercontinent Pangaea into the smaller landmasses of Gondwana and Laurasia. Although the first hypothesis seems to be more plausible, a phylogenetic revision of the entire tribe

  

Pentastirini, incorporating fossil evidence where available, is needed to gain a better understanding of the phylogeographic history of these groups and of the Cixiidae in general.

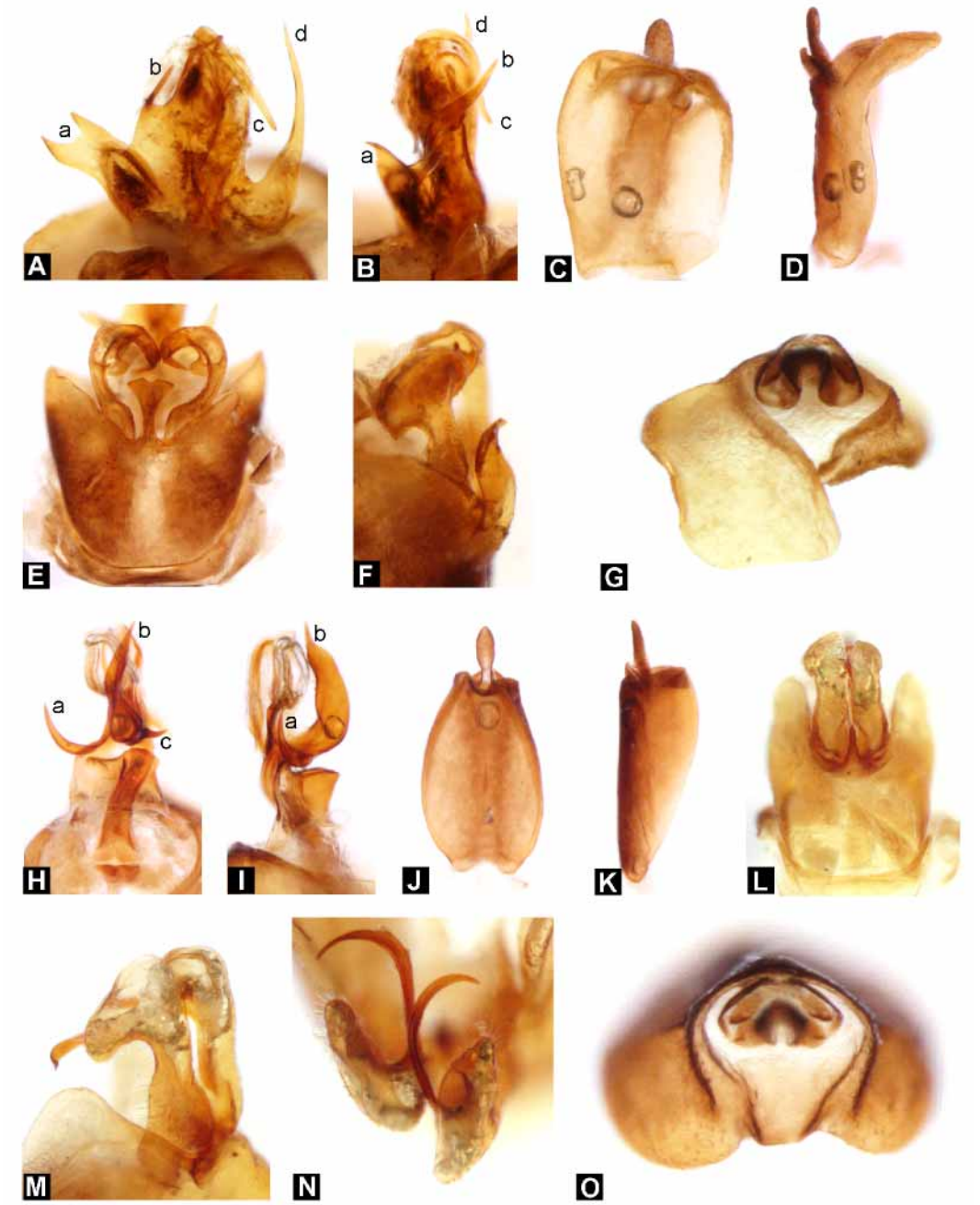


**FIGURE 31.** *Cordoliarus mareebensis*: A, B aedeagus, (A) ventral, (B) left lateral; C, D, anal tube, (C) ventral), (D) left lateral; E, F, genital styles, (E) ventral, (F) left lateral; G anal tube caudal. *Miclucha laratensis*: H, I aedeagus, (H) ventral, (I) left lateral; J, K anal tube, (J) ventral, (K) left lateral; L, M, N genital styles, (L) ventral, (M) left lateral, (N) caudal; O anal tube caudal.

  

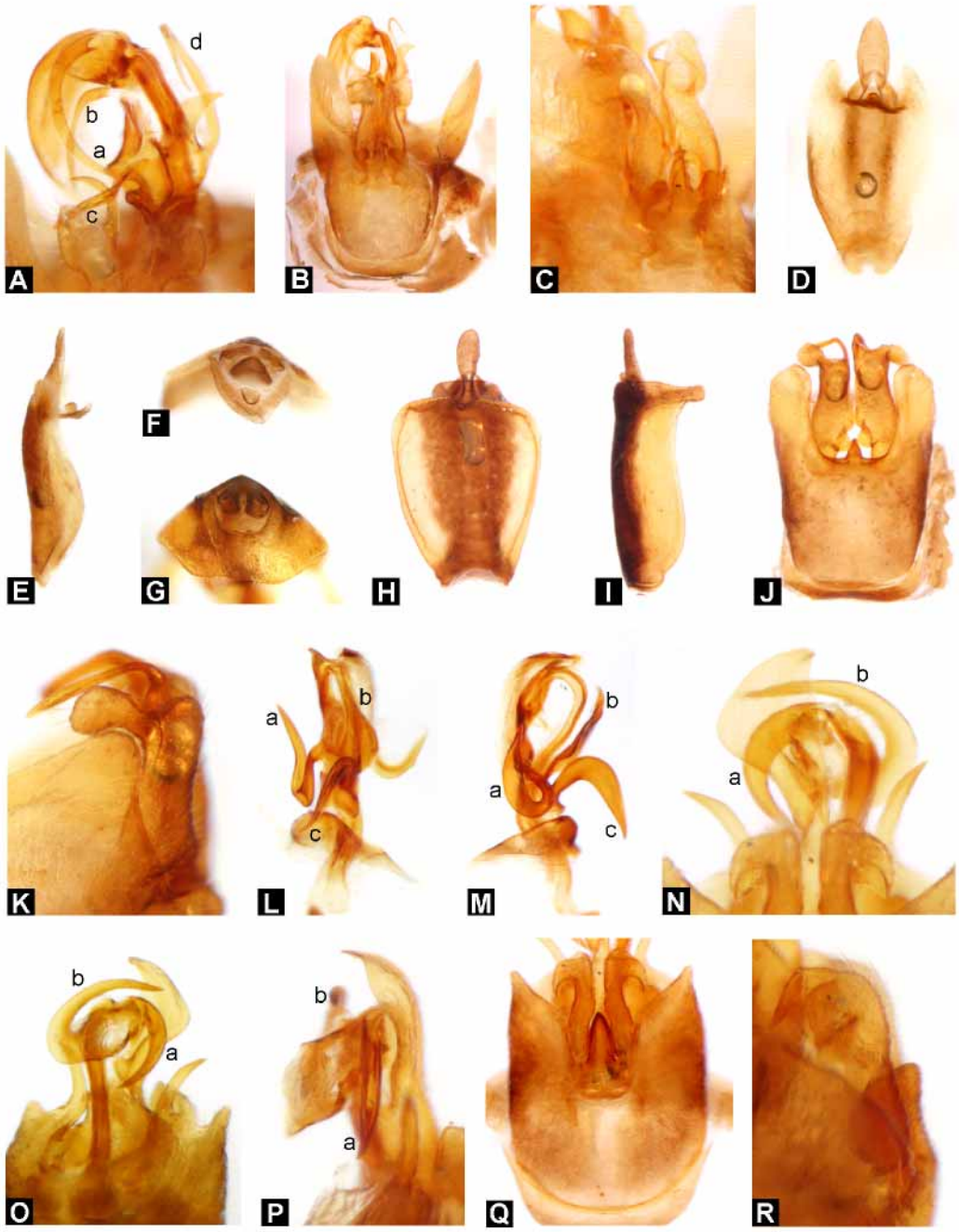


**FIGURE 32.** *Miclucha australiensis*: A aedeagus ventral; B, C genital styles, (B) ventral, (C) ventrolateral; D, E, F anal tube, (D) ventral, (E) left lateral, (F) caudal. *Miclucha incerta*: G, H, I anal tube, (G) caudal, (H) ventral, (I) left lateral; J, K genital styles, (J) ventral, (K) left lateral; L, M aedeagus, (L) ventral, (M) left lateral. *Oliarus acanthopygophoris*: N, O, P aedeagus, (N) ventral, (O) dorsal, (P) left lateral; Q, R genital styles (Q) ventral, (R) left lateral.

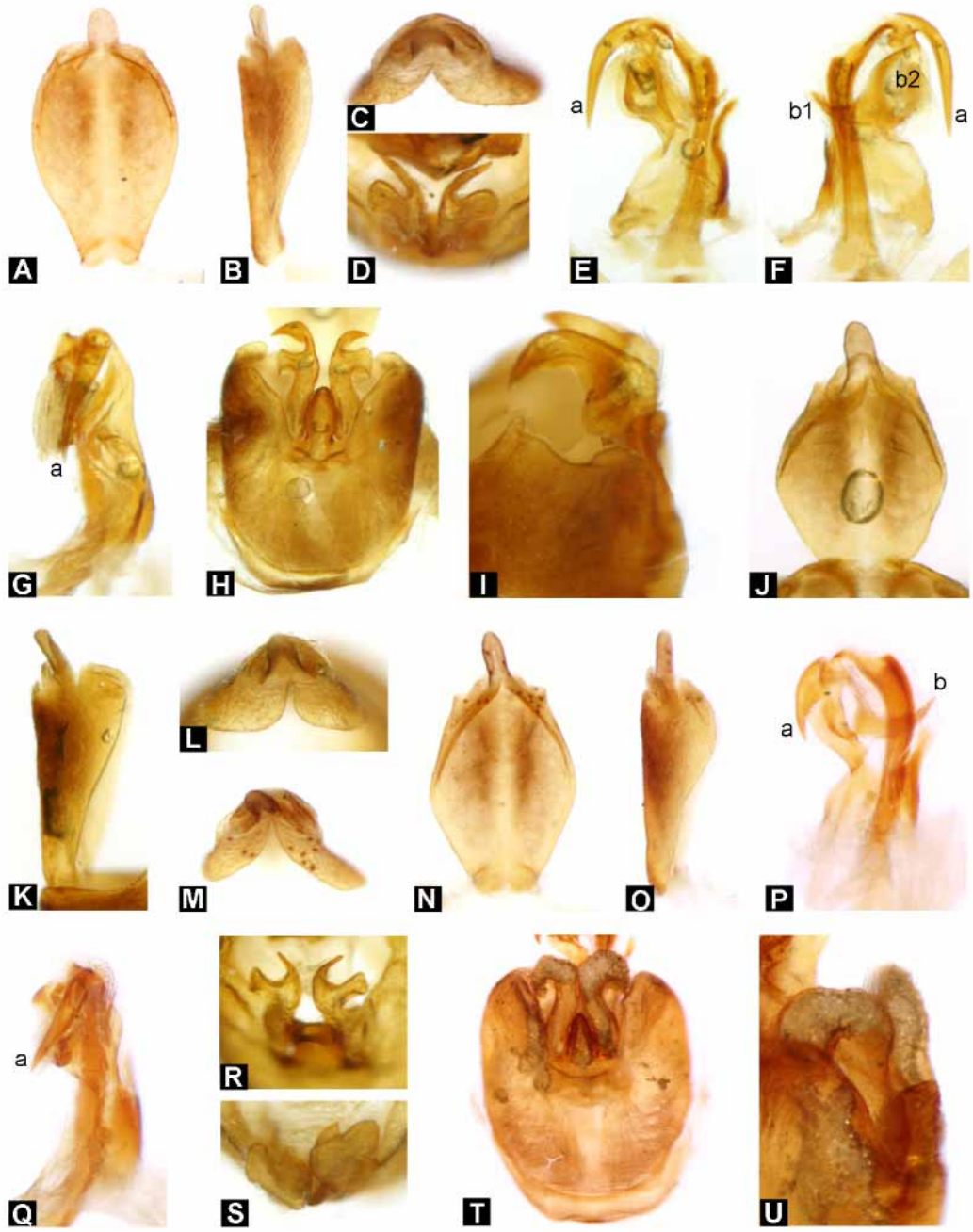


**FIGURE 33.** *Oliarus acanthopygophoris*: A, B, C anal tube, (A) ventral, (B) left lateral, (C) caudal; D genital styles caudal. *Oliarus cuberlii*: E, F, G aedeagus, (E) ventral, (F) dorsal, (G) left lateral; H, I genital styles, (H) ventral, (I) left lateral; J, K, L anal tube, (J) ventral, (K) left lateral, (L) caudal. *Oliarus lawlerorum*: M, N, O anal tube, (M) caudal, (N) ventral, (O) left lateral; P, Q aedeagus, (P) ventral, (Q) left lateral; R, S, T, U genital styles, (R, S) caudal, (T) ventral, (U) left lateral.

  

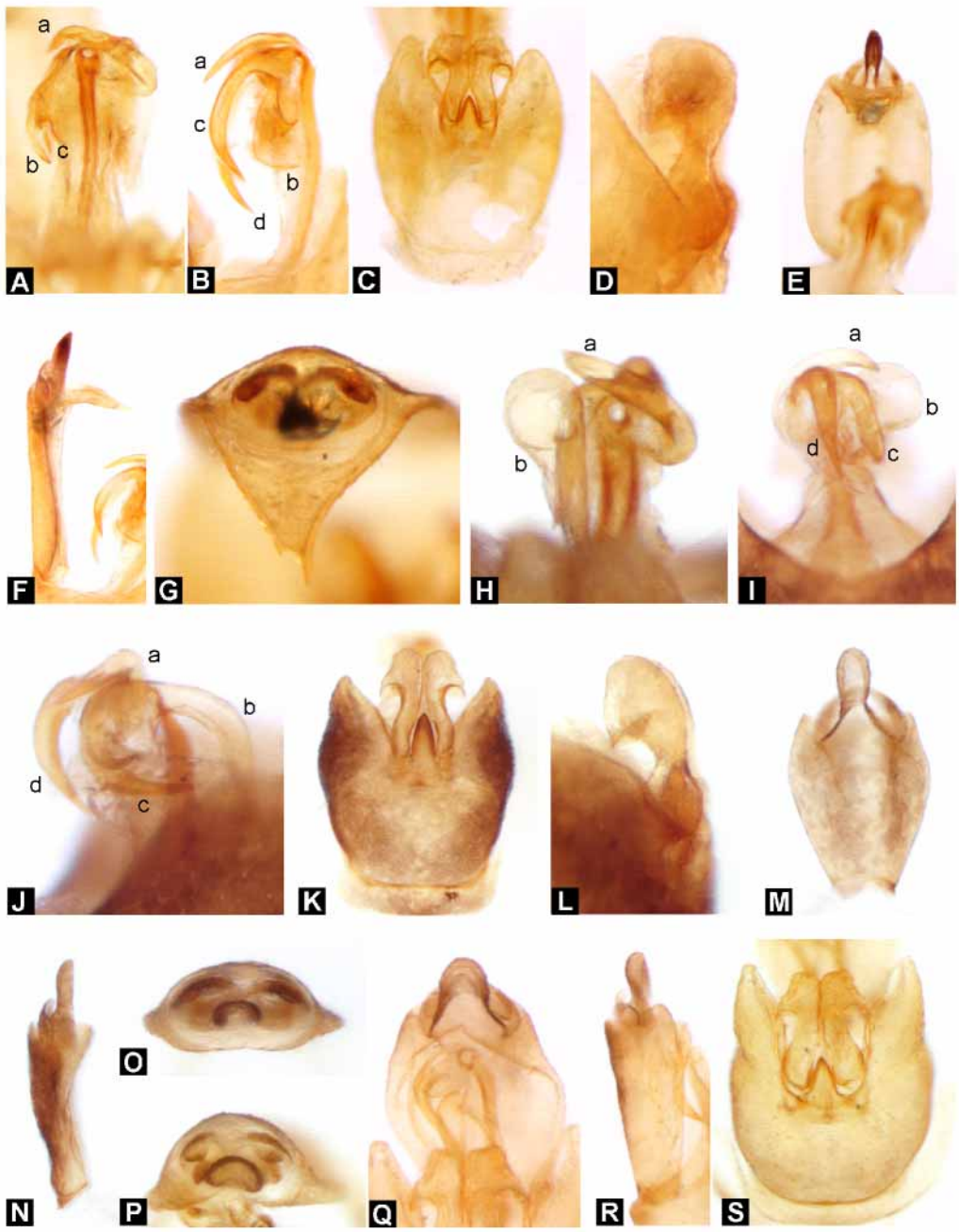


**FIGURE 34.** *Oliarus acuminatus*: A, B aedeagus, (A) ventral, (B) left lateral; C, D genital styles, (C) ventral, (D) left lateral; E, F, G anal tube, (E) ventral, (F) left lateral, (G) caudal. *Oliarus globosus*: H, I, J aedeagus, (H) ventral, (I) dorsal, (J) left lateral; K, L genital styles, (K) ventral, (L) left lateral; M, N, O anal tube, (M) ventral, (N) left lateral, (O) caudal. *Oliarus gracilis*: P, Q, R anal tube, (P) caudal, (Q) ventral), (R) left lateral; S genital styles ventral.

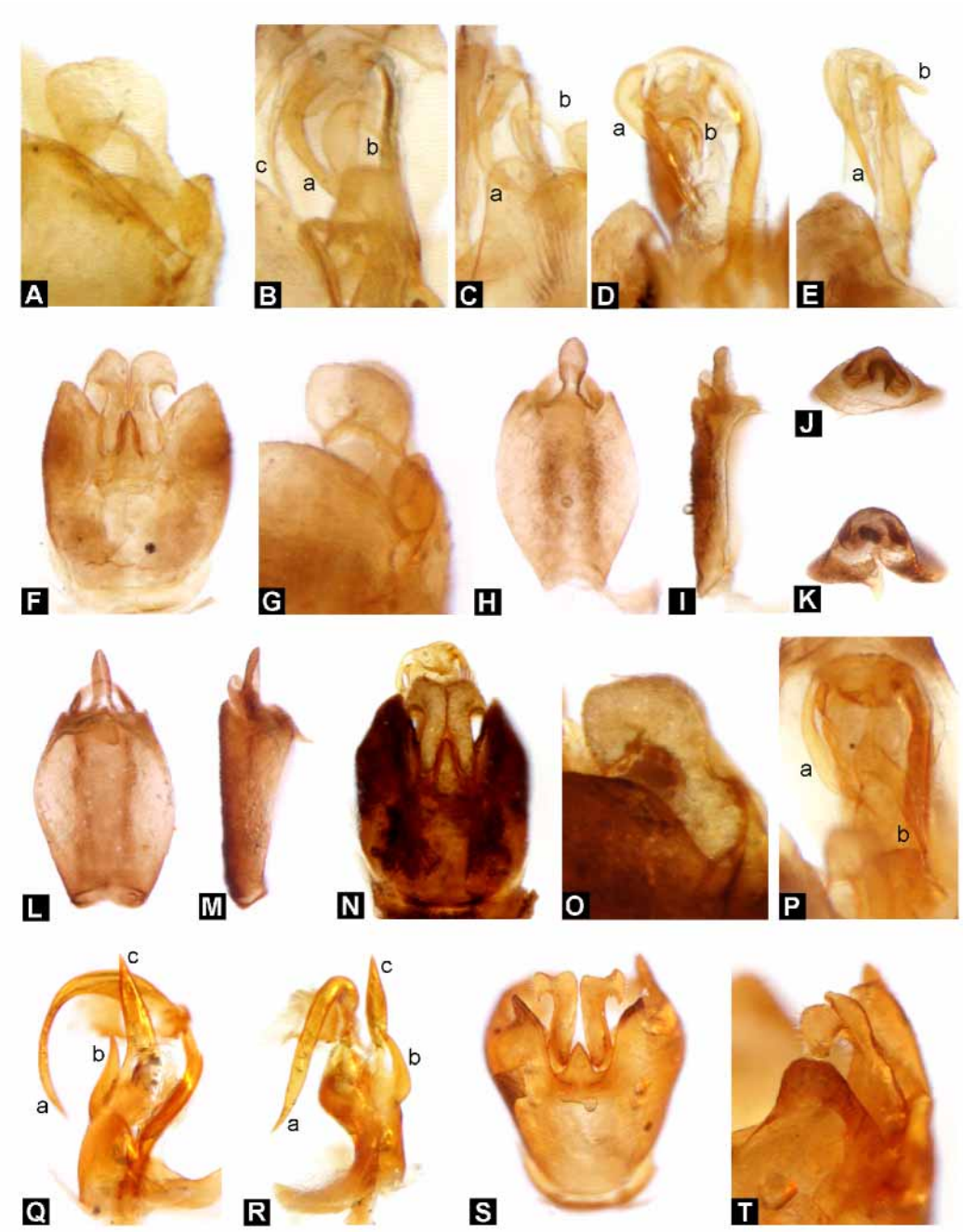


**FIGURE 35.** *Oliarus gracilis*: A genital styles left lateral; B, C aedeagus, (B) ventral, (C) left lateral. *Oliarus hamatus*: D, E aedeagus, (D) ventral, (E) left lateral; F, G genital styles, (F) ventral, (G) left lateral; H, I, J anal tube, (H) ventral, (I) left lateral, (J) caudal. *Oliarus hirsutus*: K, L, M anal tube, (K) caudal, (L) ventral, (M) left lateral; N, O genital styles, (N) ventral, (O) left lateral; P aedeagus ventral. *Oliarus busoensis*: Q, R aedeagus, (Q) ventral, (R) left lateral; S, T genital styles, (S) ventral, (T) left lateral.

  

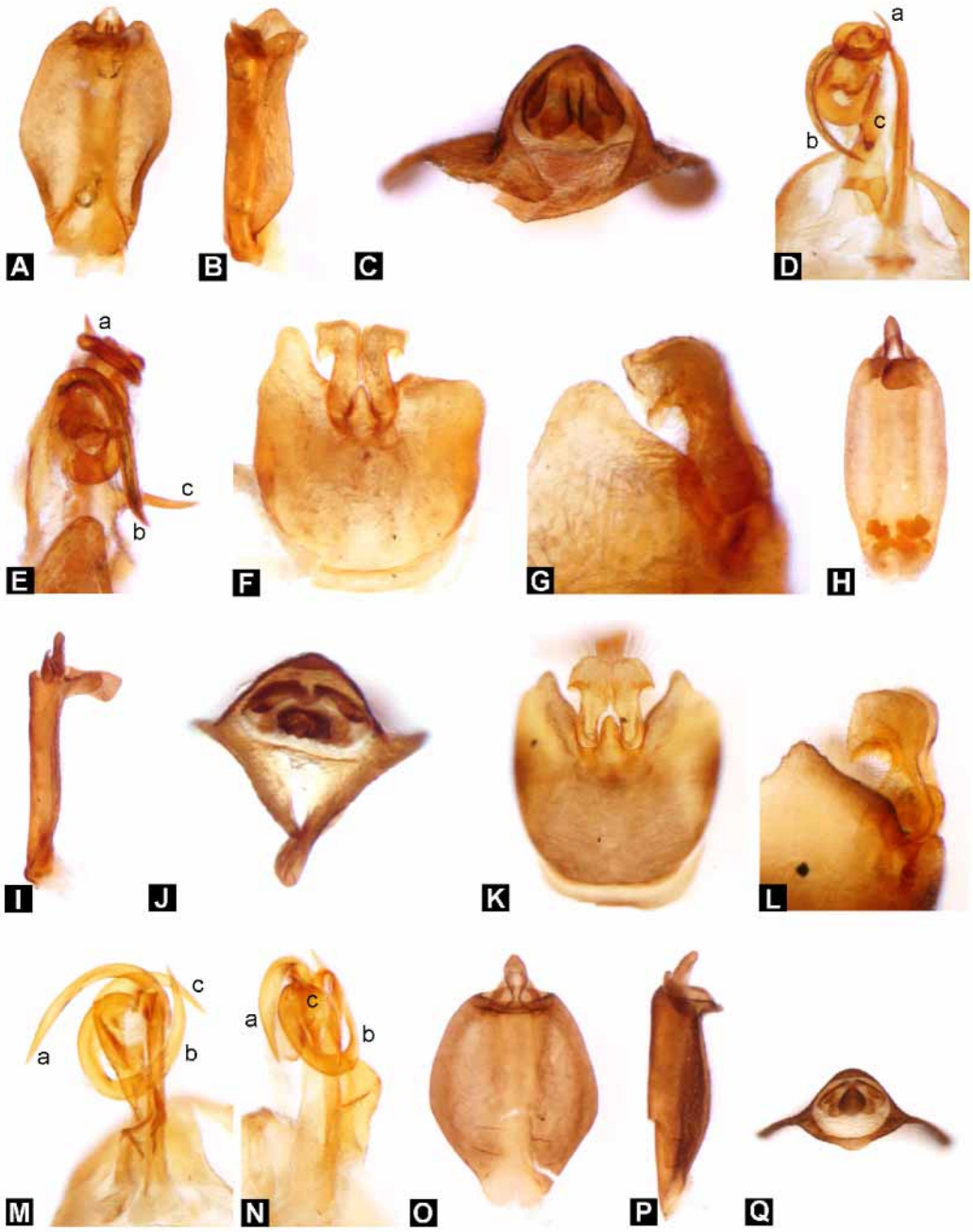


**FIGURE 36.** *Oliarus busoensis*: A, B, C anal tube, (A) ventral, (B) left lateral, (C) caudal. *Oliarus cochleatus*: D, E aedeagus, (D) ventral, (E) left lateral; F, G genital styles, (F) ventral, (G) left lateral; H, I, J anal tube, (H) ventral, (I) left lateral, (J) caudal. *Oliarus trispiralis*: K, L genital styles, (K) ventral, (L) left lateral; M, N aedeagus, (M) ventral, (N) left lateral; O, P, Q anal tube, (O) ventral, (P) left lateral, (Q) caudal.

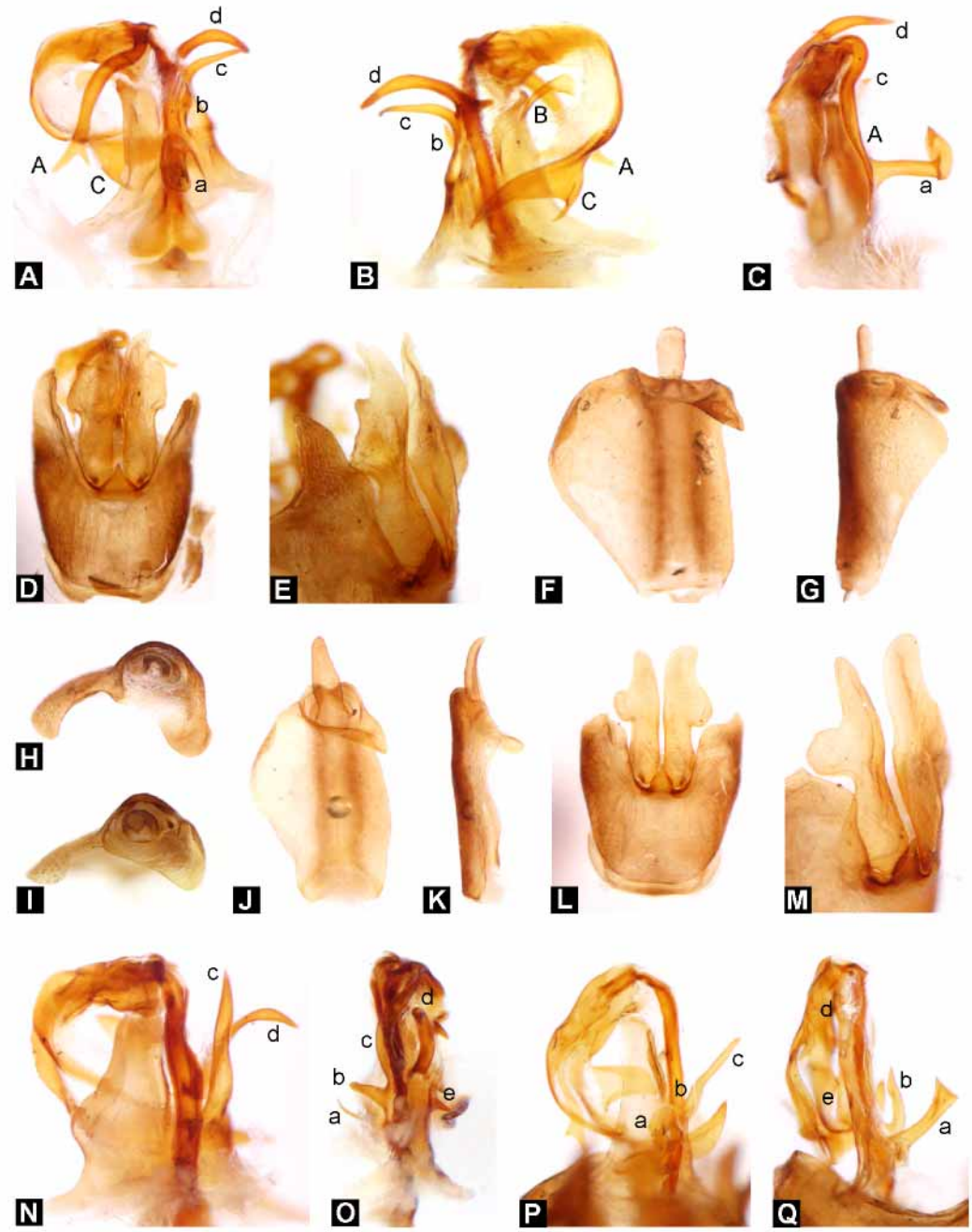


**FIGURE 37.** *Ozoliarus bullocki*: A, B, C aedeagus, (A) ventral, (B) dorsal, (C) left lateral; D, E genital styles, (D) ventral, (E) left lateral; F, G, H anal tube, (F) ventral, (G) left lateral, (H) caudal. *Ozoliarus clipealis*: I, J, K anal tube, (I) caudal, (J) ventral, (K) left lateral; L, M genital styles, (L) ventral, (M) ventrolateral; N, O aedeagus, (N) ventral, (O) right lateral. *Ozoliarus nourlangiensis*: P, Q aedeagus, (P) ventral, (Q) left lateral.

  

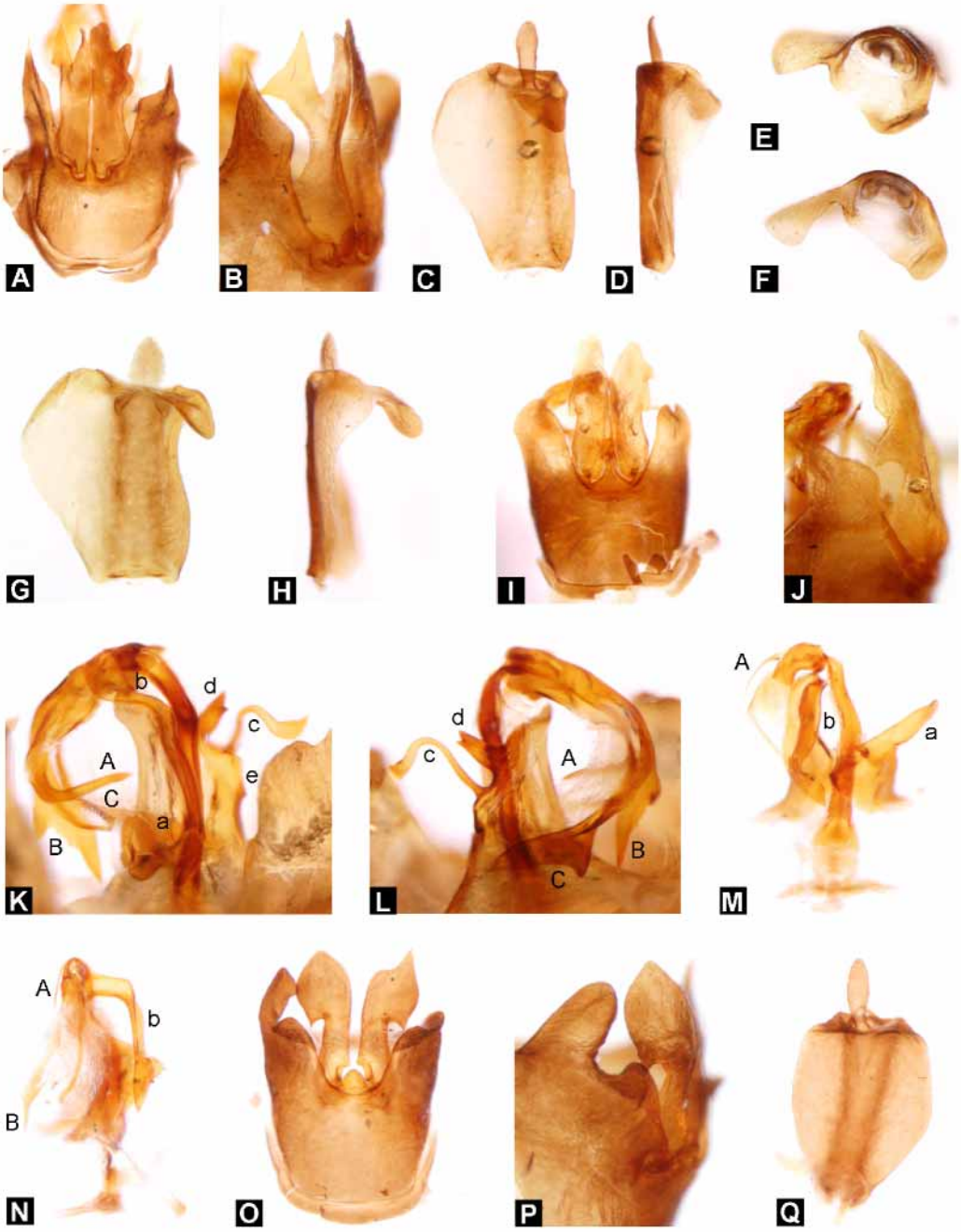


**FIGURE 38.** *Ozoliarus nourlangiensis*: A, B genital styles, (A) ventral, (B) left lateral; C, D, E anal tube, (C) ventral, (D) left lateral, (E) caudal. *Ozoliarus quercistylus*: F, G, H anal tube, (F) caudal, (G) ventral, (H) left lateral; I, J genital styles, (I) ventral, (J) left lateral; K, L aedeagus, (K) ventral, (L) dorsal. *Ozoliarus cuspidistylus*: M, N aedeagus, (M) ventral, (N) left lateral; O, P genital styles, (O) ventral, (P) left lateral; Q anal tube ventral.

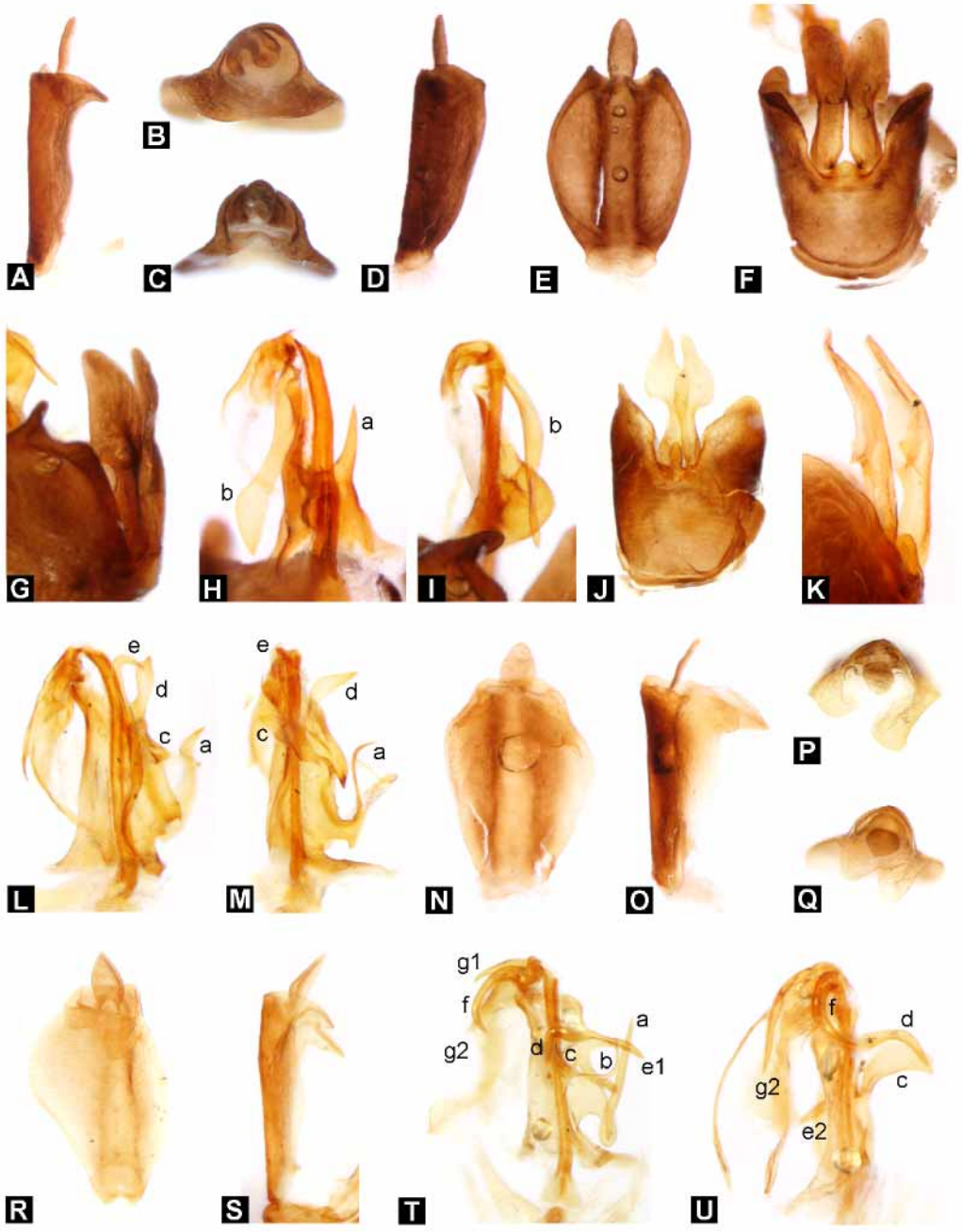


**FIGURE 39.** *Ozoliarus cuspidistylus*: A, B anal tube, (A) left lateral, (B) caudal. *Ozoliarus rotundistylus*: C, D, E anal tube, (C) caudal, (D) left lateral, (E) ventral; F, G genital styles, (F) ventral, (G) left lateral; H, I aedeagus, (H) ventral, (I) left lateral. *Ozoliarus catherinae*: J, K genital styles, (J) ventral, (K) left lateral; L, M aedeagus, (L) ventral, (M) left lateral; N, O, P anal tube, (N) ventral, (O) left lateral, (P) caudal. *Ozoliarus cynosurus*: Q, R, S anal tube, (Q) caudal, (R) ventral, (S) left lateral; T, U aedeagus, (T) ventral, (U) left lateral.

  

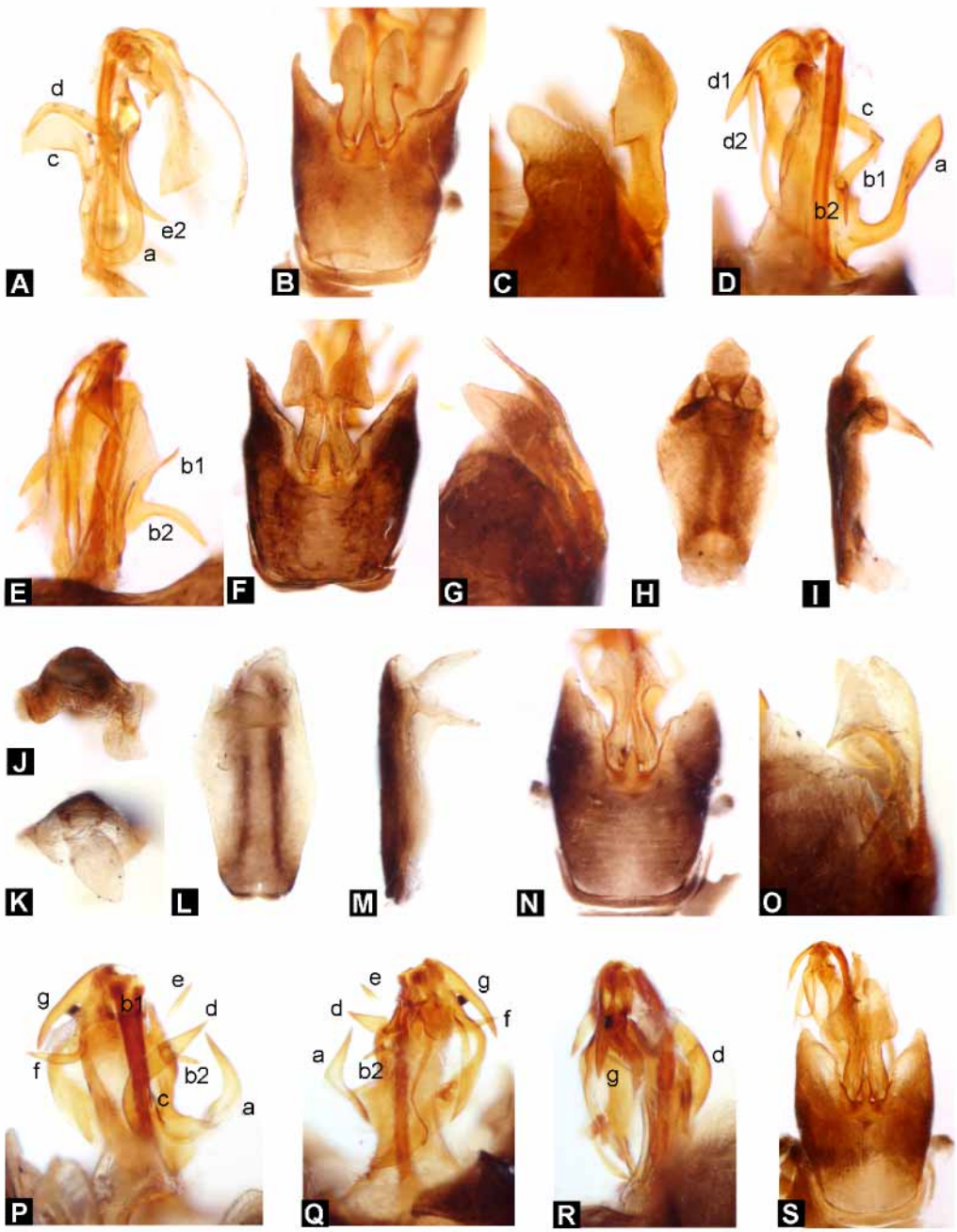


**FIGURE 40.** *Ozoliarus cynosurus*: A aedeagus right lateral; B, C genital styles, (B) ventral, (C) left lateral. *Ozoliarus golgolensis*: D, E aedeagus, (D) ventral, (E) left lateral; F, G genital styles, (F) ventral, (G) left lateral; H, I, J anal tube, (H) ventral, (I) left lateral, (J) caudal. *Ozoliarus maru*: K, L, M anal tube, (K) caudal, (L) ventral, (M) left lateral; N, O genital styles, (N) ventral, (O) left lateral; P, Q, R aedeagus, (P) ventral, (Q) dorsal, (R) left lateral. *Ozoliarus pitta*: S genital styles ventral.

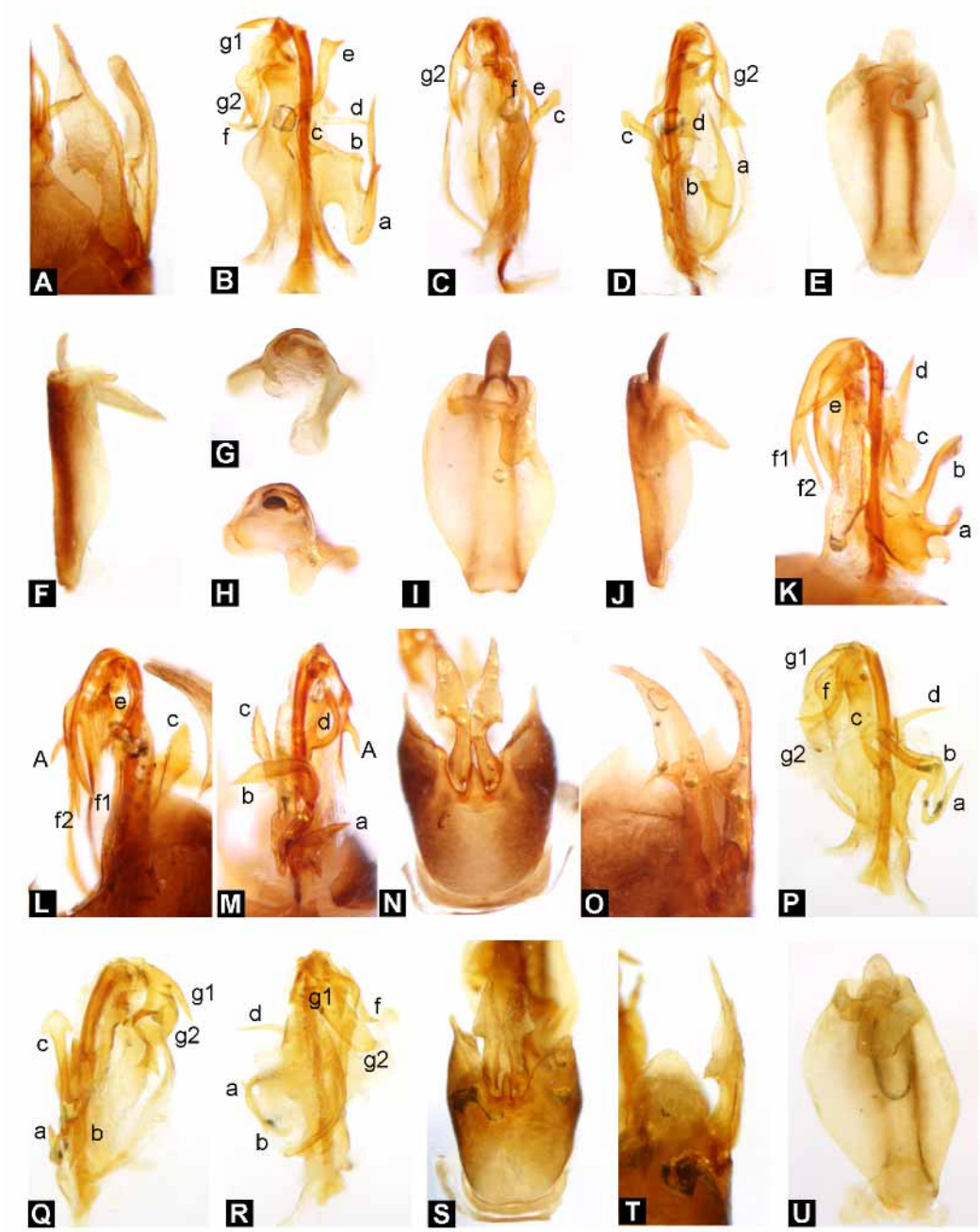


**FIGURE 41.** *Ozoliarus pitta*: A genital styles left lateral; B, C, D aedeagus, (B) ventral, (C) left lateral, (D) right lateral; E, F, G anal tube; (E) ventral, (F) left lateral, (G) caudal. *Ozoliarus serratus*: H, I, J anal tube, (H) caudal, (I) ventral, (J) left lateral; K, L, M aedeagus, (K) ventral, (L) left lateral, (M) right lateral; N, O genital styles, (N) ventral, (O) left lateral. *Ozoliarus smithi*: P, Q, R aedeagus, (P) ventral, (Q) right lateral, (R) dorsal; S, T genital styles, (S) ventral, (T) left lateral; U anal tube ventral.

  

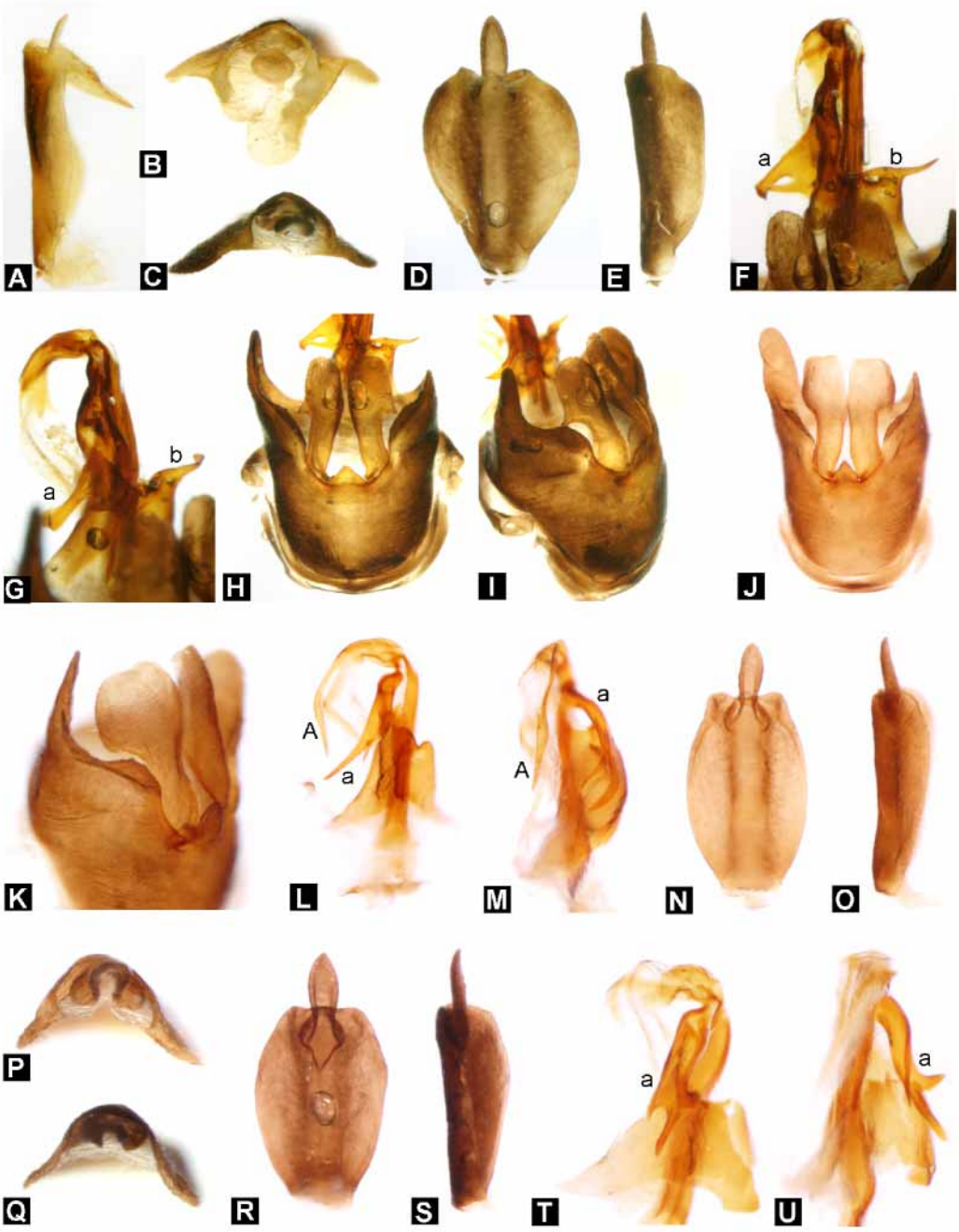


**FIGURE 42.** *Ozoliarus smithi*: A, B anal tube, (A) left lateral, (B) caudal. *Ozoliarus dingkana*: C, D, E anal tube, (C) caudal, (D) ventral, (E) left lateral; F, G aedeagus, (F) ventral, (G) left lateral; H, I genital styles, (H) ventral, (I) ventrolateral. *Ozoliarus quadratistylus*: J, K genital styles, (J) ventral, (K) ventrolateral; L, M aedeagus, (L) ventral, (M) left lateral; N, O, P anal tube, (N) ventral, (O) left lateral, (P) caudal. *Ozoliarus semicircularis*: Q, R, S anal tube, (Q) caudal, (R) ventral, (S) left lateral; T, U aedeagus, (T) ventral, (U) left lateral.

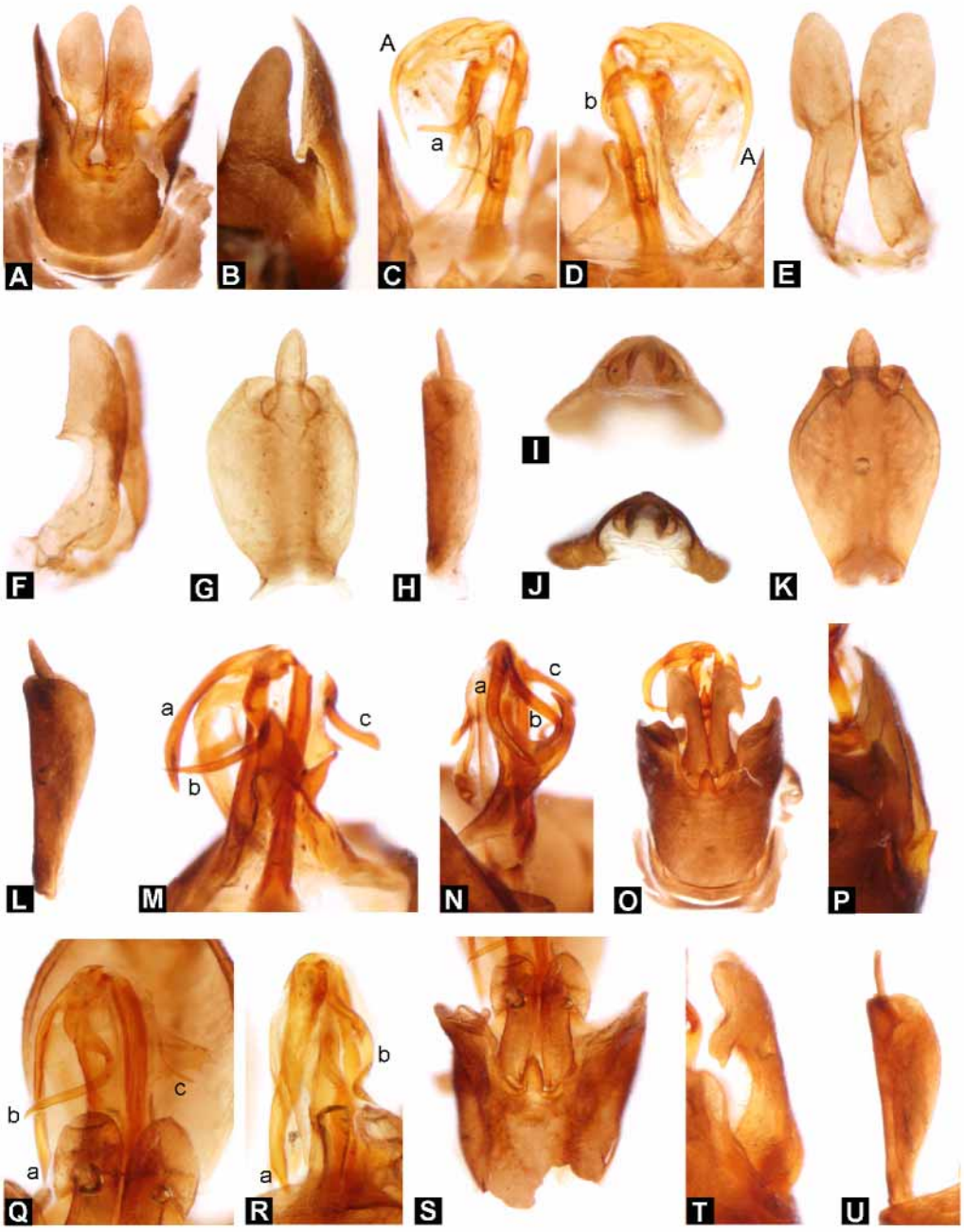


**FIGURE 43.** *Ozoliarus semicircularis*: A, B genital styles, (A) ventral, (B) left lateral. *Ozoliarus triangularis*: C, D aedeagus, (C) ventral, (D) dorsal; E, F genital styles, (E) ventral, (F) left lateral; G, H, I anal tube, (G) ventral, (H) left lateral, (I) caudal. *Ozoliarus taroomensis*: J, K, L anal tube, (J) caudal, (K) ventral, (L) left lateral; M, N aedeagus, (M) ventral, (N) left lateral; O, P genital styles, (O) ventral, (P) left lateral. *Ozoliarus umbella*: Q, R aedeagus, (Q) ventral, (R) left lateral; S, T genital styles, (S) ventral, (T) left lateral; U anal tube left lateral.

  

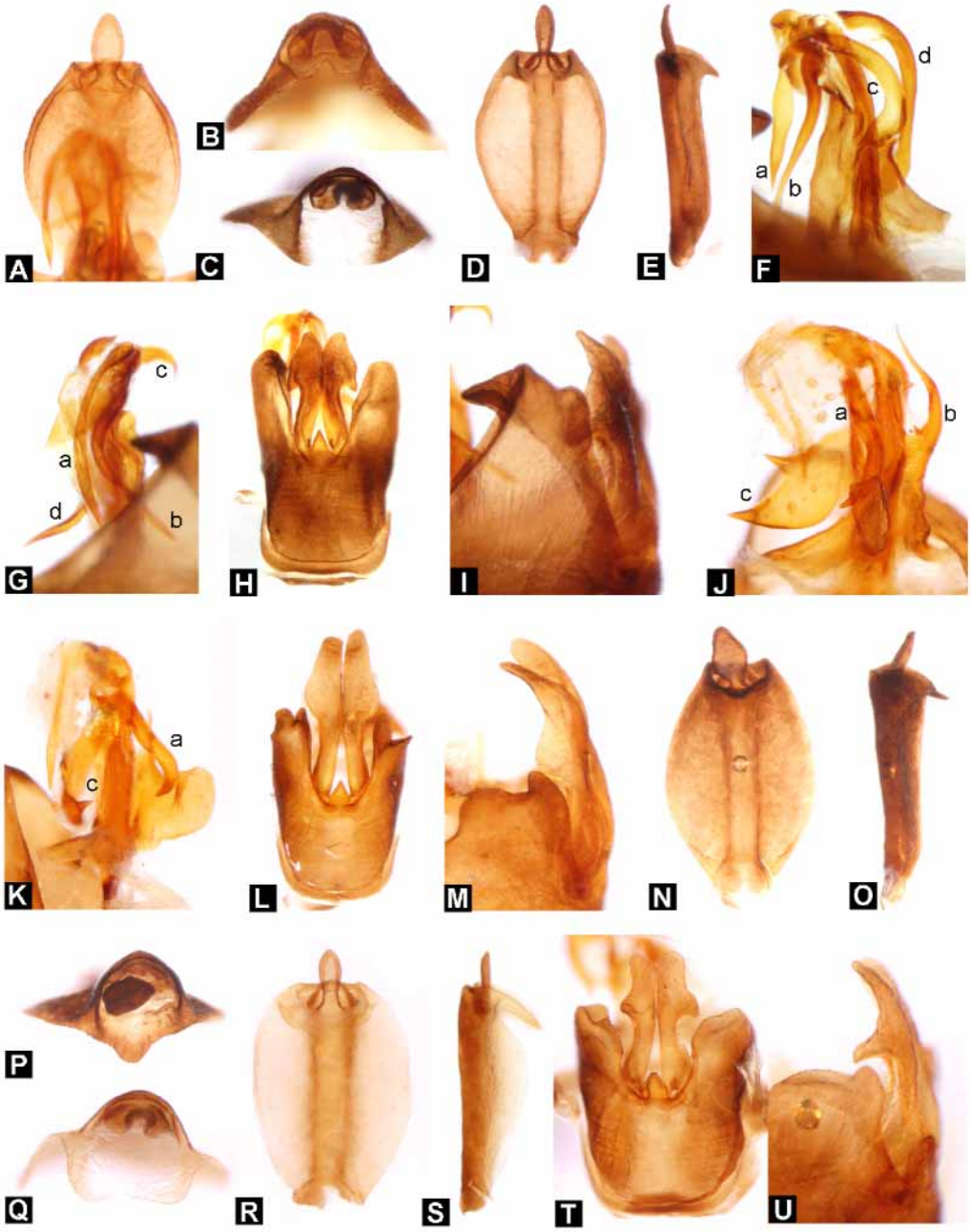


**FIGURE 44.** *Ozoliarus umbella*: A, B anal tube, (A) ventral, (B) caudal. *Ozoliarus laertes*: C, D, E anal tube, (C) caudal, (D) ventral, (E) left lateral; F, G aedeagus, (F) ventral, (G) left lateral; H, I genital styles, (H) ventral, (I) left lateral. *Ozoliarus alces*: J, K aedeagus, (J) ventral, (K) left lateral; L, M genital styles, (L) ventral, (M) left lateral; N, O, P anal tube, (N) ventral, (O) left lateral, (P) caudal. *Ozoliarus antennoides*: Q, R, S anal tube, (Q) caudal, (R) ventral, (S) left lateral; T, U genital styles, (T) ventral, (U) left lateral.


**FIGURE 45.** *Ozoliarus antennoides*: A, B aedeagus, (A) ventral, (B) left lateral. *Ozoliarus bumarangoides*: C, D, E aedeagus, (C) ventral, (D) dorsal, (E) left lateral; F, G genital styles, (F) ventral, (G) left lateral; H, I, J anal tube, (H) ventral, (I) left lateral, (K) caudal. *Ozoliarus dedariensis*: K, L, M anal tube, (K) caudal, (L) ventral, (M) left lateral; N, O, P aedeagus, (N) ventral, spine c broken, (O) dorsal, (P) left lateral; Q, R genital styles, (Q) ventral, (R) left lateral. *Ozoliarus latifundus*: S, T genital styles, (S) ventral, (T) left lateral.

  

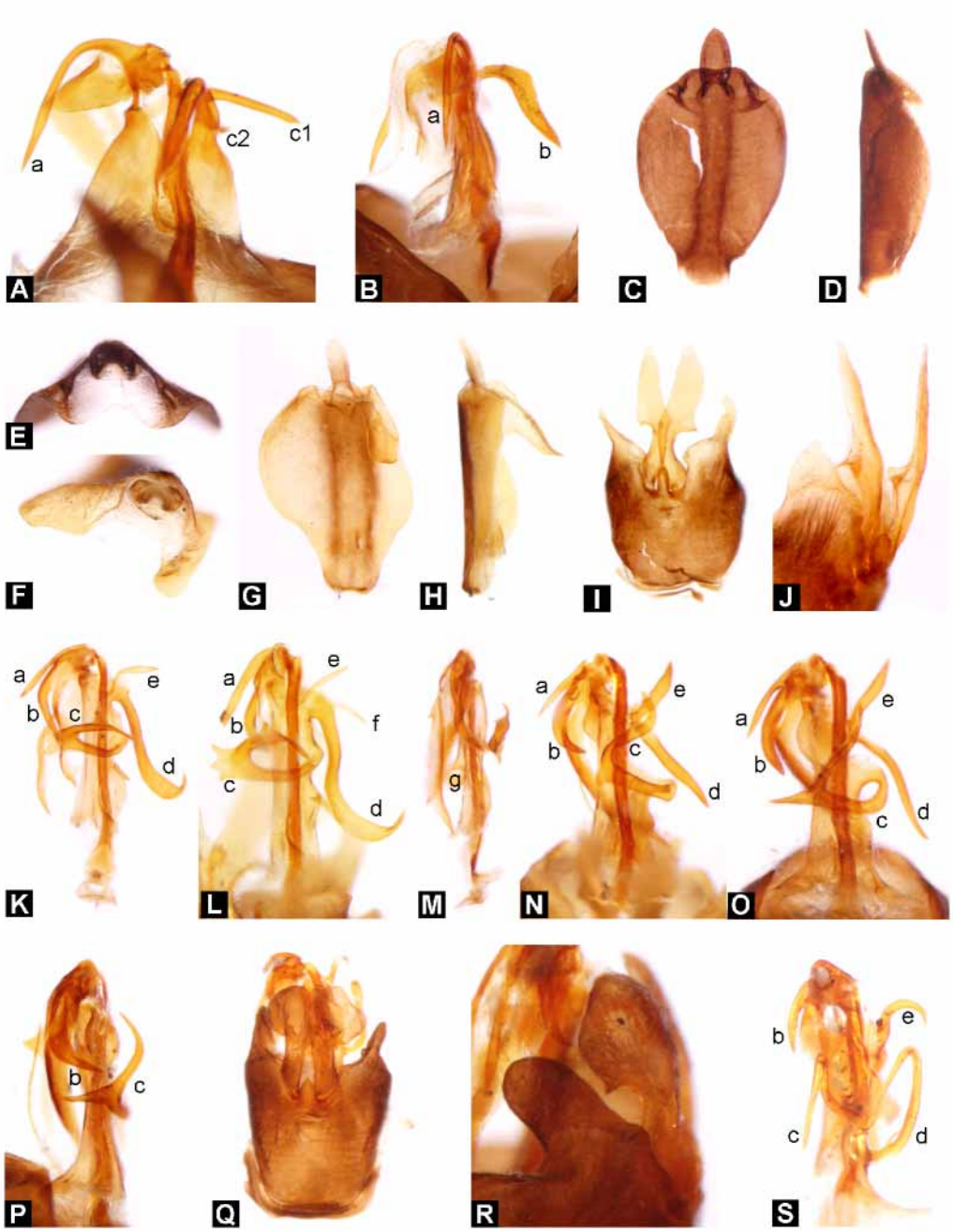


**FIGURE 46.** *Ozoliarus latifundus*: A, B aedeagus, (A) ventral, (B) left lateral; C, D, E anal tube, (C) ventral, (D) left lateral, (E) caudal. *Ozoliarus olene*: F, G, H anal tube, (F) caudal, (G) ventral, (H) left lateral; I, J genital styles, (I) ventral, (J) left lateral; K, L, M aedeagus, (K, L) ventral, (M) left lateral. *Ozoliarus olene* (variant): N, O, P aedeagus, (N, O) ventral, (P) left lateral. *Ozoliarus pelecanus*: Q, R genital styles, (Q) ventral, (R) left lateral; S aedeagus ventral.

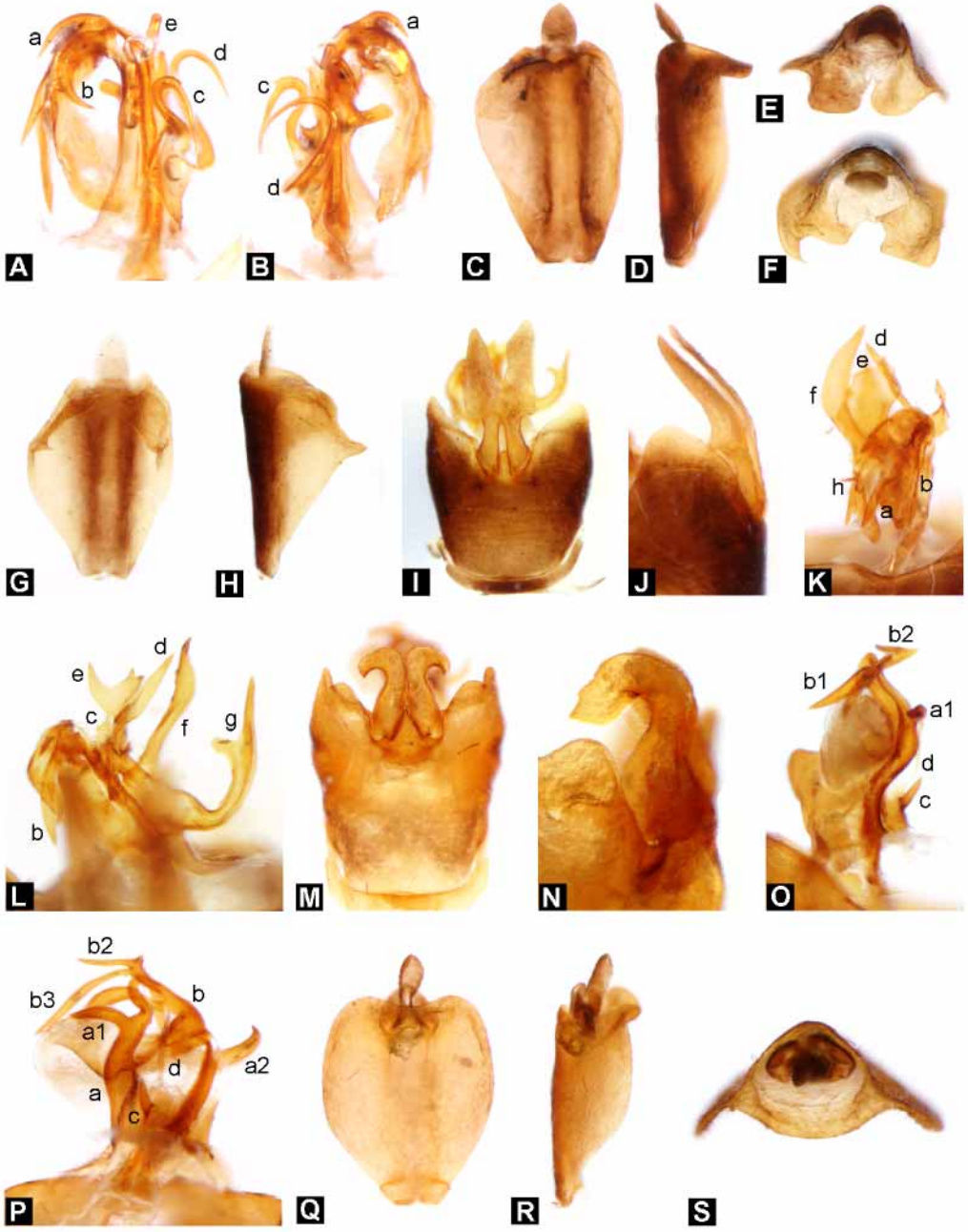


**FIGURE 47.** *Ozoliarus pelecanus*: A, B aedeagus, (A) left lateral, (B) right lateral; C, D, E anal tube, (C) ventral, (D) left lateral, (E) caudal. *Ozoliarus poculum*: F, G, H anal tube, (F) caudal, (G) ventral, (H) left lateral; I, J genital styles, (I) ventral, (J) left lateral; K, L aedeagus, (K) left lateral, (L) ventral. *Oteana lubra*: M, N genital styles, (M) ventral, (N) left lateral; O, P aedeagus, (O) left lateral, (P) ventral; Q, R, S anal tube, (Q) ventral, (R) left lateral, (S) caudal.

  

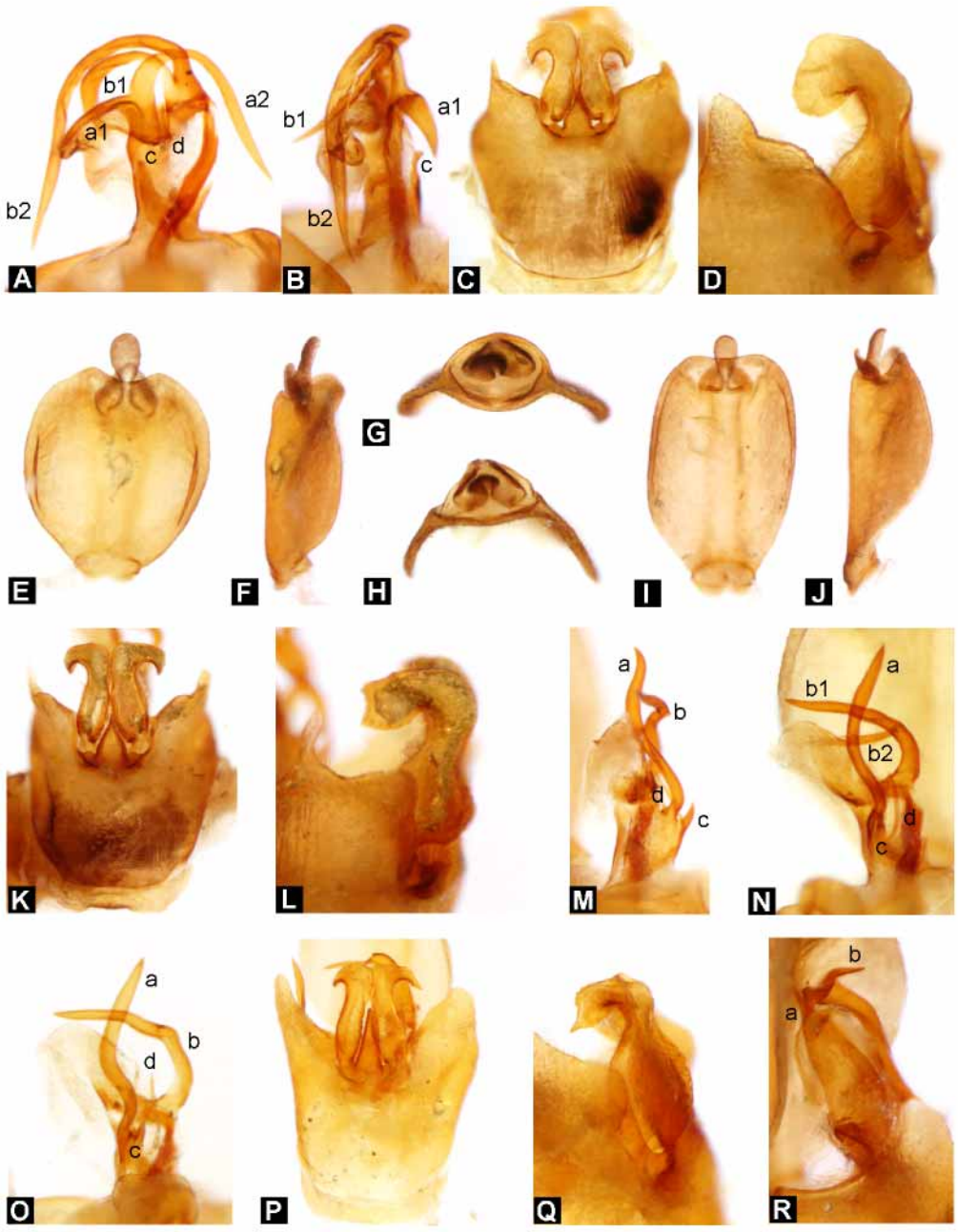


**FIGURE 48.** *Oteana salicoides*: A, B aedeagus, (A) ventral, (B) left lateral; C, D genital styles, (C) ventral, (D) left lateral; E, F, G anal tube, (E) ventral, (F) left lateral, (G) caudal. *Oteana tattendi*: H, I, J anal tube, (H) caudal, (I) ventral, (J) left lateral; K, L genital styles, (K) ventral, (L) left lateral; M, N aedeagus, (M) left lateral, (N) ventral. *Oteana tattendi* (variant): O aedeagus ventral. *Oteana sponsa*: P, Q genital styles, (P) ventral, (Q) left lateral; R aedeagus left lateral.

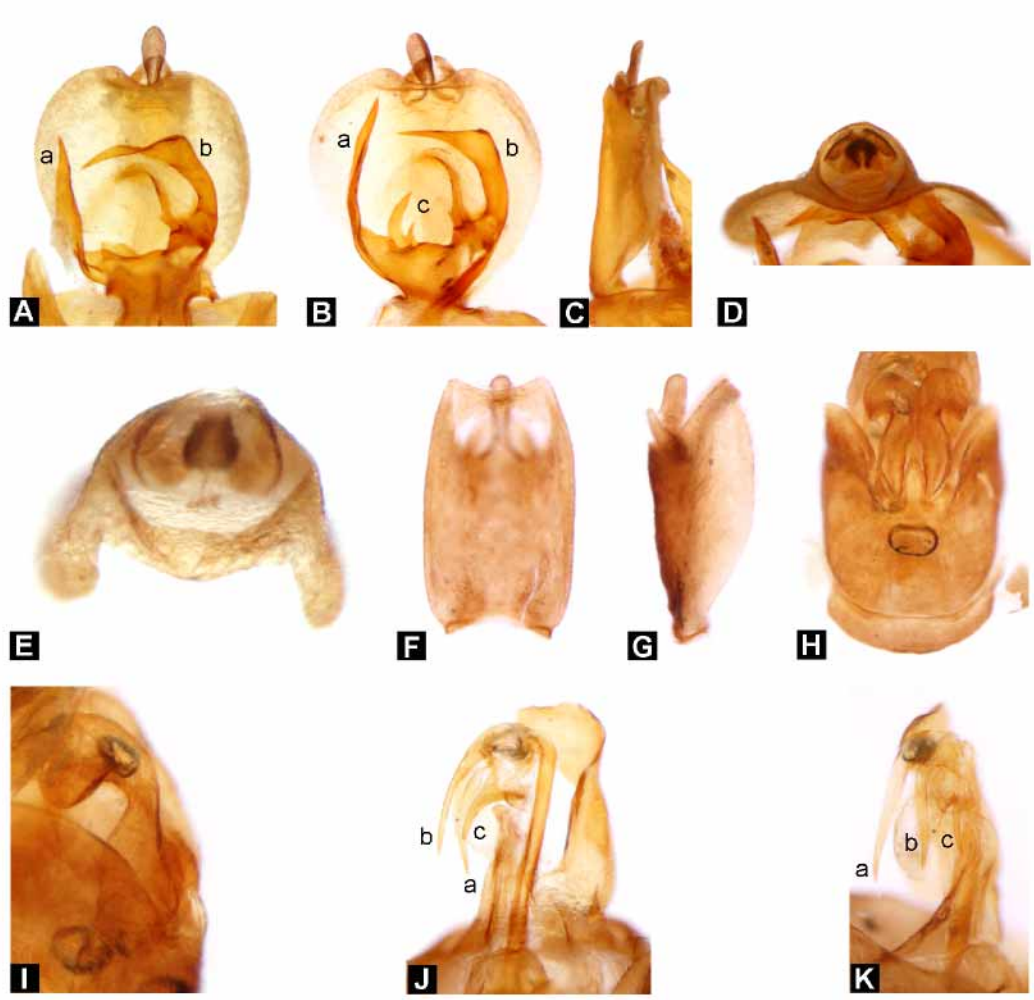


**FIGURE 49.** *Oteana sponsa*: A, B aedeagus and anal tube ventral, C, D anal tube, (C) left lateral, (D) caudal. *Pentastiridius felis*: E, F, G anal tube, (E) caudal, (F) ventral, (G) left lateral; H, I genital styles, (H) ventral, (I) left lateral; J, K aedeagus, (J) ventral, (K) left lateral.

Hoch (2006) raised the question of the origins of the colonizing lineages of *Oteana* in the Society and Cook Islands. There is strong evidence that Australia is the source. *Oteana* is represented by four species in Australia, three of which form a distinct group together with the species from the Society and Cook Islands, the *lubra* group. *Oteana lubra* has been recorded from Australia, New Caledonia, and Fiji.

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**Appendix I. Checklist of Australian Pentastirini taxa (new taxa or combinations in bold)**



Genus ***Cordoliarus*** Löcker, **gen. nov.**
***Cordoliarus mareebensis*** Löcker, **sp. nov.**

Genus *Miclucha* Emeljanov, 2001
*Miclucha laratensis* (Muir, 1924)
***Miclucha australiensis*** Löcker, **sp. nov.**
***Miclucha incerta*** (Distant, 1907a), **comb. nov.**

Genus *Oliarus* Stål, 1862
*acanthopygophoris* group
***Oliarus acanthopygophoris*** Löcker, **sp. nov.**
***Oliarus cuberlii*** Löcker, **sp. nov.**
***Oliarus lawlerorum*** Löcker, **sp. nov.**

*acuminatus* group
*Oliarus acuminatus* Muir, 1924
***Oliarus globosus*** Löcker, **sp. nov.**

*gracilis* group
***Oliarus gracilis*** Löcker, **sp. nov.**
***Oliarus hamatus*** Löcker, **sp. nov.**
***Oliarus hirsutus*** Löcker, **sp. nov.**

other species of *Oliarus*
*Oliarus busoensis* Van Stalle, 1989
***Oliarus cochleatus*** Löcker, **sp. nov.**
***Oliarus trispiralis*** Löcker, **sp. nov.**
*Oliarus alexanor* Kirkaldy 1906, nom. dub.
*Oliarus doddi* Muir 1931, nom. dub.
*Oliarus kampaspe* Kirkaldy 1906, nom. dub.
*Oliarus lilinoe* Kirkaldy 1907, nom. dub.
*Oliarus phelia* Kirkaldy 1906, nom. dub.
*Oliarus talunia* Kirkaldy 1906, nom. dub.

Genus ***Ozoliarus*** Löcker, **gen. nov.**
*bullocki* group
***Ozoliarus bullocki*** Löcker, **sp. nov.**
***Ozoliarus clipealis*** (Jacobi 1928), **comb. nov.**
***Ozoliarus nourlangiensis*** Löcker, **sp. nov.**
***Ozoliarus quercistylus*** Löcker, **sp. nov.**

*cuspidistylus* group
***Ozoliarus cuspidistylus*** Löcker, **sp. nov.**

  

***Ozoliarus rotundistylus*** Löcker, **sp. nov.**

*pitta* group

***Ozoliarus catherinae*** Löcker, **sp. nov.**
***Ozoliarus cynosurus*** Löcker, **sp. nov.**
***Ozoliarus golgolensis*** Löcker, **sp. nov.**
***Ozoliarus maru*** Löcker, **sp. nov.**
***Ozoliarus pitta*** Löcker, **sp. nov.**
***Ozoliarus serratus*** Löcker, **sp. nov.**
***Ozoliarus smithi*** Löcker, **sp. nov.**

*triangularis* group

***Ozoliarus dingkana*** (Distant 1907), **comb. nov.**
***Ozoliarus quadratistylus*** Löcker, **sp. nov.**
***Ozoliarus semicircularis*** Löcker, **sp. nov.**
***Ozoliarus triangularis*** Löcker, **sp. nov.**

*umbella* group

***Ozoliarus taroomensis*** Löcker, **sp. nov.**
***Ozoliarus umbella*** Löcker, **sp. nov.**

Other species of *Ozoliarus*

***Ozoliarus laertes*** (Kirkaldy 1906), **comb. nov.**
***Ozoliarus alces*** Löcker, **sp. nov.**
***Ozoliarus antennoides*** Löcker, **sp. nov.**
***Ozoliarus bumarangoides*** Löcker, **sp. nov.**
***Ozoliarus dedariensis*** Löcker, **sp. nov.**
***Ozoliarus latifundus*** Löcker, **sp. nov.**
***Ozoliarus olene*** Löcker, **sp. nov.**
***Ozoliarus pelecanus*** Löcker, **sp. nov.**
***Ozoliarus poculum*** Löcker, **sp. nov.**
***Ozoliarus asaica*** (Kirkaldy 1906), **comb. nov.**, nom. dub.

Genus ***Oteana*** Hoch, 2006

*lubra* group

***Oteana lubra*** (Kirkaldy 1906), **comb. nov.**
***Oteana salicoides*** Löcker, **sp. nov.**
***Oteana tattendi*** Löcker, **sp. nov.**

other species of *Oteana*

***Oteana sponsa*** (Kirkaldy 1906), **comb. nov.**

Genus *Pentastiridius* Kirschbaum 1868

*Pentastiridius felis* (Kirkaldy 1906)

Genus *Prosops* Buckton 1893

*Prosops pedisequus* Buckton 1893, nom. dub.

  

## Appendix II: Other material examined

*Miclucha laratensis* (Muir)

**AUSTRALIA, Qld:** 1♂, 5 km S Batavia Downs, 12.41S 142.41E, malaise trap, 15.ii.–6.iii.1993 (I. Cunningham) (ANIC), 1♀, Middle Claudie River, Iron Range, 1.xi.1974 (G. Daniels) (AMS), 1♀, Middle Claudie River, mv lamp, 29.vi.1982 (M.A. Schneider, G. Daniels) (UQIC), 1♀, 1 mile NE Mt. Lamond, Iron Range, 18.i.1972 (D.K. McAlpine, G.A. Holloway) (AMS), 1♀, Gordon Creek, Claudie River, River district, 12º42'S 143º17'E, 10.xii.1986 (G. Daniels, M.A. Schneider) (UQIC), 1♀, Endeavour R. (MAMU), **AUSTRALIA, WA**: 1♀, Kununurra, 25.ii.1984 (A.C. Postle) (ASCU).

*Miclucha incerta* (Distant)

**AUSTRALIA, NT**: 11♂, 11♀, Tindal, 14.31S 132.22E, light trap, 1.–20.xii.1967 (W.J.M. Vestjens) (ANIC), 2♀, South Alligator R. crossing, SSW of Cooinda, 26.xii.1986 (M.S. & B.J. Moulds) (ASCU), 1♀, Petherick's Rainforest Park, on Wangi Road, 10.xi.1983 (C. Wilson, S. Collins) (MAGD), 1♀, 1 km S of Cahills Crossing (East Alligator R.), 12.26S 132.58E, 3.xi.1972 (Upton, Barrett) (ANIC), 3♂, 2♀, 1 km N of Cahills Crossing (E. Alligator R.), 12.25S 132.58E, 31.x.1972 (Upton, Barrett) (ANIC), 1♂, 1♀, same data, 8.xi.1972 (M.S. Upton) (ANIC), 3♂, 3♀, same data, 31.xi.1972 (T. Weir, T. Angeles) (MAGD), 1♂, same data, 8.–9.xi.1972 (J.C. Cardale) (ANIC), 11♂, 5♀, 1 km NE of Cahills Crossing (E. Alligator R.), 12.25S 132.58E, 11.xi.1972 (M.S. Upton) (ANIC), 1♂, 1♀, 5 km NNW of Cahills Crossing, East Alligator R., at light, 8.vi.1973 (R.L. Kitching) (ANIC), 3♀, same data, 5.xi.1972 (Upton, Barrett) (ANIC), 3♂, 2♀, 7 km NW by N of Cahills Crossing (East Alligator R.), 12.12S 132.56E, 12.xi.1972 (M.S. Upton) (ANIC), 4♂, 8 km WSW of Victoria River Downs, at light, 12.ix.1973 (L.P. Kelsey) (ANIC), 1♂, 4.8 km WSW of Victoria Riv. Downs, 12.ix.1973 (L.P. Kelsey) (ANIC), 1♂, Sweets Lagoon, 12.52S 130.35E, malaise trap, 18.vii.1997 (M. Steinbauer) (ANIC), 1♂, Nourlangie Ck., 8 km E of Mt. Cahill, 12.52S 132.47E, 27.x.1972 (Upton, Barrett) (ANIC), 1♂, 5♀, same data, 17.xi.1972 (T. Weir, A. Allwood; M.S. Upton) (1♂, 3♀ MAGD, 1♀ NTDPI, 1♀ ANIC), 2♂, Nourlangie Ck, 8 km N of Mt. Cahill, 12.48S 132.42E, 26.x.1972 (Upton, Barrett) (ANIC), 1♂, 15 km E of Mt. Cahill, 12.52S 132.50E, 6.iii.1973 (M.S. Upton) (ANIC), 3♂, 2♀, Cooper Ck, 11 km S by W of Nimbuwah Rock, 12.17S 133.20E, 1.xi.1972 (Upton, Barrett; T. Weir, T. Angeles) (ANIC, MAGD), 1♂, 1♀, Cooper Ck, 19 km E by S of Mt. Borradaile, 12.06S 133.04E, 2.xi.1972 (T. Weir, T. Angeles) (ANIC), 1♂, same data, 9.xi.1972 (M.S. Upton) (ANIC), 1♂, 2♀, McArthur R., 48 km SW by S of Borroloola, 16.27S 136.05E, 29.x.1975 (M.S. Upton) (ANIC), 2♀, 12 km NNE of Borroloola, 1.xi.1975 (M.S. Upton) (ANIC), 1♀, Surprise Ck., 45 km SW by S of Borroloola, 5.xi.1975 (M.S. Upton) (ANIC), 1♂, South Alligator Motor Inn, 28.xii.1987 (M. Moulds) (AMS), 1♀, South Alligator Inn, 12.40S 132.30E, mv light, 7.–9.vii.1979 (G. Monteith, D. Cook) (QM), 2♂, 2♀, Stuart Hwy, Coomalie Ck, 50m, 24.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1♂, 5♀, Lake Argyle, 16.07S 129.01E, mv light, 15.xi.1984 (M. Malipatil) (MAGD), 2♂, Leila Lagoon, McArthur R., 4 km N of McArthur R. Stn., at light, 25.ix.1977 (J.A. Forrest) (SAM), 1♀, 10 miles S Dunmara, 200m, 26.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 2♂, 1♀, Beatrice Hill, on *Mimosa pigra*, 20.ix.1984 (C. Wilson) (ASCU), 2♂, 9♀, Bullock Ck, 10 km N of Horse Ck Bore, mv light, 27.viii.1985 (I. Archibald *et al.*) (MAGD), 1♂, 1♀, Lake Woods, 15 km SW Elliot, at light, 5.x.1977 (G.F. Gross) (SAM), 2♂, 1♀, Koongarra, 15 km E of Mt Cahill, 15.xi.1972 (T. Weir, A. Allwood) (MAGD), 2♀, Darwin

(G.F. Hill) (SAM), 1♀, Daly River, 13.45S 130.42E, mv light, 9–10.viii.1980 (M.B. Malipatil) (MAGD), 1♀, 4 miles W of Coolibah HS., 15.34S 130.54E, 25.v.1968 (M. Mendum) (ANIC), 1♀, same data, 13.vi.1968 (M. Mendum) (ANIC), 1♀, Elsey Ck, 19 km SSE of Mataranka, 15.05S 133.07E, 15.x.1972 (Upton, Barrett) (ANIC), **AUSTRALIA, Qld**: 2♂, 3♀, Batavia Downs, 12.41S 142.41E, malaise trap, 22.vi–23.viii.1992 (P. Zborowski, J. Cardale) (ANIC), 2♀, 5 km S Batavia Downs, 12.41S 142.41E, malaise trap, 23.xiii.–16.ix.1992 (P. Zborowski, L. Miller) (ANIC), 1♂, 1♀, same data, 11.xii.1992–15.i.1993 (P. Zborowski) (ANIC), 2♂, same data, 15.ii.–6.iii.1993 (I. Cunningham) (ANIC), 1♂, same data, 8.iii–4.iv.1993 (P. Zborowski) (ANIC), 1♂ or♀ (abdomen missing), 1♀, same data, 4.iv.–24.v.1993 (P. Zborowski, A. Roach) (ANIC), 5,♂, 6♀, same data, 24.v.–17.vi.1993 (P. Zborowski, I. Naumann) (ANIC), 3♂, 2♀, same data, 18.vi–22.vii.1992 (P. Zborowski, E.S. Nielson) (ANIC), 5♀, same data, fight intercept trap, 8.iii–4.iv.1993 (P. Zborowski) (ANIC), 1♂, 1♀, 7 km S Batavia Downs, 12.43S 142.42E, malaise trap, 19.vi–22.vii.1992 (P. Zborowski, E.S. Nielson) (ANIC), 1♂, same data, 23.xi–11.xii.1992 (P. Zborowski, W. Dressler) (ANIC), 5♂, 1♀, same data, 22.vi.–23.viii.1993 (P. Zborowski, J. Cardale) (ANIC), 1♀, 3 km W of Batavia Downs, 12.40S 142.39E, flight intercept trap, 18.vi.–22.vii.1992 (P. Zborowski, E.S. Nielsen) (ANIC), 1♀, Heathlands, 11.45S 142.35E, flight intercept trap, 18.viii.–ix.1992 (P. Zborowski, L. Miller) (ANIC), 1♂, Isaacs River, N of Dingo, 27.i.1986 (M.S. & B.J. Moulds) (MJF), 1♂, 3♀, Rockhampton, x.1922 (SAM), 1♀, same data, xi.1922 (SAM), 1♀, same data, xii.1922 (SAM), 2♂, Lawn Hill Ck, Adels Grove, W of Gregory Downs, 18.xii.1991 (B.J. & M.S. Moulds) (AMS), 2♂, 2♀, Walker Ck, 35 km NNE of Normanton, 16.xii.1986 (M.S. & B.J. Moulds) (ASCU), 1♂, Battle Camp Range, 15.17S 144.44E, at light, 27.vi.1993 (I. Naumann & P. Zborowski) (ANIC), 1♂, Claudie River near Mount Lamond, mv light, 13. xii.1971 (D.K. McAlpine, G.A. Holloway, D.P. Sands) (AMS), 1♀, Claudie River, 4 miles W Mt. Lamond, at light, 16.xii.1971 (D.K. McAlpine, G.A. Holloway) (AMS), 1♀, Chillagoe, 20.i.1988 (M.S. & B.J. Moulds) (ASCU), 3♂, 2♀, 10 miles SW Townsville, 50m, 12.xi.1962 (E. Ross, D. Cavagnaro) (CAS), 4♂, 1♀, Cannovale, 15.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 2♂, near Brookdale, 10m, 2.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 3♂, 3♀, 37 miles NW Bowen, 20m, 14.xi.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1♂, 1♀, Cairns, xi.1949 (J.G. Brooks) (AMS), 1♂, Pentland, viii.–x.1942 (J.G. Brooks) (AMS), 1♂, Arriga R.S. via Mareeba, at light, 17.ii.1977 (R.I. Storey) (QDPC), 1♂, Arriga, at light, 1.ii.1980 (I.C.C.) (QDPC), 1♀, same data, 4.ii.1980 (QDPC), 1♀, same data, 11.ii.1980 (QDPC), 1♂, Mount Cootha, 2.ix.1923 (H. Hacker) (QM), 3♂, 3♀, West Claudie River, 4.5 km SW road junction, 12º44'S 143º15'E, mv lamp, 3.xii.1986 (G. Daniels, M.A. Schneider) (UQIC), 1♀, same data, 5.xii.1986 (UQIC), 1♂, Wenlock River, 13º05'S 142º56'E, mv lamp, 12.xii.1986 (G. Daniels, M.A. Schneider) (UQIC), 1♂, 3♀, Walkers Bend, Flinders R., 14.i.1986 (M.S. & B.J. Moulds) (MJF), 1♀, Kuranda, iii.1950 (J.G. Brooks) (AMS), 1♀, Iron Range, 7.iv.1964 (I.F.B. Common, M.S. Upton) (ANIC), 2♀, 2 km N Rockeby, 13.39S 142.40E, at light, 15.vii.1993 (K. Halfpapp, S. DeFaveri) (1 ASCU, 1 AMS), 1♀, Iron Range, near airport, mv light, 20.xii.1971 (D.K. McAlpine, G.A. Holloway) (AMS), 1♀, Lloyd Bay, 3 miles N Claudie River mouth, mv lamp, 14.i.1972 (D.K. McAlpine, G.A. Holloway) (AMS), 1♀, Darr R., 31 km NW by N of Longreach, 23.13S 144.04E, 22.x.1975 (M.S. Upton) (ANIC), 1♀, 5 km W by N of Rounded Hill, 15.17S 145.10E, 7.x.1980 (T. Weir) (ANIC), 2♀, Ipswich, 13.x.1923 (SAM), 1♀, Silver Plains homestead, east coast Cape York Peninsula, 17.iii.1960 (J.L. Wassell) (ANIC), 1♀, same data, at light, 27.x.1961 (ANIC), 1♀, Python Waterhole, 14.44S 144.07E, at light, 28.x.1992

  

(P. Zborowski, T. Weir) (ANIC), **AUSTRALIA, SA**: 1♂, 1♀, near Clifton Hills OS, 26º30'S 139º28'E, malaise trap, 18.–21.xi.1993 (J.A. Forrest, D. Hirst) (SAM), **AUSTRALIA, WA**: 3♀, Old Doongan, 15.19S 126.32E, 2.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC), 1♂, 2♀, Carson escarpment, 14.49S 126.49E, 9.–15.viii.1975 (I.F.B. Common, M.S. Upton) (ANIC), 2♀, Argyle Diamond Mine, ca. 110 km SSW Kununurra, 11.v.1985 (A. Postle) (WAMP), 2♂, 1♀, Winjana Gorge, 140 km E of Derby, 31.x.1978 (M.S. B.J. Moulds) (MJF), 1♂, Winjana Gorge, 100 m, 17.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1♂, Kimberley Research Stn via Wyndham, 29.ix.1956 (E.C.B. Langfield) (ANIC), 1♂, same data, 21.xii.1956 (ANIC), 1♀, same data, light trap, 12.xii.1960 (K.T. Richards) (WADA), 1♂, near Old Napier Downs Cave, Napier Range, Kimberleys, 10.vi.1970 (Lemley Expedition) (WAMP).

*Oliarus acuminatus* Muir

**AUSTRALIA, NT**: 4♂, Nourlangie Creek, 6 km E of Mt Cahill, 12.52S 132.46E, 12.x.1972 (T. Weir) (MAGD), 1♂, 1♀, Nourlangie Creek, 8 km E of Mt. Cahill, 12.52S 132.47E, 17.xi.1972 (T. Weir, A. Allwood) (MAGD), 1♂, same data, 7.x.1975 (A. Allwood, T. Angeles) (MAGD), 2♂, Nourlangie Ck, 8 km N of Mt Cahill, 12.48S 132.42E, at light, 16.vi.1973 (R.L. Kitching) (ANIC), 1♂, 5 km NNW of Cahills Crossing, East Alligator River, 12.23S 132.57E, at light, 8.vi.1973 (R.L. Kitching) (ANIC), 1♂, Jabaluka lagoon, 14 km N of Mudginbarry HS, 12.28S 132.52E, 13.xi.1972 (Upton, Barrett) (ANIC), 1♂, Magela Ck, 1 km NNW of Mudginbarry HS, 12.36S 132.52E, 25.v.1973 (Upton, McInnes) (ANIC), 1♂, Magela Ck, 9 km N by E of Mudginbarry HS, 12.31S 132.54E, 10.vi.1973 (R.L. Kitching) (ANIC), 2♂, 1♀, Magela Ck, 9 km SSE of Mudginbarry HS, 6.xi.1972 (D.H. Colless) (ANIC), 1♀, Magela Ck, 2 km N of Mudginbarry HS, 15.xi.1972 (D.H. Colless) (ANIC), 4♂, 2♀, Magela Creek, 4.xi.1989 (C.W. & L.B. O'Brien) (LBOB), 8♂, 4♀, Jim Jim Ck, 19 km WSW of Mt Cahill, 12.57S 132.33E, 17.vi.1973 (R.L. Kitching) (ANIC), 1♂, Humpty Doo, Adelaide River, 23.ix.1960 (J.L. Gressitt) (BPBM), 1♂, C.P.R.S, in light trap in *Mimosa pigra*, 4.x.1985 (C. Wilson) (ASCU), 1♂, Cooper Ck, 19 km E by S of Mt Borradaile, 10.xi.1972 (D.H. Colless) (ANIC), 1♂, Katherine River, 15 km E Katherine, 3.x.1977 (G.F. Gross, J.A. Forrest) (SAM), 1♂, Petherick's Rainforest Park, on Wangi Road, 10.xi.1983 (C. Wilson, S. Collins) (MAGD), **AUSTRALIA, Qld**: 1♂, 1♀, Kowanyama, 25.vii.1982 (J.F. Donaldson) (QDPC), 2♂, 1♀, Statton R. nr Inkerman HS, at light, 29.vii.1982 (J.F. Donaldson, J.W. Turner) (QDPC), 1♂, Archer R., 27.vi.1960 (C.N. Smithers) (AMS), 1♂, Horn Island, 10.37S 142.17E, at light, 2.–5.xii.1986 (K. Houston, K. Sadler) (QDPC), 1♂, West Claudie River, 25.vi.1982 (M.A. Schneider, G. Daniels) (UQIC), 1♂, Silver Plains homestead, 24.vi.1960 (C.N. Smithers) (AMS).

*Oliarus busoensis* Van Stalle

**AUSTRALIA, Qld**: 1♂, Koy Property at Brigooda (Top site), 26º16'S 151º25'E, intercept trap, vine scrub, 26.i.–20.iv.1995 (G.B. Monteith) (QM).

*Ozoliarus clipealis* (Jacobi), **comb. nov.**

AUSTRALIA, WA: 2♂, 1♀, 15 miles W Louisa Downs, 250 m, 18.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), AUSTRALIA, NT: 1♂, Lake Argyle, 16.07S 129.01E, mv lamp, 15.xi.1984 (M. Malipatil) (MAGD).

*Ozoliarus laertes* (Kirkaldy), **comb. nov.**

  

**AUSTRALIA ACT**: 1♂, Cotter River, 6.i.1931 (A.L. Tonnoir) (ANIC), **AUSTRALIA, NSW**: 1♂, 1♀, 0.5 km SE Lansdowne, 0–10m, mangrove riv. rainforest, malaise trap, 24.–31.i.1993 (G. Williams) (AMS), 2♀, same data, 10.–17.i.1993 (AMS), 3♂, 1♀, same data, 6.–20.xii.1992 (AMS), 5♂, Eastwood, near Sydney, 7.xii.1977 (M.J. Fletcher) (ASCU), 4♂, Eastwood, near Sydney, on *Banksia robur*, 13.xi.1977 (M.J. Fletcher) (MJF), 1♂, 1♀, Araluen, 21.xi.1965 (Z. Liepa) (ANIC), 1♂, Lake George, 18.xi.1989 (C.W. & L.B. O'Brien) (LBOB), 2♂, Coocumbac Island, Taree, Manning River, riv. rainforest, 10.–21.xi.1994 (G. & T. Williams) (ANIC), 2♂, same data, 21.–29.xi.1994 (ANIC), 1♂, same data, ex floodplain rainforest, 1.–8.xii.1994 (ANIC), 1♂, Cabramatta, 1.ii.1959 (M.I. Nikitin) (AMS), 1♂, Casula, 20.xii.1958 (M.I. Nikitin) (AMS), **AUSTRALIA, Qld**: 1♂, Gumdale Hwy, 9.xi.1989 (C.W. & L.B. O'Brien) (LBOB).

*Oteana lubra* (Kirkaldy), **comb. nov.**

**AUSTRALIA, NSW:** 2♂, 12♀, Narrabri A.R. Stn, at light, 15.ii.1967 (W.E. Wright) (ASCU), 4♂, 6♀, Narrabri, at light, 26.x.1965 (W.E. Wright) (ASCU), 1♀, same data, 21.xi.1965 (ASCU), 1♂, 3♀, same data, 25.i.1960 (W.E. Wright, M.I. Nikitin) (ASCU), 1♀, same data, 23.i.1961 (ASCU), 1♀, same data, 21.xii.1959 (ASCU), 2♂, Yanco, 4.xi.1966 (M.I. Nikitin) (ASCU), 2♀, same data, 20.iii.1960 (W.E. Wright, M.I. Nikitin) (ASCU), 1♂, Wallis Lake, ex beatings, 31.x.1982 (AMS), 1♂, 4♀, Rydalmere, at light, 21.iii.1968 (ASCU), 1♂, Port Macquarie, in light shade, 9.v.1978 (M.J. Fletcher) (MJF), 1♂, 1♀, Mootwingee Homestead, Mootwingee NP, mv lamp, 8.xi.1984 (G.R. Brown, H.M. Holmes) (ASCU), 2♀, Mootwingee Homestead, Mootwingee NP, near dam, mv lamp, 6.xi.1984 (H.M. Holmes, G.R. Brown) (ASCU), 1♂, Old Mootwingee Gorge, Mootwingee NP, 5.xi.1984 (G.R. Brown, H. M. Holmes), 1♂, 7 km N of Tibooburra, dry creek bed, mv lamp, 12.iv.1979 (B.J. Loudon) (ASCU), 2♂, 2♀, Gunnedah, at light, 1.ii.1965 (E. Keys) (MJF), 2♂, 1♀, Moree, 20.i.1914 (W.W. Froggatt) (ASCU), 1♀, same data, 20.iv.1916 (ASCU), 1♀, same data, 25.xi.1916 (ASCU), 1♀, same data, 5.xii.1914 (ASCU), 1♀, Moree, 3.xi.1971 (LRG) (ASCU), 1♂, 1♀, Moree, xii.1917 (ASCU), 1♂, Moree, 1919 (ASCU), 1♂, 1♀, Moree, Faba bean, 17.ix.2003 (C.M. Carr) (ASCU), 1♂, 19 km S of Moree, on *Eucalyptus citriodora*, 1.xii.1976 (E.M. Exley & T. Low) (UQIC), 2♂, 1♀, Towler's Bay, W Pittwater, 27.–29.i.1973 (M.J. Fletcher) (MJF), 1♂, Cronulla, 15.xi.1958 (M.I. Nikitin) (AMS), 1♂, Bourke, 26.ii.1981 (B.J. Loudon, R. Pigott) (ASCU), 2♂, Iluka Clarence R., rainforest, 24.xi.1970 (D.K. McAlpine) (AMS), 1♂, same data, 25.xi.1970 (AMS), 1♀, same data, 22.ii.1965 (AMS), 1♂, Armidale, at light, 17.ii.1963 (C.W. Frazier) (ASCU), 1♀, same data, 14.ii.1963 (ASCU), 1♂, Breeza, chickpeas crop, 2.x.2002 (LPFS) (ASCU), 1♂, 1♀, 3 miles W of Woodburn, 3.xi.1965 (M.S. Upton) (ANIC), 2♂, 3♀, Cobar, mv lamp, 3.xi.1984 (G.R. Brown) (ASCU), 1♂, Pearl Beach, near Way Way, 16.xii.1971 (M.J. Fletcher) (MJF), 1♂, Upper Horseshoe Ck, nr Kyogle, at black light, 24.xi.1986 (D.J. Scambler) (ASCU), 2♂, Menindee Lakes Pk, Trust Caravan Pd, at light, 26.xii.1973 (G.F. Gross) (SAM), 1♂, Darling River bank, 20 miles SSW of Bourke, at light, 26.xii.1973 (G.F. Gross) (SAM), 3♂, 1♀, 8 km SW Brewarrina, Boat ramp on Barwon River, 100m, 30.00S 146.55E, 26.x.1995 (Schuh, Cassis) (AMS), 2♂, North Beach, Bellinger R., 21.ii.1965 (D.K. McAlpine, R. Lossin) (AMS), 1♂, 7 km N Tibooburra, dry creek bed, mv lamp, 24.ii.1981 (B.J. Loudon, R. Pigott) (ASCU), 1♂, Mirrool Creek crossing, 70 km E of Hay, 5.iv.1997 (M.J. Fletcher, J.S. Mann) (ASCU), 1♂, Warren, ex cotton or lucerne, xi.1992 (M. Gaynor) (ASCU), 1♂, Broken Hill, at light, 10.i.1964 (K. Dansie) (SAM), 1♂, 1♀, Noonee Nyrang HS, 7 km N by E of Wellington, mv lamp, 32.30S 148.57E,

  

11.xi.1984 (H.M. Holmes) (ASCU), 2♂, 1♀, Trangie, 5.ii.1951 (B. Cameron) (ANIC), 2♀, same data, 3.ii.1951 (ANIC), 1♂, Glen Innes, 25.xi.1960 (M.F. Day, N.E. Grylls) (ANIC), 1♂, 3 miles SSE of Port Macquarie, 15.v.1966 (M.S. Upton) (ANIC), 1♂, Mudgee (QM), 2♂, Coolabah (W.B.G.) (1 BMNH, 1 ASCU), 1♂, 1♀, New England, Glenrock Station, 27.i.1987 (G. Hangayer) (AMS), 1♂, Lord Howe Island, UV lamp, 18.ix.1991 (G. Brown) (ASCU), **AUSTRALIA, NT**: 2♂, 3♀, Elsey Ck, 19 km SSE of Mataranka, 15.05S 133.07E, 15.xi.1972 (Upton, Barrett) (ANIC), 5♂, 4♀, 18 km NE of Andado HS, 25.18S 135.25E, 29.ix.1972 (M.S. Upton) (ANIC), 3♀, 2 km WSW of Andado HS, 25.25S 135.16E, 26.ix.1972 (M.S. Upton) (ANIC), 2♂, Ooratippra, 275 m, 31.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), 1♂, Dingo Hole Dam, 30 km N Amarco Stn, at light, 9.x.1977 (G.F. Gross, J.A. Forrest) (SAM), 1♂, Adelaide River, vii.1963 (J.C. Dawkins) (SAM), 2♂, Leila Lagoon, McArthur River, 4 km N of McArthur R. Stn, at light, 25.ix.1977 (J.A. Forrest) (SAM), 1♂, The Granites, at light, 11.iv.1963 (J.E. Dewee) (ANIC), 10♂, 1♀, Junction WH, 16 km SW Austral Downs, at light, 22.ix.1977 (G.F. Gross) (SAM), **AUSTRALIA, Qld**: 1♂, 1♀, Bucasia, 17.v.2003 (K.J. Sandery) (ANIC), 1♀, same data, 30.v.2003 (ANIC), 1♀, same data, 4.x.2001 (ANIC), 1♀, same data, 31.i.2003 (ANIC), 1♀, same data, 16.xi.2000 (ANIC), 1♀, same data, 2.v.1998 (ANIC), 1♀, same data, 28.iv.1998 (ANIC), 1♂, 5 km N of Leyburn, 27.58S 151.38E , 28.iii.1986 (G. & A. Daniels) (UQIC), 1♂, Bundaberg, sugar cane (Koebele) (BPBM), 1♂, Mapleton, 17.vi.1952 (J.G. Morris) (UQIC), 1♂, 8♀, Goose Lagoon, 11 km SW by S of Borroloola, 16.10S 136.15E, 31.x.1975 (M.S. Upton) (ANIC), 1♂, Brisbane, 14.xi.1962 (T. Brooks) (UQIC), 1♂, same data, 6.v.1954 (O.R. Byrne) (UQIC), 1♂, same data, 10.x.1951 (L.E. Jackson) (UQIC), 1♂, same data, 20.ii.1965 (H.S. Rose) (UQIC), 1♂, same data, 5.iv.1950 (J.H. Southern) (UQIC), 1♂, 1♀, same data, xii.1922 (H. Hacker) (QM), 1♂, same data, 8.xi.1922 (QM), 1♂, same data, 5.x.1925 (QM), 1♂, same data, 19.x.1922 (QM), 1♂, same data, 19.xi.1923 (QM), 1♂, same data, 17.vi.1954 (A.G. Barrie) (UQIC), 1♂, same data, 14.v.1953 (UQIC), 1♂, same data, 20.iv.1953 (T. Denmead) (UQIC), 1♂, same data, malaise trap, v.1977 (K.J. Houston) (QDPC), 1♂, Brisbane, light trap, 26.x.1961 (UQIC), 2♂, 3♀, Moranbah, 4 km S, 22.02S 148.03E, mv light, 3.x.2003 (G.B. Monteith) (QM), 3♂, 1♀, Dynevor Lakes, 88 km W Eulo, 28.05S 144.12E, 150 m, 27.ix.1991 (G. Daniels) (UQIC), 1♂, 1♀, Goondiwindi, 7.xi.1936 (K.H.L. Key) (ANIC), 1♂, Nine mile bore, 16 km E Eulo, 28.07S 145.11E, on *Eremophila mitchellii*, 25.ix.1991 (G. Daniels) (UQIC), 1♂, 6 km N Taroom, 25.36S 149.46E, 200m, 2.x.1991 (G. Daniels) (UQIC), 1♂, Heron I., 10–14.xi.1957 (T.E. Woodward) (UQIC), 2♂, 2♀, North Stradbroke Island, 20.iv.1968 (T. Weir) (UQIC), 1♂, Gatton, 13.x.1926 (UQIC), 1♂, same data, 4.iv.1951 (S.G. Grimmett) (UQIC), 1♂, 3♀, same data, 14.i.1986 (R. De Keyzer) (AMS), 1♂, 1♀, same data, on potato, ii.10.1962 (R. Winks) (QDPC), 2♂, 1♀, DPI Res. Stn, Gatton, D-vac, 30.iii.1981 (QDPC), 1♂, Bulurin State Forest, via Many Peaks, 17.19.x.1972 (B.K. & J. A. Cantrell) (UQIC), 1♂, Boyne Island, via Gladstone, 23.55S 151.20E, 1995 (C.Q. University) (QM), 1♂, Lawes, 12.i.1957 (W.F. Wildin) (UQIC), 1♂, same data, 6.iv.1963 (A. MacQueen) (UQIC), 1♂, same data, v.1949 (QDPC), 1♂, Charleville (QM), 1♂, Dalby, 1936 (N. Geary) (QM), 1♂, Konilworth State Forest, 1.iv.1969 (B. Cantrell) (UQIC), 1♂, Black River, 20 km W/N of Townsville, 19.14S 146.38E, 3.xii.1991 (T. Woodger) (ANIC), 1♂, Lake Broadwater, via Dalby, 19.ii.1985 (G.I. Thompson) (QM), 4♂, same data, 27.21S 151.06E, mv lamp, 27.ix.1986 (G. & A. Daniels) (UQIC), 1♂, 1♀, same data, 29.i.1987 (UQIC), 7♀, same data, 12.iv.1986 (UQIC), 5♀, same data, 2.v.1987 (UQIC), 1♂, 1♀, 1.v.1987 (UQIC), 5♀, same data, 12.iv.1986 (D.K. Yeates) (UQIC), 1♂, Mareeba Shire, Kuranda, Russet Park, 460 m, mv lamp,

20.xi.1987 (T. W. Davies) (CAS), 1♂, North Baker's Ck, Mackay, 7.ii.1965 (E.C. Dahms) (QM), 1♂, Albion, Brisbane, 8.xi.1957 (S. Breeden) (QM), 1♂, 1♀, "Camp Mile", Cooloola, 3.–13.iii.1970 (E. Dahms) (QM), 1♂, Normanton, mv lamp, 7.v.1963 (P.F. Aitken, N.B. Tindale) (SAM), 4♂, Norwin, truck trapping, 4.x.1982 (E. Sinclair) (QDPC), 2♂, Pentland, viii.–x.1942 (J. G. Brooks) (AMS), 2♂, 10 km S of St Lawrence turnoff, Waverley Rg, 21.xii.1987 (M.S. & B.J. Moulds) (ASCU), 1♂, Georgina R., 50 km S Carandotta, at light, 20.ix.1977 (J.A. Forrest, G.F. Gross) (SAM), 4♂, 2♀, Cunnamulla, x.1941 (N. Geary) (AMS), 4♀, same data, 26.x.1940 (AMS), 1♀, same data, ii.1941, 1♀, same data, 22.x.1938 (AMS), 1♀, same data, 5.xi.1940 (AMS), 1♂, Cairns district (A.M. Lea) (SAM), 1♂, Bunya Mtns, Cherry Plains, 22.iv.1986 (M. Elsam-Harris) (QDPC), 1♂, Pittsworth, ex *Eremophila mitchellii*, 1.v.1973 (P. Allsopp) (QDPC), 1♂, 2♀, Mt Tamborine, malaise trap, x.1977 (Sankowsky) (QDPC), 1♂, Rockhampton, x.1922 (SAM), 1♂, River Bank, St George, 11.x.1974 (I.D. Galloway) (QDPC), 1♂, Millaroo, rice, D-vac, 9.ii.1982 (J.F. Donaldson) (QDPC), **AUSTRALIA, SA**: 1♂, 9 km WNW Andamooka HS, Sand hills, at light, 1.xi.1975 (J.A. Herridge) (SAM), 4♂, Sinclair Flat. River Murray, at light, 21.ii.1973 (G.F. Gross) (SAM), 1♂, Old Alton Downs, Simpson Desert, 19.ix.1972 (Z. Liepa) (ANIC), 1♂, Berri, on sticky trap in vineyard, 21.x.–2.xi.1998 (VAIC), 4♂, Berri, sticky trap, 17.ii.–5.iii.2004 (P. Magarey) (ASCU), 1♂, Loxton, sticky trap, 15.ii.–11.iii.2005 (P. Magarey) (ASCU), 3♂, 3♀, 6 miles W Warooka, tea tree swamp, at light, 27.i.1962 (P. Aitken) (SAM), 2♂, Cannuwaukaninna Dune, 16 km W of Etadunna Homestead, 6.iii.1972 (E.G. Matthews) (SAM), 1♂, 2♀, Frome River crossing of Birdsville Track, near Maree, at light, 25.x.1966 (G.F. Gross) (SAM), 1♂, Murbke River Murray, 20.ii.1973 (G.F. Gross) (SAM), 1♂, Cold and Wet Station, at light, 19.xi.1962 (P. Aitken, N. Tindale, G. Pretty) (SAM), 1♂, Bullinia Dam, 45 km NE Marree, 27.xi.1974 (J.A. Herridge) (SAM), 1♂, Leigh Ck, x.1964–iii.1965 (G.C. Gregory) (ANIC), 1♂, Goyder Lagoon Water hole, Birdville track, 18.ix.1972 (Z. Liepa) (ANIC), 1♂, Koonchera Dune near Koonchera Waterhole, 26.41S 139.30E, 2.ix.1997 (J. & A. Skevington) (UQIC), **AUSTRALIA, VIC**: 1♂, 5 km S of Rocket Lake, Murray-Sunset NP, 34.39S, 141.49E, at light, 24.xi.1992 (Moulds, McEvey, McAlpine) (AMS), 1♂, same data (2.xii) (AMS).

*Oteana sponsa* (Kirkaldy), **comb. nov.**

**AUSTRALIA, NT**: 4♂, 10♀, 1 km N of Cahills Crossing, East Alligator River, 12.25S 132.58E, 29.v.1973 (Upton, McInnes) (ANIC), 2♂, 1♀, same data (T. Weir, N. Forrester) (MAGD), 14♂, 7♀, same data, 7.vi.1973 (R.L. Kitching) (ANIC), 3♂, 1♀, same data (T. Weir, A. Allwood) (MAGD), 7♂, 8♀, same data, 31.x.1972 (Upton, Barrett), (ANIC), 7♂, 4♀, same data, 31.xi.1972 (T. Weir, T. Angeles) (MAGD), 7♂, 2♀, same data, 8.xi.1972 (M.S. Upton) (ANIC), 1♂, same data, 8.–9.xi.1972 (J.C. Cardale) (ANIC), 1♂, 1♀, 1 km S of Cahills Crossing, East Alligator River, 12.26S 132.58E, 3.xi.1972 (Upton, Barrett) (ANIC), 7♂, 6♀, 5 km NNW of Cahills Crossing, East Alligator River, 12.23S 132.57E, 8.vi.1973 (R.L. Kitching) (ANIC), 2♂, 1♀, same data, 5.xi.1972 (Upton, Barrett) (ANIC), 1♂, 1♀, same data, 5.x.1975 (A. Allwood, T. Angeles) (MAGD), 5♂, 4♀, 7 km NW by N of Cahills Crossing, East Alligator River, 12.23S 132.56E, 12.xi.1972 (M.S. Upton), (ANIC), 1♀, same data, 27.v.1973 (Upton, McInnes) (ANIC), 2♂, 2♀, same data, 9.vi.1973 (R.L. Kitching) (ANIC), 1♂, same data (T. Weir, A. Allwood) (MAGD), 2♂, Marrakai Station, 28.31.vii.1929 (I.M. Mackerras, T.G. Campbell) (ANIC), 3♂, 4♀, Jabaluka lagoon, 14 km N of Mudginbarry HS, 12.28S 132.52E, 13.xi.1972 (Upton, Barrett) (ANIC), 2♂, Magela Ck, 9 km SSE

  

of Mudginbarry HS, 12.40S 132.54E, 6.xi.1972 (Upton, Barrett) (ANIC), 1♂, same data, 7.xi.1972 (ANIC), 1♂, 1♀, Magela Ck, 1 km NNW of Mudginbarry HS, 12.36S 132.52E, 25.v.1973 (T. Weir, N. Forrester) (MAGD), 1♂, Magela Ck, 2 km N of Mudginbarry HS, 12.35S 132.52E, 14.xi.1972 (M.S. Upton) (ANIC), 1♂, 9 km N by E of Mudginbarry, 12.31 132.54E, 10.vi.1973 (T. Weir, A. Allwood) (MAGD), 2♂, 2♀, 15 km E of Mt Cahill, 12.52S 132.50E, 9.iii.1973 (M.S. Upton) (ANIC), 1♂, Yellowwater Billabong, 3.xi.1989 (G.W. & L.B. O'Brien) (LBOB), 2♂, 1♀, Cooper Ck, 19 km E by S of Mt Borradaile, 12.06S 133.04E, 2.xi.1972 (Upton, Barrett) (ANIC), 6♂, 2♀, same data (T. Weir, T. Angeles) (MAGD), 4♂, 1♀, same data, 9.xi.1972 (M.S. Upton) (ANIC), 3♀, same data, 5.vi.1973 (R.L. Kitching) (ANIC), 1♂, same data, 31.v.1973 (T. Weir, N. Forrester) (MAGD), 1♂, Jim Jim Ck, 19 km WSW of Mt Cahill, 12.57S 132.33E, 24.x.1972 (Upton, Barrett) (ANIC), 1♂, 1♀, same data, 19.v.1973 (Upton, McInnes) (ANIC), 1♂, 6 km SW by S of Oenpelli, 12.22S 133.01E, 6.vi.1973 (R.L. Kitching) (ANIC), 1♀, Nourlangie Ck, 8 km N of Mt Cahill, 12.48S 132.42E, 16.vi.1973 (R.L. Kitching) (ANIC), 3♂, 2♀, same data, 26.x.1972 (Upton, Barrett) (ANIC), 3♂, 1♀, 16 km E by N of Mt Cahill, 12.50S 132.51E, 16.xi.1972 (T. Weir, A. Allwood) (MAGD), 1♂, 15 km E of Mt Cahill, 12.52S 132.50E, 9.iii.1973 (M.S. Upton) (ANIC), 6♂, 3♀, 8 km E of Mt Cahill, 12.52S 132.47E, 17.xi.1972 (T. Weir, A. Allwood) (MAGD), 1♂, South Alligator Inn, 12.40S 132.30E, mv light, 7.–9.vii.1979 (G. Monteith, D. Cook) (QM), 1♂, Birraduk Ck, 18 km E by N of Oenpelli, 12.17S 133.13E, 1.vi.1973 (T. Weir, N. Forrester) (MAGD), 1♂, same data, 4.vi.1973 (R.L. Kitching) (ANIC), 1♂, 1♀, Petherick's Rainforest Park, on Wangi Road, 10.xi.1983 (C. Wilson, S. Collins) (MAGD), 1♂, 1♀, Adelaide River, vii.1963 (J.C. Dawkins) (SAM), 2♂, 2♀, Corndorl billabong nr Jabiru, 30.xi.1982 (M.B. Malipatil) (MAGD), 1♂, Channel Island, 12.33S 130.52E, 5.vii.1982 (M. Malipatil) (MAGD), 1♂, Darwin (SAM), 1♂, 1 ♀, Stuart Hwy, Coomalie Ck, 50 m, 24.x.1962 (E.S. Ross, D.Q. Cavagnaro) (CAS), **AUSTRALIA, Qld**: 1♂, Ingham, 30.iii.1960 (K.L. Harley) (ANIC), 1♂, Archer River, 9.i.1988 (M.S.& B.J. Moulds) (ASCU), 1♂, 3♀, Jardine R., Cape York Pen., 11.08S 142.29E, 28.x.1979 (M.S. & B.J. Moulds) (MJF), 2♂, Statton R. nr Inkerman HS, at light, 29.vii.1982 (J.F. Donaldson, J.W. Turner) (QDPC), 1♂, Whitfield Range nr Cairns, 24.viii.1971 (M.S. Moulds) (MJF), 1♂, Sandstone outcrops, 30 km W of Fairview via Laura, 22.–24.vi.1976 (G.B. & S.R. Monteith) (QM), 4♂, 5♀, Ingham, light trap, 15.iii.1961 (K.L. Harley) (ANIC), 4♂, 3♀, same data, 7.iv.1961 (ANIC), 1♀, same data, 29.iii.1961 (ANIC), 4♂, 6♀, same data, 20.iv.1961 (ANIC), 1♂, 1♀, same data, 17.ii.1961 (R. Straatman) (ANIC), 1♂, Arriga, at light, 11.ii.1980 (I.C.C.) (QDPC), 2♂, 3♀, West Claudie River, 4 km SW road junction, 12.44S 143.15E, mv lamp, 1.xii.1986 (G. Daniels, M.A. Schneider) (UQIC), 2♂, same data, 3.xii.1986 (UQIC), **AUSTRALIA, WA**: 1♂, 1♀, Kimberley Research Station, Kununurra, 5.–8.vii.1073 (L.P. Kelsey) (ANIC).

*Pentastiridius felis* (Kirkaldy)

**AUSTRALIA, NSW**: 1♂, Towra Pt. Botany Bay, 21.–29.v.1977 (J. Grimshaw) (QDPC), 1♂, Careel Bay, Casuarina swamp, 14.iii.1963 (D.K. McAlpine) (AMS), 1♂, North Cronulla, near Sydney, mangroves, 31.iii.1972 (D.K. McAlpine) (AMS), **AUSTRALIA, Qld**: 1♀, Brisbane, 4.i.1923 (H. Hacker) (BPBM), 1♀, same data, 25.iii.1923 (QM), 1♂, 2♀, same data, 27.iii.1923 (QM), 1♂, 6♀, same data, 7.iv.1923 (BPBM), 4♀, same data, 16.ii.1924 (QM), 2♀, same data, 25.iv.1924 (QM), 1♀, same data, 15.ii.1926 (QM), 15♂, same data, 16.ii.1926 (13♂ QM, 2♂ QDPC), 19♂, same data, 19.iv.1926 (QM), 23♂, 1♀, Brisbane (A.M. Lea) (SAM), 1♂, Cairns

(CAS), 1♂, 2♀, Ayr, 4.i.1956 (G. Saunders) (QDPC), 2♂, 3 km N Marlborough, 15.iv.1974 (J.F. Donaldson (QDPC), 2♂, 1♀, Townsville, in dry vegetation, D-Vac, 7.xi.1975 (I.D. Galloway) (QDPC), 1♀, Townsville, light trap, 30.xii.1967 (P. Ferrar) (ANIC), 3♂, Arriga, rice, D-Vac, iii.1982 (QDPC), 1♂, Bowen, 23.viii.1954 (G. Saunders), 1♀, Bowen, sweep net in tomatoes, 4. vi. 1996 (I. Kay, J. Brown) (QDPC), 1♀, same data, 6. vi.1996, 1♀, same data, 5.ix.1996.

## Appendix III: Taxonomic index (valid names in bold)





  

  