Belgian Journal of Entomology

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Volume 137

2023

Citation: Semeraro L. & Constant J., 2023. The "*Triceratops*" leafhoppers. A new species of the genus *Cornutipo* Evans, 1934 from Northern Queensland, Australia.(Hemiptera: Cicadellidae: Eurymelinae: Ipoini). *Belgian Journal of Entomology* 137: 1–20.

urn:lsid:zoobank.org:pub:A992D038-1989-4284-BB0E-91C77D745317

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- Zoological Record, Thomson Reuters, Publication Processing, 1500 spring Garden Street, Fourth Floor, Philadelphia PA 19130, USA.

ISSN: 1374-5514 (Print Edition)
ISSN: 2295-0214 (Online Edition)

Published: 12 June 2023

The Belgian Journal of Entomology is published by the Royal Belgian Society of Entomology, a non-profit association established on April 9, 1855.

www.srbe-kbve.be
Head office: Vautier street 29, B-1000 Brussels.
N° d'entreprise SRBE : 0408709597
RPM Bruxelles

The publications of the Society are partly sponsored by the University Foundation of Belgium.

Front cover: *Cornutipo chillagoensis* sp. nov. ♂ paratype. Top, dorsal habitus. Bottom, lateral habitus.

The "*Triceratops*" leafhoppers. A new species of the genus *Cornutipo* Evans, 1934 from Northern Queensland, Australia. (Hemiptera: Cicadellidae: Eurymelinae: Ipoini)

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Abstract

A new leafhopper species of the unusual Eurymelinae genus *Cornutipo* Evans, 1934, *C. chillagoensis* sp. nov., is described from Northern Queensland. It is compared with the morphologically similar *C. tricornis* (Evans, 1934), sharing with it the spectacular three horned face. A species list and summary of the diagnostic characters of *Cornutipo*, as well as additional features of *C. tricornis* are included for comparison with the new species. *Cornutipo chillagoensis* sp. nov. was found on *Acacia auriculiformis* A.Cunn. ex Benth. (Mimosaceae) and discovered to be involved in trophobiosis with two ant species which represents the first record of this interaction in the genus. Photographs of the new species include detailed diagnostic characters of both external (male and female) and internal (male) structures and live specimens as captured in the field. The discussion summarises the features which characterize *Cornutipo* and highlights the need for further taxonomic work.

Keywords: Auchenorrhyncha, *Acacia auriculiformis*, *Cornutipoides*, Formicidae, morphology, taxonomy

Introduction

The Ipoini are a tribe of Eurymelinae leafhoppers (Cicadellidae) which are known to occur in Australasia. Trees of the genus *Eucalyptus* L'Hér. are a common host, but Ipoini are also recorded on other Myrtaceae genera (*Callistemon* R.Br., *Melaleuca* L.) and other host plant families such as Casuarinaceae, Euphorbiaceae, Loranthaceae, Mimosaceae, Moraceae, Myoporaceae, Proteaceae, Rutaceae and Sapindaceae (Evans, 1934, 1939, 1966; Day & Fletcher, 1994; Fletcher, 2009). Some species are also known to be attended by ants (Evans, 1934, 1946; Fletcher, 2009). While generally smaller and less colourful (often mottled brown, or with red, pink or white) they can also be recognised from other eurymeline tribes by the male subgenital plates, which are usually narrow and without accessory processes (Fletcher, 2009).

The Australian genus *Cornutipo* Evans, 1934, one of the 18 valid genera of Ipoini (Day & Fletcher, 1994; Fletcher, 2009), was described from the type species *Cornutipo scalpellum* Evans, 1934, known from Queensland and Central Australia (Evans, 1934). In the same paper, Evans (1934) described another new genus *Cornutipoides*, to accommodate a new species, *Cornutipoides tricornis* Evans, 1934. However, he later synonymized *Cornutipoides* under *Cornutipo* based on the description of a new species, *C. bakeri* Evans, 1969 which he considered to be an intermediate form between *C. scalpellum* and *C. tricornis* due to sharing the combined facial features of each (Evans, 1969).

A key to the genera of Ipoini and a list of species in each genus are found in Fletcher (2009) based on the work of Evans (1969). There are currently three species of *Cornutipo* (Evans, 1969) described, typified by the modification of the head, featuring horns on the vertex or

projected spatulate processes on the frontoclypeus. While *C. tricornis* has three horns on the head (as the name implies), *C. scalpellum* has a spatulate frontoclypeus and *C. bakeri* displays intermediate characters. Evans (1969) regarded these three species as belonging to the same genus based on the modifications of the head and features of the thorax and male genitalia.

During a recent field expedition in Northern Queensland, a species of *Cornutipo* was discovered on small *Acacia* shrubs in Chillagoe. The specimens were being attended by ants which drew attention to the leafhoppers. While specimens appeared similar to *C. tricornis* as illustrated in Fletcher (2009), after comparing with the species original description and illustrations in Evans (1934), some differences were found, particularly in the shape of the medial horn on the head, which is tapered towards the apex in *C. tricornis* and is longer than the lateral two horns. The type specimens of *C. tricornis*, including the male genitalia, were compared with the specimens collected from Chillagoe. This confirmed that the specimens in hand were different, although close, to *C. tricornis*, in having the three horns appearing about the same length in dorsal view, and the medial horn distinctly truncate at the apex. Furthermore, this is the first record of the genus being collected from *Acacia*. Here the new species is described and illustrated with images of its habitat and documentation of ant attendance. Photographs of *C. tricornis* are provided for comparison.

Material and methods

The specimens were collected by hand into transparent plastic specimen vials. Most specimens were detected by finding ants aggregated on the *Acacia* shrubs which revealed the location of the leafhopper specimens, often hiding in the fork of young shoots or stems. Associated ants were collected for identification and are retained as reference specimens. The specimens were euthanized with ethyl acetate and card mounted.

Specimens were examined and photographed under a Leica EZ4W stereomicroscope with an integrated camera. The photographs were stacked with CombineZ software and optimized with Adobe Photoshop CS3. Photographs from the field were taken with an Olympus Tough TG-6 camera.

The genitalia were examined by removing the abdomen and placing it in a 10% solution of potassium hydroxide (KOH) at room temperature overnight.

Terminology and description of the external and internal genitalia features follow Evans (1934, 1966), tegmen and hind wing venation as in Dietrich (2005) and classification as in Fletcher (2009).

The distribution map was produced with SimpleMappr (Shorthouse, 2010).

The following collection acronyms are used:

AM = Australian Museum, Sydney, New South Wales, Australia

BMNH = The Natural History Museum, London, U.K.

QM = Queensland Museum, Brisbane, Queensland, Australia

RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium

SAM = South Australian Museum, Adelaide, South Australia, Australia

Taxonomy

Order **Hemiptera** Linnaeus, 1758
Suborder **Auchenorrhyncha** Duméril, 1806
Infra-order **Cicadomorpha** Evans, 1946
Superfamily **Membracoidea** Rafinesque, 1815
Family **Cicadellidae** Latreille, 1825
Subfamily **Eurymelinae** Amyot & Serville, 1843
Tribe **Ipoini** Evans, 1933

Genus ***Cornutipo*** Evans, 1934

Cornutipo Evans, 1934: 164. Type species: *Cornutipo scalpellum* Evans, 1934.

Cornutipoides Evans, 1934: 164. Type species: *Cornutipoides tricornis* Evans, 1934 (synonymised by Evans, 1969).

Diagnosis.

Body: Brown and white/ cream mottling on pronotum and tegmen.

Head: Orientation of head, vertical, crown narrowly visible dorsally; eyes prominent; vertex flat; fronto-clypeus or frons produced into a spatulate process or horn-like structure; ante-clypeus and lora directed ventrad; lora swollen, posterior margin almost reaching the antennal ledges; narrow maxillary plates; rostrum reaching base of the mesocoxae.

Thorax: Pro-epimeron extended posteriorly as a fine spine or tooth over the mesopleuron. Tegmen broad at apex, appendix narrow. Legs with tibiae dorsally flat and relatively broad; metatibiae usually bearing 1 or 2 spurs, sometimes with a few small spines.

Abdomen: Male subgenital plates narrow, parameres very small and not reaching apex of pygofer.

Differential diagnosis.

Recognised from other Eurymelinae in having spatulate or horn-like processes on the head, the face having swollen lora with posterior apices reaching near the antennal bases, pronotum with a long lateral margin (distinctly separating the head from the base of the tegmen), the pro-epimeron having a posteriorly directed process and the males having unusually small subgenital plates and parameres (Evans, 1969).

Distribution.

Australia: New South Wales, Northern Territory, Queensland, Victoria and Western Australia.

Hosts.

Mimosaceae: *Acacia auriculiformis* A.Cunn. ex Benth.; Myrtaceae: *Corymbia dichromophloia* (F.Muell.) K.D.Hill & L.A.S.Johnson, *Melaleuca acacioides* F. Muell.; Proteaceae: *Grevillea pteridifolia* Knight*, G. parallela* Knight*, G. glauca* Banks & Sol. ex. Knight, *Hakea* sp. (Evans, 1966).

Annotated checklist of the species of *Cornutipo*

* = type locality

C. bakeri Evans, 1969 [Western Australia: *Ashburton]. Holotype: AM.

C. chillagoensis sp. nov. [Queensland: *Chillagoe]. Holotype: QM.

C. scalpellum Evans, 1934 [New South Wales: Strahorn State Forest; Northern Territory: Lake Mackay, Alice Springs; Queensland: *Duaringa, Pentland, Carnavon Ranges; Victoria: Red Cliffs (Evans, 1966)]. Holotype: BMNH

C. tricornis (Evans, 1934) [Western Australia: *"North-West Australia"; Derby, Cunderdin; Queensland: Mareeba, Atherton Tableland (Evans, 1966)]. Holotype: SAM.

***Cornutipo chillagoensis* sp. nov.**

urn: sp.nov.: urn:lsid:zoobank.org:act:D976CBD6-AD9F-4A34-B2EC-F4B1329C7BE4

(Figs 1-6, 8)

Etymology.

This species is named after the town, Chillagoe, North Queensland, Australia, from which the specimens were collected, in bushland near the Chillagoe Observatory and Eco Lodge.

Type material.

Holotype

AUSTRALIA • ♂ (Figs 1 D, 5); Queensland, Chillagoe; 17°08'55"S, 144°31'43"E; 7–11 May 2022; alt. 400–500m; on *Acacia auriculiformis*; J. Constant & L. Semeraro leg.; specimen tended by ants; "Australia Qld. Chillagoe, 17°08'55"S, 144°31'43"E, 7–11 May 2022, alt. 400–500m, leg. J. Constant & L. Semeraro, Leopold III Funds Expedition", "collected on *Acacia auriculiformis*; specimen tended by ants"; QM.

Paratypes

AUSTRALIA • 2♂♂, 5♀♀, 1 sex undet. (abdomen missing); collection details as per holotype; QM • 2♂♂, 5♀♀; collection details as per holotype; RBINS.

Diagnosis.

Generally mottled, pale to dark brown and stramineous with strikingly contrasted white to cream coloured oblique fascia basally and preapically on tegmen (Figs 1, 3). Head with three horns, all about equal or subequal in length when viewed dorsally, fronto-clypeal horn, widest at base, more or less parallel sided throughout, truncate at apex (Fig. 2A, 4A). Aedeagus with two apical processes and a pair of preapical processes (Fig. 5H-L).

Description.

Measurement and ratios: Body length, ♂ holotype, 7.5mm; 4 ♂♂, 7.4–7.8mm; 10 ♀♀, 7.9–8.7mm. Head equal to sub-equal width of pronotum. Pronotal length about 2/5 to 3/5 its width. Tegmen length 2.4–2.8 times medial width. Length of metatibiae around 1.5x length of mesotibiae; mesotibiae 1.5x length of mesotarsi. Female pygofer and ovipositor ventral length, 2.3–2.7mm (n=8).

Head: (Figs 2A-D, 4A-C) Mottled with stramineous background and orange brown to dark brown reticulate patches; face mottled dark brown to black patches, lora and posterior lateral frontoclypeus stramineous to cream coloured, with dark brown patch laterally. Tiny scale-like setae on face, particularly around gena and lora; three horns—medial frontoclypeal horn, widest at base, lateral margins more or less parallel sided throughout (after basal ¼), width at mid-length as wide as at apex, apically roundly truncate, lateral horns on vertex equal to sub-equal in length compared to medial frontoclypeal projection when viewed dorsally, inner lateral margins of each, straight to very weakly convex, outer lateral margins slightly convex, strongly convex apically, tapering to a point towards inner margin; ocelli medial on face, positioned in slight concavity between lateral horns on vertex; antennal bases closer to posterior lateral margin of lora than to posterior corner of eyes. Rostrum reaching posterior margin of procoxae or up to anterior margin of mesocoxae; uniformly brown.

Thorax: (Figs 1A-C, E, 2A-D, 3, 4A-C) Pronotum pitted and coloration mottled as per head; slightly wider posteriorly than anteriorly, with coronal calli depressed and a further pair of depressions along lateral mid-length of pronotum; lateral pronotal margin long, well separating the head from the base of the tegmen; posterior margin slightly concave medially. Pro-epimeron distinctly extended posteriorly into a narrow tapering spine. Mesonotum and scutellum pitted and mottled dark brown, darker than pronotum, anterior lateral angles with dark brown to black triangles, apex orange to brown, stramineous apically.

Tegmina: (Figs 1A, C, E, 3A, C-D) Mottled with dark brown to light brown patches, opaque white to cream fascia anteriorly extending obliquely from base of clavus across Cu, M and R veins almost to costal margin, and semi-translucent oblique fascia posteriorly at around ¾ length of tegmen from apex of claval suture, crossing pre-apical cells; distal portion of anal veins cream coloured, appearing like a v-shaped pattern from dorsal aspect; punctate particularly visible around base of clavus. Tegminal veins generally light brown.

Hind wings: (Figs 1D, 4E) Mostly infuscate and translucent, fuscous along vein Cu2 and anal vein 1; veins brown to dark brown; small wing coupling process along anterior margin dark brown to black.

Legs: (Figs 1A-C, E, 3A-D) Mostly brown; a few very small, almost scale-like setae on legs; tibiae on all legs dorsally flattened; protibiae relatively broad, width around 0.3–0.4x length; white to cream coloured lateral spots at around basal 1/3 of each tibia on dorsal aspect, white to cream coloured ring at apex of tibiae on all legs; 2 spurs on hind tibia, most distal spur largest; tarsal claws relatively large, slightly less than 0.5x length of third tarsomere.

Abdomen: (Figs 1B, 2E, 3B, 4D) Mostly brown; tergites mostly dark brown, posteriorly paler orange brown; ventrally stramineous, may be orange to pale brown towards posterior sternites.

Fig. 1. *Cornutipo chillagoensis* sp. nov. ♂ (QM). A, paratype, dorsal habitus. B, paratype, ventral habitus. C, paratype, lateral habitus. D, holotype, hind wing. E, paratype, dorsolateral habitus.

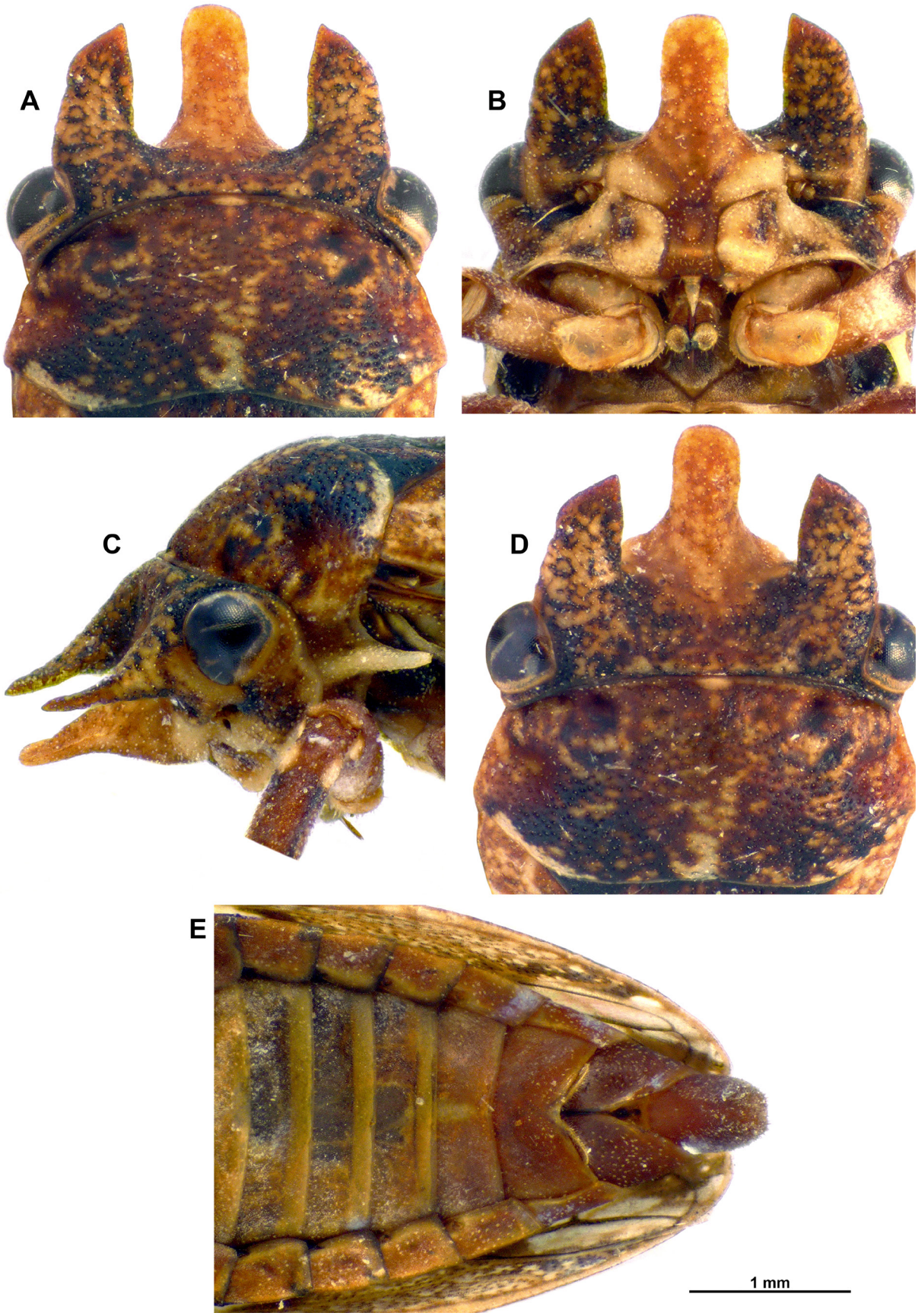

Fig. 2. *Cornutipo chillagoensis* sp. nov. ♂, paratype (QM). A, dorsal head and pronotum. B, ventral head and pronotum. C, lateral head and pronotum. D, anterodorsal head and pronotum. E, ventral abdomen and terminalia.

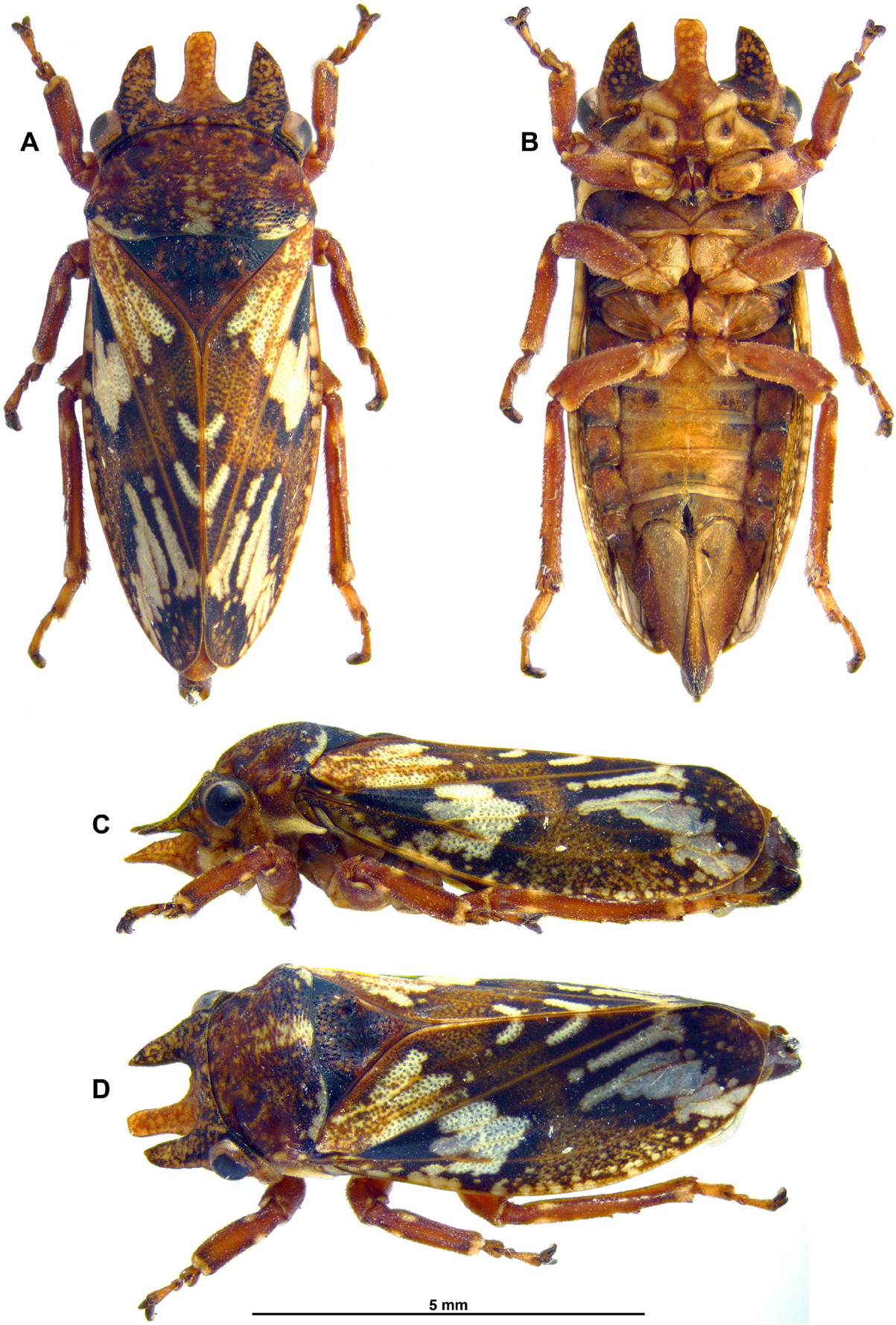

Fig. 3. *Cornutipo chillagoensis* sp. nov. ♀, paratype (QM). A, dorsal habitus. B, ventral habitus. C, lateral habitus. D, dorsolateral habitus.

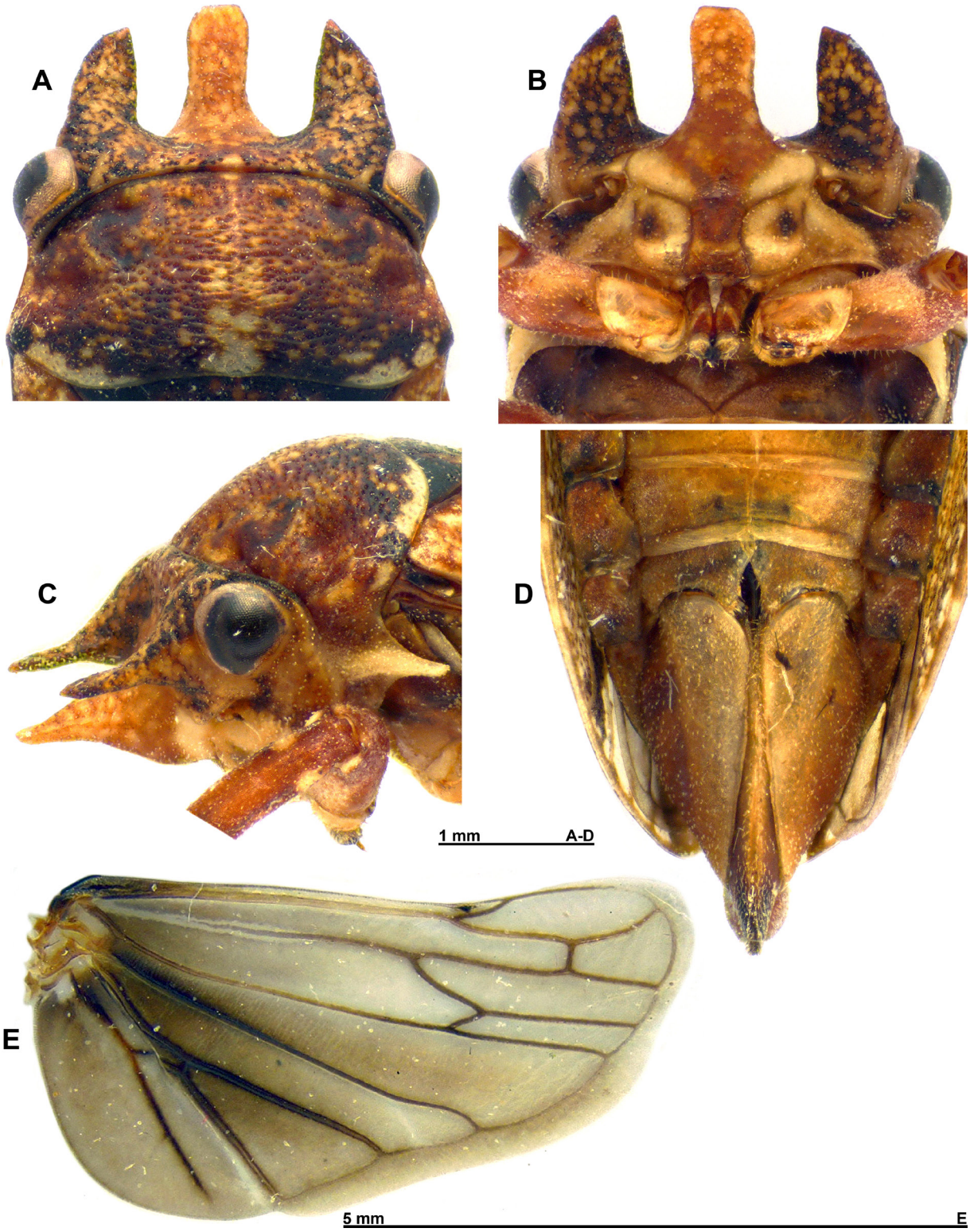

Fig. 4. *Cornutipo chillagoensis* sp. nov. ♀, paratype (QM). A, dorsal head and pronotum. B, ventral head and pronotum. C, lateral head and pronotum. D, ventral abdomen and terminalia. E, hind wing.

Terminalia ♂: (Figs 2E, 5) Pregenital sternite generally quadrate, lateral margins parallel-sided, posterior margin, broadly and distinctly v-shaped medially. Pygofer dark brown, slightly paler anteriorly, higher than wide; anterior margin broadly concave; posterior margin roughly quadrate, slightly concave along ventral half; dark brown sclerotized section along anterior ventral margin; posteroventral margin pre-apically strongly notched with a distinct concavity, ventroapically rounded; anal tube large, height almost half that of pygofer and triangular-shaped in lateral view; dorsoposterior margin oblique; small short, fine setae all over anal tube and on pygofer. Aedeagus, laterally flattened with apex directed ventrad; thimble-shaped sac at base of aedeagus; aedeagal anterior margin with triangular-shaped hump medially and smaller hump towards base; posterior margin basally constricted, evenly convex along the rest of its length; two apical processes anterior to gonopore; in lateral view, anterior-most process long, straight directed anteroventrad; a pair of small fine lateral pre-apical processes, at base of anterior-most apical process, about 1/3 of its length; posterior process, curved, directed laterodorsad. Subgenital plates short, not quite reaching apical point of pygofer, apically strongly rounded; dorsoapically produced into a strongly sclerotized tooth. Paramere apex, reaching almost half of subgenital plate length, apically tapered, knife-shaped tapering with blunt apices, indentation along inner margin.

Terminalia ♀: (Fig. 4D) Tegmina not reaching apex of abdomen in females; anal tube, pygofer and ovipositor slightly exposed distally. Pregenital sternite posterior margin, medially divided by deep, narrow v-shaped notch, almost splitting the sternite in two; posterior margin produced medially on each side of notch, appearing M-shaped, a deep concavity on each side of posterior margin, tufts of setae on posterior medial projections. Ovipositor distinctly exceeding apical point of pygofer posterior margin. Anal tube large (as in males) reaching around half height of pygofer.

Common name.

The Triceratops leafhopper. Bearing three horns on the face, this configuration is reminiscent of the three horned *Triceratops* dinosaur.

Biology.

The specimens of *C. chillagoensis* sp. nov. were collected in dry open woodland, with mostly Eucalypts (Fig. 6D). This species was found being attended by ants (Fig 6B-C) during the day (late afternoon) on the small, presumably young *Acacia auriculiformis* shrubs (pers. com J. Wainer, Nov. 2022). Two different species of ants of the subfamily Dolichoderinae (Formicidae) were collected but only one species of ant was found attending the adult leafhopper at any one time. One of the ant species was identified as *Papyrius nitidus* (Mayr, 1862) (pers. com J. Wainer, Nov. 2022 – Figs 6C, 7A-B), which is previously recorded tending scale insects (Coccoidea) and butterfly caterpillars (Lepidoptera) (AntWiki, 2022). The second ant species was *Iridomyrmex* sp., possibly *I. sanguineus* Forel, 1910 (pers. com J. Wainer, Nov. 2022 – Figs 6A, 7C-D), a common meat ant (AntWiki, 2022) with some species in this genus also known to attend myrmecophilous caterpillars, aphids and scale insects (AntWiki, 2022). No leafhopper nymphs were observed.

Distribution.

Australia: Queensland, Chillagoe (Fig. 8).

Host. *Acacia auriculiformis* A. Cunn. ex. Benth. (Mimosaceae) (Fig. 6D-E).

Fig. 5. *Cornutipo chillagoensis* sp. nov. ♂, holotype. A, lateral genitalia. B, posterolateral genitalia. C, posterior genitalia. D, subgenital plates and parameres, dorsal view. E, subgenital plates and parameres, ventral view. F, subgenital plates and parameres, dorsolateral view. G, subgenital plates and parameres, posterior view. H, aedeagus, left lateral view. I, aedeagus, right lateral view. J, aedeagus, right posterolateral view. K, aedeagus, posterior view. L, aedeagus, anterior view.

Fig. 6. *Cornutipo chillagoensis* sp. nov., in nature in Queensland, Chillagoe, 7 May 2022. A, specimen on stem of *Acacia auriculiformis*. B, specimen tended by *Iridomyrmex* sp. C, specimens tended by *Papyrius nitidus*. D, habitat, general view. E, typical *A. auriculiformis* shrub hosting *C. chillagoensis* sp. nov.

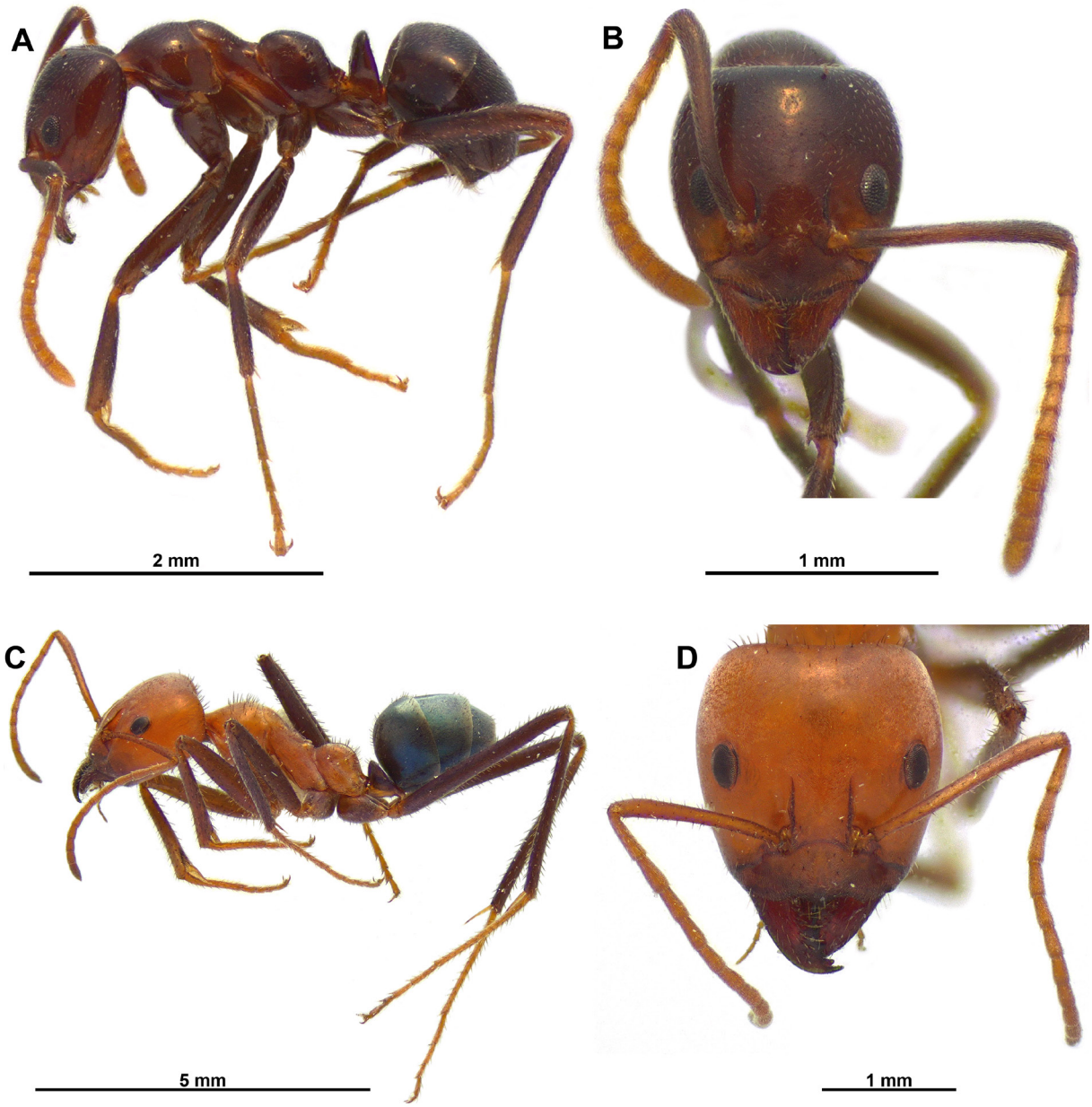

Fig. 7. Ant species tending *Cornutipo chillagoensis* sp. nov. A–B, *Papyrius nitidus.* A, lateral habitus. B, face. C–D, *Iridomyrmex* sp. C, lateral habitus. D, face.

Differential diagnosis.

Both *C. chillagoensis* sp. nov. and *C. tricornis* differ from the other two *Cornutipo* species in having three horns on the head, while *C. bakeri* (Evans, 1969) has two smaller acutely pointed processes laterally on the vertex with a slightly upturned posterior margin of the frontoclypeus and *C. scalpellum* (Evans, 1934) has a single spatulate process on the posterior margin of the frontoclypeus but no lateral horns on the vertex. The shape of the aedeagi also differ appearing pick-shaped at apex in both *C. bakeri* and *C. scalpellum* with no apical processes while *C. tricornis* and *C. chillagoensis* sp. nov. have two apical and a pair of pre-apical processes. The males of *C. bakeri* and *C. scalpellum* are smaller in size (5–5.6mm) compared with *C. tricornis* and *C. chillagoensis* sp. nov. (6–7.8mm).

Cornutipo chillagoensis sp. nov. is most similar in appearance to *C. tricornis* but in the latter, the medial horn, arising from the frontoclypeus, is tapered towards the apex and the two lateral horns of the vertex are distinctly shorter than the medial horn when viewed dorsally, while in

C. chillagoensis sp. nov. the medial horn is more or less parallel sided and truncate at the apex and the lateral horns appear equal to subequal in length to the medial horn in dorsal view. In lateral view, the two lateral horns are curved ventrad in *C. tricornis*, but directed anteriad in *C. chillagoensis* sp. nov. The colouration of *C. tricornis* differs from *C. chillagoensis* sp. nov. in having less pale brown or orange brown and white to cream coloured markings on the tegmina which are mostly mottled dark brown in comparison to *C. chillagoensis* sp. nov. which have distinct white fasciae on the tegmen. Also, based on the description (Evans, 1934), *C. tricornis* is considerably smaller in body size (6mm) than *C. chillagoensis* sp. nov., which ranges in size from 7.4–8.7mm (average ♂ = 7.6mm, ♀ = 8.3mm) and the width of the head is narrower and measured at 2.2mm in *C. tricornis* while it is 2.6–3mm in *C. chillagoensis* sp. nov.

The aedeagus of *C. chillagoensis* sp. nov., appears very similar in shape to *C. tricornis* with the apical processes being almost identical, however, the posterior-most process is more curved and appears slightly shorter in *C. chillagoensis* sp. nov. which also have a smaller but distinct pair of pre-apical processes at the base of the anterior-most apical process. While the preapical processes are neither described nor figured in Evans (1934) for *C. tricornis*, at least one is visible in the genitalia of the holotype specimen (Fig. 9 D) and based on the paratype specimen appear to be relatively thick and long (longer than 1/3 length of anterior apical process), unlike *C. chillagoensis* sp. nov., in which the preapical processes are thinner and less than 1/3 length of anteroapical process; the subgenital plates bear an apical dorsal tooth which is strongly sclerotized and appears larger in *C. chillagoensis* sp. nov. compared with *C. tricornis*; the parameres also differ in this species with *C. chillagoensis* sp. nov. having a distinct indentation along ¾ of the length of the inner margin.

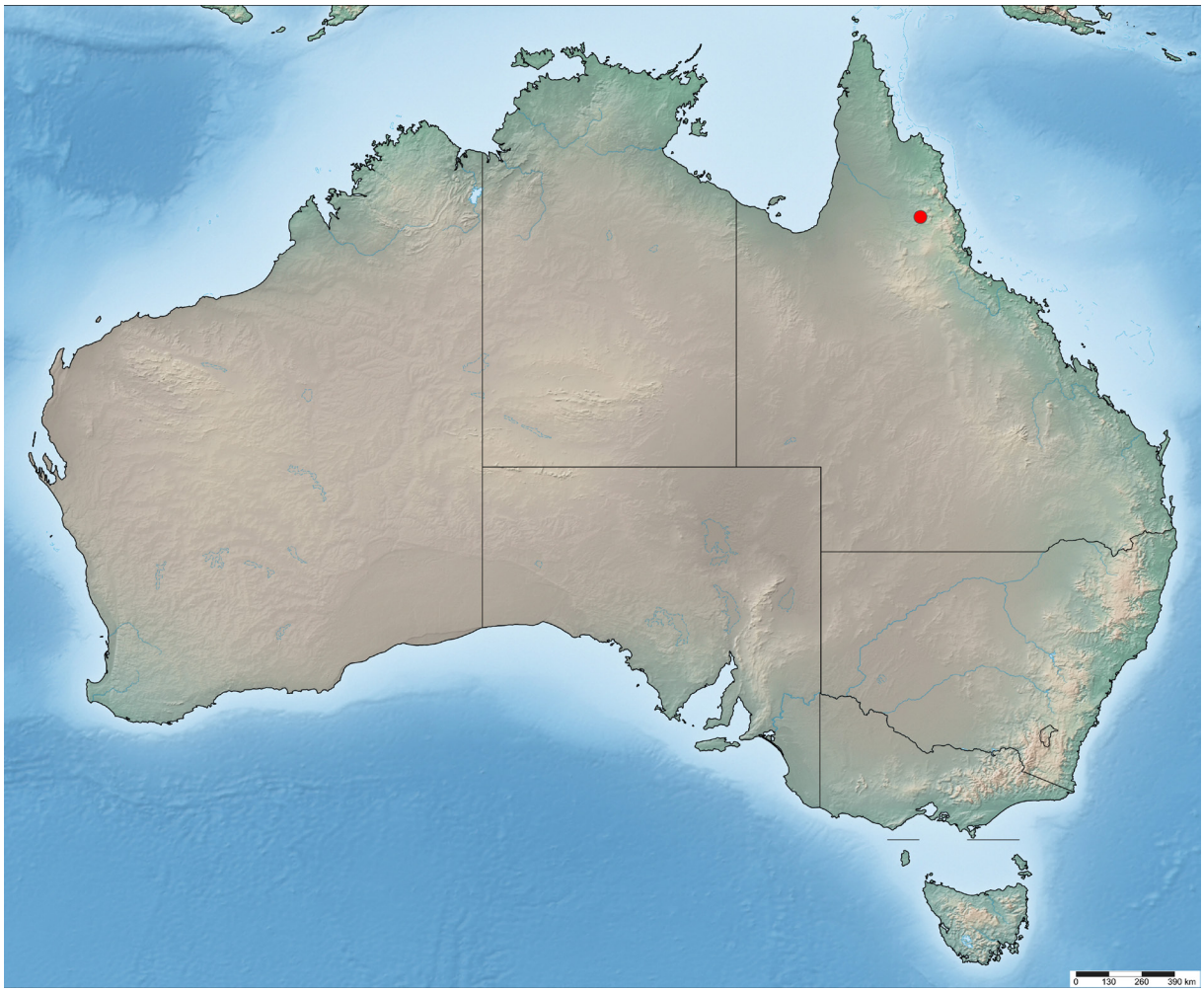

Fig. 8. *Cornutipo chillagoensis* sp. nov., distribution map.

Comments.

In his original description of the genera *Cornutipoides* and *Cornutipo*, Evans (1934) describes the metatibia as bearing one spur and in the case of *Cornutipoides* one spur and a few small spines. However, in *C. chillagoensis* sp. nov., the metatibia bears 1–2 spurs with one smaller than the other. No distinct sexual dimorphism is found in this species apart from the size, with females slightly larger than males. The function of the three horns on the head is unknown and the horns are the same shape and relative size between males and females.

Cornutipo tricornis (Evans, 1934)

(Figs 9-10)

Cornutipoides tricornis Evans, 1934: 150 (in key), 164, fig. C 3a, b, 11–12 [original description, genotype of *Cornutipoides* gen. nov.].

Cornutipoides tricornis – Evans, 1938: 34 [notes on morphology]. — Evans, 1942: 143 [listed, restricted to Western Australia]. — Evans, 1946: 50, fig. 3 e [notes on head morphology, ventral head illustrated]. — Metcalf, 1965: 29 [catalogued]. — Evans, 1966: 50, fig. 11 i [plant host records, new distribution records].

Cornutipo tricornis – Evans, 1969: 51, fig. 1 E [new name combination and synonymy of *Cornutipoides* with *Cornutipo*, nymph illustrated]. — Evans, 1975: 426, fig. 57 [description and illustration of features of the head].

Type material examined.

Holotype

AUSTRALIA • ♂; North-Western Australia; "*Cornocercopis tricornis*, Goding M.S., N.W. Aust.", "*Cornutipoides tricornis* Ev., *Cornutipoides tricornis* Ev", "N.W.A., Attacking trees", "SAMA Database No. 20-017508", "Type"; SAM.

Paratypes

AUSTRALIA • 1 ♂, 2 ♀♀; collection details as per holotype; SAM.

Note: The holotype, three paratypes and one nymph of *C. tricornis*, were examined (Figs 9-10). They are card-mounted on two cards and attached to a single pin (Fig. 9F). The dissected male specimen, considered to be the holotype as depicted in the illustrations of Evans (1934) was found to be damaged with only the head, pronotum, scutellum, left hind wing and left tegmen attached to the card (Fig. 9A-C). The genitalia of the holotype of *C. tricornis* is represented by the aedeagus, subgenital plates and parameres, all glued onto a slide in an undetermined resin (Fig. 9D-F) and attached to the pin with the type specimens. The abdomen and pygofer are missing in the holotype specimen and were not illustrated by Evans (1934).

Amended description.

(based on Evans (1934); additions marked with *)

Measurements: Body length 6mm; head width 2.2mm.

General: (Figs 9A-C, 10A-D) Appearing mostly mottled dark brown; head and pronotum mottled, stramineous, with dark brown to black mottled patches; mesonotum with anterior lateral margin with dark brown to black triangles; scutellum with dark brown to black patches.

Head: (Figs 9A-B, 10A-D) Bearing three horns; *in dorsal view, medial horn (fronto-clypeal projection) widest at the base, narrowing apically, apical width around 3/5 medial width, apical margin roundly truncate, horn slightly curved anterodorsad in lateral view; *lateral projections (on each side of vertex) reaching ¾ length of medial projection and slightly convergent towards apex in dorsal view, distinctly directed anteroventrad in lateral view; *head width about equal to pronotal width (at widest point posteriorly).

Thorax: (Figs 9A-B, 10A-D) *Pronotum about half length of width; pronotum punctate.

Tegmina: (Figs 9C, 10A-D) Hyaline, mottled dark brown to black; claval area around scutellum punctate; veins brown.

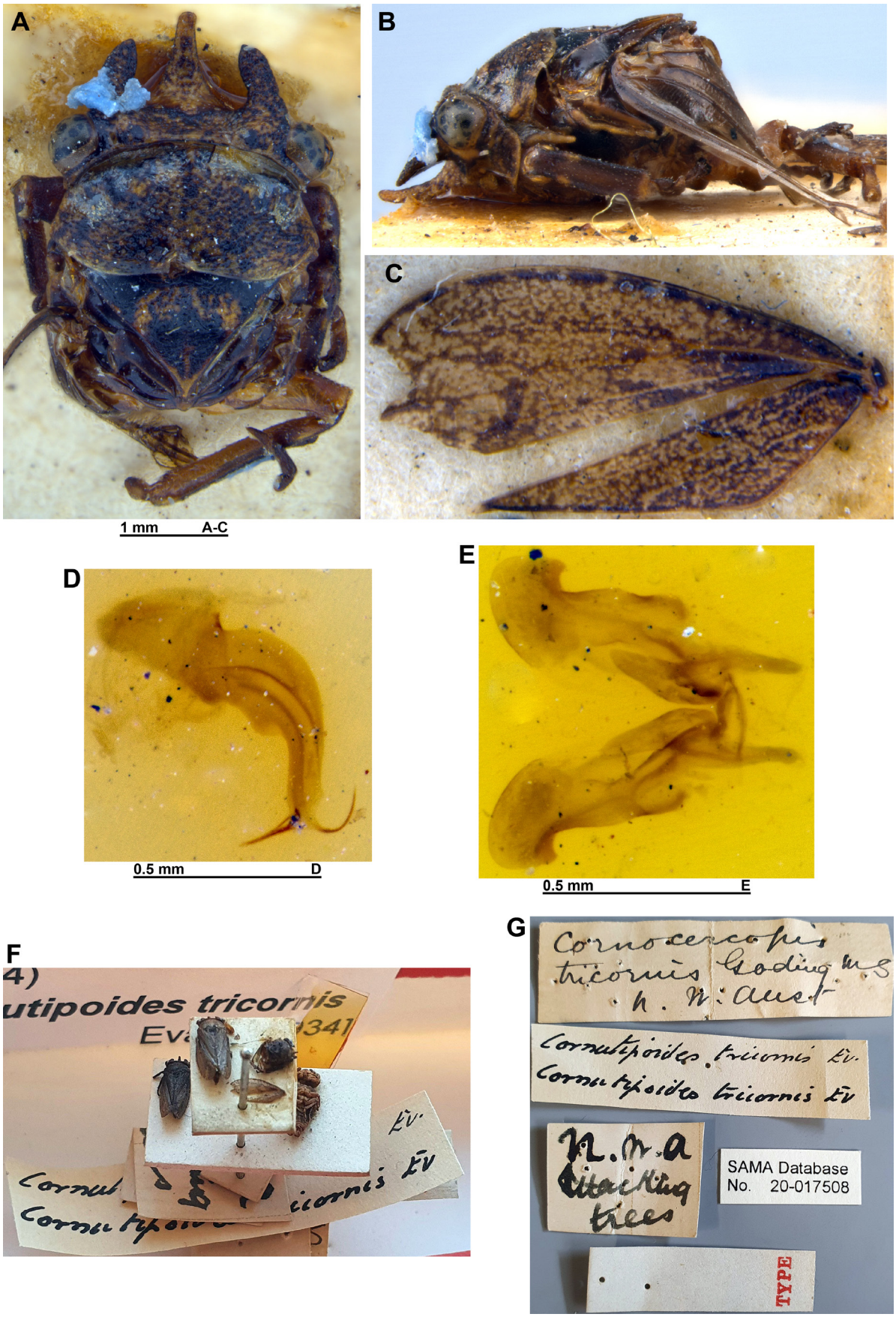

Fig. 9. *Cornutipo tricornis* (Evans, 1934) (SAM). A, ♂ holotype, dorsal habitus. B, ♂ holotype, lateral habitus. C, ♂ holotype, left tegmen. D, ♂ holotype, aedeagus. E, ♂ holotype, parameres and subgenital plates. F, type series. G, labels. © B. Parslow (SAM).

Terminalia ♂: (Fig. 9 D-E) Subgenital plates small, *apically rounded and dorsal apex with a small beak-like point directed dorsad; paramere apex reaching less than half length of subgenital plate; *base of aedeagus with thimble-shaped sac; *gonoduct directed ventrad, two apical processes anterior to the gonopore, the most anterior process straight, directed anteroventrad and one more posterior, curved, directed posterodorsad; *pre-apical processes at base of anterior-most apical process, almost reaching half of length of apical process.

Fig. 10. *Cornutipo tricornis* (Evans, 1934) (SAM). A–B, ♀ paratype. A, lateral habitus. B, dorsal habitus. C–D, ♀ paratype. C, lateral habitus. D, dorsal habitus. E, ♂ paratype, ventral habitus. F, nymph, dorsal habitus. © B. Parslow (SAM).

Distribution.

Australia: Western Australia, Queensland (Evans, 1966).

Host.

Proteaceae: *Grevillea pteridifolia* Knight (1809)*, G. parallela* Knight (1809)*, G. glauca* Banks & Sol. ex. Knight (1809); Myrtaceae: *Melaleuca acacioides* F. Muell. (1862), (Evans, 1966, Fletcher, 2009).

Discussion

All species of *Cornutipo* display an unusual modification of the head that is not present in other eurymelines except for *Anacornutipo* Evans, 1934 which has the frontoclypeus posterior margin, upturned into a transverse ridge (Evans, 1934). Another distinctive feature of *Cornutipo* is the pro-epimeron which is elongate and narrowed to a point posteriorly. While this feature is not known in other Cicadellidae, it is found in some species of the related treehopper family Aetalionidae Spinola, 1850.

While the association between ants and eurymelines has previously been well documented (Fletcher, 2009), this interaction was captured for the first time in *Cornutipo* through images taken during this field work. It was noted that there were many more individuals of *Papyrius nitidus* observed around the *C. chillagoensis* sp. nov. specimens compared with the *Iridomymex* species and the two ant species were not found together tending the same leafhopper individual. This is also the first record of the genus *Cornutipo* feeding on a species of *Acacia*.

Based on current specimen records, the distribution of *Cornutipo* is mostly in Northern Australia, (extending from North Western Australia, Northern Territory across to North Queensland), except for the type species of the genus, *C. scalpellum*, which is known from New South Wales and as far south as Victoria. However, careful examination and validation of all *Cornutipo* specimens currently identified in collections, would help to better confirm the distribution of each species.

Including the new species described in this paper, there are now four species of *Cornutipo* recorded from Australia and no doubt more species awaiting description. In terms of form, *C. tricornis* and *C. chillagoensis* sp. nov. show distinct similarities, particularly in features of the head and the male genitalia and are likely closely related species, more so than the other two species of *Cornutipo*. It may be that there are further clades (subgenera or species groups) within the genus to be described in future, but this will only be revealed following further study of the known species and when new species are discovered and described. Molecular DNA studies of these species and closely related eurymelines could provide valuable additional data to understand these relationships.

Acknowledgements

We thank Chris Lambkin (QM) for facilitating with obtaining collecting permits and guidance with collection procedures; Ben Parslow (SAM) for providing images of the type specimens of *C. tricornis* for comparison with the new species; John Wainer (Agriculture Victoria, Melbourne, Australia) for taking on the challenge of plant identification (from photographs only) and for identification of the two species of ants found attending the newly described species; Miss Mado Berthet (RBINS) for improving the plates of habitus and genitalia; Mr Mick Webb (BMNH) for his valuable comments to improve this paper; Dr Thierry Backeljau and Dr Jackie Van Goethem (RBINS – Leopold III Funds), Dr Mark Blacket (Agriculture Victoria, Melbourne, Australia), Dr Justin Bartlett and Dr Mark Schutze (Queensland Department of Agriculture and Fisheries, Brisbane, Australia), Scott Braiding and Mandy Mitchell (Museum of Tropical Queensland, Townsville, Australia) and David Britton (Department of Agriculture, Water and the Environment, Cairns, Australia) for their help and support with the equipment and logistics for the expedition. This paper is partly a result of the Leopold III Funds project "Fulgoridae and Eurybrachidae of Australia: (II) Taxa of coastal NE Queensland".

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