*Zootaxa* 5599 (1): 001–271
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**Monograph**

ISSN 1175-5326 (print edition)
**ZOOTAXA**
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.5599.1.1
http://zoobank.org/urn:lsid:zoobank.org:pub:B140A7ED-4B89-464B-8A3E-16934B175A40

# ZOOTAXA

**5599**

# Revision of Australian *Tomosvaryella* Aczél (Diptera: Pipunculidae) with description of 100 new species

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Magnolia Press
Auckland, New Zealand

*Accepted by A. Ricarte: 1 Feb. 2025; published: 5 Mar. 2025*

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**Revision of Australian *Tomosvaryella* Aczél (Diptera: Pipunculidae) with description of 100 new species**
(*Zootaxa* 5599)

271 pp.; 30 cm.

5 Mar. 2025

ISBN 978-1-77973-317-7 (paperback)

ISBN 978-1-77973-318-4 (Online edition)

FIRST PUBLISHED IN 2025 BY

Magnolia Press

P.O. Box 41-383

Auckland 1041

New Zealand

e-mail: magnolia@mapress.com

https://www.mapress.com/zt

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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## Abstract

A comprehensive taxonomic revision of genus *Tomosvaryella* Aczél, 1939 (Diptera: Pipunculidae: Tomosvaryellini) from Australia is provided, based on morphological characters and barcode sequence data from mitochondrial COI. One hundred new species are introduced to science, the previously known six species are redescribed and lectotypes are nominated where required. Descriptions of all species, distribution maps, diagnoses, an illustrated key, some comments about taxonomic status and genetic distance are given.

**Key words**: big-headed flies, COI, distribution map, DNA barcoding, mini barcode protocol, taxonomy

## Introduction

*Tomosvaryella* Aczél, 1939 is one of the most diverse genera of Pipunculidae with 322 valid species recognized. They are found everywhere except in Antarctica and are most diverse in grasslands and arid areas (Motamedinia *et al.* 2021). This genus was established in 1939 by Martin Aczél and divided into two subgenera, *Dorylomorpha* and *Tomosvaryella*. Hardy (1980, 1989) grouped these two taxa into the tribe Tomosvaryellini. Previous study showed that *Tomosvaryella* is closely related to *Dorylomorpha* (Rafael & De Meyer 1992); both lack a pterostigma and can be differentiated by the position of cross vein r-m which is located close to the middle of the discal cell in *Tomosvaryella*. Recent molecular work has challenged this hypothesis and suggests that the two genera are not sister taxa and have been placed in a redefined Tomosvaryellini (Motamedinia *et al*. 2021) along with eight other genera. Several new species of *Tomosvaryella* have been described around the world recently as follows: one new species from central and western Europe (Földvári & De Meyer 1999), three from the Mediterranean Basin (Kehlmaier *et al*. 2019), four from Iran (Kazerani *et al*. 2017; Majnon-Jahromi *et al*. 2017a, b), 19 from the Middle East (Motamedinia *et al*. 2021), 16 from the Afrotropical Region (De Meyer 1993), 19 from the Neotropical Region (Ale-Rocha & Rafael 1995; Ale-Rocha 1996; Ramos-Pastrana & Rafael 2021) and three from Fiji (Skevington & Földvári 2007).

Australian pipunculid taxonomy has received some recent attention but the fauna is still poorly known overall. The majority of recent revisionary work was carried out by Skevington (1999, 2001, 2002, 2003). He revised *Allomethus* Hardy, 1943, *Cephalosphaera* Enderlein, 1936 sensu lato, *Clistoabdominalis* Skevington, 2001, and *Eudorylas* Aczél, 1940 and De Meyer and Grootaert (1992) revised *Beckerias* Aczél, 1939 and *Cephalops* Fallén, 1810 sensu lato. No one has revised *Chalarus* Walker, 1834, with dozens of undescribed species, *Collinias* Aczél, 1940 has several new species, *Dasydorylas* Skevington, 2001 includes over 30 undescribed species, *Jassidophaga* has one or two new species and *Microcephalops* De Meyer, 1989 has a few undescribed species. *Tomosvaryella* was an even more extreme different story! There are currently 79 described Australian pipunculid species, so this revision more than doubles the known diversity for the continent. Pekins (1905) was the first to describe Australian species that we now place in *Tomosvaryella* (*T. epichalca*, *T. leimonias*, *T. nyctias*, *T. pseudophanes* and *T. synadelpha*). All were described as *Pipunculus* species. Tonnoir (1925) described *T. novaezealandiae* from New Zealand and we show below that it is also found in Australia. These six species are the only described species known from Australia. The actual diversity is astounding, and the group is a taxonomic challenge. We sorted out all the known male specimens morphologically, corroborated and sometimes revised our species concepts using COI mitochondrial DNA and managed to associate some females with males using DNA barcodes. Below we provide a key to species of males, provide descriptions of all species (both sexes where possible), DNA barcode data and distribution maps. Given the number of singleton species (27 species are described from single individuals), it is clear that this genus still has a huge undiscovered diversity and is the most diverse pipunculid genus in Australia.

## Material and methods

### *Morphological study*

This study is based on the examination of all available material from the following collections: ANIC (The Australian National Insect Collection, Canberra, ACT, Australia), ASCU (Agricultural Scientific Collections Unit,

Orange, NSW, Australia), BPBM (Bernice P. Bishop Museum, Honolulu, Hawaii, USA), CAS (California Academy of Sciences, San Francisco, California, USA), CMNZ (Canterbury Museum. Christchurch, New Zealand), CNC (Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Ontario, Canada), DEBU (University of Guelph Insect Collection, Canada, Ontario, Guelph), LEM (Lyman Entomological Museum, Montreal, Quebec, Canada), GDCB (Greg Daniels private collection [deposited in the Queensland Museum, Brisbane, Australia and recorded in the material examined list as QM]), INHS (Illinois Natural History Survey, Champaign, Illinois, USA), MVMA (Museum of Victoria, Abbotsford, Victoria, Australia), QDPC (Queensland Department of Primary Industries, Brisbane, QLD, Australia), QM (Queensland Museum, Brisbane, QLD, Australia), SAM (South Australian Museum, Adelaide, SA, Australia), WAM (Western Australian Museum, Perth, WA, Australia), USNM (National Museum of Natural History, Washington, DC, USA [formerly, United States National Museum]).

All specimens are labeled with a unique reference number from the CNC database (e.g., Jeff Skevington Specimen12345 and CNC_Diptera12345, abbreviated as JSS12345 and CNCD12345 respectively) and can be accessed at https://cnc.agr.gc.ca/. Male genitalia were dissected from the end of the abdomen and cleared in hot lactic acid (85%) at 100°C for 30–240 minutes to facilitate the study of genitalia characters then stored in microvials containing glycerin. All examined males were included in type series of new species and female specimens were included if DNA barcode data corroborated their linkage with sequenced males. Specimens were examined using Leica MZ16 and M80 stereomicroscopes with an ocular micrometer. Stacked external character photographs were taken using a Leica DMC5400 camera with a 0.6x lens on a Leica M205C stereomicroscope. The genitalia characters were imaged using a Leica DM5500B microscope equipped with a Leica DMC4500 module connected to a personal computer running the Leica Application Suite software (https://www.leica-microsystems.com). Both systems include an Auto-Montage module that combines multiple layers of photographs into a single fully-focused image. All photos were subsequently modified using Adobe Photoshop CS3® imaging software.

The morphological terminology follows Skevington (2002), Kehlmaier (2005) and Motamedinia *et al.* (2021) with the following abbreviations being used throughout the paper: LP:LB=length of piercer to length of base (viewed laterally); LDP:LPP=length of distal part of piercer to length of proximal part of piercer (viewed laterally), S: sternite; ST8: syntergosternite 8; T: tergite, LP:LB: Length of piercer to length of base (viewed laterally), MLE: MWE: Max length of epandrium to max. width of epandrium (viewed dorsally). RangeMapper (Philip, 1994) was used to create the species distribution maps. The construction of maximum liklihood (ML) tree was performed using IQ-TREE web server (Nguyen *et al*., 2015). Bootstrap support values were estimated from 1000 replicates.

### *Molecular study*

Total genomic DNA was non-destructively extracted from 2 legs, or whole specimens (dried or in alcohol) using the DNeasy Blood and Tissue kit (Qiagen Inc., Santa Clara, CA, USA) following the manufacturer's protocol. Following extraction, specimens were critical-point dried and deposited as vouchers in all aforementioned collections.

For DNA barcoding, a 658 bp fragment of the 5' end of the mitochondrial coding gene cytochrome oxidase subunit I (COI) was amplified using the primer pair LCO1490 and COI-Dipt-2183R, as previously described by Gibson *et al.* (2011). In some cases, initial attempts to amplify the full COI barcode failed, presumably due to the degradation of the DNA. In these cases, a COI mini-barcode protocol was employed in order to amplify a 214 bp fragment (COI-Fx-C), located at the 3'-end of the COI barcode region, for species identification (Motamedinia *et al.* 2019). In the case of putative new species, efforts were made to amplify the 5' and middle COI mini-barcode fragments (COI-Fx-A and COI-Fx-B respectively) that, when combined, provide a complete COI barcode sequence. Oligonucleotides (primers) used in this study are listed in supplementary file 1. PCR amplifications were carried out in 25µl volumes, including 15.7µl ddH2O, 2.5µl 10X Ex Taq PCR buffer (containing 20mM MgCl2), 0.65µl 25mM MgCl2, 1µl of each 10µM primer, 2µl 10mM dNTPs, 0.15µl Ex Taq HS DNA polymerase (TaKaRa Bio USA, Madison, WI, USA), and 2µl total DNA. Amplification cycles were performed on an Eppendorf ep Gradient S Mastercycler (Eppendorf AG, Hamburg, Germany). All PCR and sequencing reactions were performed with the following thermal cycler conditions: 94°C for 3 mins x 1 cycle, 94°C for 45 secs, 45°C for 45 secs, 72°C for 1 min x 45 cycles, 72°C for 5 minutes x 1 cycle, followed by an unlimited step at 10°C. Amplification products were visualized on 1% agarose electrophoresis gels and purified prior to sequencing using either Clone-Well 0.8% Egels (Invitrogen™, Carlsbad, CA, USA) for full barcode amplicons, or an ExoSAP-IT protocol (USB Corp., Cleveland,

OH, USA) for COI-Fx amplicons. Sequencing reactions were carried out in 10µl volumes, using the ABI BigDye Terminator v3.1 Cycle Sequencing kit (PE Applied Biosystems, Foster City, CA, USA). Bidirectional sequencing reactions were purified using the ABI ethanol/EDTA/sodium acetate precipitation protocol and analyzed on an ABI 3500xl Genetic Analyzer (PE Applied Biosystems, Foster City, CA, USA). Sanger Sequencing was performed at CNC.

All sequence chromatograms were edited and contigs formed using Sequencher 5.4.6 (Gene Codes Corp., Ann Arbor, MI, USA). Resulting contigs were hand-aligned using Mesquite 3.6 (Maddison & Maddison 2018). Uncorrected pairwise genetic distances (p-distance) were calculated with Mega7 (Kumar *et al.* 2016).

## Results

### *Systematics*

### Genus *Tomosvaryella* Aczél, 1939

*Tomosvaryella* Aczél, 1939: 22. Type species: *Pipunculus sylvaticus* Meigen, 1824, by original designation.
*Alloneura* Rondani, 1856: 140. Type species: *Pipunculus flavipes* Meigen, 1824, by monotypy. Suppressed by I.C.Z.N. 1961: opinion 597.

Diagnosis: Small to medium-sized big-headed flies, body length 1.5–4.6 mm, ground abdomen color metallic blue (Skevington & Földvári 2007) to usually black, dorsocentral rows of bristles on prescutum and scutum with longer bristles anteriorly, third costal section of wing very short, pterostigma absent, Cross-vein r-m usually close to middle of discal cell (rarely more basal) (Rafael & De Meyer 1992).

Distribution: Cosmopolitan except Antarctica (Skevington 2020).

### Key to the males of the Australian species of *Tomosvaryella*

| | | |
|---|---|---|
| 1 | One of the abdominal sternites with spines (Figs 152A, D–E) | 2 |
| - | Abdominal sternites without spines | 9 |
| 2 | Sternite 4 with "Y"-shaped spine along posterior margin (Fig. 152A) | 3 |
| - | Sternite 4 with simple spine or keel (Fig. 152E) | 4 |
| 3 | Mid tibia with some extremely long apical spurs (Fig. 150E) | *Tomosvaryella calcarilonga* **sp. nov.** |
| - | Mid tibia without long apical spurs | *Tomosvaryella neboissi* **sp. nov.** |
| 4 | Hind tibia flattened with condensed bristles apically | *Tomosvaryella hirta* **sp. nov.** |
| - | Hind tibia not flattened | 5 |
| 5 | Hind trochanter without spine or keel | *Tomosvaryella amphispina* **sp. nov.** |
| - | Hind trochanter with spine or keel | 6 |
| 6 | Hind trochanter with keel (not spine) (Fig. 145D) | 7 |
| - | Hind trochanter with spine (not keel) (Fig. 144B) | 8 |
| 7 | Surstyli triangular-shaped in dorsal view (Fig. 97A) | *Tomosvaryella tribula* **sp. nov.** |
| - | Surstyli rectangular-shaped in dorsal view (Fig. 88A) | *Tomosvaryella setaria* **sp. nov.** |
| 8 | Hind trochanter with two distinct spines (Fig. 144B) | *Tomosvaryella gaimarii* **sp. nov.** |
| - | Hind trochanter with a patch of spines (Fig. 146A) | *Tomosvaryella atraspina* **sp. nov.** |
| 9 | Abdomen covered by distinct and dense bristles (Fig. 152B) | 10 |
| - | Abdomen not covered by distinct and dense bristles | 11 |
| 10 | Hind trochanter with two patches of bristles ventroapically and ventrobasally (Fig. 145C) | *Tomosvaryella caesariata* **sp. nov.** |
| - | Hind trochanter without distinct bristles | *Tomosvaryella reburra* **sp. nov.** |
| 11 | Thorax and abdominal tergites shiny | *Tomosvaryella lanterna* **sp. nov.** |
| - | Thorax and abdominal tergites both dark but not shiny | 12 |
| 12 | Hind femur broadened or with a specific protrusion at base (Fig. 150C) | 13 |
| - | Hind femur not broadened or without a specific protrusion. | 18 |
| 13 | Surstyli narrowed strongly at basal one third in dorsal view (Fig. 50A) | *Tomosvaryella kooncheraensis* **sp. nov.** |
| - | Surstyli not narrowed at basal one third | 14 |
| 14 | Surstyli without long and distinct bristles (Fig. 73A) | *Tomosvaryella parvistyla* **sp. nov.** |
| - | Surstyli with long and distinct bristles | 15 |

15 Surstyli flattened towards apex (not pointed). . . . 16
- Surstyli pointed towards apex . . . . 17
16 Surstyli strongly constricted in middle in dorsal view (Fig. 40A), subepandrial sclerite without some horizontal transverse streaks in ventral view (Fig. 40B) . . . . *Tomosvaryella exigua* **sp. nov.**
- Surstyli not strongly constricted in middle in dorsal view (Fig. 83A), subepandrial sclerite with some horizontal transverse streaks (Fig. 83B) . . . . *Tomosvaryella pterygia* **sp. nov.**
17 Surstyli with condensed long bristles at the base in dorsal view (Fig. 44A) . . . . *Tomosvaryella gidgee* **sp. nov.**
- Surstyli with condensed long bristles before apex (Fig. 53A) . . . . *Tomosvaryella latipoda* **sp. nov.**
18 Hind trochanter with a keel (Figs 144E, 146F) . . . . 19
- Hind trochanter without a keel . . . . 44
19 Hind femur with long bristles at distal half (Fig. 144E). . . . 20
- Hind femur without long bristles . . . . 24
20 Surstyli with an extended lobe on inner margin in dorsal view . . . . 21
- Surstyli without an extended lobe on inner margin in dorsal view . . . . 22
21 Surstyli "S"-shaped in outer margin in dorsal view (Fig. 106A) . . . . *Tomosvaryella wyperfeldensis* **sp. nov.**
- Surstyli straight in outer margin in dorsal view (Fig. 36A) . . . . *Tomosvaryella dolicholoba* **sp. nov.**
22 Cerci extremely large, hairy and gradually widened towards epandrium in lateral view (Figs. 30D–E) . . . . *Tomosvaryella dasyprocta* **sp. nov.**
- Cerci normal in lateral view . . . . 23
23 Right surstylus with a triangle-shaped lobe on inner margin before apex in dorsal view (Fig. 102A) . . . . *Tomosvaryella vasta* **sp. nov.**
- Right surstylus without a triangle-shaped lobe on inner margin before apex in dorsal view (Fig. 96A). . . . *Tomosvaryella tetraloba* **sp. nov.**
24 Hind tibia flattened apically (Fig. 150B) . . . . 25
- Hind tibia not flattened. . . . 26
25 Surstyli broadened apically in dorsal view (Fig. 99A). . . . *Tomosvaryella tuber* **sp. nov.**
- Surstyli not broadened apically in dorsal view (Fig. 77A). . . . *Tomosvaryella petala* **sp. nov.**
26 Mid metatarsus flattened . . . . *Tomosvaryella miltocentra* **sp. nov.**
- Mid metatarsus not flattened . . . . 27
27 Hind metatarsus flattened. . . . *Tomosvaryella patula* **sp. nov.**
- Hind metatarsus not flattened. . . . 28
28 One of ejaculatory ducts with spine (Fig. 2E) . . . . 29
- Ejaculatory ducts without spines . . . . 30
29 Both gonopods with a finger-like projection medially in ventral view (Fig. 54B) . . . . *Tomosvaryella latistyla* **sp. nov.**
- Gonopods without a finger-like projection medially in ventral view (Fig. 2B). . . . *Tomosvaryella alexanderi* **sp. nov.**
30 Subepandrial sclerite with a projection medially in ventral view (Figs 55B, 43B) . . . . 31
- Subepandrial sclerite without any projection medially in ventral view . . . . 37
31 Subepandrial sclerite with three protrusions medially in ventral view (Fig. 43B). . . . *Tomosvaryella gibberensis* **sp. nov.**
- Subepandrial sclerite with one fin-shaped protrusion medially in ventral view . . . . 32
32 Left gonopod longer than right one in ventral view (Fig. 6B) . . . . *Tomosvaryella angustistyla* **sp. nov.**
- Both gonopods equal in height in ventral view . . . . 33
33 Right gonopod wider than left one in ventral view (Fig. 18B) . . . . *Tomosvaryella brocha* **sp. nov.**
- Both gonopods equal in width in ventral view (Fig. 91B) . . . . 34
34 Gonopods broadened in ventral view (Fig. 91B) . . . . *Tomosvaryella spinifex* **sp. nov.**
- Gonopods elongated in ventral view (Fig. 100B) . . . . 35
35 Right gonopod with a distinct projection on inner margin (Fig. 100B). . . . *Tomosvaryella uncinata* **sp. nov.**
- Right gonopod without a distinct projection on inner margin . . . . 36
36 Hypandrial apodeme distinct in ventral view (Fig. 55B) . . . . *Tomosvaryella ledknapperensis* **sp. nov.**
- Hypandrial apodeme not distinct in ventral view (Fig. 79B). . . . *Tomosvaryella powerae* **sp. nov.**
37 Gonopods unequal in length in ventral view (Fig. 95B) . . . . *Tomosvaryella tesca* **sp. nov.**
- Gonopods equal in height in ventral view . . . . 38
38 Right gonopod with a finger-like projection on inner margin in ventral view (Fig. 62B) . . . . *Tomosvaryella melaleuca* **sp. nov.**
- Right gonopod without a finger-like projection on inner margin in ventral view . . . . 39
39 Hypandrial apodeme distinct in ventral view (Fig. 20B) . . . . *Tomosvaryella bulbosa* **sp. nov.**
- Hypandrial apodeme not distinct in ventral view. . . . 40
40 Cerci triangle-shaped in lateral view (Fig. 64D–E) . . . . *Tomosvaryella millstreamensis* **sp. nov.**
- Cerci differently shaped in lateral view . . . . 41
41 Surstyli tiny and parallel, without any protrusions in dorsal view (Fig. 12A). . . . *Tomosvaryella biloba* **sp. nov.**
- Surstyli normal, curved to each other, with protrusions in dorsal view (Fig. 60A) . . . . 42
42 Subepandrial sclerite very long in ventral view (Fig. 60B) . . . . *Tomosvaryella macrostyla* **sp. nov.**
- Subepandrial sclerite not very long in ventral view. . . . 43
43 Both surstyli curved along ventral margin in lateral view (Fig. 84D–E) . . . . *Tomosvaryella quadrata* **sp. nov.**
- Both surstyli bent along ventral margin before apex in lateral view (Fig. 25D–E) . . . . *Tomosvaryella cona* **sp. nov.**

44 Hind trochanter with spur, spine or pegs (Figs 145A, F, 146E, 147A-C, F, 148A–B, D) . . . . . 45
- Hind trochanter without spur, spine or pegs . . . . . 62
45 Hind femur with some long bristles posteriorly . . . . . 46
- Hind femur without some long bristles posteriorly . . . . . 47
46 Gonopods equal in height in ventral view (Fig. 70B) . . . . . *Tomosvaryella novaezealandiae*
- Gonopods unequal in height, left longer than right one in ventral view (Fig. 51B) . . . . . *Tomosvaryella lambkinae* **sp. nov.**
47 Mid femur with some long bristles . . . . . *Tomosvaryella boomerang* **sp. nov.**
- Mid femur without some long bristles . . . . . 48
48 Phallus with spines before emerging ejaculatory ducts (Fig. 23D–E) . . . . . *Tomosvaryella clavata* **sp. nov.**
- Phallus without spines before emerging ejaculatory ducts . . . . . 49
49 Phallus with membranous sheaths . . . . . 50
- Phallus without membranous sheaths . . . . . 51
50 Surstyli pointed towards each other at apex in dorsal view (Fig. 10A) . . . . . *Tomosvaryella bicalcarata* **sp. nov.**
- Surstyli rounded at apex in dorsal view (Fig. 61A) . . . . . *Tomosvaryella mathiesoni* **sp. nov.**
51 One of the ejaculatory ducts with a spine (s) or teeth . . . . . 52
- Ejaculatory ducts without any spines or teeth . . . . . 58
52 Subepandrial sclerite with a small fin-shaped protrusion in ventral view . . . . . 53
- Subepandrial sclerite without a small fin-shaped protrusion in ventral view . . . . . 55
53 Subepandrial sclerite with two finger-like projections towards surstyli in ventral view (Fig. 24B) . . . . . *Tomosvaryella collessi* **sp. nov.**
- Subepandrial sclerite without two finger-like projection towards surstyli in ventral view . . . . . 54
54 Hind trochanter with few dark short spines in a group ventrobasally and flat ventral side with shorter and fewer spines . . . . . *Tomosvaryella angelikae* **sp. nov.**
- Hind trochanter with tuft of short dark longer spines ventrobasally . . . . . *Tomosvaryella moffattensis* **sp. nov.**
55 Membranous area with long and condensed bristles . . . . . *Tomosvaryella planca* **sp. nov.**
- Membranous area without long and condensed bristles . . . . . 56
56 Surstyli tiny, upright in dorsal view (Fig. 8A) . . . . . *Tomosvaryella arnhemensis* **sp. nov.**
- Surstyli elongated in dorsal view . . . . . 57
57 Surstyli moderately tapering towards apex in dorsal view (Fig. 75A) . . . . . *Tomosvaryella paxilla* **sp. nov.**
- Surstyli not tapering towards apex, a little broadened at apex in dorsal view (Fig. 103A) . . . . . *Tomosvaryella velutina* **sp. nov.**
58 Fore tarsus with the unusual shape of the distal tarsomere, with a handle-shaped base and gradually widening towards tip (Fig. 151C) . . . . . *Tomosvaryella ansa* **sp. nov.**
- Fore tarsus normal, without any unusual shape . . . . . 59
59 Hypandrial apodeme distinct . . . . . 60
- Hypandrial apodeme not distinct . . . . . 61
60 Hind trochanter with two differently shaped spur-like projections (Fig. 147F) . . . . . *Tomosvaryella dissidens* **sp. nov.**
- Hind trochanter with distinct spur at the distal end and groups of 10–12 dark short spines ventrobasally, in “echidna” style (Fig. 145F) . . . . . *Tomosvaryella ngarrbekiota* **sp. nov.**
61 Right surstylus curved towards left one in dorsal view (Fig. 105A) . . . . . *Tomosvaryella wintertoni* **sp. nov.**
- Right surstylus straight, not curved towards left one in dorsal view (Fig. 28A) . . . . . *Tomosvaryella dactylopoda* **sp. nov.**
62 Hind femur with some distinct bristles . . . . . 63
- Hind femur without bristles . . . . . 68
63 Mid femur with some distinct bristles . . . . . *Tomosvaryella pseudophanes*
- Mid femur without bristles . . . . . 64
64 Fore and mid trochanters with 2–3 short dark bristles; fore coxa with a short dark bristle . . . . . *Tomosvaryella sicula* **sp. nov.**
- Fore and mid trochanters not as above . . . . . 65
65 Surstyli straight in basal third, then falcate in dorsal view (Fig. 41A) . . . . . *Tomosvaryella falcata* **sp. nov.**
- Surstyli not as above . . . . . 66
66 Surstyli without long bristles in dorsal view (Fig. 92A) . . . . . *Tomosvaryella spinivaria* **sp. nov.**
- Surstyli with some long bristles along dorsomedial margin in dorsal view (Fig. 66A) . . . . . 67
67 Left surstylus broadened in the middle in dorsal view (Fig. 29A) . . . . . *Tomosvaryella danielsi*
- Left surstylus not broadened in the middle in dorsal view (Fig. 66A) . . . . . *Tomosvaryella minychoma* **sp. nov.**
68 Mid tibia with one distinct and long apical spur, as long as mid metatarsus (Fig. 150F) . . . . . *Tomosvaryella leimonias*
- Mid tibia not as above . . . . . 69
69 Flagellum long tapering, with distinct bristle-like tips (Fig. 151F) . . . . . *Tomosvaryella acuminata* **sp. nov.**
- Flagellum not as above . . . . . 70
70 Upper side of basal costal cell with two long brown bristles and 3–4 short light brown bristles . . . . . *Tomosvaryella seticosta* **sp. nov.**
- Upper side of basal costal cell not as above . . . . . 71
71 Ejaculatory apodeme funnel shaped (Fig. 35C, 37C) . . . . . 72
- Ejaculatory apodeme not as above . . . . . 74
72 Ejaculatory ducts without tooth-like projection in lateral view (Fig. 35E) . . . . . *Tomosvaryella divaricata* **sp. nov.**
- Ejaculatory ducts with projections or teeth . . . . . 73
73 Surstyli asymmetrical, right surstylus wider, left one longer in dorsal view (Fig. 37A) . . . . . *Tomosvaryella epichalca*

- Surstyli symmetrical, both elongated (Fig. 48A) . . . . . *Tomosvaryella infundibula* **sp. nov.**
74 Ejaculatory duct with a spine (s) or teeth (Fig. 16D) . . . . . 75
- Ejaculatory duct without spines or teeth . . . . . 80
75 Left surstylus pointed towards outer margin in dorsal view (Fig. 86A). . . . . *Tomosvaryella scapania* **sp. nov.**
- Left surstylus not as above . . . . . 76
76 Left surstylus constricted in the middle in dorsal view (Fig. 16A) . . . . . *Tomosvaryella brachystyla* **sp. nov.**
- Left surstylus not as above . . . . . 77
77 Both surstyli triangle-shaped in dorsal view (Fig. 19A) . . . . . *Tomosvaryella brooksi* **sp. nov.**
- Surstyli not as above. . . . . 78
78 Gonopods quadratic-shaped, right one with a small finger-like projection on right corner at apex (Fig. 3B). . . . . *Tomosvaryella aliceae* **sp. nov.**
- Gonopods triangle-shaped (Fig. 98B) . . . . . 79
79 Gonopods equal in height in ventral view (Fig. 98B) . . . . . *Tomosvaryella trispina* **sp. nov.**
- Right gonopod longer than left one in ventral view (Fig. 59B) . . . . . *Tomosvaryella luma* **sp. nov.**
80 Phallus with membranous sheath (Fig. 58D) . . . . . 81
- Phallus without membranous sheath . . . . . 83
81 Phallus with two membranous sheaths, hypandrium with a small projection and a small hairy membranous sheath (Fig. 58D) . . . . . *Tomosvaryella lophia* **sp. nov.**
- Phallus with one membranous sheath. . . . . 82
82 Subepandrial sclerite divided into two parts from its middle towards surstyli (Fig. 31B). . . . *Tomosvaryella deltastyla* **sp. nov.**
- Subepandrial sclerite distinct but not divided (Fig. 38B). . . . . *Tomosvaryella eremia* **sp. nov.**
83 Phallus with distinct projection or hairs . . . . . 84
- Phallus without distinct projection or hairs . . . . . 85
84 Phallus with a small triangular projection before emerging ejaculatory ducts in lateral view (Fig. 45C–D) . . . . . *Tomosvaryella hardyi* **sp. nov.**
- Phallus strong, one side covered by condensed furcate hairs from its middle to apex in lateral view (Fig. 94C). . . . . *Tomosvaryella synadelpha*
85 Phallic guide with some spines dorsolaterally covered by two short membranous sheaths, each membranous sheath covered with small teeth-like projections in lateral view (Fig. 11D). . . . . *Tomosvaryella biflocca* **sp. nov.**
- Phallic guide not as above . . . . . 86
86 Hypandrial apodeme distinct in ventral view. . . . . 87
- Hypandrial apodeme not distinct in ventral view. . . . . 88
87 Gonopods unequal in height; right gonopod shorter with two triangle-shaped projections on inner margin in ventral view (Fig. 72B) . . . . . *Tomosvaryella parkeri* **sp. nov.**
- Gonopods equal in height (Fig. 71B) . . . . . *Tomosvaryella nyctias*
88 Gonopods unequal in height. . . . . 89
- Gonopods equal in height. . . . . 91
89 Left surstylus rounded at apex in dorsal view (Fig. 17A) . . . . . *Tomosvaryella brancha* **sp. nov.**
- Left surstylus pointed towards right one at apex in dorsal view . . . . . 90
90 Subepandrial sclerite distinct with condensed spine-like bristles in ventral view (Fig. 76B) *Tomosvaryella peronensis* **sp. nov.**
- Subepandrial sclerite with some horizontal wrinkles in ventral view (Fig. 49B) . . . . . *Tomosvaryella irwini* **sp. nov.**
91 Both surstyli strongly curved, hook-like in dorsal view (Fig. 57A). . . . . *Tomosvaryella leipoa* **sp. nov.**
- Surstyli not as above. . . . . 92
92 Phallic guide widened at the middle and sinuous in lateral view (Fig. 26C–D) . . . . . *Tomosvaryella creagra* **sp. nov.**
- Phallic guide not as above . . . . . 93
93 Surstyli bent outwards by 90° distally, with two small protrusions shortly before apex at inner margin in dorsal view (Fig. 63A) . . . . . *Tomosvaryella merinater* **sp. nov.**
- Surstyli not bent outwards . . . . . 94
94 Surstyli straight from base to apex in dorsal view (Fig. 87A) . . . . . *Tomosvaryella setapteron* **sp. nov.**
- Surstyli curved, bent or pointed at apex in dorsal view . . . . . 95
95 Subepandrial sclerite too short and not distinct in ventral view (Fig. 47B). . . . . *Tomosvaryella indistincta* **sp. nov.**
- Subepandrial sclerite normal and distinct. . . . . 96
96 Subepandrial sclerite with an elongated suture in its middle in ventral view (Fig. 93B). . . . . *Tomosvaryella staricki* **sp. nov.**
- Subepandrial sclerite without an elongated suture in its middle in ventral view. . . . . 97
97 Right surstylus with a small lobe along inner margin in dorsal view. . . . . 98
- Right surstylus without a small lobe along inner margin in dorsal view . . . . . 101
98 Left surstylus without a small dorsomedial protrusion in lateral view (Fig. 39D). . . . . *Tomosvaryella eucalypti* **sp. nov.**
- Left surstylus with a small dorsomedial protrusion in lateral view . . . . . 99
99 Left surstylus broadened in its middle in lateral view (Fig. 32D–E) . . . . . *Tomosvaryella denhamensis* **sp. nov.**
- Left surstylus not broadened in its middle in lateral view . . . . . 100
100 Surstyli moderately narrow in apical half in lateral view (Fig. 101C–D) . . . . . *Tomosvaryella unda* **sp. nov.**
- Surstyli not narrow in apical half in lateral view (Fig. 15D–E). . . . . *Tomosvaryella bounites* **sp. nov.**
101 Epandrium wider than long (Fig. 27A) . . . . . *Tomosvaryella culgoaensis* **sp. nov.**
- Epandrium longer than wide . . . . . 102

| | | |
|---|---|---|
| 102 | Hypandrium extremely elongated (Fig. 81B) | *Tomosvaryella prolixa* **sp. nov.** |
| - | Hypandrium not as above | 103 |
| 103 | Ejaculatory ducts biramous at apex (Fig. 13B–E) | *Tomosvaryella birama* **sp. nov.** |
| - | Ejaculatory ducts not as above | 104 |
| 104 | Both surstyli moderately curved towards sternite in lateral view (Fig. 80D–E) | *Tomosvaryella prolata* **sp. nov.** |
| - | Both surstyli straight, strongly bent towards sternite before apex | 105 |
| 105 | Surstyli finger-like, subepandrial sclerite not broadened in the middle (Fig. 104A–B) | *Tomosvaryella warrumbunglensis* **sp. nov.** |
| - | Surstyli elongated, subepandrial sclerite broadened in the middle (Fig. 33A–B) | *Tomosvaryella dirigostyla* **sp. nov.** |

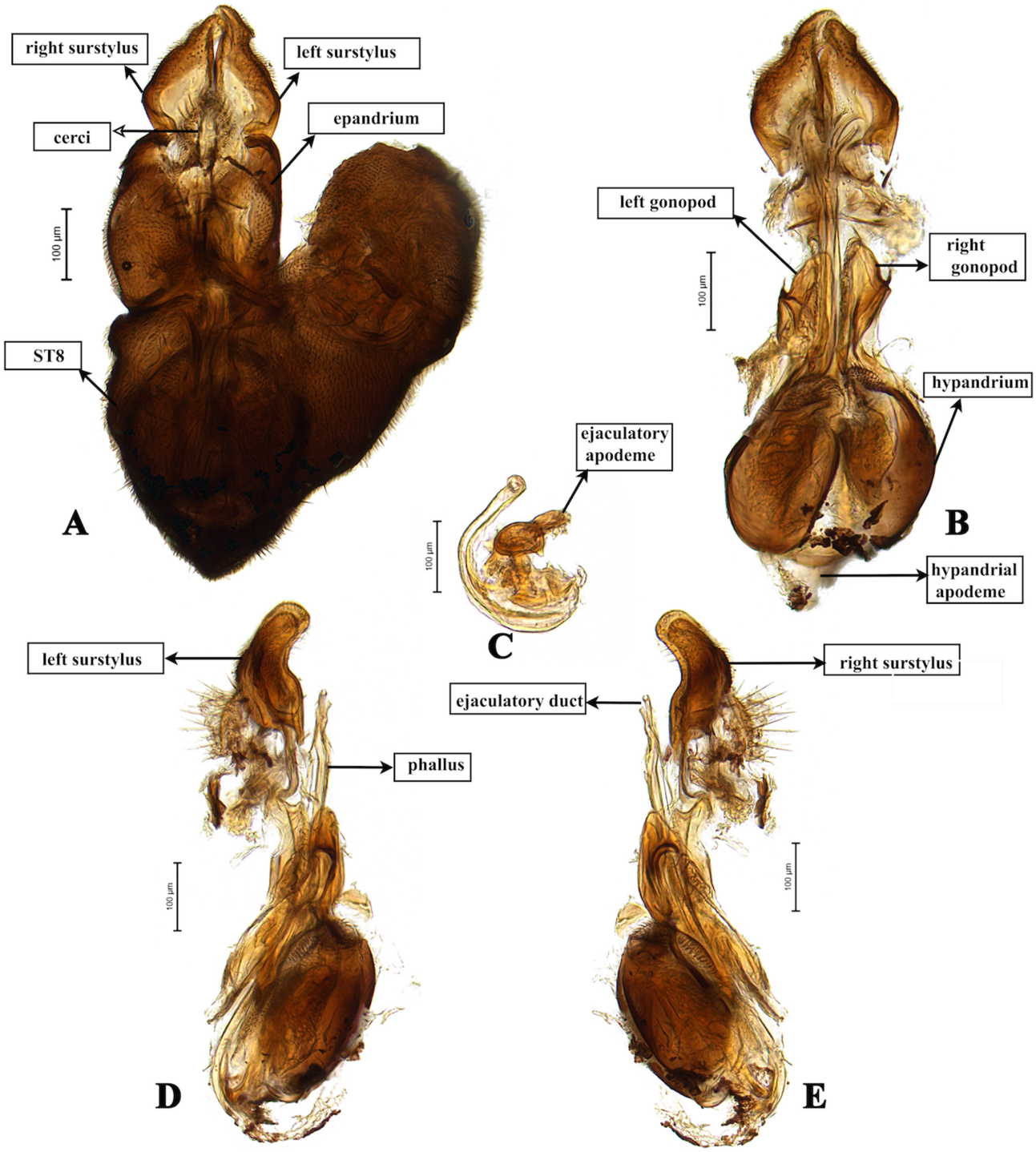



**FIGURE 1**. Male genitalia of *Tomosvaryella acuminata* **sp. nov.** (JSS9254, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella acuminata* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:BA774BB4-990B-444A-BE4C-F1B41168B602
Figs 1A–E, 107, 151F

**Diagnosis:** This species can be recognized by the shape of the flagellum, long and tapering, with bristle-like tips (Fig. 151F); epandrium with two bulging lobes; widened surstyli basally, moderately narrowed to apex in dorsal view (Fig. 1A); gonopods triangle-shaped with an edge in lateral margin in ventral view (Fig. 1B).

**Description: MALE:** Body length: 3.0 mm. ***Head***. Scape, pedicel dark, flagellum long tapering, brown pollinose, tips narrowed and like bristle (Fig. 151F). Face silvery brown pollinose with a bright line close to antennae. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 dark different-sized bristles. Mesonotum (viewed obliquely from front) brown pollinose. Dorsocentral and supra-alar bristles short, dark, longer in frontal half. Scutellum silvery brown pollinose and with 4–6 bristles along distal edge. Halter, knob light brown, tip brownish, base and stem dark brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae light brown (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with 5–8 short dark bristles ventrobasally, brown pollinose. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 brown pollinose Dispersed short dark bristles on all tergites present. Lateral bristles on first tergite present, 6–8 dark bristles up to as long as hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1) with two bulging lobes in each side. Surstyli widened at basal, moderately narrowed to apex, constricted before apex, curved to each other at apex (Fig. 1A). Genital capsule in ventral view: gonopods extended towards surstyli, pointed at apex with an edge on outer margin; phallic guide without dorso- dorsolateral spines; subepandrial sclerite distinct (Fig. 1B); genital capsule in lateral view: both surstyli curved towards sternite, (Fig. 1D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 1C).

**FEMALE:** Unknown.

**Etymology:** From the Latin acuminatus, pointed or sharpened, in reference to the long, tapering flagellum.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: The Boulders, 5 km W of Babinda, 17°21'S, 145°55'E, 14–15.XI.1981, D.H. Colless, at light, JSS9254 (1♂, ANIC).

**Distribution:** Australia (Queensland) (Fig. 107).

**Notes:** Unlike most *Tomosvaryella* species, this appears to be a rainforest species and is conceivably nocturnal given that it was collected at a light.

***Tomosvaryella alexanderi* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:30EE7A34-252B-4072-ADCC-0C0A19EA6256
Figs 2A–E, 107, 149B

**Diagnosis:** This species can be recognized by the hind trochanter with a keel covered by a row of short bristles in a row along the edge (Fig. 149B); elongated surstyli in dorsal view (Fig. 2A); elongated gonopods in ventral view (Fig. 2B); subepandrial sclerite with 3–4 fin-shaped protrusions in middle in ventral view; phallic guide with 3–4 dorso- dorsolateral spines; one of ejaculatory ducts with one distinct spine in lateral view (Fig. 2C).

**Description: MALE:** Body length: 2.8–3 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper 1/3. ***Thorax***. Postpronotum pale, with 5–6 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior

part more grey, grayish also from the side. Scutellum brown pollinose and with 8–10 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous long bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 4 strong, dark bristles, one is shorter. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow-brown (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter with a small keel, in a row of short bristles along the edge (Fig. 149B); ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; 4–5 short dark spines on mid femur; hind femur without ventroapical spines, except 10–12 bristles posteroventrally, equally spaced, longer on distal half, longest up to 1/3 of the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present. Hind tibia slightly bent in posterior view. Metatarsi not flattened, hind metatarsus almost as long as 2–4 combined, all tarsomeres shorter than usual. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on tergite 5). Dispersed short dark bristles on all tergites present, longest on tergite 5 up to 1/3 of the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.1–1.3 times as long as ST8. Genitalia without dissection: ST8 medium sized, broad, round in dorsal view, dark brown and with some distinct bristles, otherwise velvet-like coverage; membranous area slit-like, widening dorsally; epandrium dark brown, surstyli yellow, long. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli elongated, broadened at base, straightened in middle, pointed at apex on inner margin, left surstylus slightly longer than right one (Fig. 2A). Genital capsule in ventral view: gonopods elongated towards surstyli, tapering at apex, equal in height; subepandrial sclerite with 3–4 small fin-shaped protrusions in middle (Fig. 2B); phallic guide with 3–4 dorso-dorsolateral spines. Genital capsule in lateral view: both surstyli curved towards sternite, right surstylus narrowed in apical quarter (Fig. 2C); phallus with three phallic guides, one with one small spine (Fig. 2E).

**FEMALE:** Unknown.

**Etymology:** This species is named in honour of Alexander Skevington, JHS's son, a keen young entomologist and one of the collectors of several specimens of this species. Alexander collected or was involved in the collection of 7% of the specimens and 15% of the species used in this revision (Supplementary file 2).

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Carnarvon N[ational] P[ark], summit of Fly Hill near West Branch Camp, 24°58'S, 147°60'E, 900m, 12.X.2002, J. Skevington, hand collected, JSS12799 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Carnarvon National Park, Carnarvon Gorge, Consuelo land, 24°56'S, 148°6'E, land, S. Boucher, sweep net, CNCD253914 (1♂, LEM); Carnarvon National Park, Mount Moffatt Section, southernmost of 3 Sisters, summit, 25°7'S, 148°6'E, hilltop, 23.I.1998, J.&A. Skevington & S. Winterton, hand collected, JSS2732; JSS2735; JSS2737; JSS2742; JSS2749 (5♂, QM); Mount Moffatt summit, 25°4'S, 148°3'E, 1097m, 18.XI.2014, J.H., A.M. and A.W. Skevington, CNC374960; CNC375009-10 (3♂, CNC); Carnarvon National Park; Summit of Fly Hill Near West Branch Camp, 24°58'S, 147°60'E, 900m, 12.X.2002, J. Skevington, JSM 467, CNC484089 (1♂, CNC); Western Australia: Summit of Mount Barker, 34°39'S, 117°39'E, hilltop, 26.I.2015, J.H., A.M. and A.W. Skevington, CNC391301 (1♂, CNC).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 107).

**Notes:** Two highly disjunct populations have been documented based on specimens from Carnarvon National Park in Queensland and Mount Barker in Western Australia. Most specimens were captured hilltopping. Intraspecific genetic distance ranges from 0.0–3.9% (Supplementary file 3). This may be a cryptic species complex with the same terminalia characters, so future genetic work is encouraged.

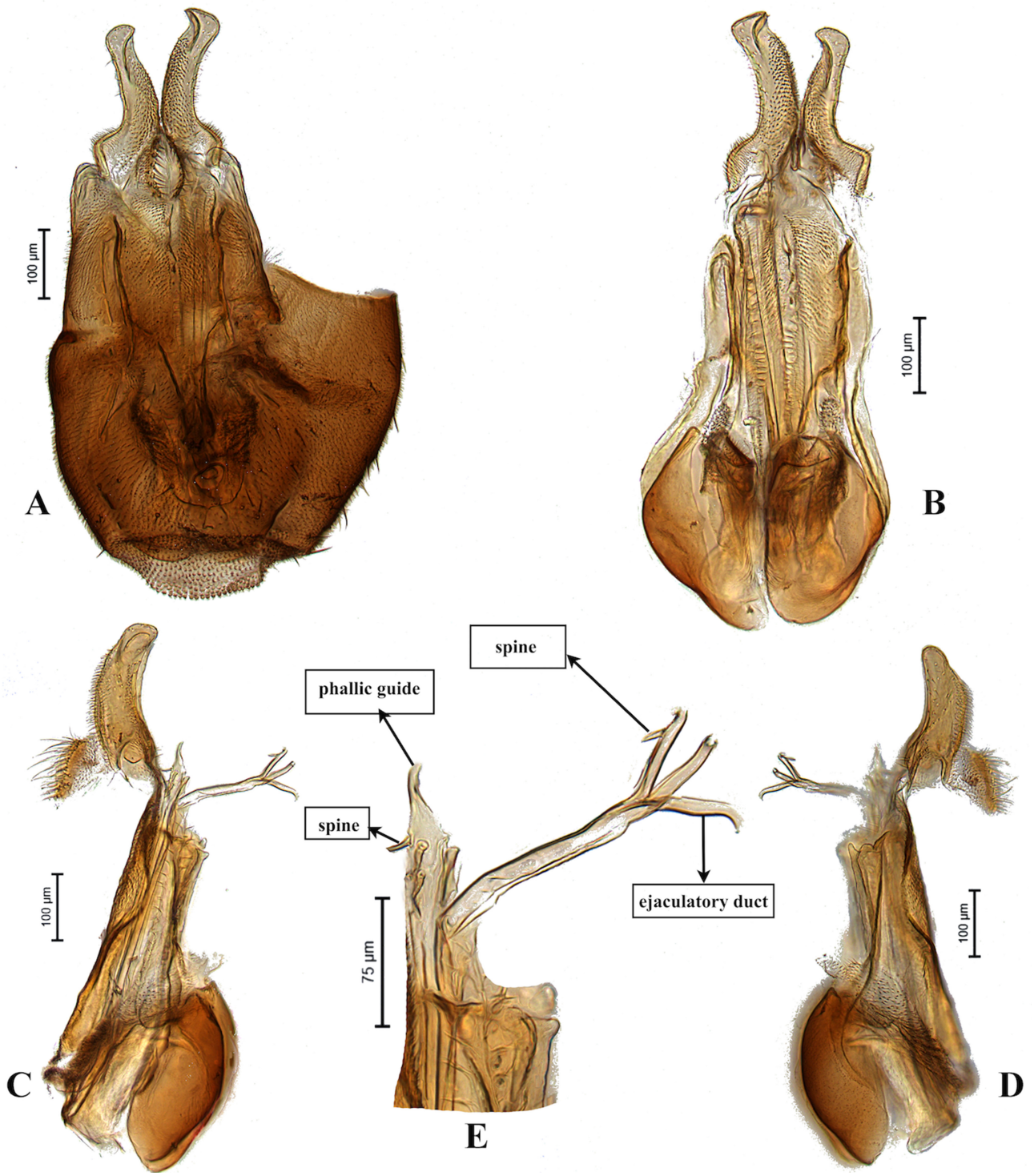



**FIGURE 2**. Male genitalia of *Tomosvaryella alexanderi* **sp. nov.** (CNC391301, CNC) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view, **E**) phallic guide and phallus in lateral view.

***Tomosvaryella aliceae*** **Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:E364FC7C-D4A2-4887-A10A-50B72F379BC4
Figs 3A–E, 107

**Diagnosis:** This species can be recognized by long rectangular-shaped surstyli in dorsal view (Fig. 3A); gonopods quadratic-shaped, the right one with a small finger-like projection on the right corner at apex in ventral view (Fig. 3B); long subepandrial sclerite, one of the ejaculatory ducts with three long spines in ventral view (Fig. 3B).

**Description: MALE:** Body length: 2.4 mm. ***Head***. Scape, pedicel and arista dark brown. Scape with four short upper bristles and two short lower bristles. Flagellum tapering; brown, grey-brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 3–4 long pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, with some medium supra-alar bristles behind postpronotum lobes. Scutellum silvery brown pollinose and with 6–12 short dark bristles along distal edge. Halter, knob pale, stem and base dark. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments dark dorsally and yellow ventrally. Hind trochanter without specific feature, grey pollinose with some scattered tiny bristles; two ventrobasal bristles present on fore and absent on mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced sort bristles posteroventrally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one short dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 long pale setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 silvery grey. Lateral bristles on first tergite present, 4–5 light brown bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli straight and elongated, left is longer than left one and a little widened before the apex (Fig. 3A). Genital capsule in ventral view: both gonopods equal in height, quadratic-shaped, right one with a small finger-like projection on right corner at apex; phallic guide strong without dorso- dorsolateral spines; subepandrial sclerite long, phallus trifid, one of ejaculatory ducts with three long spins (Fig. 3B); genital capsule in lateral view: both surstyli curved towards sternite, (Fig. 3D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 3C).

**FEMALE:** Unknown.

**Etymology:** This species is named after Alice Daniels, one of the collectors of the holotype. Alice and Greg Daniels are prolific collectors and have contributed immensely to our understanding of Australian insects.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Elanda Point, Lake Cootharaba, 26°14'S, 153°0'E, 2.II.1986, G. & A. Daniels, JSS8917 (1♂, QM); **PARATYPE**: AUSTRALIA: New South Wales: Murray River 50 miles west of Wentworth, 34°3'S, 141°3'E, 22.XI.1967, A. Neboiss, JSS8798 (1♂, MVMA).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 107).

**Notes:** Two specimens are known from nearly 2000km apart. We were unable to sequence the DNA from these two specimens and need more samples to test if this is a widespread species as hypothesized or two cryptic species.

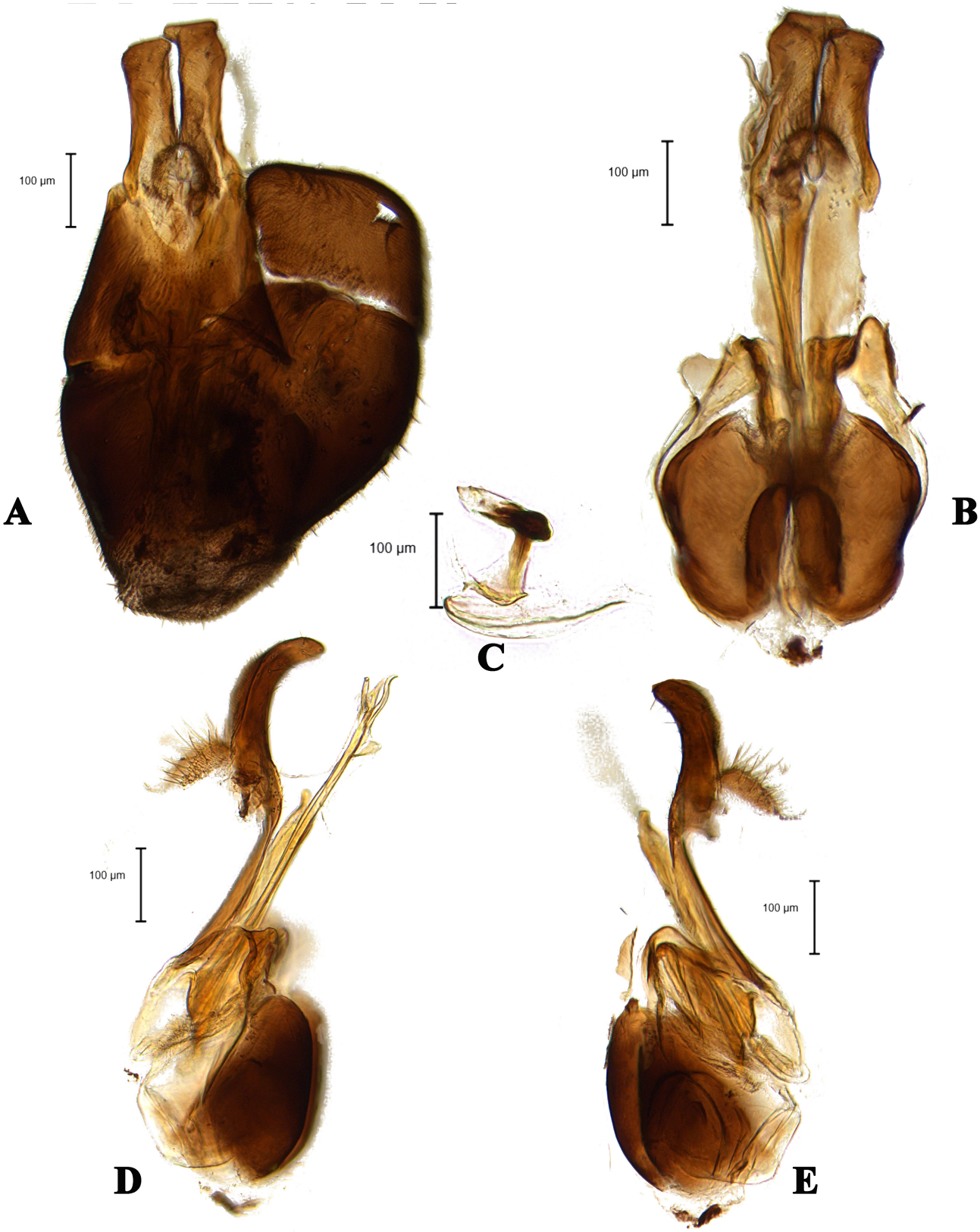



**FIGURE 3**. Male genitalia of *Tomosvaryella aliceae* **sp. nov.** (JSS8917, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella amphispina* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:C9E59AE5-382D-4436-B535-3FBDD9B427D2
Figs 4A–E, 108, 145E

**Diagnosis:** This species can be recognized by two spines along posterior margin of sternites 3 and 4; hind femur with small posterior triangular keel ('shark fin'); left surstylus with a depression dorsomedially in lateral view (Fig. 4A); hypandrium with long hypandrial apodeme in ventral view (Fig. 4B); phallic guide with four spines dorsolaterally (Fig. 4D–E).

**Description: MALE**: Body length: 3.6–4.0 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, including upper half. ***Thorax***. Postpronotum pale, with 6–8 distinct pale bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish also from the side. Scutellum silvery pollinose and with 12–14 indistinct pale bristles along the distal edge. Dorsocentral bristles firmly developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with 2–3 long brown bristles at inner apical corner. Trochanters and base of femora brown, femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 of tibiae yellow (otherwise brown), tarsal segments yellow, last segment dorsally brown. Ventroapical row of spines on fore femur missing, 4–6 short, black spines on mid femur; no spines on hind femur, only 10–12 pale bristles posteriorly equally distributed, and longer on distal half (half as long as width of hind tibia at the distal end). Subapical (distal) short spines on first four tibiae present. Hind trochanter with small keel and comb-like structure with 8–10 spines (Fig. 145E), one big round tooth posteriorly instead of a last spine; 1–3 long ventrobasal spines present on fore femur and mid femur. Hind femur with small triangular keel ('shark fin') on the posterior side close to base. Hind tibia with a distinct row of semi-erect bristles along lateral edge. Hind metatarsus flattened (1, 2 and 3 tarsomeres especially), first tarsomere as long as 2–3 combined; ventral bristles scrub-like, yellow, dorsal bristles on tarsomeres 1 and 2 in dark row along posterior edge. Pulvilli as long as 2/3 of last tarsal segment. ***Wing***. Length: 3.4–3.6 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 4–5 times as long as third costal section (3rd costal section very short). Cross-vein r-m distinctly distal to middle of discal cell. 4–5 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with side spots almost touching in the middle). Dispersed short dark bristles on tergites present, the longest on tergite 5 and up to twice as long as width of hind tibia at base. Lateral bristles on first tergite present, 8–10 black bristles up to twice as long as width of hind femur at distal tip. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Sternites 3 and 4 with a pair of spines along posterior margin. Genitalia without dissection: ST8 large, shiny black; membranous area long, slit-like, dividing ST8 completely; epandrium paler, narrow; yellow surstyli appear long and flat, often visible in lateral view showing can-opener-shaped margin of left surstylus. ***Genitalia***. Genital capsule in dorsal view: epandrium dark brown, surstyli light brown. Epandrium wider than long (MLE: MWE = 0.6). Surstyli rather symmetrical, rectangular-shaped with broad base, left surstylus longer than right one (Fig. 4A). Genital capsule in ventral view: subepandrial sclerite wide, extended towards epandrium with a small protrusion towards phallic guide; gonopods flat, elongated towards surstyli (Fig. 4B), phallic guide with four spines dorsolaterally (three in left and one in right side); hypandrium with long hypandrial apodeme (Fig. 4B). Genital capsule in lateral view: both surstyli curved towards sternite, left surstylus with a depression dorsomedially (Fig. 4D); phallus with three ejaculatory ducts; ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 4C).

**FEMALE**: Unknown.

**Etymology:** The name is a combination of the Greek amphi, around, on both sides, double and the Latin spina, thorn, in reference to the paired spines along the posterior margin of sternites 3 and 4.

**Examined material: HOLOTYPE:** AUSTRALIA: Western Australia: M[oun]t Magnet, M[oun]t Waramboo, 28°2'S, 117°49'E, hilltop, 14.xii.1999, J. Skevington, JSS7434 (WAM); **PARATYPES:** AUSTRALIA: Western Australia: same data as holotype, JSS7429-30, JSS7432, JSS7451–2, JSS7454–62, JSS7465, JSS7467–8, JSS7472–80, JSS7482 (2♂ ANIC, 2♂ CNC, 20♂ QM, 2♂ USNM; 2♂ WAM); South Australia: Great Victoria Desert, vehicle net between 183–217 km South Vokes Hill Corner, [27°52'S, 130°22'E], 29.viii.1980, J. Forrest, JSS8704 (1♂, SAM).

**Distribution:** Australia (South Australia, Western Australia) (Fig 108).

**Notes:** This desert species is presumably widespread but has only been collected in two widely separated localities. Most of the specimens were captured hilltopping. Based on the DNA barcode, this species is genetically most similar to *T. spinifex* **sp. nov.** (1.9–3.5% pairwise divergence). Intraspecific genetic distance ranges from 0.0% to 0.2% (Supplementary file 3).

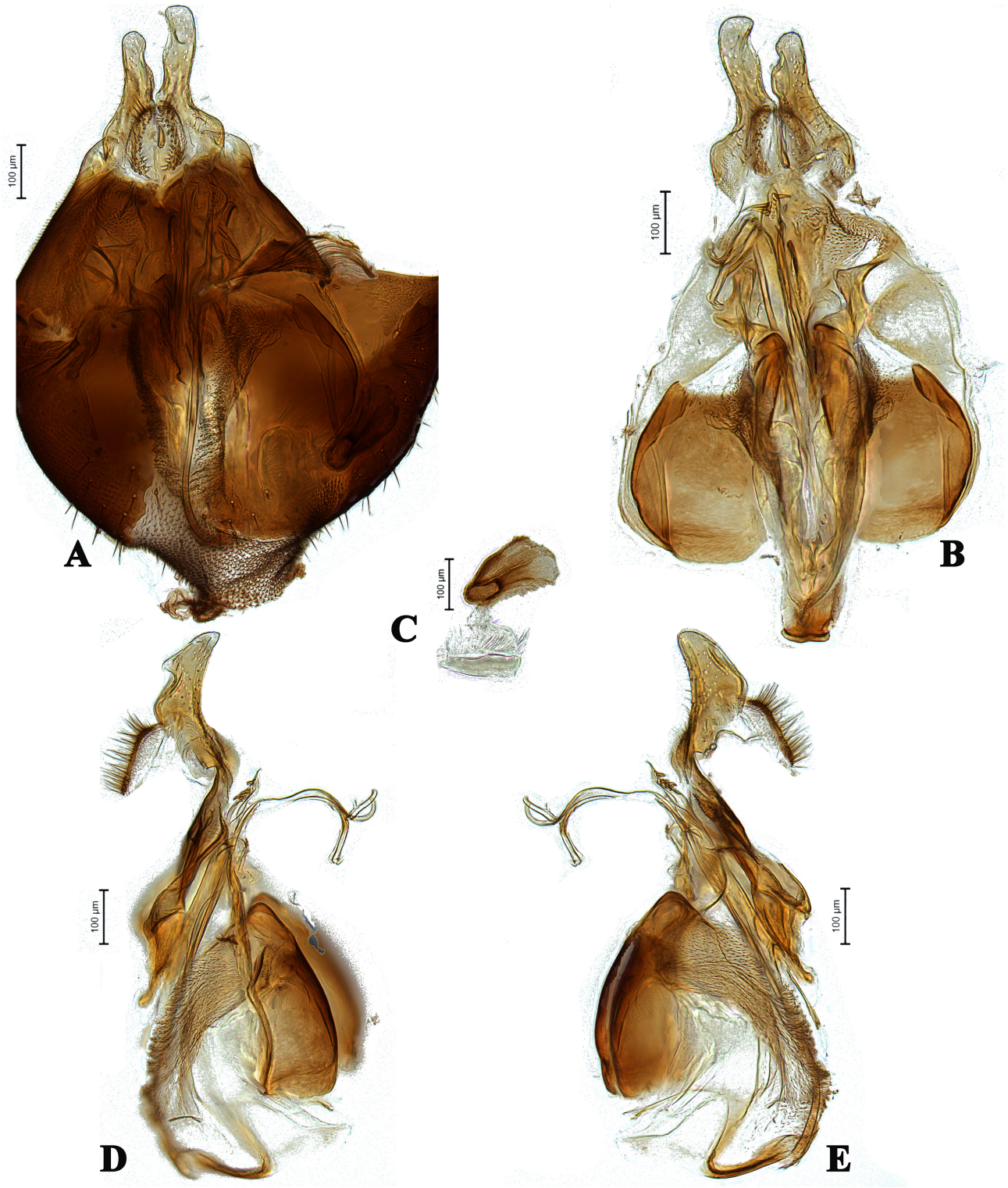



**FIGURE 4**. Male genitalia of *Tomosvaryella amphispina* **sp. nov.** (JSS7434, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella angelikae* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:2E244487-2FD2-41A1-B3F1-981FF89C481A
Figs 5A–F, 108, 148B, 154C

**Diagnosis:** This species can be recognized by the hind trochanter with a few dark, short spines in a group ventrobasally and the flat ventral side with shorter and fewer spines (Fig. 148B); elongated surstyli in dorsal view (Fig. 5A); phallic guide with some dorso-dorsolateral spines (Fig. 5F); elongated gonopods with two inwards projections (Fig. 5B); hypandrium with two hairy membranous sheaths (Fig. 5D–F); subepandrial sclerite with a small fin-shaped protuberance (Fig. 5B); one of ejaculatory ducts with some small spines at base (Fig. 5D–F).

**Description: MALE:** Body length: 3.1–3.3 mm. ***Head***. Flagellum short acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 5–7 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, dark bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise black), tarsal segments dark brown, ventrally yellowish, last segment darker. Hind trochanter with few dark short spines (3–8) in a group at the base ventrally and with a flat ventral side (a few spines are possible on the flat part as well) (Fig. 148B); ventrobasal spines (1) present on fore femur. Hind tibia slightly bent in posterior view. Ventroapical row of spines on fore femur 4–5; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 6–8 equally spaced bristles posteroventrally on distal half, longest up to 2/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres extensively flattened, hind metatarsus almost as long as 2–5 combined and with scrub-like bristles ventrally (tarsi 1–3). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one long dark bristle and 2–3 short brown bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites shining brown, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on t5). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 dark bristles up to 1.2–1.4 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.2–1.4 times as long as ST8. Genitalia without dissection: ST8 medium sized rounded in dorsal view, brown and with distinct bristles, otherwise velvet-like coverage; membranous area with narrow part narrowing epandrium and rounded part mostly directed dorsally; epandrium brown, surstyli yellow, long and slim, often visible completely in lateral view (nothing is blocking the view). ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.3). Surstyli rather symmetrical, widened at base, elongated with rounded tips, right surstylus smaller than left one, pointed at inner margin before apex (Fig. 5A). Genital capsule in ventral view: phallic guide straight with 3–4 dorso-dorsolateral spines (one is longer), gonopods equal in height, elongated towards surstyli with two small inward projections before apex, hypandrium with two hairy membranous sheaths extended towards gonopods; subepandrial sclerite rather wide with a small fin-shaped protuberance in its center; phallus with three ejaculatory ductus, one with four small spines (Fig. 5B). Genital capsule in lateral view: both surstyli straight, abruptly bent in 90° in apical fourth, left is longer than right one (Fig. 5D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 5C).

**FEMALE:** Body length: 3.2 mm. As male except for the following characters. Frons with eyes separated, as wide as 1.6–1.8 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, no transition zone; frons depressed along upper 2/3 with a groove in the median line. Enlarged ommatidia silvery, shining. Pulvilli and claws about 1.5–2 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 3–6. ***Ovipositor.*** Base of ovipositor brownish pollinose with dispersed small bristles, piercer straight, thin and reaching distal end of 1st segment. LP:LB = 2.3. LDP:LPP = 2.5. (Fig. 154C).

**Etymology**: This species is named in honour of Angelika (Angela) Skevington who collected or helped collect 35% of the species and 17% of the specimens used in this revision and several of the specimens of this species (Supplementary file 2).

**Examined material: HOLOTYPE:** AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.v.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2145, JSS16110 (1♂, ANIC); **PARATYPES:** AUSTRALIA: New South Wales: Warrumbungle National Park, 31°16'S, 149°0'E, in creek bed [in *Eucalyptus* forest], 17–22.xii.1998, J.&A. Skevington & S. Winterton, Malaise trap, JSS5064 (1♀, QM); Northern Territory: Litchfield, 4WD camping area; about 300 m in on 4WD map, 13°2'S, 130°55'E, xii.1997–i.1998, A. Zwick, JSS8846 (1♂, QM); Queensland: 2 km S of Horseshoe lookout, Blackdown land, 23°50'S, 149°3'E, 23–24.IV.1981, D.H. Colless, JSS8613 (1♂, ANIC); 3 km NE of Mount Webb, 15°3'S, 145°9'E, 30.IV.1981, D.H. Colless, Malaise trap, JSS8610 (1♂, ANIC); Culgoa Floodplain National Park, 11.8km North of Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow Black Box, 17.XII.2009–20.I.2010, C. Kelly, A. Coward, Malaise trap, 19263, CNC574521, CNC576695–7, CNC576679 (4♂, CNC, 1♂ USNM); 91.2 km west Windorah, 25°22'S, 141°47'E, Malaise in dry creek bed, 31.viii–5.ix.1997, S. Winterton, J.&A. Skevington, JSS8396 (1♂, QM); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 15.v.1999, J.&A. Skevington, hand collected, JSS5773 (1♂, QM);; Kumbia-Bunya Mountains Road, 26°48'S, 151°34'E, hilltop, 17.I.1998, C. Lambkin, JSS8848 (1♂, QM); South Australia: Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, hilltop, 9.x.1997, J.&A. Skevington & C. Lambkin, JSS8383, JSS8386 (2♂, QM); Gammon Ranges National Park, south end of Weetootla Gorge, 30°29'S, 139°16'E; ~537m, hilltop, 11.x.1997, J. Skevington & C. Lambkin, JSS8351, JSS8359, JSS8365 (3♂, QM); Western Australia: 82 km S junction Karijini Drive on Great Northern Highway, 23°7'S, 119°6'E, 694m, wash with pools, 23.iv–6.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15673 (1♂, CNC); Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.v.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2145, JSS16105 (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E; 789m; between drying pools in rocky Turee Creek; near rocky outcrop, *Eucalyptus Eremophila* scrub, 19–25.iv.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2059; JSS16254, (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°43'S, 118°25'E, 799m, ANIC [Bulk Sample] 2039, JSS16179 (1♀, ANIC); Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2044, JSS16085, JSS16098, JSS16100 (1♂, 2♀, ANIC); Mount Augustus National Park; south slope on Saddle Trail, 24°18'S, 116°48'E, 400m, small dry wooded wash, 25.iv–7.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15885 (1♀, CNC); Martin's Well, West Kimberley, 16°34'S, 122°51'E, 28.IV.1977, D.H. Colless, Malaise trap, JSS9258 (1♂, ANIC); Northern Territory: Litchfield National Park, 13°30'S, 130°36'E, 20.I.1998, A. Zwick, debu265568 (1♀, DEBU); Tasmania: Mount William National Park, 40°53'S, 148°13'E, across dry creek bed, 23.XII.0–10.I.1999, J.&A. Skevington, Malaise trap, JSS5073 (1♂, QM); Western Australia: Cape Borda to Pender, West Kimberley, 16°0'S, 126°0'E, 24.IV.1977, D.H. Colless, JSS9172 (1♂, ANIC); Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E, 775m, on hilltop, open *Eucalyptus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16139 (1♂, ANIC).

**Distribution:** Australia (New South Wales, Northern Territory, Tasmania, Queensland, South Australia, Western Australia) (Fig. 108).

**Notes:** This species is found throughout most of Australia in a variety of habitat types, from *Eucalyptus*-dominated to extremely arid, *Acacia*-dominated areas. Some specimens have been found hilltopping. This species is genetically closest to *T. pterygia* **sp. nov.**, differing by 2.5–2.7% (pairwise divergence). Intraspecific genetic distance ranges from 0.0% to 2.0% (Supplementary file 3). This may be a species complex with two taxa including JSS8365, JSS8386 (species group 1) collected from South Australia and the rest of the specimens along with JSS8351 from SA (species group 2) (Supplementary Fig. 5). As morphological features, particularly genitalia features are similar, more molecular work and specimens are needed to shed light on this.

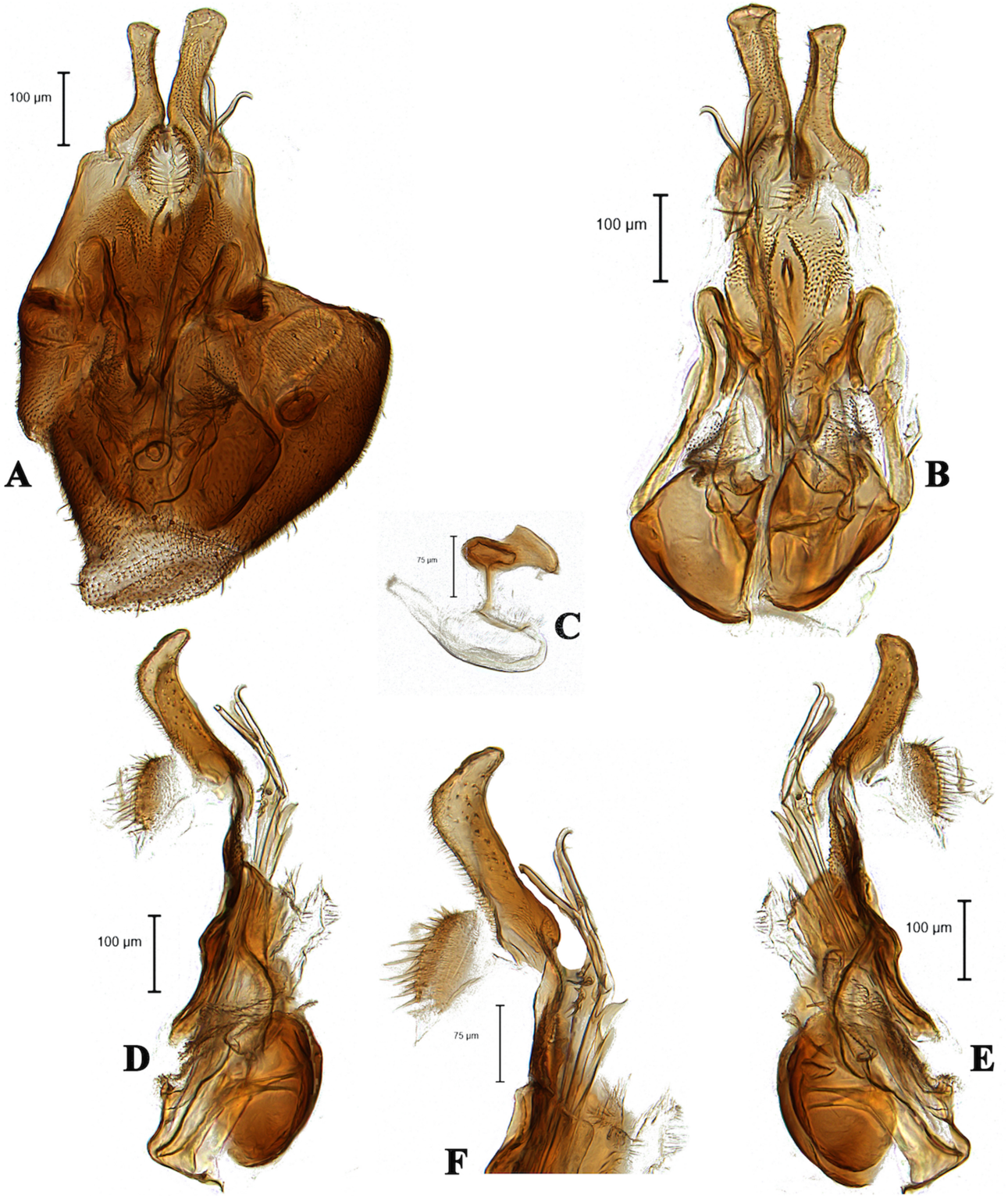



**FIGURE 5**. Male genitalia of *Tomosvaryella angelikae* **sp. nov.** (JSS16110, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view, **F**) left surstylus and phallus in lateral view.

***Tomosvaryella angustistyla* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:1100C02C-F6A7-4093-8B89-E3F6F21F976E
Figs 6A–D, 109, 149F, 156A

**Diagnosis:** This species can be recognized by the hind trochanter with a keel covering 2–3 short dark spines at the proximal end (Fig. 149F); elongated surstyli in dorsal view (Fig. 6A); extended gonopods towards surstyli, left longer than right one; distinct subepandrial sclerite with fin-shaped projection; phallic guide with 5–6 dorso-dorsolateral spines in ventral view (Fig. 6B); left surstylus narrowed in apical half in lateral view (Fig. 6C).

**Description: MALE:** Body length: 2.6–2.7 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 5–7 bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, a few pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments brown dorsally, yellow ventrally, last segment darker. Hind trochanter with 45 degree keel, 2–3 short dark spines at the proximal end (Fig. 149F); ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur missing; 4–7 distinct, black spines on mid femur; hind femur without ventroapical spines, except 10–12 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres flattened (especially hind metatarsus on distal half), hind metatarsus as long as 2–3 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny, brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 dark bristles up to as long as ¾ of hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 small to medium sized, round, globular, brown and with distinct bristles, otherwise with velvet-like coverage; membranous area is round, mostly directed posteriorly; epandrium brown, surstyli brown. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli elongated, symmetrical, left surstylus longer than right one and wider at apex, right surstylus with a distinct triangle-shaped protrusion at inner margin before apex (Fig. 6A). Genital capsule in ventral view: both gonopods extended towards surstyli, left is longer than right one, right one with a projection on inner margin; phallic guide with 5–6 dorso- dorsolateral spines, one spine longer than others; subepandrial sclerite distinct with a small fin-shaped protrusion extended from basal to its center (Fig. 6B); genital capsule in lateral view: both surstyli curved towards sternite, left surstylus narrowed in apical half (Fig. 6C).

**FEMALE:** Body length: 2.5 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.4 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black only around directly ocellar triangle, smooth change in transition zone (just before ocellar triangle) to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.5–2.0 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6; ***Ovipositor.*** Straight in ventral view, straight, dagger-like in lateral view (yellow piercer, brown base), reaching distal end of 2nd segment; base silvery brown pollinose with dispersed short dark bristles. LP:LB = 1.3. LDP:LPP = 4.30. (Fig. 156A).

**Etymology:** From the Latin angustus, narrow, in reference to the narrowed left surstylus.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 27.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16196 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E, 638m, wide sandy wash, 7–18.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15726 (1♂, CNC); 171 km East of Marble Bar, 21°17'S, 121°14'E, 300m, dry wash with flowers, 2–15.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15870, JSS15872 (2♀, CNC); Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 814m, open *Eucalyptus* grassland, 19–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16222–3 (1♂,1♀, ANIC).

**Distribution:** Australia (Western Australia) (Fig. 109).

**Notes:** This species appears to be a Western Australian endemic and is found in *Eucalyptus* dominated habitats to desert washes. Based on the DNA sequences, this species is genetically close to *T. patula* **sp. nov.** (6.7% pairwise divergence). Intraspecific genetic distance ranges from 0.2% to 1.4% (Supplementary file 3).

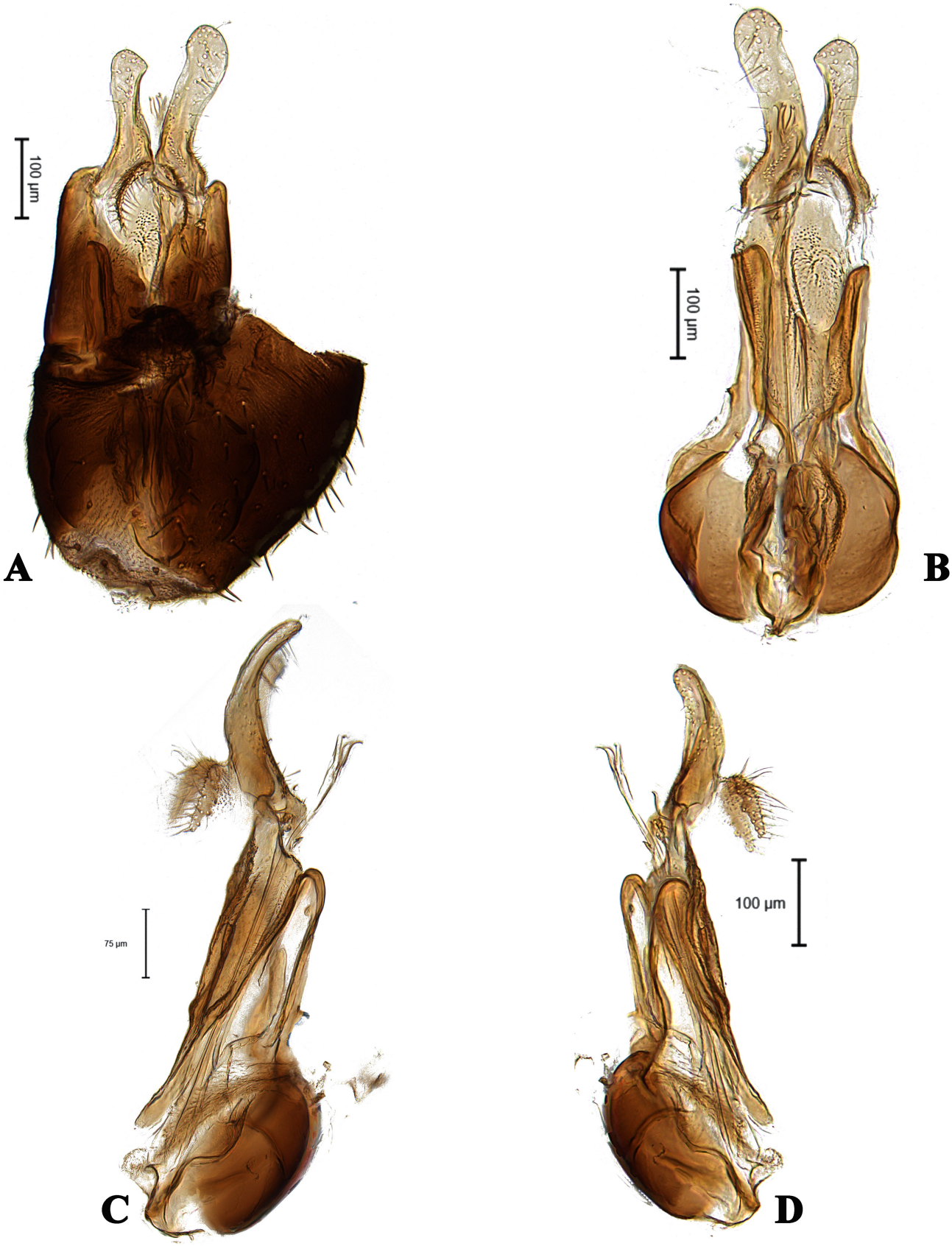



**FIGURE 6**. Male genitalia of *Tomosvaryella angustistyla* **sp. nov.** (JSS16196, WAM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

***Tomosvaryella ansa* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:BB23A234-0FF8-437F-B7D0-CBB2B4EC5D0A
Figs 7A–D, 108, 147C, 151C–D

**Diagnosis:** This species can be recognized by the peg-like projection and dense dark bristles on the hind trochanter (Fig. 147C); the unusual shape of the distal tarsomere of the fore tarsus, with a handle-shaped base that gradually widens towards the tip (Fig. 151C); abdominal sternites 2–5 with distinct dark spines along posterior margin; surstyli elongated in dorsal view (Fig. 7A); left gonopod longer than right one (Fig. 7B); phallic guide with five spines dorsal-dorsolaterally, one longer than others.

**Description: MALE**: Body length: 4.1 mm. ***Head***. Flagellum acuminate, yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose with a golden tinge; eyes touching for distance equal to 3.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper half. ***Thorax***. Postpronotum pale, slightly brownish, with 15–17 distinct long pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part slightly silver pollinose; grayish also from the side. Scutellum brownish pollinose and with 20–22 long bristles along the distal edge. Dorsocentral bristles undeveloped, indistinct, numerous pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 4–6 extra long, dark bristles, hind coxa 4–5 shorter dark bristles. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, and distal extremity of tibiae yellow-brown (tibiae otherwise black), tarsal segments dark brown, yellowish ventrally. Hind trochanter without a keel, but with a distinct, blunt peg on the distal end with a few dark bristles (8–10) basally to the peg (Fig. 147C). Ventroapical row of spines on fore femur missing, a patch of 6–7 short dark spines are present at 1/3 from distal end; 3–4 short, black spines on mid femur; no spines on hind femur, only 12–14 dark bristles posteriorly on distal half positioned on a slight keel (up to as long as half the width of hind tibia at the distal end). Fore and mid femora with 6–8 ventrobasal bristles. Subapical (distal) spines on first four tibiae absent. Hind tibia covered with dense long dark bristles ventroapically; last tarsomere of fore tarsi longer than other tarsomeres, with a long handle-type base and gradually widening towards tip, provided with strong dark bristles dorsally; the segment itself is bent (Fig. 151C). Hind tarsomeres all flattened, hind metatarsus almost as long as 2–4 combined, last tarsomere long and broad, almost as broad and longer than tarsomere 2 (Fig. 151D); bristles are missing dorsally on hind metatarsus in the median line but are present anterior and extensively on posterior edge. Pulvilli 1/3 as long as last tarsomere of fore tarsi, as long as last tarsomere of mid tarsi and half as long as last tarsomere of hind tarsi. ***Wing***. Length: 4.2 mm. Upper side of basal costal cell with two long light bristles. Fourth costal section 3.5–4 times as long as third costal section (3rd section appears to be unusually short). Cross-vein r-m at 3/5 of discal cell, distal to middle. 7–8 very strong, dark setulae on tegula. ***Abdomen***. Dissected. Tergite 1 silvery grey. Lateral bristles on first tergite present, 16–18 long pale bristles in a group (as seen in species of *Claraeola* Aczél) up to 1.6–1.8 times as long as the width of hind femur at distal tip in lateral view. Sternites 2–5 with distinct dark spine along posterior margin in each segment. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli dark brown. Epandrium wider than long (MLE:MWE = 0.6). Surstyli rather symmetrical, broadened at base, elongated, pointing towards each other at apex, left is wider than right one (Fig. 7A). Genital capsule in ventral view: gonopods unequal, left is longer than right one, hypandrium broad, subepandrial sclerite rectangular-shaped (Fig. 7B), phallic guide with five spines dorso- dorsolaterally (the longest one twice as length as others); genital capsule in lateral view: both surstyli curved towards sternite (Figs 7C–D).

**FEMALE:** Unknown.

**Etymology**: The Latin ansa for handle or haft, refers to the handle-shaped distal fore tarsomere.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Queensland: Cudmore National Park (CM1M), 22°54’S, 146°21’E, 365m, *Eucalyptus* woodland with *Spinifex*, 27.x.2010–2.viii.2011, Lambkin, Starick & Bailey, Malaise trap, CNC591870 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 108).

**Notes:** The only known specimen was collected in central Queensland in *Eucalyptus* woodland with *Spinifex.*

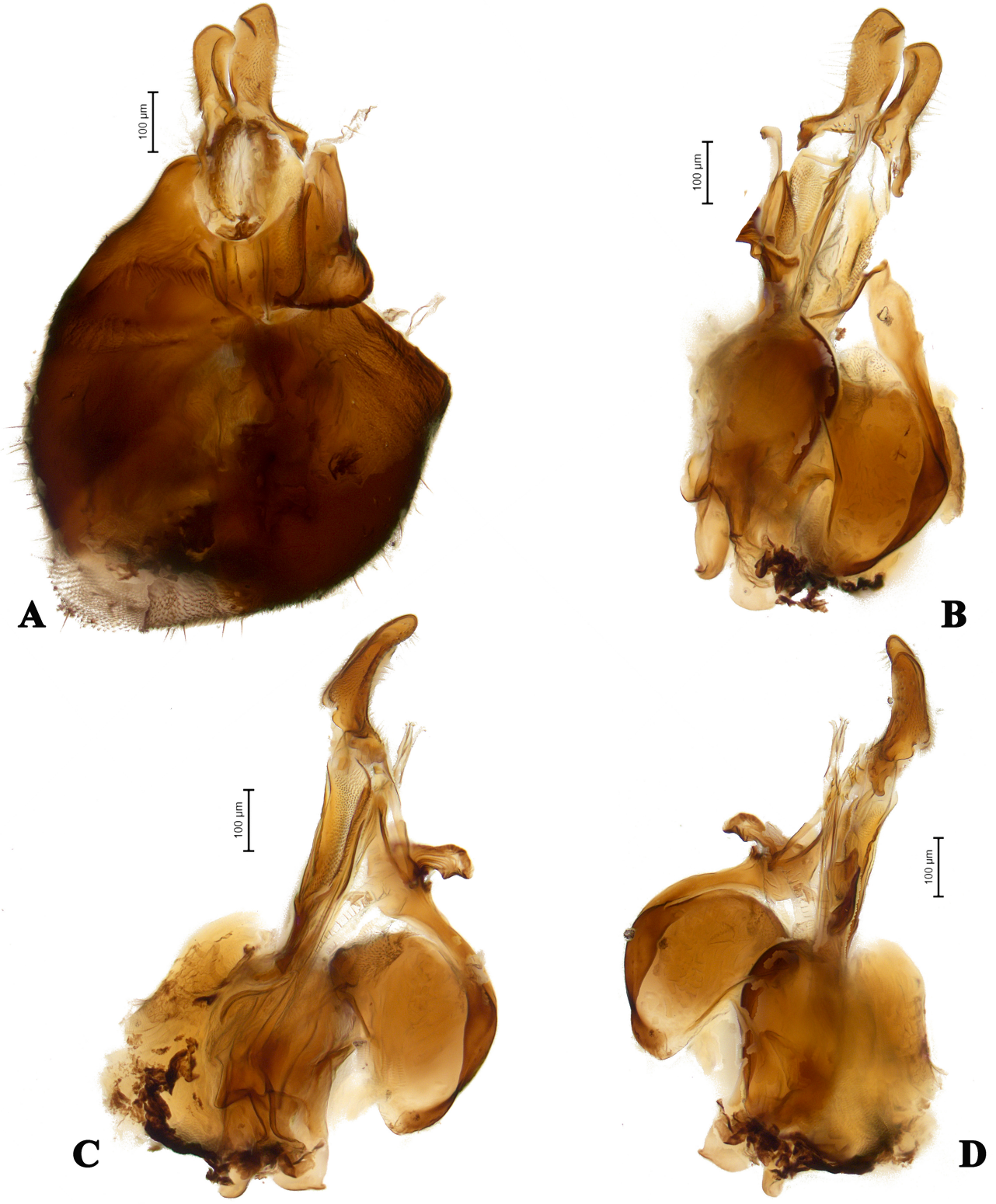



**FIGURE 7**. Male genitalia of *Tomosvaryella ansa* **sp. nov.** (CNC591870, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

***Tomosvaryella arnhemensis* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:8EEC7262-DAF5-4439-B49B-683CD1989B4F
Figs 8A–E, 109, 145A

**Diagnosis:** This species can be recognized by hind trochanter with 6–10 short dark bristles in a row from ventrobasally to ventroapically (Fig. 145A); tiny surstyli, upright in dorsal view (Fig. 8A); gonopods extended towards surstyli, rounded at apex with a distinct projection on inner margin; phallic guide with 2–4 short dorso- dorsolateral spines, one of ejaculatory ducts with some short teeth in basal half in ventral view (Fig. 8B, D–E).

**Description: MALE:** Body length: 2.7 mm. ***Head***. Scape, pedicel dark brown, flagellum acuminate, yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum yellow, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) silvery brown pollinose, anterior part without pollinosity. Dorsocentral bristles short, pale, numerous pale bristles around postpronotum present. Scutellum silvery brown pollinose and with 4–8 short dark bristles. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Fore and mid trochanter with two short dark bristles ventroapically; trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright brown. Hind trochanter with 6–10 short dark bristles in a row from ventrobasally to ventroapically (Fig. 145A); ventrobasal spines present (2) on fore and mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres gently flattened (t1–3), hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey. Dispersed short dark brown bristles on all tergites present. Lateral bristles on first tergite present, 3–5 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli tiny (rather hard to see in dorsal view), upright, widened at the base, angled straight upwards in apical half (Fig. 8A). Genital capsule in ventral view: both gonopods equal in height, extended towards surstyli, rounded at apex, gonopods with a distinct projection on inner margin; phallic guide with 2–4 short dorso- dorsolateral spines; phallus trifid, one of ejaculatory ducts with some teeth in basal half; subepandrial sclerite distinct (Fig. 8B); Genital capsule in lateral view: both surstyli straight in basal two thirds, bent in apical third (Fig. 8D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 8C).

**FEMALE:** Unknown.

**Etymology:** This species name refers to Arnhem Land, a historical region of the Northern Territory of Australia where the only known specimen was collected.

**Examined material: HOLOTYPE**: AUSTRALIA: Northern Territory: Arnhem Land, Maningrida, 12°3'S, 134°13'E, 5m, 20–21.III.1961, L.&M. Gressitt, CNCD5563 (1♂, BPBM).

**Distribution:** Australia (Northern Territory) (Fig. 109).

**Notes:** This species is known from a single specimen from a coastal area near a river mouth in the Northern Territory. Based on this limited information, it should be looked for in either mangroves or coastal monsoon forest.

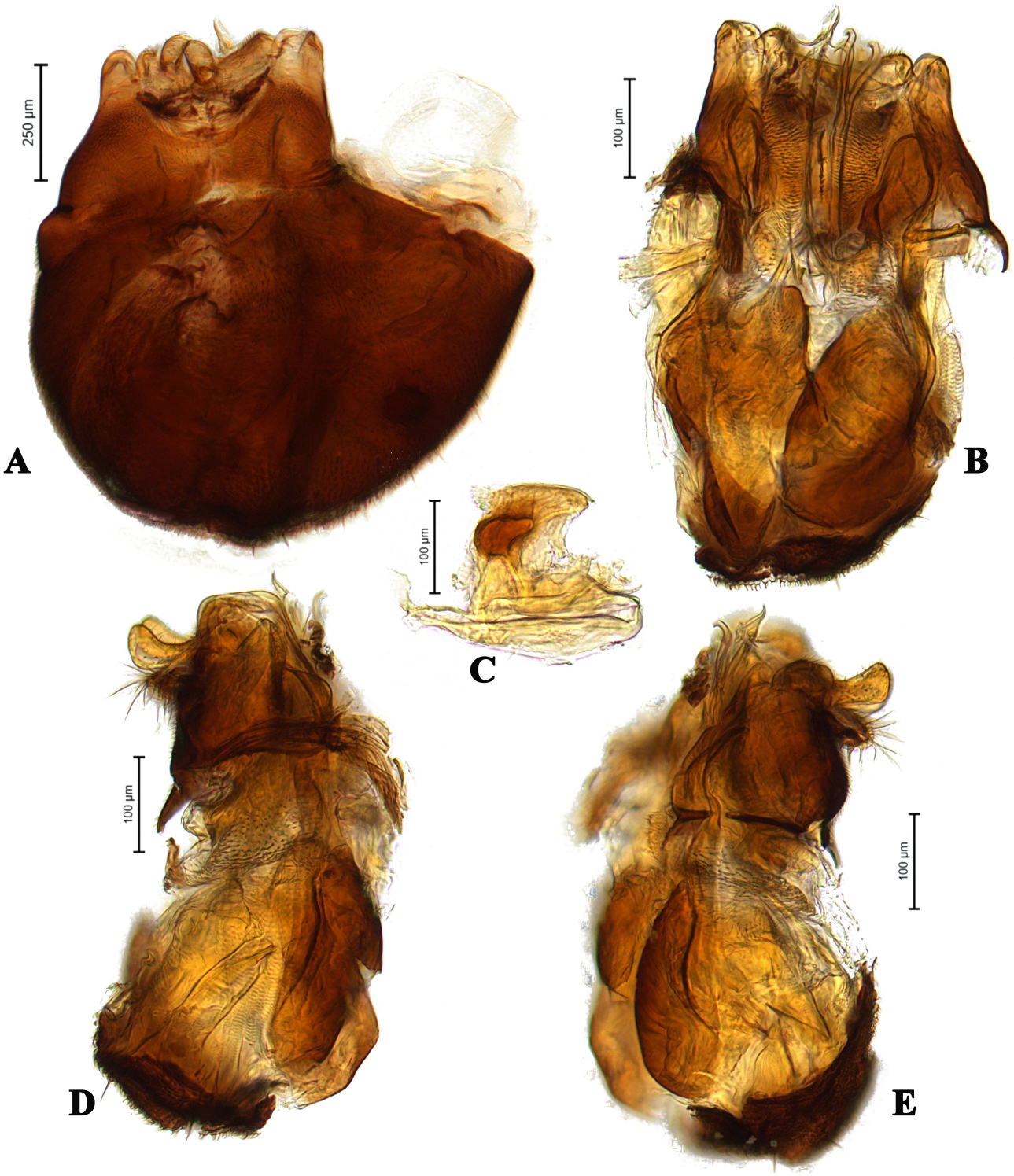



**FIGURE 8**. Male genitalia of *Tomosvaryella arnhemensis* **sp. nov.** (CNCD5563, BPBM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, E**)** lateral view.

***Tomosvaryella atraspina* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:AC350DEE-4579-4985-9F49-4D7E19A4A7FA
Figs 9A–D, 109, 146A

**Diagnosis:** This species can be recognized by a patch of dark spines on hind trochanter (Fig. 146A); a pair of spines along the posterior margin of sternite 5; elongated surstyli bent in apical third, both surstyli with a small projection at base along inner margin in dorsal view (Fig. 9A); left surstylus bent towards sternite in apical third in lateral view (Fig. 9C); three spines on phallic guide (Fig. 9A); elongated gonopods in ventral view (Fig. 9B).

**Description: MALE**: Body length: 2.6–3.0 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose with golden tinge; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, more black on upper half. ***Thorax***. Postpronotum pale, with 3–5 distinct brown bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish also from the side. Scutellum subshining black and with 6–7 distinct dark bristles along the distal edge. Dorsocentral bristles firmly developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with 2–3 bristles. Trochanters and base of femora brown, femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/6 of tibiae yellow (otherwise brown), tarsal segments yellow ventrally, brown dorsally, last segment dorsally darker. Fore femur with two distinct ventrobasal bristles, without ventroapical row of spines, 8–10 short, black spines on mid femur; no spines on hind femur, only 7–9 pale bristles posteriorly equally distributed on distal 1/3 (twice as long as width of hind tibia at the distal end). Subapical (distal) spines on first four tibiae present (short). Hind trochanter without a keel, but with a group of short dark spines basally "echidna" style (Fig. 146A). Hind metatarsus not flattened, first tarsomere as long as 2–4 combined; ventral bristles less pronounced, but scrub-like, yellow, dorsal bristles on all metatarsi semi-erect and dark. Pulvilli as long as 2/3 of last tarsal segment. ***Wing***. Length: 2.5–3.0 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites dark brownish pollinose, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with somewhat larger spots). Dispersed short dark bristles on tergites present, the longest on tergite 5 and up to as long as width of hind tibia at base. Lateral bristles on first tergite present, 5–6 brown bristles up to 1.5 as long as width of hind femur at distal tip. Sternite 5 with a pair of spines along posterior margin. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as 1.5 times the length of ST8. Genitalia without dissection: ST8 medium sized, subshiny black; membranous area broad slit-like, in the shape of a sunflower seed; epandrium paler brown, narrow; yellow surstyli with curly shape discernible. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8). Surstyli light brown, rather symmetrical, elongated, left surstylus longer and broader than right one, its tip bent toward right one in apical third (Fig. 9A), both surstyli with a small projection ventrobasally. Genital capsule in ventral view: subepandrial sclerite wide, extended beneath gonopods, covered with transverse streaks; gonopods elongated close to apex of subepandrial sclerite, with a small inward projection (Fig. 9B), phallic guide with three different-sized spines dorsally (longer one closer to apex); genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite in apical third, right surstylus smoothly curved towards sternite (Fig. 9D); phallus with three ejaculatory ducts.

**FEMALE:** Unknown.

**Etymology:** The name is derived from the Latin words atra, black, and spina, spine, in reference to the patch of dark spines on the trochanter.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Barakula State Forest No. 302, Summit Round Mountain, 26°22'S, 150°58'E, 8.i.2000, J.&A. Skevington & M. Mathieson, JSS7555 (1♂, QM); **PARATYPES**: AUSTRALIA: Australian Capital Territory: Black Mountain, Canberra, 35°16'S, 149°6'E, 18–23.ii.1985, W.W. Middlekauff, flight interception trap, JSS8448 (1♂, CAS); Queensland: Barakula State Forest No. 302, Summit Round Mountain, 26°22'S, 150°58'E, 8.i.2000, J.&A. Skevington & M. Mathieson, JSS7554 (1♂, QM); Bribie Island, QDPI Fisheries Site, 27°3'S, 153°11'E, Heathland-*Acacia* regrowth, 17–24.x.1997, S. Winterton, N. Power & D. White, Malaise trap, JSS8434 (1♀, QM); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, [hilltop], 1.xi.1997, C. Lambkin, hand collected, JSS3804 (1♂, QM); 170m, hilltop, 15.v.1999, J.&A. Skevington, hand collected, JSS5781 (1♂, QM); 16.ix.1997, J. Skevington, hand collected, JSS3799 (1♂, QM); ~170m, hilltop, 27.i.1998, J.&A. Skevington, hand collected, JSS3050–1, JSS3088 (3♂, CNC, USNM); Brisbane, Mt. Coot-tha, 27°29'S, 152°57'E, ~170m, hilltop, 7.xii.1997, J.&A. Skevington, hand collected, JSS2328, JSS2331, JSS2334,

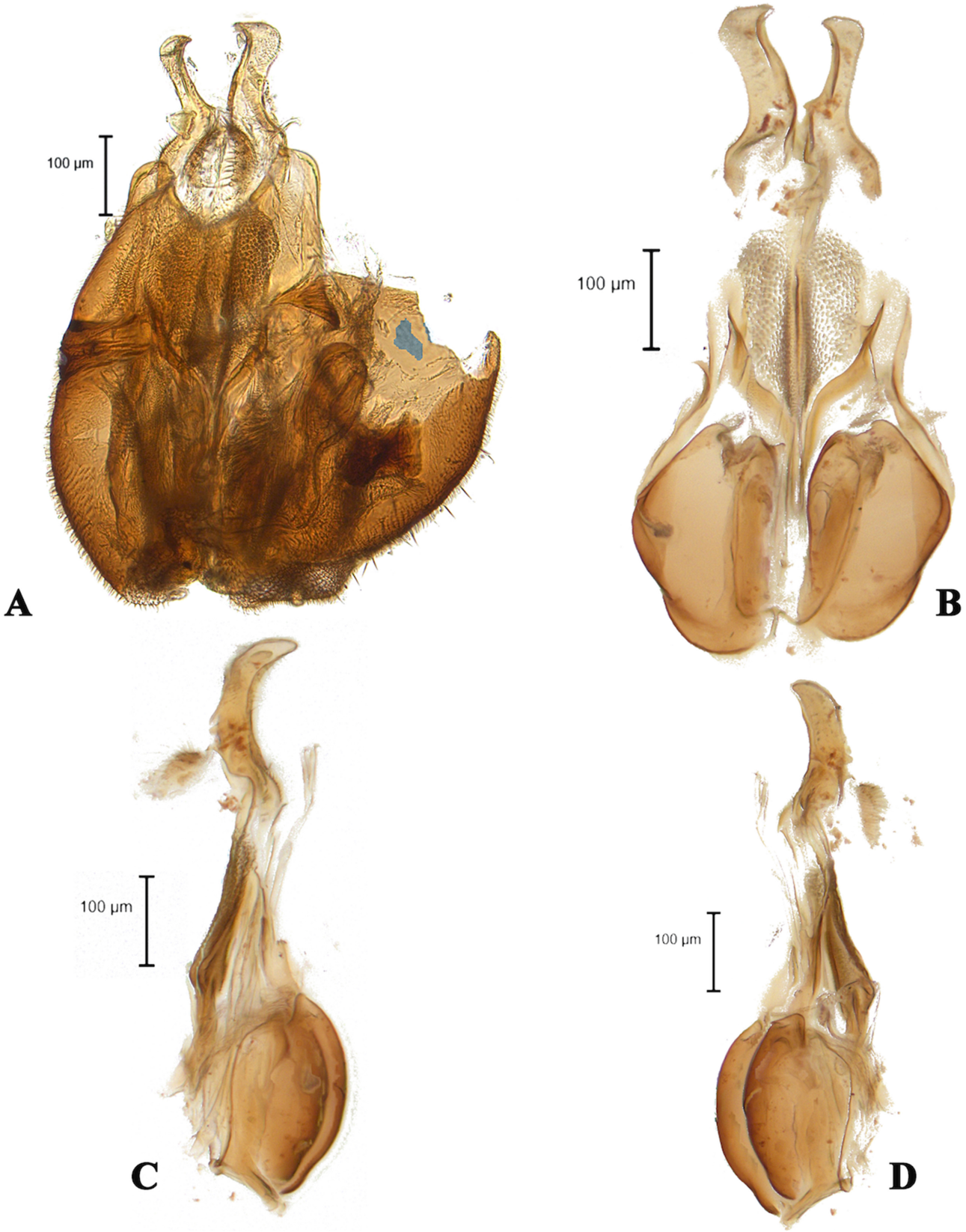



**FIGURE 9**. Male genitalia of *Tomosvaryella atraspina* **sp. nov. A**) dorsal view (JSS2328, QM), **B**) ventral view (JSS7555, QM), **C**, **D**) lateral view (JSS7555, QM).

JSS2337–8, JSS2342, JSS2344–9, JSS2353–7 (17♂, QM); Carnarvon National Park, Hilltop north of Tombs, 25°5'S, 147°52'E, hilltop, 26.xi.1997, J. Skevington & C. Lambkin, hand collected, JSS2203, JSS2211 (2♂, QM); Tasmania: Freycinet National Park, 42°8'S, 148°19'E, in heath with scattered eucalypts, 26.xii.1998–10.i.1999, J.&A. Skevington, Malaise trap, JSS4671 (1♂, QM); Western Australia: Lake Muir Nature Reserve, Lake Muir Road, 34°26'S, 116°38'E, 202m, Jarrah woodland with *Macrozamia* & grasstrees, 3–14.xi.2003, C. Lambkin, Malaise trap, JSS15954 (1♂, ANIC).

**Distribution:** Australia (Queensland, Tasmania, Western Australia) (Fig. 109).

**Notes:** This species is found in eucalypt dominated habitats and is regularly encountered hilltopping. It is genetically most similar to *T. trispina* **sp. nov.** (5.1–6.1% pairwise divergence) and intraspecific genetic distance ranges from 0.0% to 3.3 % (Supplementary file 3). The specimens JSS15954 and JSS7555 collected from Western Australia and Queensland, show a greater pairwise distance (2.9% and 3.3%, respectively) compared to the others, although their morphological features are consistent with those of the other specimens. This suggests that they might be part of a cryptic species complex. Additional fresh specimens and molecular work are needed to support this hypothesis.

***Tomosvaryella bicalcarata*** **Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:995F9A2A-0036-4302-B131-B7B5345D4907

Figs 10A–E, 110, 148A

**Diagnosis:** This species can be recognized by the hind trochanter having two spur-like projections (Fig. 148A); surstyli elongated in dorsal view (Fig. 10A); phallic guide with six spines; phallus with three short ejaculatory ducts and two long membranous sheaths in ventral view (Fig. 10E); hypandrial apodeme L-shaped in lateral view (Fig. 10C–D)

**Description: MALE:** Body length: 3.1–3.3 mm. ***Head***. Flagellum acuminate; brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 4–6 weak bristles along the distal edge. Dorsocentral bristles indistinct, somewhat more visible along frontal edge, numerous pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 1–2 dark spine-like bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally somewhat paler, last segment darker. Hind trochanter with double spurs, anterior is straighter and needle-like (Fig. 148A); ventrobasal bristle (one) on fore and mid femora. Ventroapical row of spines on fore femur absent; 5–6 small, black spines on mid femur; hind femur without ventroapical spines, except 12–13 equally spaced bristles posteroventrally, longer on the distal half, in length up to 1.2–1.4 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae absent. Metatarsi: hind metatarsus flattened, and almost as long as 2nd and both with scrub-like bristles ventrally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.9–3.0 mm. Upper side of basal costal cell with one short dark bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 small brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 3, 4 and 5 (largest on tergite 5). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to 0.5 times the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 pale bristles up to 1.5 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.2 times as long as ST8. Genitalia without dissection: ST8 medium sized square shaped in dorsal view, brown and with the occasional abdominal bristles, otherwise velvet-like coverage; membranous area elongated, widening dorsally; epandrium brown, surstyli pale brown, long and broad. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8); surstyli symmetrical, rectangular shaped with pointing tips at its apical inner corner, left surstylus slightly longer and wider than right one (Fig. 10A). Genital capsule in ventral view: phallic guide straight and slender, phallus with three ejaculatory ducts and with two membranous sheaths covered by some small condensed hairs at apex; gonopods elongated towards surstyli, equal in height, subepandrial sclerite long at apex and widened at base; hypandrium with a small hairy membranous sheath extended

towards gonopod (Fig. 10B). Genital capsule in lateral view: both surstyli curved towards sternite, more broadened at middle; hypandrial apodeme L-shaped, phallic guide with six dorso- dorsolateral spines (three short and three longer ones, the longest one twice as length as others) (Fig. 10C–E).

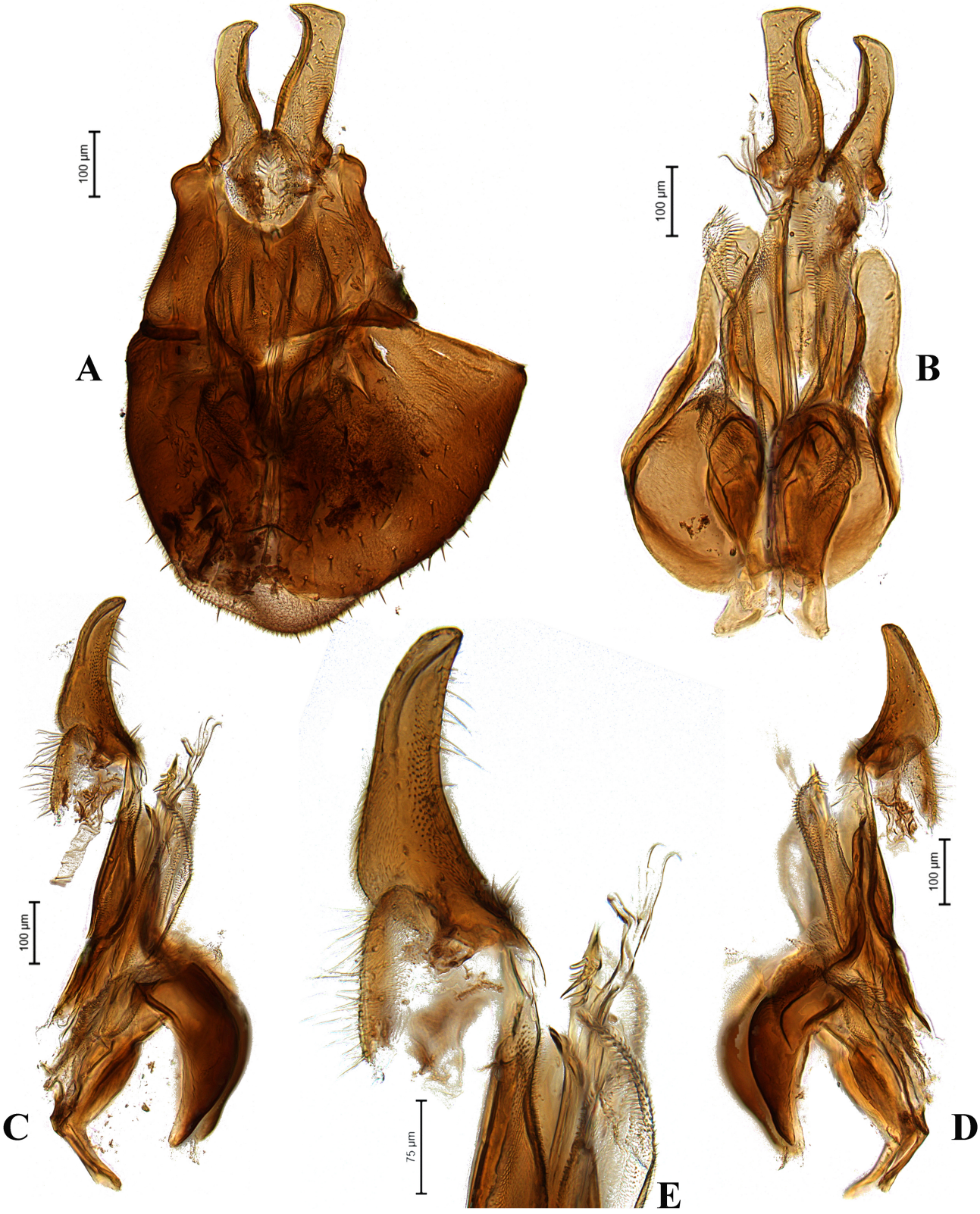



**FIGURE 10**. Male genitalia of *Tomosvaryella bicalcarata* **sp. nov.** (CNC574785, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view, **E**) left surstylus, phallus and phallic guide in lateral view.

**FEMALE:** Unknown.

**Etymology**: The name is from the Latin bi for two and calcar for spur, in reference to the hind trochanter having two spur-like projections.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Culgoa National Park, 4.5km West-Northwest Cawwell Homestead, Claypan (CGN3M), 29°3'S, 147°1'E, Gidgee, 21.xii.2009–30.i.2010, B. Schiebaan, Malaise trap, CNC574785 (1♂, QM); **PARATYPES:** AUSTRALIA: Queensland: Culgoa Floodplain National Park, 10km NE Toulby Gate (CG3), 28°56'S, 147°0'E, 140m, Brigalow, 16.ix–1.x.2008, Simpson, Coward, Malaise trap, CNC576530 (1♂, CNC); South Australia: Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, 9.x.1997, J.&A. Skevington & C. Lambkin, JSS8376, JSS8384, JSS8387–8, JSS8391 (5♂, QM); New South Wales: Culgoa National Park, 4.5km WNW Cawwell Homestead, Claypan (CGN3M), 29°3'S, 147°1'E, 192m, Gidgee, 22.XI–21.XII.2009, C. Lambkin, N. Starick & B. Schiebaan, Malaise trap, CNC591856 (1♂, CNC); Culgoa National Park, 1km North-Northwest of Cawwell Homestead, Claypan (CGN4M), 29°4'S, 147°3'E, 136m, Gidgee, 30.I–18.V.2010, Malaise trap, B. Schiebaan, CNC574679 (1♂, USNM).

**Distribution:** Australia (New South Wales, Queensland, South Australia) (Fig. 110).

**Notes:** This species is found in dry habitats dominated by *Acacia* and is known to hilltop.

### *Tomosvaryella biflocca* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:1AE0A54A-D96E-4822-8F76-A37D3396D16B

Figs. 11A–E, 111, 146D, 158B

**Diagnosis:** This species can be recognized by the hind trochanter with two tufts of bristles ventrobasally and ventroapically (Fig. 146D); shape of surstyli in dorsal view, both long, left surstylus longer than right one (Fig. 11A); subepandrial sclerite with a vertical protrusion in middle; gonopods with four projections in ventral view (Fig. 11B); phallic guide with some spines dorsolaterally covered by two short membranous sheath, each membranous sheath covered with small teeth-like projections in lateral view (Fig. 11D–E).

**Description: MALE**: Body length: 3–3.4 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, more brownish on upper half. ***Thorax***. Postpronotum pale, with 4–5 distinct pale brown bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose; slightly grayish also from the side. Scutellum brownish pollinose and without bristles along the distal edge. Dorsocentral bristles well developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with 2–3 bristles. Trochanters and base of femora black, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow, tibia otherwise dark brown, tarsal segments yellow ventrally, brown dorsally, last segment dorsally darker. Hind trochanter with tuft of dark longer bristles (4–6) ventrobasally in one group: "echidna-like" and 2–3 shorter bristles ventroapically (Fig. 146D). Ventroapical row of spines on fore femur, black spines on mid femur; no spines on hind femur, only 4–6 pale bristles posteriorly equally distributed on distal 1/3 (as long as 1/3 the width of hind tibia at the distal end); hind tibia bent at middle in posterior view. apical spurs on first four tibiae present (short). Hind metatarsus flattened (1 and 2 especially), first tarsomere slightly longer than 2–5 combined; ventral bristles scrub-like, yellow. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with 1–3 long distinct bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m proximal to middle of discal cell. 4–5 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with larger spots), tergites 2 and 3 with faint gray side spots. Dispersed short dark bristles on tergites present, the longest on tergite 5 and ST8 and up to 1.5 times as long as width of hind tibia at base. Lateral spines on first tergite present, 5–6 brown bristles up to as long as width of hind femur at distal tip. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 medium sized, brownish, very hairy; membranous area slit-like, posteriorly directed; epandrium brown; yellow surstyli appear long and slim. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli brown, rather symmetrical with broad base and finger-like apex, left slightly longer than right one; both tips bent inward apically (Fig. 11A). Genital capsule in ventral view: subepandrial sclerite covered with transverse streaks with a vertical protrusion in

middle; gonopods with four projections, two longer projections elongated towards surstyli, reaching the basal third of subepandrial sclerite, two shorter projections bent inwards (Fig. 11B), phallic guide with 5–6 different-sized spines dorsolaterally (longer ones extended towards left surstylus) and surrounded by two membranous sheaths. Genital capsule in lateral view: surstyli straight, in apical third bent towards sternite, gradually narrowed to apex (Fig. 11D–E); phallus with three ejaculatory ducts, some small teeth-like projections arranged on its membranous sheath (Fig. 11D–E); ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 11C).

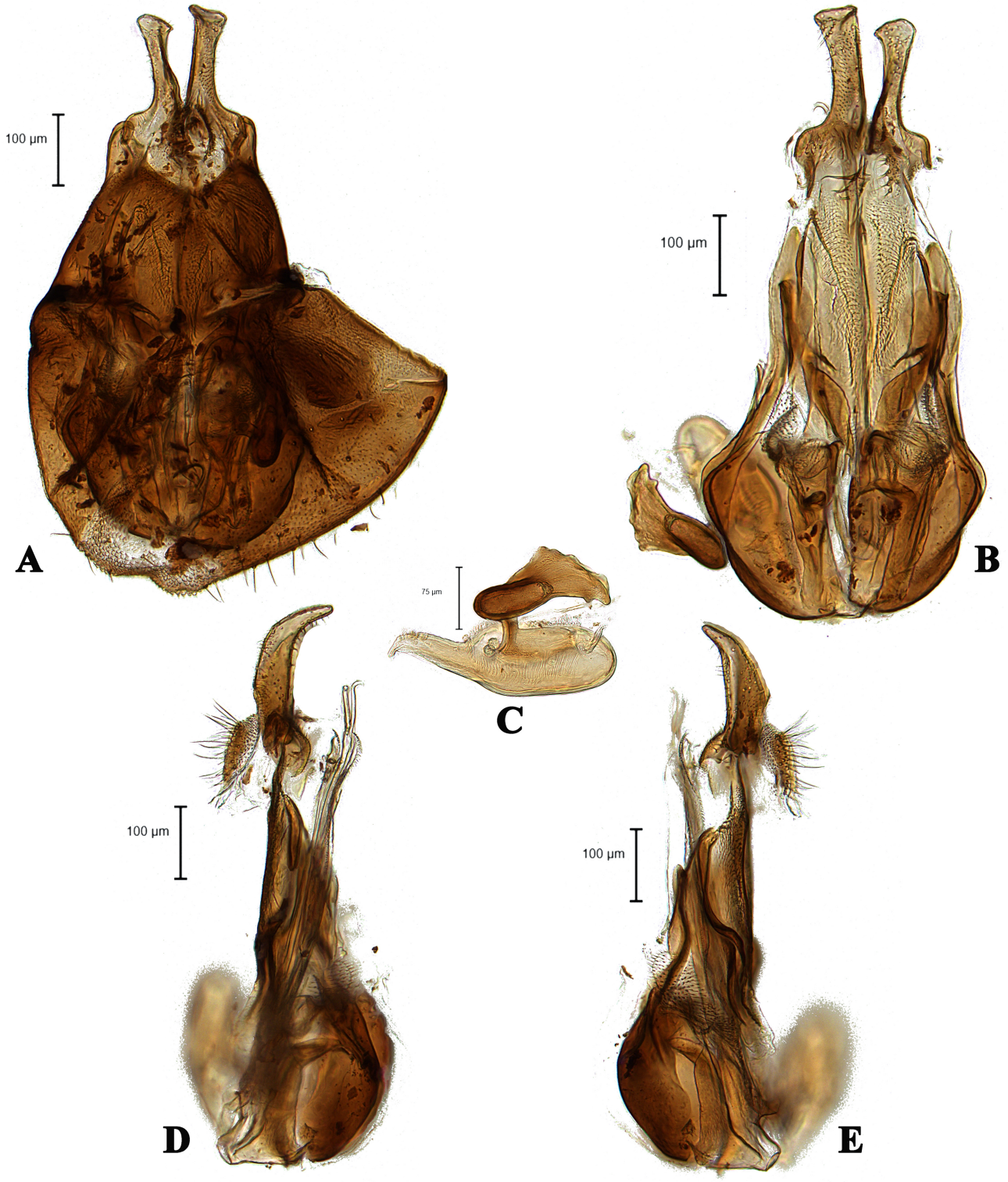



**FIGURE 11**. Male genitalia of *Tomosvaryella biflocca* **sp. nov.** (JSS8594, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE**: Body length (excluding antennae and head): 3.4 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.5 times the width at antennae; completely silver-grey pollinose until up to 3/4 of the frons, shiny black in front of ocellar triangle. Pulvilli and claws about 1–1.2 times as long as last tarsal segment. Fore and mid femora with 1–2 distinct dark spine-like bristles ventrobasally. Female abdomen with silver spots on sides of tergites 3–6. ***Ovipositor***. Base dark brown with pale apical margin, piercer straight, slightly up curved in lateral view LP:LB = 2.1. LDP:LPP = 4.5. (Fig. 158B).

**Etymology:** From the Latin bi, two, and floccus, tuft of wool or hair, in reference to the two tufts of bristles on the hind trochanter.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: 3 km NE of M[oun]t Webb, 15°3'S, 145°9'E, 2.v.1981, D.H. Colless, Malaise trap, JSS8594 (1♂, ANIC); **PARATYPES**: AUSTRALIA: New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.i–18.v.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575155 (1♂, CNC); Queensland: 1 km W of Cooktown, 15°28'S, 145°15'E, ~13.v.1981, D.H. Colless, Malaise trap, JSS8587–8 (2♂, ANIC); 3 km NE of Mount Webb, 15°3'S, 145°9'E, ~1.v.1981, D.H. Colless, Malaise trap, JSS8599, JSS8603–4 (3♂, ANIC); 2.v.1981, D.H. Colless, Malaise trap, JSS8593, JSS8595–7, JSS8605, JSS8607–8 (7♂, ANIC); 30.iv.1981, D.H. Colless, Malaise trap, JSS8600 (1♂, ANIC); 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 3.v.1981, D.H. Colless, Malaise trap, JSS8579, JSS8582 (2♂, ANIC); 4.v.1981, D.H. Colless, Malaise trap, JSS8584 (1♂, ANIC); 5.v.1981, D.H. Colless, Malaise trap, JSS8572 (1♂, ANIC); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 15.v.1999, J.&A. Skevington, hand collected, JSS5772, JSS5775, JSS5778 (3♂, QM); ~170m, hilltop, 19.iv.1998, J. Skevington, hand collected, 11:45–12:15pm, 11:15–11:45am, 12:15–12:45pm, JSS3857, JSS3861, JSS3864–5, JSS3874, JSS3879, JSS3882 (7♂, QM); 4.ix.1999, J.&A. Skevington, hand collected, 10:00 am to noon, JSS7192 (1♂, QM); ~170m, hilltop, 7.iii.1998, J.&A. Skevington, hand collected, JSS3632, JSS3634, JSS3638, JSS3643–4, JSS3648–9 (7♂, QM); 170m, hilltop, 7.xii.1997, J.&A. Skevington, hand collected, JSS2343 (1♂, QM); 8.xi.1997, J.&A. Skevington, hand collected, 10:15am–10:45am, 9:15am–9:45am, JSS982, JSS994 (2♂, QM); Coorado homestead near Expedition Range National Park, 24°30'N, 149°5'E, 3–9.iii.2001, M. Mathieson, Malaise trap, JSS13983–5 (3♂, CNC); Proserpine, Thompson Creek, 20°31'S, 148°34'E, 30m, 3–10.v.2007, J. Stanisic, CNCD159596 (1♀, CNC).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 111).

**Notes:** This species is mostly restricted to eastern Queensland, with one outlier from Culgoa in NSW. Some specimens have been captured hilltopping. This species is genetically most similar to *T. angelikae* **sp. nov.** (3.4–4.8% pairwise divergence) and intraspecific genetic distances range from 0.0% to 3.2% (Supplementary file 3). The specimens JSS8593, JSS8600, JSS8604, JSS8607 and JSS8846 have 2–3.2% pairwise divergence from other specimens in this species. It is likely these specimens belong to a new species, but we could not find any morphological characters to support this hypothesis. For now, they are treated as a single species until more specimens can be collected and additional molecular work can be conducted to improve discrimination of the species.

### *Tomosvaryella biloba* Földvari, Skevington & Motamedinia sp. nov.

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Figs 12A–E, 110, 149E, 155F

**Diagnosis:** This species can be recognized by hind trochanter with a distinct keel and some dark bristles along the whole length (Fig. 149E); symmetrical, tiny, elongated surstyli in dorsal view (Fig. 12A); gonopods extended towards surstyli with two lobes on inner margin in ventral view (Fig. 12B); phallic guide with 3–4 dorso- dorsolateral spines; subepandrial sclerite with some small teeth dorsally in lateral view (Fig. 12D–E).

**Description: MALE:** Body length: 3.3–3.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and without bristles along distal edge. Dorsocentral bristles indistinct, dark, more visible in front part, a few pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with four long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown),

tarsal segments dark brown dorsally, yellow ventrally, last segment darker. Hind trochanter with distinct keel and some dark bristles along the whole (14–16), evenly distributed (Fig. 149E); ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 12–14 equally spaced bristles posteroventrally, longer on distal half, longest up to ½ times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind metatarsus slightly flattened, as long as 2–4 combined and with strong dark bristles dorsally and dense scrub-like bristles ventrally (tarsomeres 1–2 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2–3.3 mm. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at 3/5 of discal cell (distal to middle). 4–5 distinct dark setulae on tegula. ***Abdomen***. Viewed obliquely from front, tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 short dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.2–1.4 times as long as ST8. Genitalia without dissection: ST8 small to medium sized, round in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous rounded slit, mostly directed posteriorly; epandrium brown, surstyli yellow, short. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli short, elongated, symmetrical (Fig. 12A). Genital capsule in ventral view: both gonopods extended towards sternite, rounded at tips with two distinct lobes on inner margin; phallic guide with 3–4 dorso- dorsolateral spines, one spine longer than others, subepandrial sclerite distinct, rectangular-shaped (Fig. 12B); Genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite apically, right surstylus straight, moderately broadened to apex (not bent) subepandrial sclerite with some small teeth dorsally in basal half (Fig. 12D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 12C).

**FEMALE:** Body length: 3.1–3.3 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.1–1.2 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black in front of ocellar triangle, smooth change in transition zone (at 1/4 from ocellar triangle) to shiny black, tiny ridge in the median line on upper 1/3 of frons. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.5–2.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Straight in ventral view, strongly curved towards sternite, hook-like in lateral view (yellow piercer, dark brown base), reaching distal end of 5th segment; base silvery pollinose with dispersed short dark bristles. LP:LB = 2.5. LDP:LPP = 3.3. (Fig. 155F).

**Etymology:** From the Latin bi, two and lobus, a rounded projection or protuberance, in reference to the two lobes on the gonopods.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: 8 km E[ast of] Pebble Mouse Cr[eek] on Great Northern H[igh]w[a]y, 70 km E[ast of] J[un]ct[ion], Karijini Dr[ive], 23°06.3.4'S [sic], 118°59'E, 710m, dry wash, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15891 (1♂, WAM); **PARATYPES**: AUSTRALIA: Northern Territory: Kakadu National Park, Mirrai Lookout, 12°52'S, 132°42'E, hilltop, 27.IX.1998, J.&A. Skevington, hand collected, JSS4115 (1♂, QM); Mary River National Park, 1.8 km Northwest of Bird Billabong Trail Carpark, west of Mary River bridge on Arnhem Highway, 12°52'S, 131°37'E, hilltop, 25.IX.1998, J.&A. Skevington, hand collected, JSS4081 (1♂, QM); Darwin, 12°27'S, 130°50'E, 8–9.XII.1963, J. Sedlacek, CNCD5573–4 (2♂, BPBM); Queensland: Ridgepole Waterhole, 24 km ESE of Musselbrook Resource Centre, Lawn Hill National Park, 18°40'S, 138°22'E, 180m, 12.V.1995, G. Daniels & M.A. Schneider, JSS8282 (1♂, QM); Carnarvon National Park, Mount Rugged Summit, 24°54'S, 147°60'E, 1130m, hilltop, 30.XI.1997, J. Skevington & C. Lambkin, hand collected, JSS2224 (1♂, QM); Western Australia: 12 miles S by E of Onslow, 21°41'S, 115°8'E, 18.X.1970, D.H. Colless, JSS8669–70; JSS8672 (3♂, ANIC); Walyunga National Park, 31°44'S, 116°4'E, 19–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7673 (1♂, QM); 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E, 638m, in wide sandy wash, 18–21.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS16407 (1♂, CNC); 47 km S Pardoo Road House on Shay Gap Road, 20°23'S, 120°1'E, 170m, dry wash near *Spinifex*, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15699–700 (1♂, CNC; 1♂, USNM); 67 km SW Pardoo Road House on Shay Gap Road, 20°28'S, 120°10'E, 177m, dry sandy ravine with flowers, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15662, JSS15664–6, JSS15668–71 (5♂, 2♀, CNC, 1♂ USNM); 8 km East of Pebble Mouse Creek on Great Northern Highway, 70 km East of Junction, Karijini Drive, 23°06.3.4'S [sic], 118°59'E, 710m, dry wash, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15888–90 (1♂,2♀, CNC); Cape Range National Park, Milyering Ranger House, 22°2'S, 113°56'E, 22m, below

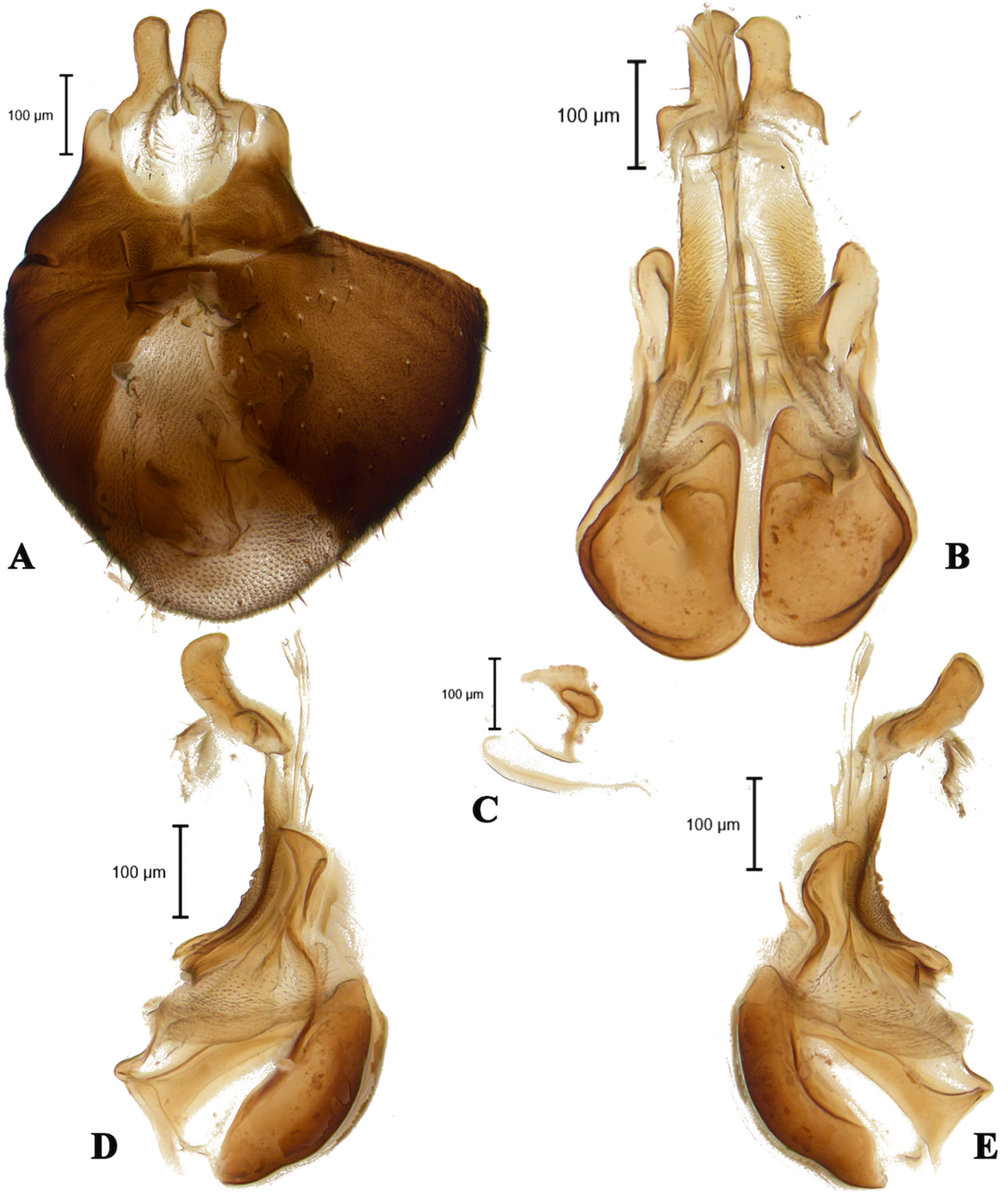



**FIGURE 12**. Male genitalia of *Tomosvaryella biloba* **sp. nov.** (JSS15662, USNM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

cliff near *Ficus*, 28.IV–11.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15653 (1♂, CNC); Karijini National Park, Hamersley-Mount Bruce Road, 22°37'S, 118°19'E, 762m, open mallee with *Spinifex*, 14–19.V.2003, C. Lambkin, J. Recsei, Malaise trap, JSS15972 (1♂, ANIC); 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16116 (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E; 789m, between drying pools in rocky Turee Creek, near rock outcrop, *Eucalyptus Eremophila* scrub, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.V.2003, C. Lambkin & T. Weir, Malaise trap, Malaise trap, JSS16028, 19–25.IV.2003, JSS16167–8, JSS16170, JSS16174, 22°44'S, 118°25'E, 14–19.V.2003, JSS16108, JSS16113, 798m, 25.IV–14.V.2003, JSS16086, JSS16091–2, 22°43'S, 118°25'E, 799m, 25.IV–14.V.2003, JSS16048 (9♂, 2♀, ANIC); Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 815m, across dry gully, *Acacia* scrub, 19–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16156 (1♂, ANIC); Karijini National Park, Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3824, CNCD3840, CNCD3850, CNCD3866 (2♂, 2♀, CNC); Millstream-Chichester National Park, Snappy Gum Drive, 21°34'S, 117°4'E, 329m, over deep rocky gully, 2–11.V.2003, C. Lambkin, D. Yeates & J. Recsei, Malaise trap, JSS16180 (1♂, ANIC); Western Australia: Karijini National Park, Karijini Dr. 8km WNW, Great Northern Hwy, 22°37'S, 118°22'E, 750m, Dry wash, 22.IV.2003, F.D. Parker & M.E. Irwin, pan trap, CNCD6878 (1♂, CNC); Cape Range National Park; Milyering Ranger House, 22°2'S, 113°55'E, 22m, below cliff near Ficus, 28.IV–11.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15654.

**Distribution:** Australia (Northern Territory, Queensland, Western Australia).

**Notes:** This species is found in the arid north central and northwestern parts of Australia. Many specimens were collected in dry washes and plant associates include *Acacia, Eremophila, Eucalyptus* and *Spinifex*. Some specimens have been captured hilltopping. Intraspecific genetic distance ranges from 0.0% to 2.4% (Supplementary file 3). The specimens JSS15888 and JSS15891 display 1.4–2.4% pairwise divergence from other specimens suggesting that this is a species complex that requires more investigation.

### *Tomosvaryella birama* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:531A021B-5B11-4B17-80F5-A1CA438ADB39
Figs 13A–E, 110

**Diagnosis:** This species can be recognized by slender and long surstyli in dorsal view (Fig. 13A); long gonopods with a slender projection towards surstyli, phallic guide with 3–6 short dorso- dorsolateral spines; ejaculatory ducts biramous at apex; subepandrial sclerite elongated in ventral view (Fig. 13B); hind femur without long bristles posteroventrally.

**Description: MALE:** Body length: 2.5 mm. ***Head***. Flagellum long tapering; brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 3–4 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey. Scutellum silvery pollinose, without bristles along distal edge. Halter, knob pale, tip brownish, stem and base dark. ***Legs***. Mid coxa with 3–4 long brown bristles. Trochanters brown, femora dark brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow ventrally. Hind trochanter with a keel with some short teeth along its edge; ventrobasal spines absent on fore and mid femora. Hind femur without ventroapical spines and without bristles posteroventrally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with shirt light brown erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one medium and two short brown bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). Lateral bristles on first tergite present, 4–5 brown bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE: MWE = 1.5). Surstyli widened at base, then strongly slender and elongated, curved to each other at apex, left surstylus is longer, right one with a small bumper before its apex (Fig. 13A). Genital capsule in ventral view: both gonopods equal in height, extended towards surstyli with slender pointed projection at apex towards surstyli; phallic guide with 3–6 short dorso- dorsolateral spines, one is longer; phallus trifid; ejaculatory ducts biramous at apex;

subepandrial sclerite elongated (Fig. 13B); Genital capsule in lateral view: both surstyli straight in basal two thirds, bent towards sternite in apical third (Fig. 13D–E). Ejaculatory apodeme tube-like, bent (Fig. 13C).

**FEMALE:** Unknown.

**Etymology:** From the Latin bi, two and ramus, branch, in reference to the double branched ejaculatory ducts.

**Examined material:** HOLOTYPE: AUSTRALIA: Queensland: Kurumba, 17°28'S, 140°53'], 18.IV.1983, J.F. Donaldson, D-Vac, JSS8967 (1♂, QDPC).

**Distribution:** Australia (Queensland) (Fig. 110).

**Notes:** This species is known from a single specimen from coastal north central Queensland.

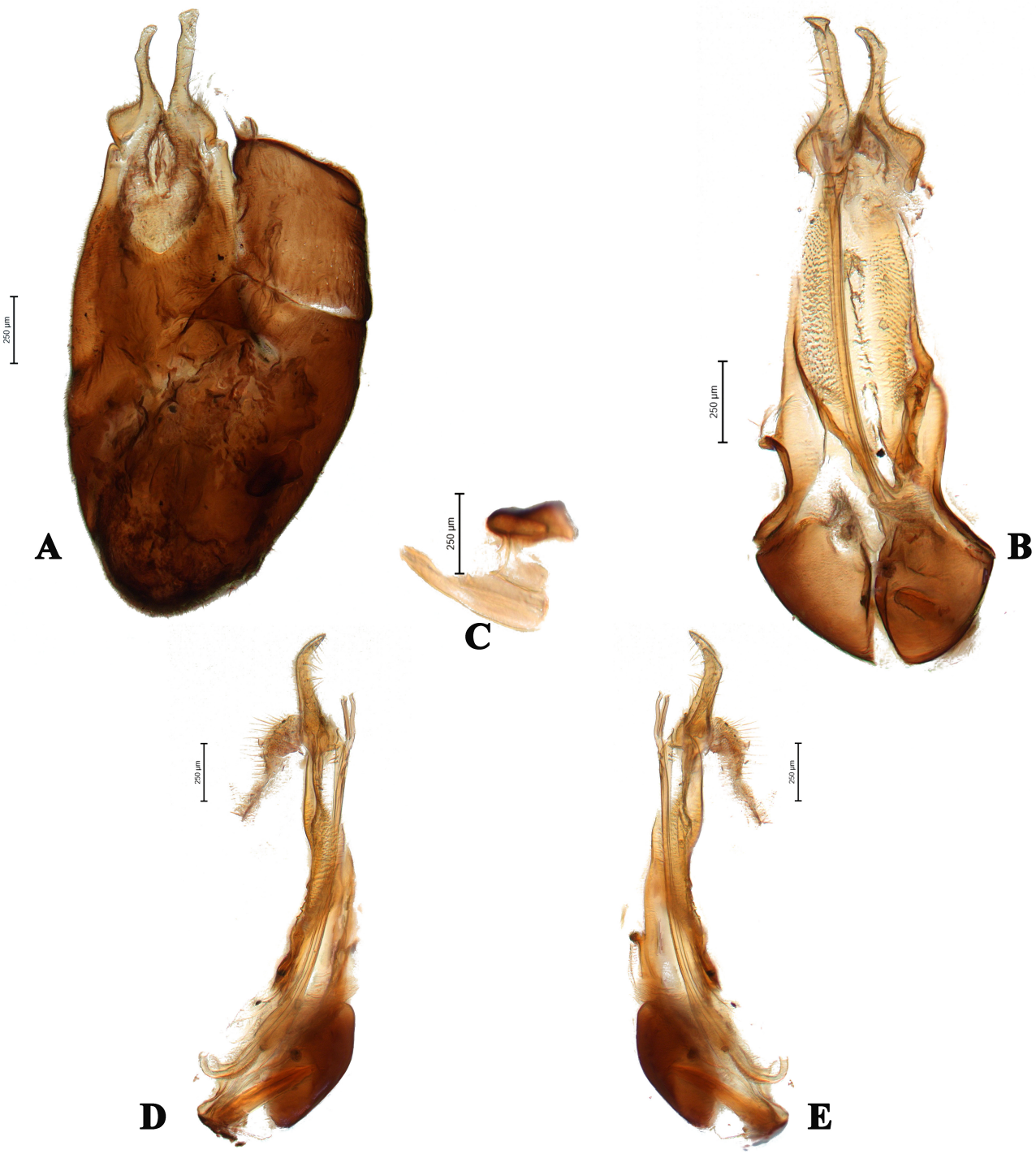



**FIGURE 13**. Male genitalia of *Tomosvaryella birama* **sp. nov.** (JSS8967, QDPC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella boomerang* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:B47F2893-5AD7-4B49-8EDD-6E24FB68951C
Figs 14A–D, 112, 158D

**Diagnosis:** This species can be recognized by the hind trochanter with a tuft of short spines ventrobasally in one group and a few bristles at the distal end; some long bristles on mid femur; surstyli constricted in basal fourth, widened in apical fourth in dorsal view (Fig. 14A); phallic guide with 5–6 dorso-dorsolateral spines, gonopods elongated towards surstyli (Fig. 14B); both surstyli boomerang-shaped, broadened in middle in lateral view (Fig. 14C–D).

**Description: MALE:** Body length: 2.9–3.0 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 18–20 weak bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous long pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal ¼ of tibiae yellow (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally somewhat paler, last segment darker. Hind trochanter with a tuft of short, dark, longer spines (7–10) ventrobasally in one group: "echidna-like"; basal spines longer and a few bristles at the distal end; ventrobasal spines (2) present on fore and mid femora. Ventroapical row of spines on fore femur 5–6; 8–10 small, 3–8 long bristles on mid femur; hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally on the distal half, longest at 2/3 from the base, in length up to 1.5 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Metatarsi moderately flattened, first tarsomere almost as long as 2–3 combined. Pulvilli as long as last tarsal segment. Hind metatarsus and second tarsomere widened apically. ***Wing***. Length: 3.1–3.2 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m distal to the middle of discal cell. 3–4 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 and anterior half of tergite 2 silvery grey, sides silvery pollinose on tergites 4 and 5 (larger on tergite 5). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to 1.1–1.3 times the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 pale bristles up to 1.5 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 medium sized square-shaped in dorsal view, brown and with the occasional distinct abdominal bristles, otherwise velvet-like coverage; membranous area elongated, widening dorsally; epandrium brown, surstyli yellow and bent towards abdomen, appear to be a yellow triangle in lateral view (the corner is square). ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli symmetrical, broadened in basal fourth and rather straight in apical, its medial margin widened, covered by dense light bristles (Fig. 14A). Genital capsule in ventral view: gonopods elongated towards surstyli, rather unequal in height, left is slightly longer than right one, subepandrial sclerite long, covered with transverse streaks (Fig. 14B). Genital capsule in lateral view: both surstyli boomerang-shaped, constricted at base, broadened at middle and bent by 90° towards sternite; phallic guide pointed at apex, with 5–6 lateral spines (the longest one twice as length as others) (Figs 14C–D).

**FEMALE**: Body length: 2.7 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.5 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, gradually changing from pollinose to shiny black in the transition zone; frons depressed at the point where it is widest (a groove is visible in the middle line). Enlarged ommatidia silvery shining. Pulvilli and claws about 1.6–1.8 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of all tergite. ***Ovipositor***. Straight, reaching middle of 3rd segment; base silvery pollinose with dispersed bristles. LP:LB = 2.07. LDP:LPP = 3.3. (Fig. 158D).

**Etymology**: The name refers to the boomerang-shaped surstyli.

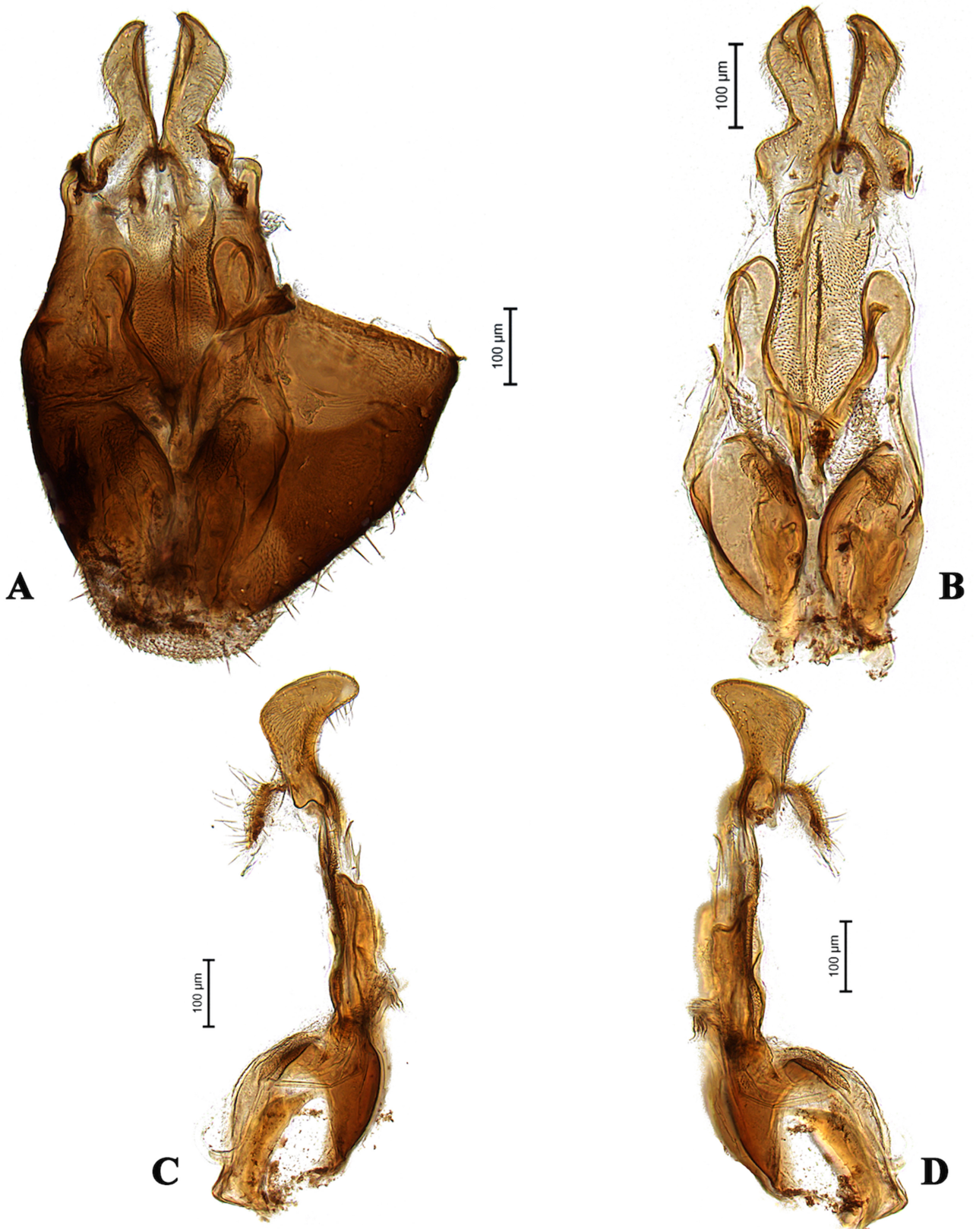



**FIGURE 14**. Male genitalia of *Tomosvaryella boomerang* **sp. nov.** (CNC574518, CNC) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Western Australia: Heinsmen Rock, Mt Ragged Track, 30°7'S, 123°28'E, 145m, woodland near drying pools, 30.x–18.xi.2003, C. Lambkin & J. Recsei, Malaise trap, JSS16242 (1♂, WAM); **PARATYPES**: AUSTRALIA: Australian Capital Territory: Canberra, Black Mountain, 35°16'S, 149°6'E, 11–19.i.1999, G. Gibson, sweeping, CNCD4464, CNCD4470 (2 ♂, CNC); New South Wales: Mount Boppy near Cobar, 31°33'S, 146°17'E, hilltop, 16.i.1999, C. Lambkin, N. Power & P. Bouchard, 10:00 AM, JSS8902 (1♂, QM); Yathong Nature Reserve near 8 Mile Tank, 32°38'S, 145°41'E, ~205m, field of flowers:open woodland, 3–25.x.2003, C. Lambkin & N. Starick, Malaise trap, CNCD3623, CNCD3627, CNCD3631, JSS50566 (3♂, QM, 1♂, ANIC); Tinderry Natl Res; Round Flat Fire Trail 11.2 Km E Michelago, 35°43'S, 149°17'E, 1186m, Revegetation Site, 26.II–19.III.2005, C.Lambkin & N.Starick, Malaise trap, Bulk Sample2711, JSS50565 (1♂, ANIC); Queensland: Culgoa Floodplain National Park, 11.8km North of Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, Black box, 17.xii.2009–20.i.2010, C. Kelly & A. Coward, Malaise trap, CNC574518 (1♂, CNC); 36m, 15–22.viii.2007, J. Stanisic, Malaise trap, 15036, CNCD159453 (1♀, CNC); Culgoa Floodplain National Park Headquarters, 11.8km N, 28°55'S, 147°8'E, 150m, Brigalow, 9.XII.2007–16.I.2008, N. Starick, C. Lambkin & R. Raven, Malaise trap, CNC591838 (1♂, QM); Culgoa Floodplain National Park, 7km NNW Toulby Gate (CG4AM), 28°56'S, 146°55'E, 160m, Gidgee, 17.XII.2009–20.I.2010, Kelly & Coward, Malaise trap, CNC591825 (1♂, QM); Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M), 28°57'S, 146°52'E, 138m, *Callitris*, 19.III–20.V.2010, C. Kelly, A. Coward, Malaise trap, CNC575020, CNC575022–3 (3♂, QM); Proserpine, Airport Drive, 20°29'S, 148°34'E, 514m, 10–16.ii.2007, C. Lambkin & N. Starick, 15002, CNCD159303 (1♂, CNC); Fanning River Homestead, 3.2km Southeast, 19°45'S, 146°27'E, 330m, vinescrub, 9.XII.2006–10.II.2007, S. Wright, Malaise trap, CNC575198 (1♂, QM); South Australia: Flinder's Ranges National Park, Love Range, Mine Road, 31°24'S, 138°47'E, in dry creek bed, 8–9.x.1997, S. Winterton, J.&A. Skevington & C. Lambkin, Malaise trap, JSS8407 (1♂, QM); Gammon Ranges National Park, south end of Weetootla Gorge, 30°29'S, 139°16'E, 537m, hilltop, 11.x.1997, J. Skevington & C. Lambkin, JSS8346, JSS8349-50, JSS8358, JSS8360, JSS8362 (6♂, QM); Mount Lofty, 35°0'S, 138°44'E, 2.I.1974, 10th Australian Boy Scout Jamboree, Malaise trap, JSS8719 (1♂, SAM); Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 22.X.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373402, CNC373424 (2♂, CNC); Victoria: Hattah-Kulkyne NP, Warepil Lookout, 34°43'S, 142°18'E, 18.x.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373150–1, CNC373172 (3♂, CNC); 12 km SE Merrijig, Howqua River, 37°12'S, 146°22'E, 30.XI.1971, Neboiss, JSS8809 (1♂, MVMA); Northern Territory: Entire Creek, 155 km NE by E of Alice Springs, 22°50'S, 135°16'E, 7.X.1978, D.H. Colless, JSS9253 (1♂, ANIC).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia, Western Australia, Victoria) (Fig. 112).

**Notes:** This is a widespread species throughout the outback of Australia. The two specimens from NE Queensland (CNCD159303 and CNC575198) are the exception and found in mesic habitats. The DNA sequence of CNCD159303 specimen is identical with all other specimens and genitalia features of both specimens are similar to others. The specimen CNC575198 doesn't have all legs and the color is lighter due to preservation conditions. Despite the apparent ecological differences, support is strong that these outliers are the same species. A few specimens have been collected hilltopping. Intraspecific genetic distance ranges from 0.0% to 1.4%. This species is genetically most similar to *T. dissidens* **sp. nov.** (1.3–1.5% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella bounites* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:EC3F9869-C741-4BEB-B2F0-E848E022B1AD
Figs 15A–E, 112, 144F

**Diagnosis:** This species can be recognized by the hind trochanter having a patch of short bristles ventrobasally (Fig. 144F); elongated surstyli with two lobes at outer margin before apex and a small, pointed edge in ventrobasal margin in dorsal view (Fig. 15A); both gonopods extended towards surstyli, rounded at apex; phallic guide with 3–4 short dorso- dorsolateral spines in ventral view (Fig. 15D–E).

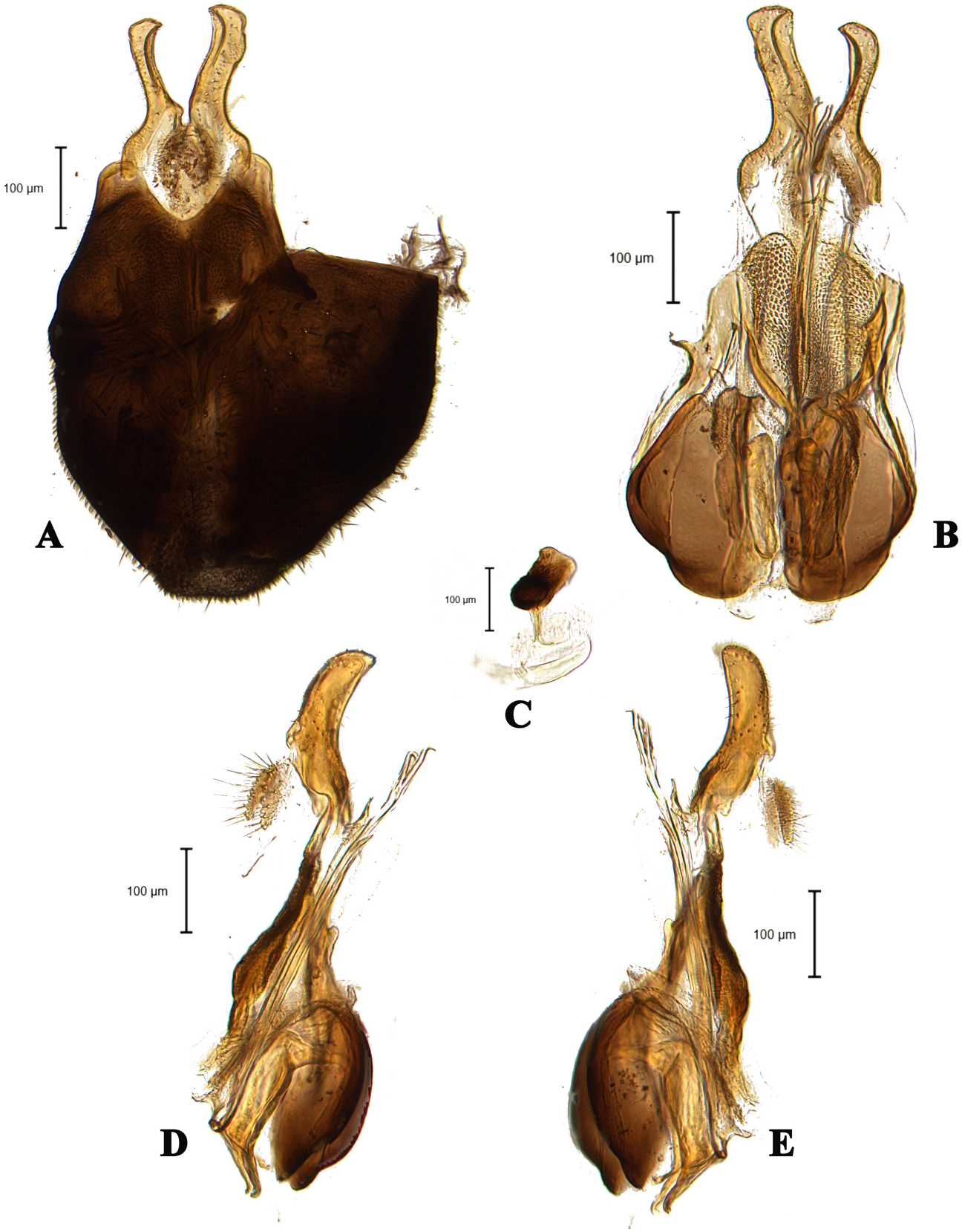



**FIGURE 15**. Male genitalia of *Tomosvaryella bounites* **sp. nov.** (CNC374415, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Description: MALE:** Body length: 2.8–2.9 mm. ***Head***. Scape and pedicel dark, arista dark brown, flagellum light brown. Flagellum tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 dark bristles. Mesonotum (viewed obliquely from front) brown pollinose, anterior part of scutum more grey. Scutellum silvery brown pollinose with scattered dark bristles. Dorsocentral and supra-alar bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter, knob pale, tip brownish, stem light brown with 2 short bristles in upper side, base dark. ***Legs***. Mid coxa with 3–4 long dark bristles. Fore and mid trochanters with 2–3 short bristles ventroapically. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments brown dorsally, light brown ventrally. Hind trochanter with a batch of short bristles ventrobasally, brown pollinosity (Fig. 144F); one long ventrobasal bristle present on fore and 1–3 shorter bristles on mid femur. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey. Lateral bristles on first tergite present, 3–5 long dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.20). Surstyli elongated, with two lobes at outer margin before apex, curved to each other at apex, left surstylus is longer, both surstyli with a small pointed edge in ventrobasal margin (Fig. 15A). Genital capsule in ventral view: both gonopods extended towards surstyli, rounded at apex; phallic guide with 3–4 short dorso- dorsolateral spines; subepandrial sclerite large with some transverse sutures (Fig. 15B); Genital capsule in lateral view: both surstyli straight in basal half, strongly bent towards sternite in basal half; both surstyli with a pointed edge dorsobasally (Fig. 15D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 15C).

**FEMALE:** Unknown.

**Etymology:** From the Greek bounites, dweller in the hills, in reference to the fact that all known specimens have been collected on hilltops. Many pipunculids go to hilltops to mate (Skevington, 2008).

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Summit of Mount Greville, 28°4'S, 152°30'E, 393m, 3.I.2015, J.H., A.M. & A.W. Skevington, CNC374390 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Carnarvon National Park, Hilltop north of Tombs, 25°5'S, 147°52'E, hilltop, 26.XI.1997, J. Skevington & C. Lambkin, hand collected, JSS2217 (1♂, QM); Summit of Mount Greville, 28°4'S, 152°30'E, 393m, 3.I.2015, J.H., A.M. & A.W. Skevington, CNC374415 (1♂, CNC).

**Distribution:** Australia (Queensland) (Fig. 112).

**Notes:** The only known specimens have been collected hilltopping in dry sclerophyll forest in SE to SC Queensland.

### *Tomosvaryella brachystyla* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:4C864A71-E108-4406-AD47-67D82F8E7968

Figs 16A–E, 113, 155A

**Diagnosis:** This species can be recognized by shortened surstyli, the left surstylus constricted in middle at outer margin in dorsal view (Fig. 16A); extended hypandrium, small gonopods, shortened subepandrial sclerite in ventral view (Fig. 16B); phallic guide widened; phallus with three strong ejaculatory ducts, one covered by small spines in basal half in lateral view (Fig. 16D–E).

**Description: MALE:** Body length: 3.1–3.2 mm. ***Head***. Flagellum short acuminate; brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 short pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 8–10 weak bristles along the distal edge. Dorsocentral bristles weakly developed, indistinct, dark, somewhat more visible along frontal edge, a few pale bristles around postpronotum present. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with

three short dark bristles in a row along the edge. Trochanters brown and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow ventrally brown dorsally, last segment darker. Hind trochanter with a half circle, no distinct bristles; ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; 4–6 small, black spines on mid femur; hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally, on distal half more like strong bristles, longest up to 1/2 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae absent. Hind tibia slightly bent in posterior view. Metatarsi moderately flattened, hind metatarsus almost as long as 2–5 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.6–3.7 mm. Upper side of basal costal cell with two short dark bristles. Fourth costal section 2 times as long as third costal section. Cross-vein r-m slightly distal to middle of discal cell. 1–2 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on tergite 5). Dispersed short dark bristles on all tergites present, very small, indistinct. Lateral bristles on first tergite absent. Postabdomen in dorsal view: T6, S7 invisible; T5 1.5–2.2 times as long as ST8. Genitalia without dissection: ST8 medium sized, broad, rounded triangle in dorsal view, dark brown and with some distinct bristles, otherwise velvet-like coverage; membranous area drop-like, directed posteriorly; epandrium dark brown, surstyli brown, inconspicuous. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli rather asymmetrical, shorter than epandrium, both surstyli broader basally and distally, left one constricted in middle at outer margin (Fig. 16A). Genital capsule in ventral view: gonopods small, semicircular in lateral margin; subepandrial sclerite small; hypandrium more extended; phallus with three strong ejaculatory ducts, one covered with small spines in basal half (Fig. 16B); Genital capsule in lateral view: both surstyli curved towards sternite; phallic guide widened and short, pointed at apex (Fig. 16D–E). Ejaculatory apodeme rather long, tube-like, with a bulb in its middle (Fig. 16C).

**FEMALE:** Body length: 3.1–3.2 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.3 times the width at antennae; completely silver-grey pollinose until up to 1/2 of the lower frons, shiny black in front of ocellar triangle, sudden change in transition zone. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–2 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6 (sometimes T3). ***Ovipositor.*** Straight in ventral view, curved towards sternite and short in lateral view, reaching distal edge of 4th segment; base brownish pollinose with occasional bristles; very flat, in level with rest of abdomen. LP:LB = 2.6. LDP:LPP = 1.7. (Fig. 155A).

**Etymology:** Brachy is Greek for short and refers to the short surstyli of the males.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Carnarvon National Park, Mount Moffatt Section, Top Shelter Shed, 24°55’S, 148°3’E, 1100m, 22.XI.1995, D.K. Yeates, JSS8311 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Bogantungan, 13.5km North, 23°32’S, 147°18’E, 880m, open forest, 18.XII.2000–27.III.2001, Cook & Monteith, flight interception trap, 10007, CNC575165 (1♂, CNC); Cudmore National Park (CM3M), 22°58’S, 146°23’E, 351m, *Melaleuca* heath near drying creek, 28.X.2010–2.VIII.2011, Lambkin, Starick & Bailey, Malaise trap, CNC575000, CNC575003 (2♂, QM); Cudmore National Park (CM3M), 22°58’S, 146°23’E, 351m, *Melaleuca* heath near drying creek, 28.X.2010–2.VIII.2011, Lambkin, Starick & Bailey, Malaise trap, CNC574704 (1♂, CNC); 3.5 km SW by S Mount Baird, 15°10’S, 145°7’E, 4.V.1981, D.H. Colless, Malaise trap, JSS8578 (1♂, ANIC); Brisbane Forest Park, 27°25’S, 152°51’E, sclerophyll *Eucalyptus* forest, 8.XI.1995, Irwin & Gaimari, JSS8835 (1♀, INHS); Carnarvon National Park, Mount Moffatt Section Headquarters, 25°1’S, 147°57’E, 740m, 21.XI.1995, M.E. Irwin & S.D. Gaimari, JSS8899 (1♂, INHS); Carnarvon National Park, Mount Moffatt Section, Top Shelter Shed, 24°55’S, 148°3’E, 1100m, 22.XI.1995, D.K. Yeates, JSS8308, JSS8313, JSS8317 (3♀, QM); Carnarvon National Park, Mount Moffatt section, 25°3’S, 147°53’E, [dry sclerophyll, savanna opening], 27.XI.1997, J. Skevington & C. Lambkin, Malaise trap, JSS2278 (1♂, QM); Scrub Road, Brisbane Forest Park, 27°25’S, 152°50’E, 3–10.X.1997, S. Winterton, N. Power & D. White, Malaise trap, JSS8857 (1♂, QM); Northern Territory: Darwin, Fannie Bay, 12°30’S, 130°50’E, Park near beach, 4.IX.2004, J. Forrest & T. Wheeler, sweeping, LEM_0016202 (1♂, LEM); New South Wales: 20 mi. Glen Innes to Grafton Highway, 29°43’S, 151°45’E, 20.IV.1970, D.H. Colless, Coordinates for Glen Innes, JSS8504 (1♂, ANIC).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland) (Fig. 113).

**Notes:** This species has been found in dry sclerophyll forest and heathlands in eastern NSW, Queensland and coastal Northern Territory. Intraspecific genetic distance ranges from 0.0% to 0.3%. This species is genetically similar to *T. biloba* **sp. nov.** (2.6% pairwise divergence) (Supplementary file 3).

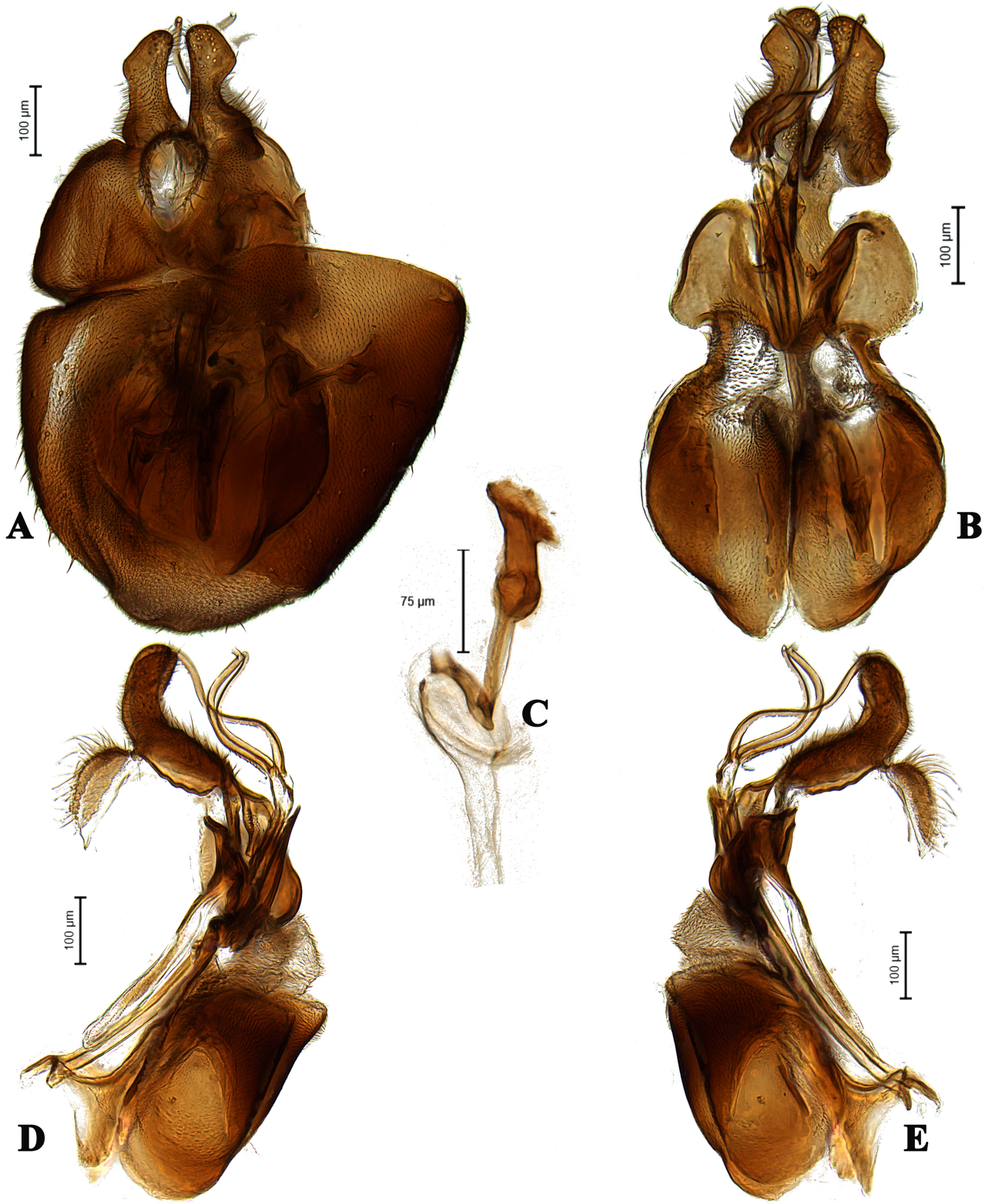



**FIGURE 16**. Male genitalia of *Tomosvaryella brachystyla* **sp. nov.** (JSS8311, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella brancha* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:C89A4357-1BE4-44AD-AFAC-610A13E95E87
Figs 17A–E, 113, 153B

**Diagnosis:** This species can be recognized by the keelless hind trochanter, with only a bump ventrally with some spine-like bristles; elongated surstyli in dorsal view (Fig. 17A); extended gonopods; phallic guide with 4–6 dorso-dorsolateral spines; subepandrial sclerite distinct with a small fin-shaped protrusion in its center (Fig. 17B).

**Description: MALE:** Body length: 3.0–3.2 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 5–7 bristles along distal edge. Dorsocentral bristles indistinct, dark, more visible in frontal half, a few pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles, one is longer. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments dark brown dorsally, yellow ventrally, last segment darker. Hind trochanter without a keel, a bump ventrally with a tuft of dark spine-like bristles, 8–10; ventrobasal spines (2) present on fore and absent on mid femur. Ventroapical row of spines on fore femur 4–6; 8–10 distinct, black spines on mid femur; hind femur without ventroapical spines, except 6–8 equally spaced bristles posteroventrally distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres flattened (especially hind metatarsus in the middle, as long as 2–4 combined), t1 with shiny patch ventrally (no bristles). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 dark bristles up to as long as ¾ of hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.9–1.1 times as long as ST8. Genitalia without dissection: ST8 small to medium sized, round in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous rounded slit, mostly directed posteriorly; epandrium brown, surstyli yellow, elongated, medium sized. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli elongated, symmetrical, left surstylus longer than right one (Fig. 17A). Genital capsule in ventral view: both gonopods extended towards sternite, rounded at tips; phallic guide with 4–6 dorso- dorsolateral spines, one spine longer than others; subepandrial sclerite distinct with a small fin-shaped protrusion in its center (Fig. 17B); Genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite apically, pointed at apex, right surstylus straight, slightly curved towards sternite (Fig. 17D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 17C).

**FEMALE:** Body length: 2.8–3.0 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.1–1.3 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black in front of ocellar triangle, smooth change in transition zone (at 1/3 from ocellar triangle) to shiny black, small groove in the median line on upper 1/3 of frons. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.5–2.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Straight in ventral view, straight, dagger-like in lateral view (whitish yellow piercer, dark brown base), reaching distal end of 2nd segment; base silvery brown pollinose with dispersed short dark bristles. LP:LB = 2.0. LDP:LPP = 3.3. (Fig. 153B).

**Etymology:** The name is derived from the Greek branchos for fin, in reference to the fin-shaped protrusion on the subepandrial sclerite.

**Examined material: HOLOTYPE**: AUSTRALIA: Northern Territory: Kakadu National Park, Mirrai Lookout, 12°52'S, 132°42'E, , hilltop, 27.IX.1998, J.&A. Skevington, hand collected, JSS4100 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Black Mountain, 6.7 km west of Croyden, 18°9'S, 142°12'E, 195m, hilltop, dry, open savanna, 12.VI.1997, J.&A. Skevington, JSS8318 (1♂, QM); Western Australia: Karijini National Park, Banjima Drive, 10 km W visitors center, 22°29'S, 118°22'E, 743m, 4–16.V.2003, M.E. Irwin & F.D. Parker, JSS15822 (1♂, CNC); Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16118 (1♂, ANIC); Karijini

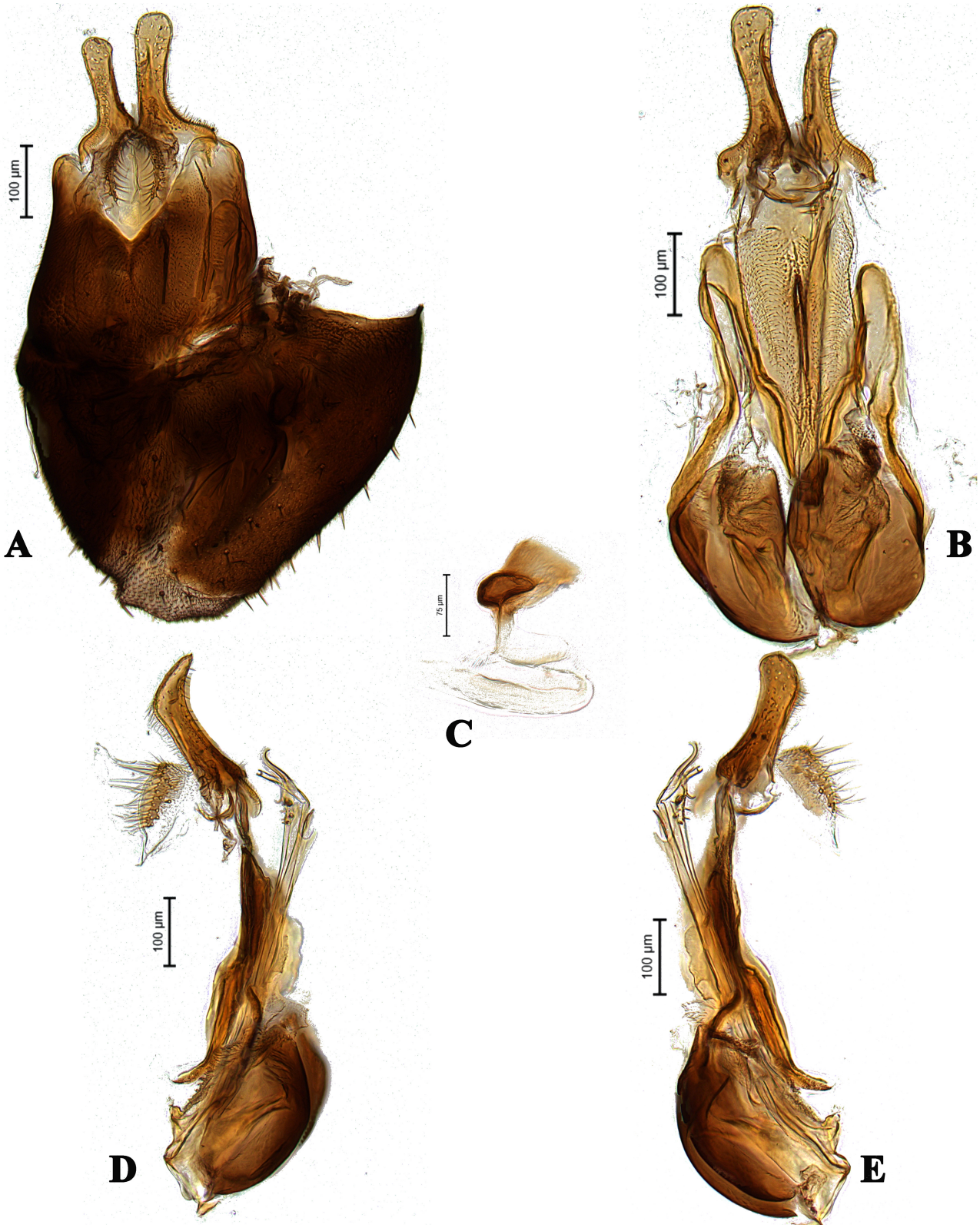



**FIGURE 17**. Male genitalia of *Tomosvaryella brancha* **sp. nov.** (JSS4100, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

National Park, Juna Downs Road, 22°42'S, 118°25'E, 789m, between drying pools in rocky Turee Creek, near rock outcrop, *Eucalyptus Eremophila* scrub, dry Turee Creek, grassy open *Eucalyptus* scrub, 19–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16175 (1♀, ANIC); 22°44'S, 118°25'E, 798m, 25.IV–14.V.2003, JSS16087 (1♂, ANIC); 22°43'S, 118°25'E, 799m, 25.IV–14.V.2003, JSS16060 (1♀, ANIC); Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 814m, open *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15582 (1♂, ANIC); Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E, 775m, hilltop, open *Eucalyptus*, 20–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16227 (1♂, ANIC); Karijini National Park, above Fortescue Falls, 22°29'S, 118°33'E, over dry creek in low *Acacia* scrub, 21–24.IV.2003, C. Lambkin, Malaise trap, JSS16135 (1♀, ANIC).

**Distribution:** Australia (Northern Territory, Queensland, Western Australia) (Fig. 113).

**Notes:** This species is found in open *Eucalyptus* forest and *Acacia* scrub across northern Australia. Some specimens have been captured hilltopping. Intraspecific genetic distance ranges from 0.0% to 0.7%. This species is genetically closest to *T. biloba* **sp. nov.** and *T. uncinata* **sp. nov.** (5.0% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella brocha* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:1B14794B-05C2-4B96-AA85-B171AE9C4C88
Figs 18A–E, 114

**Diagnosis:** This species can be recognized by the hind trochanter having a long keel covered by strong teeth along its edge; elongated surstyli, curved to each other before apex in dorsal view (Fig. 18A); both gonopods extended towards surstyli; phallic guide with 3–4 short dorso- dorsolateral spines in ventral view (Fig. 18B); left surstylus straight in basal two thirds, bent towards sternite in apical fourth in lateral view (Fig. 18D).

**Description: MALE:** Body length: 2.8 mm. ***Head***. Scape dark, pedicel brown, flagellum light brown, long tapering, brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching as long as the length of ocellar triangle. Occiput black, somewhat silvery pollinose. ***Thorax***. Postpronotum pale. Mesonotum (viewed obliquely from front) brown pollinose, supra-alar area greyer. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Scutellum silvery brown pollinose with 2–4 short scattered bristles. ***Legs***. Mid coxa with 1–2 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae light brown (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with long keel covered by strong teeth along its edge; two ventrobasal spines present on fore and mid femora. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres distinctly flattened (t1–3), hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey. Dispersed short dark bristles on all tergites present. Lateral bristles on first tergite present, 4–6 brown bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli elongated, straight in basal two thirds, slightly broadened and curved to each other before apex, left surstylus is longer and its apex is wider than right one (Fig. 18A). Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex, both gonopods with a distinct projection on inner margin, right one is wider and left one is smaller; phallic guide with 3–4 short dorso- dorsolateral spines; subepandrial sclerite distinct with a fin-shaped projection in its center (Fig. 18B); Genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite in apical fourth, right surstylus gently curved towards sternite (Fig. 18D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 18C).

**FEMALE:** Unknown.

**Etymology:** From the Latin brochus, with projecting teeth, in reference to the strong teeth on the hind trochanter.

**Examined material: HOLOTYPE**: AUSTRALIA: Tasmania: Launceston, [41°26'S, 147°8'E], JSS8726 (1♂, SAM); **PARATYPE**: AUSTRALIA: Queensland: Barakula State Forest #302, 26°22'S, 150°58'E, 8.I.2000, J.&A. Skevington, M. Mathieson, JSM 71, CNC483840 (1♂, QM).

**Distribution:** Australia (Queensland, Tasmania) (Fig. 114).

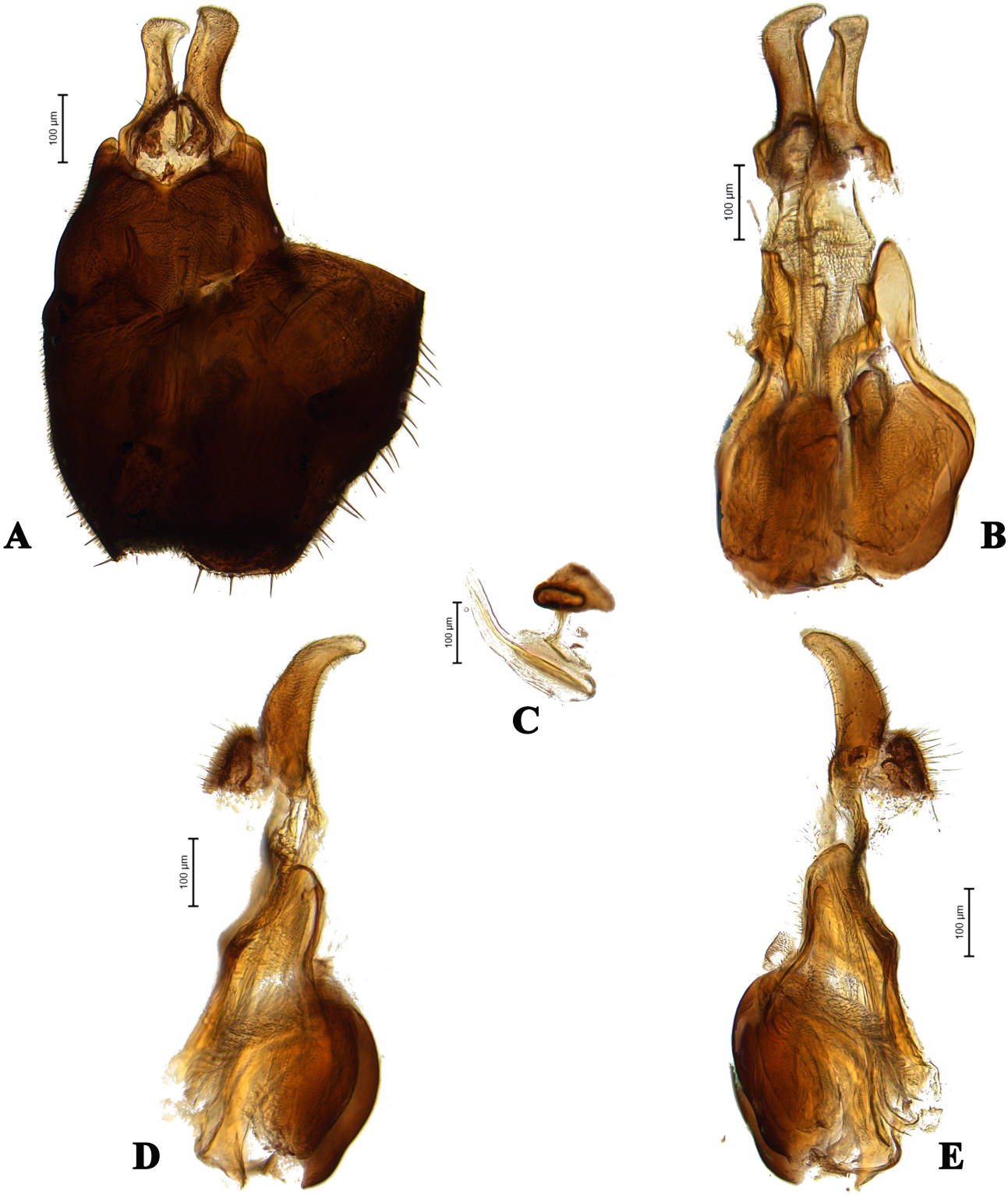



**FIGURE 18**. Male genitalia of *Tomosvaryella brocha* **sp. nov.** (JSS8726, SAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella brooksi* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:DFC7F93C-2B7A-46E8-BE5E-297E5C7609E2
Figs 19A–E, 115

**Diagnosis:** This species can be recognized by the shape of surstyli, both are triangle-shaped and the right surstylus is wider than left one in the middle in dorsal view (Fig. 19A); gonopods asymmetrical, right is longer than left one, both with a short semicircular projection at the apex; each of ejaculatory ducts with 2–3 small spines in ventral view (Fig. 19B); both surstyli straight and widened, pointed at apex in lateral view (Fig. 19D–E).

**Description: MALE:** Body length: 2.5 mm. ***Head***. Scape, pedicel and arista dark brown, Flagellum tapering, yellow-brown, light brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 3–4 long pale bristles. Prescutum with two triangle-shaped grey marks on anterior part. Mesonotum (viewed obliquely from front) silvery-brown pollinose. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Scutellum silvery brown pollinose and with 6–8 scattered bristles. Halter, base dark, stem pale, knob pale, tip brownish. ***Legs***. Mid coxa with 3–4 dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow completely, except last tarsomeres. Hind trochanter triangle-shaped grey pollinose without specific feature; ventrobasal spines absent on fore and mid femora. Hind femur without ventroapical spines, except 6–10 equally spaced short bristles posteroventrally and anteroventrally, longest up to 1/2 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect pale bristles except last tarsomeres with longer dark bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.4 mm. Upper side of basal costal cell with one long light brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, all tergite silvery-brown pollinose, Dispersed short brown bristles on all tergites present. Lateral bristles on first tergite present, 3–6 dark bristles up to as long as half of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: membranous area round and wide, epandrium longer than wide (MLE: MWE = 1.3). Surstyli triangle-shaped, wide at the base, pointed to each other at apex, right surstylus is wider than left one in the middle, left one is longer (Fig. 19A). Genital capsule in ventral view: gonopods asymmetrical, right is longer than left one, both with a short semicircular projection at the apex, small hypandrium, long subepandrial sclerite; phallic guide long; phallus trifid, each one with 2–3 small spines (Fig. 19B); Genital capsule in lateral view: both surstyli straight and widened, pointed at apex (Fig. 19D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 19C).

**FEMALE:** Unknown.

**Etymology:** This species is named in honour of Scott E. Brooks. Scott collected one of the two known specimens and is a well-known dipterist and colleague of the authors. Scott works at the CNC in Ottawa, Ontario, Canada.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Carnarvon Nat[ional] Park, Consuelo land, Race Course Spring, 24°56'S, 148°5'E, Vegetation, 12.X.2002, S. Boucher, sweep net, LEM_0016155 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: Carnarvon National Park, The Tombs, 25°5'S, 147°52'E, 12.X.2002, S. E. Brooks, sweep net, LEM_0016200 (1♂, LEM).

**Distribution:** Australia (Queensland) (Fig. 115).

**Notes:** This species is only known from two specimens collected in Carnarvon National Park in Queensland. The species presumably does not hilltop as there has been a lot of effort collecting on hilltops in Carnarvon and it has not appeared in any of those samples.

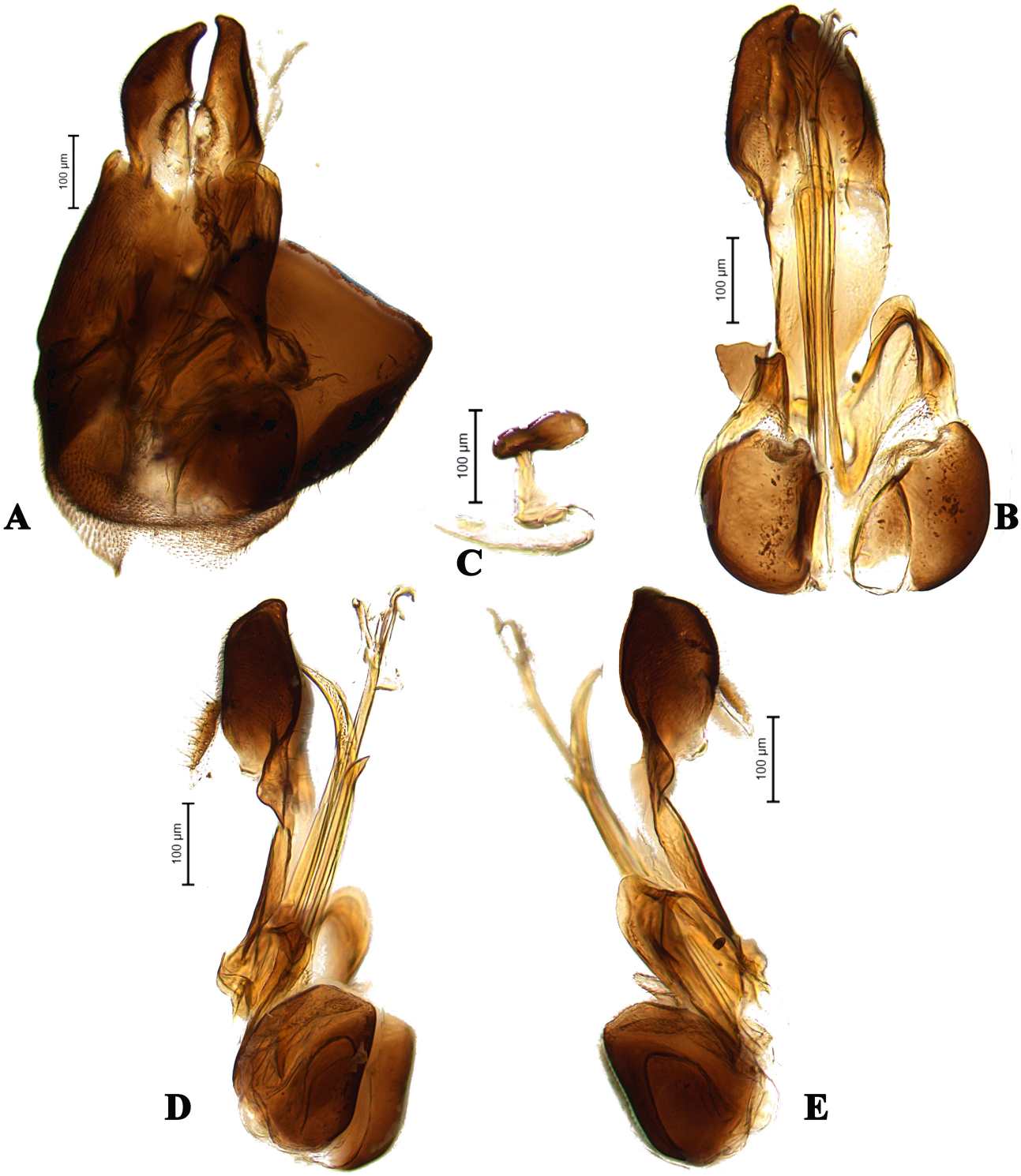



**FIGURE 19**. Male genitalia of *Tomosvaryella brooksi* **sp. nov.** (LEM_0016155, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella bulbosa* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:59F8B08E-8749-4EE7-A3A5-81D963B38DDC
Figs 20A–D, 114, 148F

**Diagnosis:** This species can be recognized by the bulging and arched hind trochanter with short spines along a keel ventrally (Fig. 148F); elongated surstyli in dorsal view (Fig. 20A); elongated gonopods towards surstyli in ventral view (Fig. 20B); long subepandrial sclerite; long and distinct hypandrial apodeme in ventral view (Fig. 20B); phallic guide with 5–6 dorso-dorsolateral spines (Fig. 20B–D).

**Description: MALE:** Body length: 2.6–2.7 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles distinct, pale, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with four same size dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter bulging arched ventrally with short spines along a keel ventrally (20–22) (Fig. 148F); ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; 3–4 small, black spines on mid femur; hind femur without ventroapical spines, except 18–20 equally spaced bristles posteroventrally, longer and stronger on distal half, longest up to 1.5 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tibia bent in posterior view. Hind metatarsus not flattened and slightly longer than 2–4 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one short dark bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at 3/5 of discal cell (distal to middle). 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites slivery pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (similar size). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to ½ the width of hind tibia at distal end. Lateral bristles on first tergite present, 3–4 dark bristles up to half as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.3–1.6 times as long as ST8. Genitalia without dissection: ST8 medium sized, broad, round in dorsal view, brown and with distinct bristles, otherwise velvet-like coverage; membranous area rounded elongate, mostly directed posterodorsally; epandrium and surstyli not visible (view blocked). ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.7). Surstyli elongated, right surstylus smaller than left one, pointed at inner margin before apex; left surstylus curved towards right one (Fig. 20A). Genital capsule in ventral view: gonopods elongated towards surstyli, tapering at apex with a small edge at inner margin before apex, equal in height; subepandrial sclerite long; hypandrial apodeme distinct, more extended beneath hypandrium (Fig. 20B). Genital capsule in lateral view: both surstyli narrow, curved towards sternite; phallic guide with 5–6 dorso-dorsolateral spines (one is longer) (Fig. 20C–D).

**FEMALE:** Unknown.

**Etymology**: The name is based on the Latin bulbus for swelling, in reference to the bulging hind trochanter.

**Examined material**: **HOLOTYPE:** AUSTRALIA: Queensland: 3 km west Windorah, [-25.406587, 142.635480], 31.VIII–5.IX.1997, S. Winterton, J.&A. Skevington & C. Lambkin, Malaise trap, JSS8852 (1♂, QM); **PARATYPES:** AUSTRALIA: South Australia: Flinder's Ranges National Park, Love Range, Mine Road, 31°24'S, 138°47'E, in dry creek bed, 8–9.X.1997, S. Winterton, J.&A. Skevington & C. Lambkin, Malaise trap, JSS8403 (1♂, QM); Flinders Ranges National Park, 31°24'S, 138°47'E, 10–11.X.1997, J.&A. Skevington, S. Winterton & C. Lambkin, Malaise trap, JSS8409 (1♂, QM); Queensland: 20 km E Mareeba, -17.092489, 145.320180, 15.IV.1980, G.F. Hevel & J.A. Fortin, JSS10529 (1♂, USNM); Carnarvon Station, Mailman Spring, 24°51'S, 147°42'E, 760m, *Eucalyptus* woodland, 16.X.2014, Wright, Lambkin, Starick, hand net, CNC597045 (1♂, CNC).

**Distribution:** Australia (Queensland, South Australia) (Fig. 114).

**Notes:** This is another species that occurs in the arid, inland areas ranging from desert to *Eucalyptus* woodland. Intraspecific genetic distance ranges from 0.0% to 2.0%. This species is genetically similar to *T. wintertoni* **sp. nov.** (2.3% pairwise divergence) (Supplementary file 3).

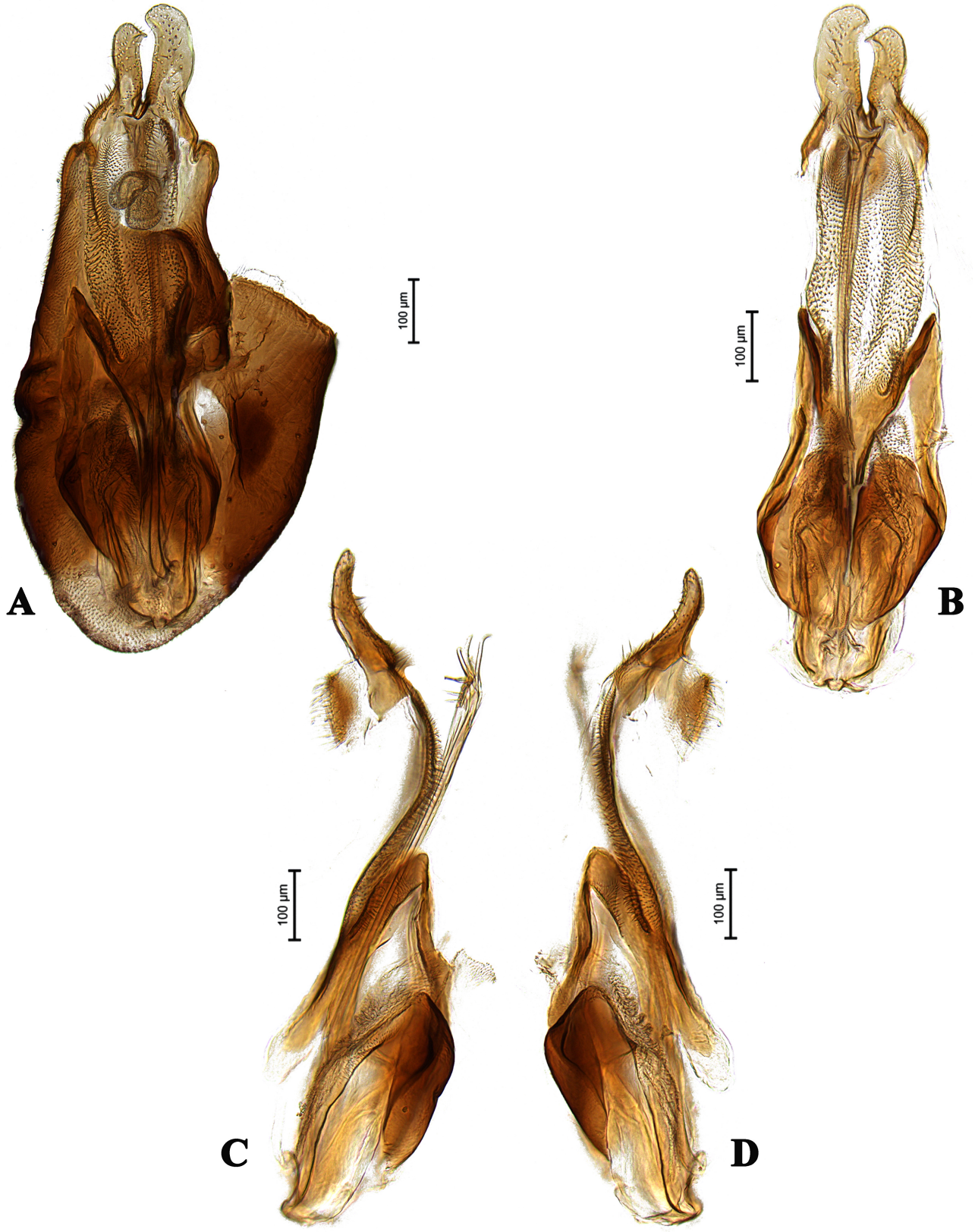



**FIGURE 20**. Male genitalia of *Tomosvaryella bulbosa* **sp. nov.** (JSS8852, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

***Tomosvaryella caesariata* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:C6E322C9-C034-4E07-85A2-F5AA04CC5825
Figs 21A–E, 112, 145C, 152B

**Diagnosis:** This species can be recognized by dense long bristles covering the abdominal tergites (Fig. 152B); hind trochanter with two patches of bristles ventroapically and ventrobasally (Fig. 145C); elongated surstyli in dorsal view (Fig. 21A); gonopods with two thumb-like projections extended towards surstyli, one of the ejaculatory ducts with some teeth in basal half in ventral view (Fig. 21B).

**Description: MALE:** Body length: 4.0–4.2 mm. ***Head***. Scape and pedicel brown, Flagellum tapering, yellow-brown. Face silvery-yellow pollinose. Frons, upper part shining black; lower part distinctly silver-yellow pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, covered by scattered short light bristles. ***Thorax***. Postpronotum pale, light brown pollinose, with 4–5 long dark bristles along upper margin. Mesonotum (viewed obliquely from front) light brown pollinose, with long bristles at anterior supra-alar area in a row, extended to posterior and uniseriate rows of long intra-alar bristles. Scutellum silvery brown pollinose and with 24–26 long bristles along distal edge. Halter, knob, stem pale, tip brownish, stem with three short bristles dorsally. ***Legs***. Fore coxa gray pollinose with 10 short brown bristles in a row. Mid coxa with 3–4 long dark bristles and 2–3 short light brown bristles. Coxae, trochanters, femora, tibiae dark brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise dark brown), tarsal segments brown. Hind trochanter with two patches of condensed spine-like dark bristle ventrobasally and ventroapically (Fig. 145C); ventrobasal spines present on fore and mid femora. Fore and mid femora with some short bristles posteroventrally in basal half. Hind femur without ventroapical spines, except 8–12 equally spaced bristles posteroventrally in distal half. Subapical (distal) spines on first four tibiae present (short). Hind metatarsus distinctly flattened, extended toward one side, covered by erect bristles especially along lateral edge. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.9–4.1 mm. light brown color. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–3 long dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). All tergites covered by condensed long strong brown bristles as long as width of hind femur at distal end (Fig. 152B). Lateral bristles on first tergite present, 32–38 long dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.4–0.5 times as long as ST8. Genitalia without dissection: ST8 grey pollinose, covered by long bristles, round, globular in dorsal view, brown; membranous area is slit-like, mostly directed posteriorly, extended close to epandrium; ***Genitalia***. Genital capsule in dorsal view: epandrium brown without pollinosity, surstyli brown; epandrium wider at base. Surstyli widened at base, elongated, slightly curved to each other at apex, left surstylus is longer (Fig. 21A). Genital capsule in ventral view: both gonopods equal in height with a thumb-like projection extended towards surstyli, rounded at apex, with a distinct projection in their inner margins before apex; subepandrial sclerite distinct, with a fin-shaped projection in its center, phallus trifid, one of ejaculatory ducts with some teeth at the basal third; phallic guide with 3–5 spines dorso-dorsolaterally, one is longer (Fig. 21B); Genital capsule in lateral view: left surstylus straight in basal two thirds, bent toward sternite in apical thirds, right surstylus short and rather straight (Fig. 21D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 21C).

**FEMALE:** Unknown.

**Etymology:** From the Latin caesariatus, covered with hair or long-haired, in reference to the densely haired abdomen of this species.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 3.V.1981, D.H. Colless, Malaise trap, JSS8580 (1♂, ANIC); **PARATYPES**: AUSTRALIA: Queensland: 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 4.V.1981, D.H. Colless, Malaise trap, JSS199 (1♂, ANIC); Brisbane, [27°28'S, 153°1'E], 23.VII.1964, I.C. Yeo, JSS8266 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 112).

**Notes:** The distribution of this species is suspicious, and the old Brisbane specimen could be mislabeled. It is strange that no other specimens have been found around Brisbane with the intensity of collecting there. More work should be conducted in the type locality to determine habitat preferences.

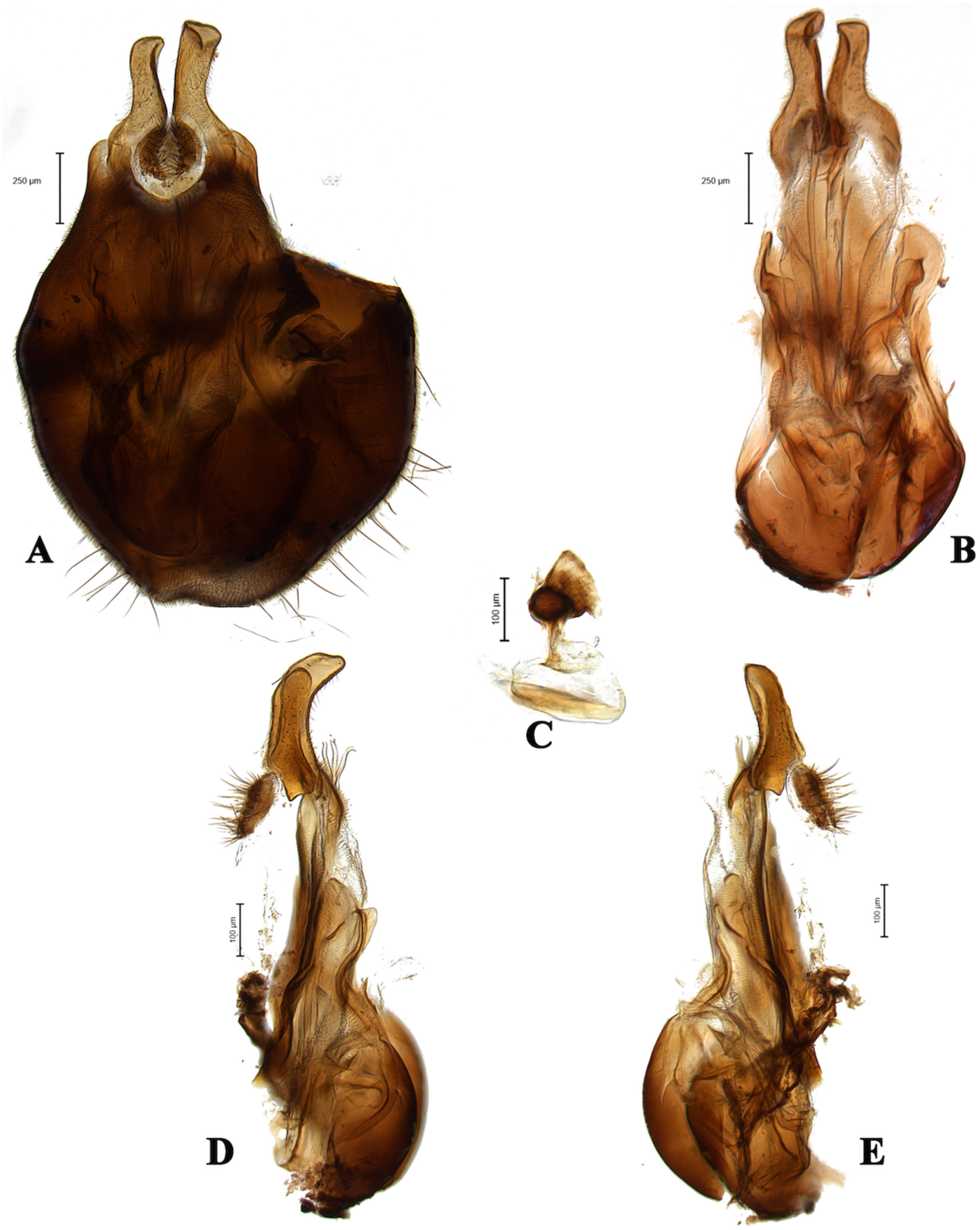



**FIGURE 21**. Male genitalia of *Tomosvaryella caesariata* **sp. nov.** (JSS199, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella calcarilonga* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:F4E8AA79-3F45-43E2-815A-09C2FDB99169
Figs 22A–E, 116, 149A, 150E, 152D

**Diagnosis:** This species can be recognized by the presence of a Y-shaped spine along the posterior margin of abdominal sternite 4; hind trochanter with a row of short dark spines (Fig. 152D); mid tibia with some extremely long apical spurs (Fig. 150E); first and second mid tarsomeres with condensed bristles ventrally; surstyli elongated, restricted in basal quarter in dorsal view (Fig. 22A); elongated gonopods, distinct hypandrial apodeme; small subepandrial sclerite in ventral view (Fig. 22B); phallic guide with 4–5 dorso-dorsolateral spines (Fig. 22B).

**Description: MALE:** Body length: 2.3–2.5 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.5 times the length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper 1/3. ***Thorax***. Postpronotum pale, with 5–6 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brown pollinose and with 8–10 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous long bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with three long, dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibia yellow (tibia otherwise dark brown), tarsal segments yellow, ventrally paler, last segment darker. Hind trochanter with a row of short dark spines, longest spines distally (Fig. 149A); ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; absent on mid femur; hind femur without ventroapical spines, except 10–12 bristles posteroventrally, equally spaced, longer on distal half, longest up to 1/3 of the width of hind tibiae at distal end. Subapical (distal) spines on first four tibiae present, three-six extremely long apical spurs only on mid tibia (as long as half the length of mid tibia) (Fig. 150E). Hind tibia slightly bent in posterior view. First and second mid tarsomeres with condensed bristles ventrally. Metatarsi flattened, hind metatarsus almost as long as 2–5 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.2–2.3 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2.5–3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites shiny black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on tergite 5). Dispersed short dark bristles on all tergites present, longest on tergite 5 up to the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 dark bristles up to as long as hind femur's width at base, sternite 4 with a specific Y shaped feature along posterior margin (Fig. 152D). Postabdomen in dorsal view: T6, S7 invisible; T5 1.2–1.4 times as long as ST8. Genitalia without dissection: ST8 medium sized, round in dorsal view, dark brown and with some distinct bristles, otherwise velvet-like coverage; membranous area rounded elongate, mostly directed posterodorsally; epandrium dark brown, surstyli yellow, long and broad. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.0). Surstyli restricted at basal quarter, broadened in middle, gently curved to each other, right surstylus smaller than left one (Fig. 22A). Genital capsule in ventral view: gonopods elongated to near surstyli, towards surstyli, tapering at apex, left is longer than right one; subepandrial sclerite small, hypandrium with distinct and rather long hypandrial apodeme (Fig. 22B); phallic guide with 4–5 dorso-dorsolateral spines (one is longer). Genital capsule in lateral view: both surstyli curved towards sternite (Fig. 22D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 22C).

**FEMALE:** Unknown.

**Etymology:** The name is derived from the Latin calcar for spur and longa for long in reference to the extremely long apical spurs on the mid tibia.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: N[ea]r Walyunga National Park, 31°44'S, 116°2'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7626 (1♂, WAM); **PARATYPES**: AUSTRALIA: Australian Capital Territory: Black Mountain Reserve, 35°16'S, 149°6'E, 4.I.1980, Z. Liepa, JSS9184, JSS9186 (2♂, ANIC); Black Mountain, 35°16'S, 149°6'E, 15–17.II.1980, 25.II.1980, 26.II.1980, 4–5.III.1980, D.H. Colless, Malaise trap, Malaise site 2, JSS8506, JSS8510–1, JSS8516–7 (5♂, ANIC); I.1988, M.E. Irwin, Malaise trap, JSS8533 (1♂, ANIC); 25.X.1981, Z. Liepa, JSS9189, JSS9191 (2♂, ANIC); Black Mountain, Canberra, 35°16'S, 149°6'E, 18–23.II.1985, W.W. Middlekauff, flight interception trap, JSS8446, JSS8449, JSS8451, JSS8453, JSS8456 (5♂, CAS); near Condor Creek, 35°19'S, 148°50'E, 6.III.1970, R. Lindsay, JSS8496–7 (2♂, ANIC); New South Wales: Fitzroy Falls, 34°36'S, 150°29'E, 22.III.1961, D.H. Colless, JSS8638 (1♂, ANIC); Warrumbungle National Park, 31°14'S, 149°1'E, 18.X.1997, J. Skevington & S. Winterton, Malaise

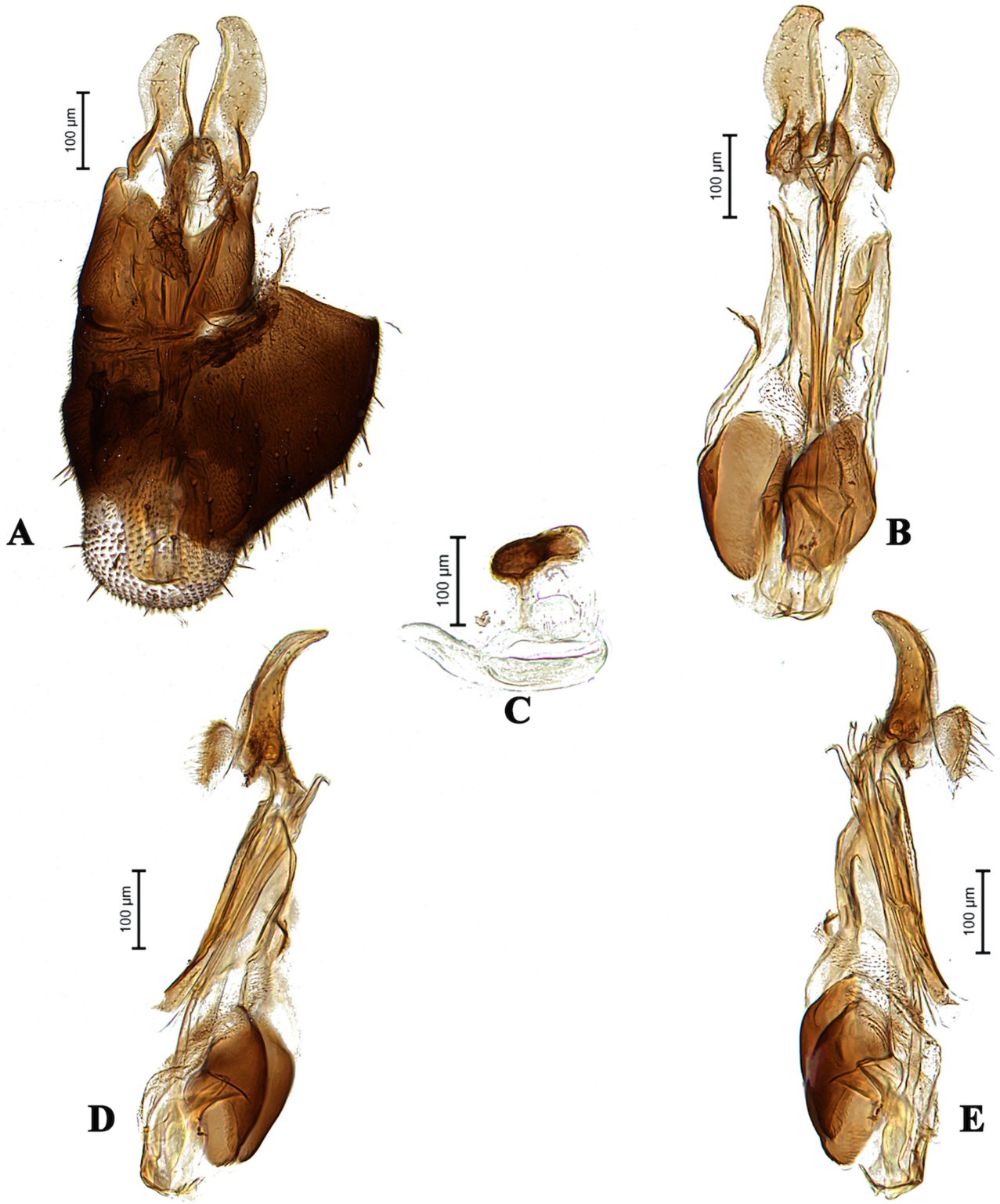



**FIGURE 22**. Male genitalia of *Tomosvaryella calcarilonga* **sp. nov.** (JSS7626, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

trap, JSS8398 (1♂, QM); 19.X–3.XI.1997, J. Skevington & S. Winterton, Malaise trap, JSS8435 (1♂, QM); Warrumbungle National Park, Woolshed at Wombelong Creek, 31°16'S, 148°57'E, 420m, rocky valley, cedar forest, 12–16.XII.1995, M.E. Irwin, Malaise trap, JSS14027, JSS14029-30 (3♂, INHS); Picadilly Circus, 35°22'S, 148°48'E, 14–28.II.1999, G. Gibson, Malaise trap, CNC335235 (1♂, CNC); Northern Territory: Fogg Dam area, 12°38'S, 131°15'E, 9.IV.1980, G.F. Hevel, J.A. Fortin, JSS10534 (1♂, USNM); Baroalba Creek Springs, 19 km NE by E of Mount Cahill, 12°48'S, 132°53'E, 13.VI.1973, D.H. Colless, JSS8545 (1♂, ANIC); Queensland: 3 km NE of Mount Webb, 15°3'S, 145°9'E, 1.V.1981, D.H. Colless, Malaise trap, JSS8601 (1♂, ANIC); 2.X.1980, D.H. Colless, Malaise trap, JSS8571 (1♂, ANIC); Carnarvon National Park, Mount Moffatt Section, Mount Moffatt area, 25°4'S, 148°3'E, 19–23.I.1998, J.&A. Skevington & S.Winterton, Malaise trap, JSS2485 (1♂, QM); 24°4'S, 148°3'E, 10.X.2002, S. Boucher, sweep net, LEM_0016181 (1♂, LEM); 25°4'S, 148°3'E, 10.X.2002, S. E. Brooks, sweep net, LEM_0016176 (1♂, LEM); Eclectus, Iron Range, 12°46'S, 143°17'E, 20m, 16.VII.1997, G. & A. Daniels, JSS8926 (1♂, QM); Lonesome National Park, near Lookout (LNP4M), 25°30'S, 148°49'E, closed *Eucalyptus* woodland on rocky ridge, 26.XI.2010–11.I.2011, D. Beard & B. Sigley, Malaise trap, 19382, CNC575011–12 (1♂, CNC); Mount Moffatt summit, 25°4'S, 148°3'E, 18.XI.2014, J.H., A.M. & A.W. Skevington, CNC374966 (1♂, CNC); Prince of Wales Island, Torres Strait, 10°41'S, 142°11'E, 27–30.V.1969, Neboiss, JSS8794 (1♂, MVMA); Upper Crossing, Teviot Brook, Boona – Killarney Road, SE Queensland, 21°58'S, 148°3'E, 23.III.1975, B.K. Cantrell, JSS8934 (1♂, QDPC); Victoria: 12 km southeast Merrijig, Howqua River, 37°12'S, 146°22'E, 30.XI.1971, Neboiss, JSS8810–1, JSS8813, JSS8816 (4♂, MVMA); Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31'S, 147°27'E, 4.III.1973, JSS8761–3 (3♂, MVMA); Dart–Mitta River Junction, Locality L, 36°31'S, 147°27'E, 4.III.1973, Dartmouth Survey, JSS8759; JSS8770; JSS8775 (3♂, MVMA); Eight Mile Creek, Locality JA, 37°13'S, 146°26'E, 12.IV.1973, Dartmouth Survey, JSS8752–3 (2♂, MVMA); Mitta River, 546493 Loc. CB, 36°31'S, 147°27'E, 28.XI–3.XII.1973, Dartmouth Survey, JSS8758 (1♂, MVMA); Western Australia: Near Walyunga National Park, 31°44'S, 116°2'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7625 (1♂, QM); Neerabup Lake National Park, 31°38'S, 115°43'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7634 (1♂, QM); Walyunga National Park, 31°44'S, 116°4'E, 19–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7674 (1♂, QM).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Northern Territory, Queensland, Western Australia, Victoria) (Fig. 116).

**Notes:** The Y-shaped spine along the posterior margin of abdominal sternite 4 is similar to *Tomosvaryella neboissi* **sp. nov.** but terminalia characters are different. *Tomosvaryella calcarilonga* **sp. nov.** is restricted to forested parts of Australia and occurs in both wet and dry forests. Intraspecific genetic distance ranges from 0.0% to 1.6%. This species is genetically most similar to *T. cona* **sp. nov.** (0.2–2.7% pairwise divergence). Despite the overlap, these species are morphologically divergent and in the absence of additional data are treated as separate species (Supplementary file 3).

### *Tomosvaryella clavata* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:218B2564-1BB7-4CA7-9B6A-1BE7A5C23CB6

Figs 23A–E, 116

**Diagnosis:** This species can be recognized by the distinct ventroapical spine on the hind trochanter; elongated surstyli, left one longer and club-shaped in dorsal view (Fig. 23A); both gonopods with a thumb-like projection towards surstyli; phallic guide with 3–4 different-sized dorso- dorsolateral spines, one is longer and sinuous; subepandrial sclerite with condensed transverse wrinkles in ventral view (Fig. 23B); phallus bearing some teeth apically before ejaculatory ducts in lateral view (Fig. 23D–E).

**Description: MALE:** Body length: 2.6 mm. ***Head***. Scape, pedicel, flagellum light brown. Flagellum tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 2–3 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part close to postpronotum, greyer. Scutellum silvery pollinose and with 6–8 very short bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter, knob and stem pale, tip brownish. ***Legs***. Mid coxa with 3–6 different-sized dark bristles. Trochanters brown, femora darker, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of

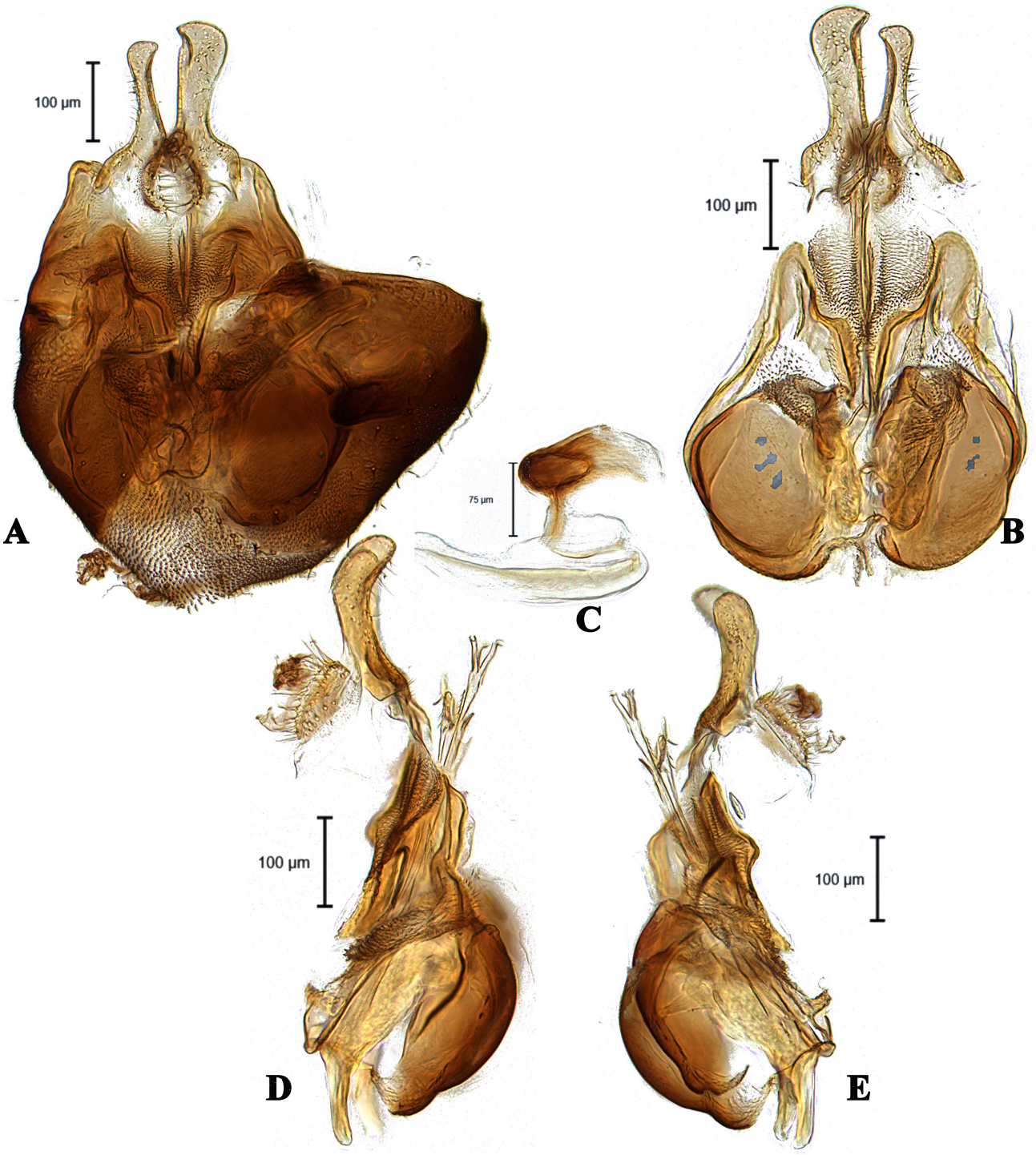



**FIGURE 23**. Male genitalia of *Tomosvaryella clavata* **sp. nov.** (JSS16075, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter grey pollinose with a distinct ventroapical spine; ventrobasal spines present (1) on fore and mid femur. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect dark bristles. Pulvilli shorter than last tarsal segment. ***Wing***. (damaged). Upper side of basal costal cell with 2–3 short to medium dark brown bristles. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey. Lateral bristles on first tergite present, 4–6 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium

rather quadratic-shaped (MLE:MWE = 1.02). Surstyli elongated, left longer and wider than right one, both surstyli widened at the basal fourth, narrowed in the middle, broadened at the apex, left one club-shaped, both curved to each other at apex (Fig. 23A). Genital capsule in ventral view: both gonopods widened at base with a thumb-like projection towards surstyli; phallic guide with 3–4 different-sized dorso- dorsolateral spines, one is longer and sinuous; subepandrial sclerite widened in the middle with condensed transverse wrinkles (Fig. 23B); Genital capsule in lateral view: both surstyli straight in basal two thirds, left one bent towards sternite apically, right one slightly curved towards sternite apically. Phallus trifid with some teeth apically before ejaculatory ducts (Fig. 23D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 23C).

**FEMALE:** Unknown.

**Etymology:** The name is from the Latin clava, club or cudgel and refers to the club-shaped left surstylus.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 27.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16075 (1♂, WAM).

**Distribution:** Australia (Western Australia) (Fig. 116).

### *Tomosvaryella collessi* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:0398D378-9CB5-4F79-B2E2-57CA78FECEB6

Figs 24A–E, 117, 148D, 154E

**Diagnosis**: This species can be recognized by the hind trochanter with few dark tiny spines in one group ventrobasally (Fig. 148D); elongated surstyli in dorsal view (Fig. 24A); elongated gonopods fused with subepandrial sclerite, with two inward projections (Fig. 24B); hypandrium with two hairy membranous sheaths (Fig. 24B); subepandrial sclerite with a small fin-shaped protrusion (Fig. 24B); one ejaculatory duct with some spines (Fig. 24D–E); phallic guide with some dorso- dorsolateral spines in lateral view (Fig. 24D–E).

**Description**: **MALE**: Body length: 2.6–2.9 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with 2–3 long brown bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments brown, ventrally yellow-brown, last segment darker. Hind trochanter with few dark tiny spines in one group ventrobasally ("echidna"-like), elongated troch with flat ventral part (Fig. 148D); ventrobasal spines (1 or 2) present on fore and present on mid femur. Ventroapical row of spines on fore femur 5–7; 6–8 small, black spines on mid femur; hind femur without ventroapical spines, except 14–16 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present. Hind tarsomeres flattened, hind metatarsus almost as long as 2–5 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark bristle and three short light brown bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m slightly distal to middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (similar size). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to ½ the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to 1.1–1.3 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.8–1.0 times as long as ST8. Genitalia without dissection: ST8 large, broad, round in dorsal view, brown and with distinct bristles, otherwise velvet-like coverage; membranous area with narrow part approaching epandrium and rounded part mostly directed dorsally; epandrium brown, surstyli yellow, long. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli symmetrical, elongated, right surstylus smaller than left one, right one with a small protrusion at inner margin before apex (Fig. 24A). Genital capsule in ventral view: gonopods equal in height, elongated towards surstyli and fused with subepandrial sclerite, with two small inward projection before apex, subepandrial sclerite rather wide with a small fin-shaped protrusion in its center; hypandrium with two hairy membranous sheaths extended towards phallus

(Fig. 24B). Genital capsule in lateral view: both surstyli curved towards sternite, phallus with three short ejaculatory ducts, one with three small spines, phallic guide with 6–7 dorso-dorsolateral spines (one is longer) (Fig. 24D–E); Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 24C).

**FEMALE:** Body length: 2.5–2.6 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.7–1.9 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, no transition zone; frons depressed along upper 2/3 with a groove in the median line. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.5–2 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Piercer straight in ventral view, straight and robust in lateral view, reaching distal end of 2nd segment; base brownish pollinose with occasional bristles. LP:LB = 2.0. LDP:LPP = 2.0. (Fig. 154E).

**Etymology**: This species is named after Don Colless, who collected the holotype and several other specimens. Don collected 8% of the specimens used in this revision and 28% of the species (Supplementary file 2).

**Examined material: HOLOTYPE:** AUSTRALIA: Queensland: 14 km W by N Hope Vale Mission, 15°16'S, 144°59'E, 8.V.1981, D.H. Colless, Malaise trap, JSS8561 (1♂, ANIC); **PARATYPES:** AUSTRALIA: Queensland: 1 km North of Eclectus, Iron Range, 12°46'S, 143°17'E, 5.VII.1997 20m, G. & A. Daniels, JSS8925 (1♂, QM); 14 km W by N Hope Vale Mission, 15°16'S, 144°59'E, 9.V.1981, D.H. Colless, Malaise trap, JSS8559-60, JSS8562 (3♂, ANIC); Cooloola National Park, East Mullen hilltop, 26°0'S, 152°59'E, dry sclerophyll forest, 15.XI.2014, J.H., A.M. & A.W. Skevington, CNC374117–8, CNC384971 (3♂, CNC); Cape York, Stewart Range, 14°4'S, 143°41'E, 500m, 29.IX–3.V.1961, L.&M. Gressitt, CNCD5551 (1♂, BPBM); Mount Cook National Park, 15°29'S, 145°16'E, 10.V.1981, D.H. Colless, Malaise trap, JSS183 (1♂, ANIC); Proserpine, near Kelsey Substation, XY19, 20°23'S, 148°32'E, 21m, closed forest, 3–10.V.2007, E.J. Stanisic, Malaise trap, CNCD160423–34 (12♂, QM); Buderim, SE Queensland, 26°41'S, 153°3'E, 14–22.III.1985, G.K. Waite, Malaise trap, JSS8948 (1♂, QDPC); Carnarvon National Park, Consuelo land, Race Course Spring, 24°56'S, 148°5'E, Vegetation, 12.X.2002, S. Boucher, sweeping, LEM_0016156–7 (2♂, LEM); Cooloola National Park, East Mullen hilltop, 26°0'S, 152°59'E, dry sclerophyll forest, 15.XI.2014, J.H., A.M. & A.W. Skevington, CNC374119 (1♂, CNC); Northern Territory: Barramundi Creek, 13°19'S, 132°26'E, 14.V.1998, R. Lynch, Malaise trap, JSS7905 (1♀, QM); Fogg Dam area, 12°38'S, 131°15'E, 9.IV.1980, G.F. Hevel, J.A. Fortin, JSS10533 (1♂, USNM); Queensland: Carnarvon National Park, Mount Moffatt section, 25°4'S, 148°2'E, 27–28.XI.1997, [dry sclerophyll, along permanent creek], J. Skevington & C. Lambkin, Malaise trap, JSS2293 (1♂, QM); Gunshot Creek, 13 km NW Heathlands Homestead, 11°42'S, 142°26'E , 23.III.1992, G. Daniels, M.A. Schneider, JSS8270 (1♂, QM); Mount Cook National Park, 15°29'S, 145°16'E, 10.V.1981, D.H. Colless, Malaise trap, JSS8557 (1♂, ANIC); Mica Creek, Mount Isa, 20°49'S, 139°27'E, 17–22.III.2001, 360m, D. C. Darling, Malaise trap, JSS19188 (1♂, QM); 20 km E Mareeba, 17°0'S, 145°26'E, 15.IV.1980, G.F. Hevel & J.A. Fortin, JSS10523, JSS10532 (2♂, USNM); Gordonvale, 17°5'S, 145°47'E, VII.1918, JSS10512 (1♂, USNM); New South Wales: Warrumbungle National Park, 31°16'S, 149°0'E, 17–22.XII.1998, in creek bed [in *Eucalyptus* forest], J.&A. Skevington & S. Winterton, Malaise trap, JSS5063 (1♂, QM); Arnhem Land, Maningrida, 12°3'S, 134°13'E, 5m, 20–21.III.1961, L.&M. Gressitt, CNCD5562 (1♂, BPBM); Darwin, 12°27'S, 130°50'E, 8–9.XII.1963, J. Sedlacek, CNCD5572 (1♂, ANIC); Victoria: Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31'S, 147°27'E, 4.III.1973, JSS8772 (1♂, MVMA); Dartmouth Survey, Mitta Mitta River, Loc. EA, 36°31'S, 147°27'E, 9.II.1973, JSS8768–9 (2♂, MVMA); 12 km SE Merrijig, Howqua River, 37°12'S, 146°22'E, 30.XI.1971, Neboiss, JSS8781 (1♂, MVMA); Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31'S, 147°27'E, 4.III.1973, JSS8754–5, JSS8766, JSS8773, JSS8777 (5♂, MVMA); South Australia: Mount Lofty, 35°0'S, 138°44'E, 28.XII.0–6.I.1974, 10th Australian Boy Scout Jamboree, JSS8718 (1♂, SAM).

**Non-type material examined:** Australia: Queensland: Sybella Creek, 20°53'S, 139°27'E, 17–22.III.2001, Malaise trap, JSS50563 (1♂, QM); Western Australia: 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E, 638m, in wide sandy wash, 18–21.V.2003, M.E. Irwin, F.D. Parker, Malaise trap, JSS16415 (1♂, CNC).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland, South Australia; Victoria, Western Australia) (Fig. 117).

**Notes:** This is a coastal forest species found from Darwin to Adelaide in the eastern half of the country. The two specimens from Western Australia and western Queensland that are found in arid regions break this pattern and were not included in the type series. These two specimens, JSS50563 and JSS16415, are similar to the holotype but there is a little difference in the shape of the gonopods and subepandrial sclerites in ventral view. The left gonopod is a little longer and the subepandrial sclerite is missing the two small lobes in the middle of outer margin. This is

suggestive that these specimens should be treated as a distinct new species but as these characters vary in some other *Tomosvaryella* species we have chosen to treat them as part of *T. collessi* **sp. nov.** for now. We need fresh samples to allow us to compare DNA sequence data and to see if these characters hold up across more specimens. Intraspecific genetic distance ranges from 0.0% to 3.7%. Specimen JSS8562 shows the same morphological features as genetically divergent specimens (pairwise distance 1.9–3.7%). This could be another species complex so more specimens and molecular work are needed. This species is genetically most similar to *T. biflocca* **sp. nov.** (3.2–5.8% pairwise divergence) (Supplementary file 3).

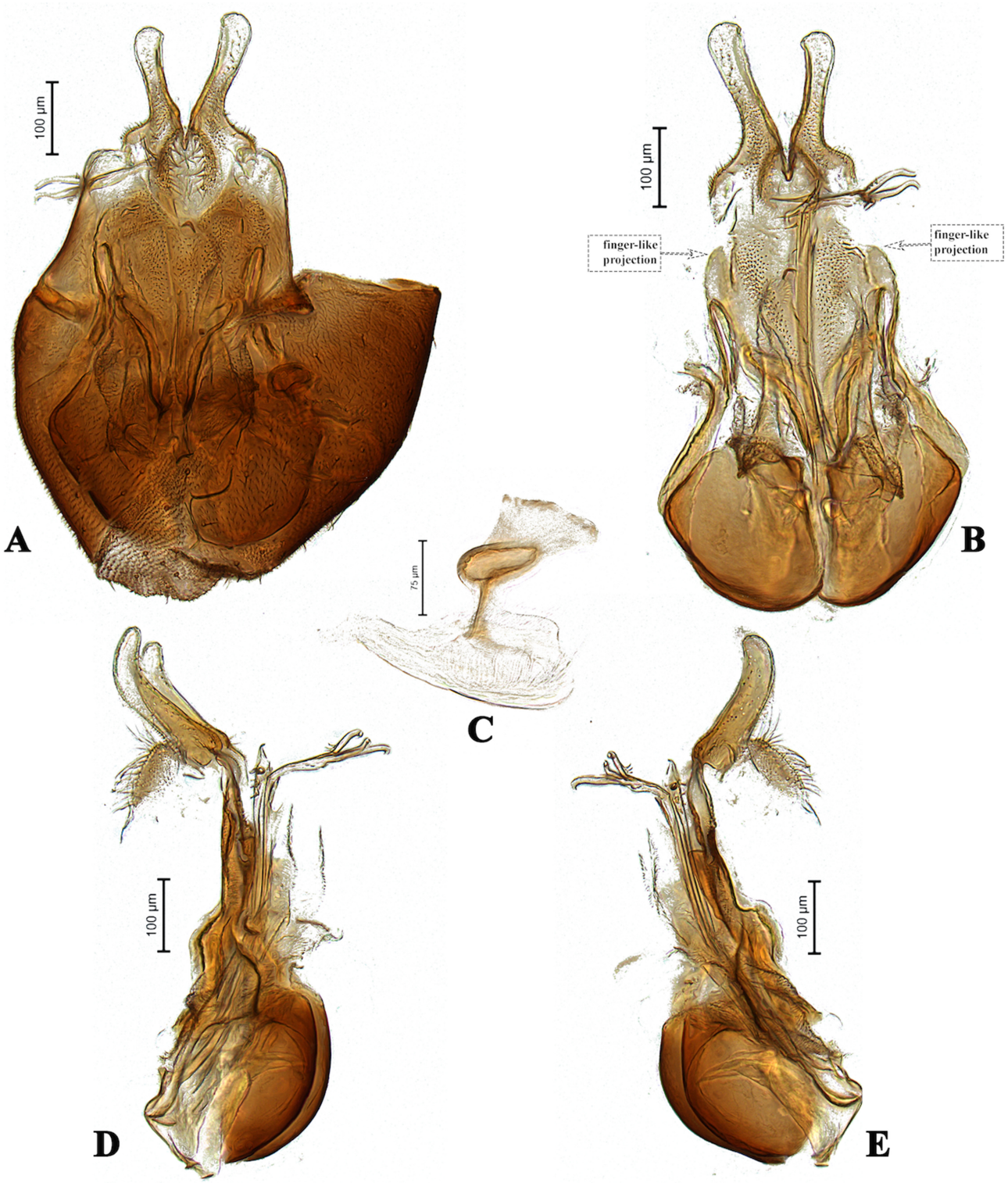



**FIGURE 24**. Male genitalia of *Tomosvaryella collessi* **sp. nov.** (JSS8561, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella cona* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:E4709C4C-3766-430A-9F2E-E3BEBFD67781
Figs 25A–E, 118, 157C

**Diagnosis:** This species can be recognized by the hind trochanter having a keel covered with erect bristles along its edge; surstyli gradually broadened towards apex in dorsal view (Fig. 25A); gonopods cone-shaped, extended towards surstyli in ventral view (Fig. 25B); phallic guide with some spines in ventral view (Fig. 25B); both surstyli straight at basal two thirds and bent towards sternite in lateral view (Fig. 25D–E).

**Description: MALE:** Body length: 2.0–2.2 mm. ***Head***. Flagellum tapering; yellow-brown, as long as wide. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver-brown pollinose; eyes touching for distance equal to 1.2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum light yellow, with 2–3 short pale bristles. Mesonotum (viewed obliquely from front) brown, upper side darker; brown pollinose. Scutellum light brown, silvery brown pollinose and without bristles along distal edge. Dorsocentral bristles distinct, dark, mostly in frontal half, as long as ¾ width of hind femur at base, pale bristles around postpronotum absent; with 3–5 postalar bristles. Halter, knob and stem light yellow, base brown, stem with 3–4 short pale bristles. ***Legs***. Mid coxa with 3–5 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly, tarsal segments yellow-brown dorsally, yellow ventrally, last segment darker. Hind trochanter with small keel, and some short, erect and condensed dark bristles along its edge, ventrobasal spines absent on fore and mid femur. Hind femur without ventroapical spines, with some bristles posteroventrally. Hind tarsomeres obviously flattened. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.0–2.1 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 silvery grey except a narrow band at its lower margin. Dispersed short dark bristles on all tergites present. Lateral bristles on first tergite present, 2–6 dark bristles up to as long as hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium rather longer than wide (MLE:MWE = 1.08). Surstyli symmetrical, elongated, constricted before the base, gradually broadened towards apex, curved to each other, left surstylus a little longer than right one (Fig. 25A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, cone-shaped, both gonopods with a distinct projection on inner margin, right one is clearly distinct; phallic guide with 4–6 dorso- dorsolateral spines, one is longer than others; subepandrial sclerite short (Fig. 25B); Genital capsule in lateral view: both surstyli straight in basal three fourths and bent towards sternite apically (Fig. 25D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 25C).

**FEMALE:** Body length: 2.6–2.7 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.9–2.3 times the width at antennae, wider in the middle; completely silver-grey pollinose, shiny black in front of ocellar triangle, no transition zone. Enlarged ommatidia silvery shining. For femur with two distinct bristles ventrobasally. Hind tibia with condensed short bristles ventrobasally. Tarsi covered with erected bristles, longer on metatarsi. Pulvilli and claws about 1.5 times as long as last tarsal segment. ***Ovipositor.*** Piercer rather straight in ventral view, very long, rather straight and upwards at tips in lateral view, reaching distal end of 2nd segment; base brownish pollinose with occasional bristles. LP:LB = 2.0. LDP:LPP = 3.0. (Fig. 157C).

**Etymology:** From the Latin conus, cone-like, in reference to the cone-shaped gonopods.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Nairana National Park (NR2M), 21°34'S, 146°55'E, 196m, closed *Acacia* woodland, 10.XI–7.XII.2010, R. Raven, H. & D. Hanrahan, Malaise trap, 18497, CNC576506 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: same details as holotype, CNC576500, CNC576503 (2♂, CNC, QM); Near Rosedale, 24°37'S, 151°54'E, 21.VII.1975, H. Frauca, JSS8524 (1♂, ANIC); Carnarvon National Park, Mount Moffatt section, 25°3'S, 147°53'E, dry sclerophyll, savanna opening, 1–2.XII.1997, J. Skevington & C. Lambkin, Malaise trap, JSS2276 (1♂, QM); Ridgepole Waterhole, 24 km eastsoutheast of Musselbrook Resource Centre, Lawn Hill National Park, 18°40'S, 138°22'E, 180m, 1.V.1995; 12.V.1995; 4.V.1995; 6.V.1995; 8.V.1995, G. Daniels & M.A. Schneider, JSS8281; JSS8286; JSS8288–89; JSS8297 (4♂,1♀, QM); Scrub Road, Brisbane Forest Park, 27°25'S, 152°50'E, 10–17.X.1997; 2–9.I.1998, S. Winterton, N. Power & D. White, Malaise trap, JSS8412, JSS8440 (2♂, QM); New South Wales: Colo Heights, Putty Road, 33°23'S, 150°45'E, 6.II.1968, D.H. Colless, JSS8666 (1♂, ANIC); Coolabah, 31°0'S 146°42'E, 12.X.1963, D.H. Colless, JSS8663 (1♂, ANIC); Nelligen (tidal flat), 35°38'S, 150°8'E, , 1.II.1973, D.H. Colless, JSS8500–1 (2♂, ANIC); Rotary Lookout, Pigeon House Range NW of Milton, 19°30'S, 140°19'E; 22.II.1979, Z. Liepa, JSS9167–8 (2♂, ANIC);

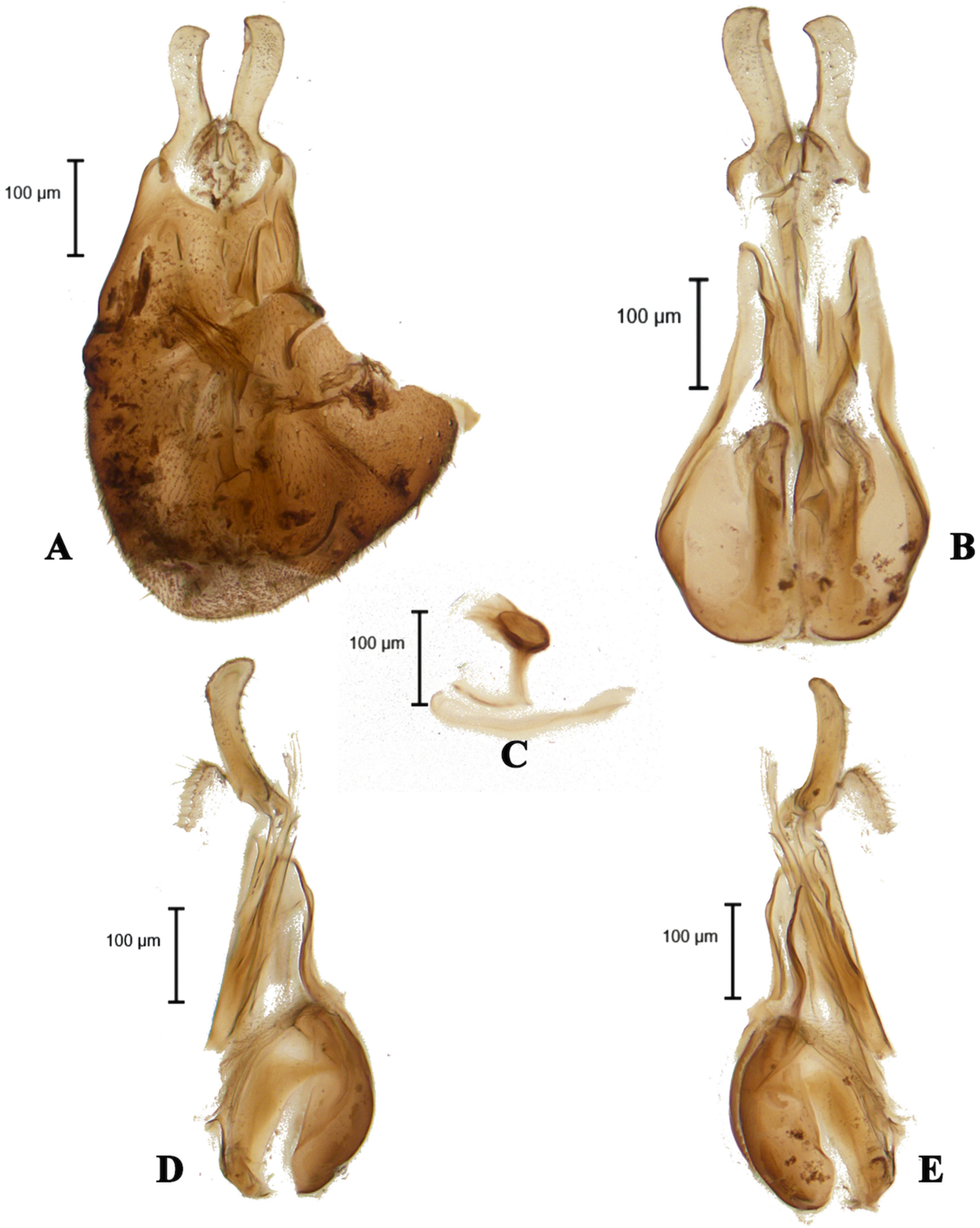



**FIGURE 25**. Male genitalia of *Tomosvaryella cona* **sp. nov.** (CNC576506, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen, B. Shieban, Malaise trap, CNC575133 (1♂, QM); Ledknapper National Reserve, 5km N Beulah Homestead (LDN1M), 28°19'S, 147°10'E, *Allocasuarina*, 18.III–15.V.2010, S. O'Sullivan, C. Lambkin, Malaise trap, CNC576717, CNC576719 (2♂, CNC, QM); Mount Kaputar National Park, Dawson, Spring, 30°17'S, 150°10'E, 1–5.XII.1987, G.R. Brown, yellow pan trap, Moericke trap, JSS8745 (1♀, ASCU); Warrumbungle National Park, 31°14'S, 149°1'E, 18.X.1997, J. Skevington & S. Winterton, Malaise trap, JSS8399 (1♂, QM); Northern Territory: Namatijira Drive, 20 km W Hugh River Crossing, 23°49'S, 133°11'E, 760m, 14–15.III.2002, C.J. Burwell, JSS13933 (1♀, QM); Standley Chasm, 23°44'S, 133°28'E, 750m, 14.III.2002, C.J. Burwell, sweep net, JSS13931 (1♂, QM); South Australia: Koonchera Dune near Koonchera Waterhole, 26°41'S, 139°30'E, 3.IX.1997, J.&A. Skevington, JSS8341 (1♀, QM); Tasmania: Chauncy Vale Wildlife Sanctuary Near Bagdad, 42°37'S, 147°15'E, 17–27.XII.1998, J.&A. Skevington, Malaise trap, JSS4836; JSS4839; JSS4843 (3♂, QM); S. Winterton, J.&A. Skevington, D. Yeates, Malaise trap, JSS4833 (1♂, QM); Cradle Mountain National Park, 41°38'S, 145°57'E, in flowering heath, 22.XII.1998–8.I.1999, J.&A. Skevington, Malaise trap, JSS4685; JSS4725; JSS4735 (2♂,1♀, QM); Western Australia: Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E; 22°43'S, 118°25'E, 789m; 799m, between drying pools in rocky Turee Creek; near rock outcrop, *Eucalyptus Eremophila* scrub, 19–25.IV.2003; 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2059; ANIC [Bulk Sample] 2040, JSS16058; JSS16253 (2♂, ANIC); Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E, 775m, on hilltop, open *Eucalyptus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, ANIC Bulk Sample 2052, JSS15210; JSS16138; JSS16143; JSS16147 (4♂, ANIC); Millstream–Chichester National Park, Black Hill Pool, 21°20'S, 117°15'E, 176m, over wide dry rocky creek bed, *Eucalyptus*, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, ANIC [Bulk Sample] 2106, JSS16315 (1♂, ANIC); 82 km S junction Karijini Drive on Great Northern Highway, 23°7'S, 119°6'E, 694m, wash with pools, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15674 (1♂, CNC); Karijini National Park, Banjima Road, 22°24'S, 118°16'E, 690m, in creek with pools, unburnt *Eucalyptus* grassland, 15–18.V.2003, C. Lambkin, J. Recsei & N. Starick, Malaise trap, JSS15975 (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E; 22°44'S, 118°25'E, 789m; between drying pools in rocky Turee Creek; dry Turee Creek, grassy open *Eucalyptus* scrub, 19–25.IV.2003; 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16166; JSS16090; JSS16093; JSS16103 (3♂,1♀, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3825; CNCD3832–3; CNCD3839; CNCD3862 (3♂,2♀, CNC); Near Walyunga National Park, 31°44'S, 116°2'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7627 (1♂, QM); Neerabup Lake National Park, 31°38'S, 115°43'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7637 (1♂, QM); Pebble Mouse Creek on Great Northern Highway, 62 km E Junction, Karijini Drive, 23°5'S, 118°55'E, 713m, damp river bed, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15880 (1♂, CNC).

**Distribution:** Australia (New South Wales, Queensland, South Australia, Tasmania, Western Australia) (Fig. 118).

**Notes:** This species occurs from the coast to *Acacia*-dominated habitats in inland Queensland and New South Wales. *Tomosvaryella cona* is morphologically and genetically similar to *T. calcarilonga* **sp. nov.** (1.1–2.1% pairwise distance). In *T. calcarilonga* **sp. nov.**, the surstyli are wider in the middle in dorsal view, there is a Y-shaped spine along the posterior margin of abdominal sternite 4 and extremely long apical spurs are present on the mid tibia (Fig. 150E). These character differences are consistent so despite other similarities we recognize two species.

### *Tomosvaryella creagra* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:182BD887-AAAC-4F6C-924B-F5CD4DBA14DA
Figs 26A–D, 119

**Diagnosis:** This species can be recognized by the shape of its surstyli in dorsal view, straight in the basal half, falciform in the apical half (Fig. 26A); gonopods extended towards surstyli; phallic guide with three equal-sized dorsolateral downward-directed spines; subepandrial sclerite and hypandrial apodeme distinct in ventral view (Fig. 26B); phallic guide widened at the middle and sinuous in lateral view (Fig. 26C–D).




**FIGURE 26**. Male genitalia of *Tomosvaryella creagra* **sp. nov.** (JSS15595, WAM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

**Description: MALE:** Body length: 2.5 mm (from head to first segment of abdomen). ***Head***. Scape and pedicel dark brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.2 times the length of ocellar triangle. Occiput grey pollinose, covered by short dark bristles. ***Thorax***. Postpronotum light yellow, with 2–6 distinct light brown bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part greyer; scutum with scattered bristles at anterior supra-alar area. Postalar callus light brown with 3–4 brown bristles in upper margin. Scutellum black, silvery pollinose with 8–10 bristles along distal edge. Halter, knob pale, stem brown. ***Legs***. Mid coxa with two dark bristles. Trochanters brown, femora dark brown, shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow ventrally and brown dorsally, last segment darker. Hind trochanter silvery pollinose, without specific feature; ventrobasal spines absent on fore and mid femur, two rows ventroapical present. Hind femur without ventroapical spines. Tibiae with two rows of short black bristle on anterior and three rows on posterior side. Hind tarsomeres distinctly flattened (especially tarsomeres 1–3), hind metatarsus as long as 2–4 combined; posterior corners with distinct bristles on all tarsomeres. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Dissected except tergite 1. Tergites 1 dark, silvery pollinose. Lateral bristles on first tergite present, 6–10 dark bristles up to as long as 3/4 hind femur's width at base, distributed from lateral to its middle. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli symmetrical, basal half straight, small depression ventromedially, apical half falciform (Fig. 26A). Genital capsule in ventral view: gonopods equal in height, both gonopods extended towards surstyli; phallic guide with three same sized dorsolateral downward spines; subepandrial sclerite wide and distinct with a crescent-shaped wrinkle in its center; hypandrial apodeme long and distinct (Fig. 26B); Genital capsule in lateral view: both surstyli widened and rather rounded at basal two thirds, narrowed and curved towards sternite at apical third; phallic guide widened at the middle and sinuous (Fig. 26C–D). **FEMALE:** unknown.

**Etymology:** From the Greek kreagra, meathook, in reference to the hooked surstyli.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Pine Hill, Cape Arid N[ational] P[ark], Balladonia Road, 33°18'S, 123°22'E, 130m, mallee woodland, 31.X–18.XI.2003, C. Lambkin & J. Recsei, Malaise trap, JSS15595 (1♂, WAM).

**Distribution:** Australia (Western Australia) (Fig. 119).

**Notes:** The only known specimen was collected in mallee woodland in Cape Arid National Park. This species is genetically most similar to *T. irwini* **sp. nov.** (8.2% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella culgoaensis* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:76BEA6DD-BF22-4DE5-9BC4-BF4CEC027016

Figs 27A–D, 116

**Diagnosis**: This species can be recognized by a few short dark bristles on the hind trochanter ventromedially; elongated and slender surstyli in dorsal view (Fig. 27A); gonopods more elongated towards surstyli in ventral view (Fig. 27B); phallic guide with four spines dorsomedially, one is longer than others (Fig. 27B–D).

**Description**: **MALE**: Body length: 2.2–2.4 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.2–1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper half. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and without bristles along the distal edge. Dorsocentral bristles undeveloped, indistinct, somewhat visible along frontal edge, a few pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with two long and two short, pale bristles. Trochanters and femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 and distal extremity of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, base of last segment slightly brown. Hind trochanter without a keel, but with a few short dark bristles (5–7) in a groups ventromedially. Ventroapical row of spines on fore femur 3–4 very weak; 5–7 short, black spines on mid femur; no spines on hind femur, only 4–5 stronger dark bristles at 2/3 from base, where femur is wider (up to as long as 1.2–1.4 times the width of hind tibia at the distal end). Ventrobasal spines (2) present on fore and mid femora and absent on hind femur (both legs: one strong, one weaker). Subapical (distal) spines on first four tibiae present (short). Hind metatarsus slightly flattened. Pulvilli as

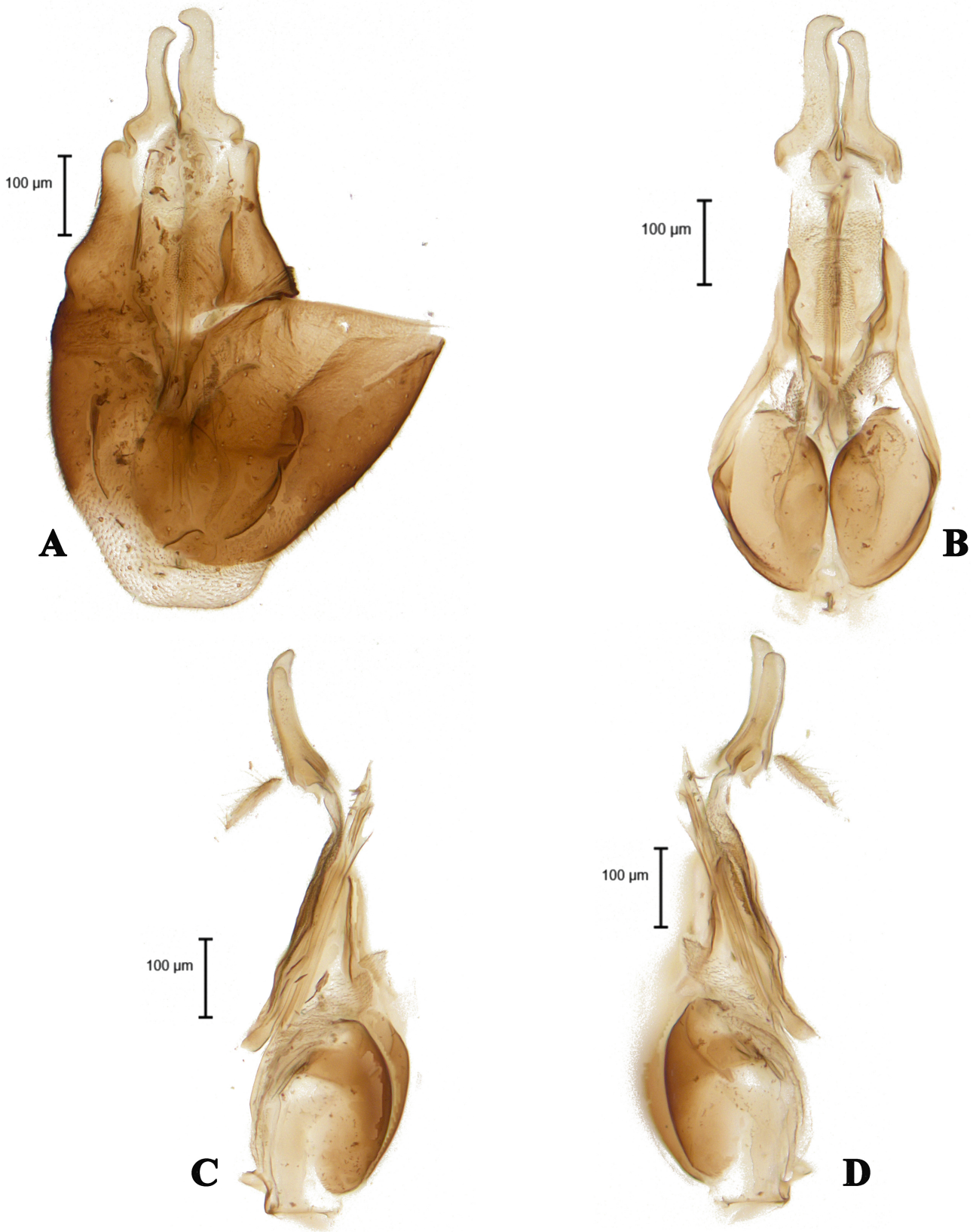



**FIGURE 27**. Male genitalia of *Tomosvaryella culgoaensis* **sp. nov.** (CNC575143, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

long as the last tarsal segment, shorter on metatarsi. ***Wing***. Length: 2.4–2.5 mm. Upper side of basal costal cell with one dark and short bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 distinct brown setulae on tegula, mostly along the edges. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (spot on 5 larger). Dispersed strong dark bristles on all tergites absent, only occasional indistinct bristles present. Lateral bristles on first tergite present, 4–5 short pale bristles in a row up to 0.5–0.7 times as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 medium sized, brownish; membranous area elongated, broadening on dorsal part; epandrium brown, surstyli yellow, slim. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli brown, gray pollinose. Epandrium wider than long (MLE:MWE = 0.8). Surstyli rather symmetrical, broadened at base, elongated and slender, pointing towards each other at apex, left is wider than right one (Fig. 27A). Genital capsule in ventral view: gonopods more elongated towards surstyli (reach cerci), equal in height, hypandrium broad, subepandrial sclerite rectangular-shaped covered with transverse streaks (Fig. 27B), phallic guide with four spines dorsolaterally (one left spines longer than others; the longest one twice as length as others). Genital capsule in lateral view: both surstyli rather straight, left apically bent towards sternite (Figs 27C–D). **FEMALE:** Unknown.

**Etymology**: This species is named after the only place that specimens have been collected, Culgoa National Park.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.i–18.v.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575143 (1♂, QM); **PARATYPES**: AUSTRALIA: New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.i–18.v.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575148, CNC575156 (1♂, QM, 1♂ CNC).

**Distribution**: Australia (New South Wales) (Fig. 116).

**Notes:** Culgoa National Park has a rich diversity of *Tomosvaryella* with 20 species known from only 68 specimens. *Tomosvaryella culgoaensis* is currently endemic to the park and named to raise awareness of this remote borderland park that includes part of Queensland and New South Wales.

### *Tomosvaryella dactylopoda* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:92F7993B-8C13-404E-9F49-7DE06C22CB1D

Figs 28A–E, 117

**Diagnosis**: This species can be recognized by the two patches of spines on the hind trochanter; surstyli elongated in dorsal view (Fig. 28A); phallic guide with some different-sized spines; both gonopods with a finger-like projection in ventral view (Fig. 28B).

**Description**: **MALE**: Body length: 3.5 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum dark brown, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose, slightly grayish also from the side. Scutellum brown pollinose and with 6–8 weak bristles along the distal edge. Dorsocentral bristles developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob brown, stem black. ***Legs***. Mid coxa with two long dark bristles. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow-brown, tibiae black, tarsal segments dark brown, only yellowish ventrally. Hind trochanter with a few short dark spines (5–7) in a group at the base ventrally ("echidna"-like), at distal end with 1 strong and 2–3 weaker bristles in a small spot (appears to be one needle). Ventroapical row of spines on fore femur missing, 4–6 very short, black spines on mid femur; no spines on hind femur, only 6–8 pale bristles posteriorly on distal half (as long as the half the width of hind tibia at the distal end); fore and mid femora with two dark bristles ventrobasally; hind femur bent in a slight arch when observed from above; hind tibia slightly bent at middle in posterior view. Hind metatarsus flattened, slightly longer than 2–4 combined covered by semi-erect bristles dorsally. Pulvilli as long as last tarsal segment. ***Wing***. Length: 4.0 mm. Upper side of basal costal cell with one dark and long bristles. Fourth costal section 4–5 times as long as third costal section, third section appears to be unusually short. Cross-vein r-m distal to middle of discal cell. 5–7 dark setulae

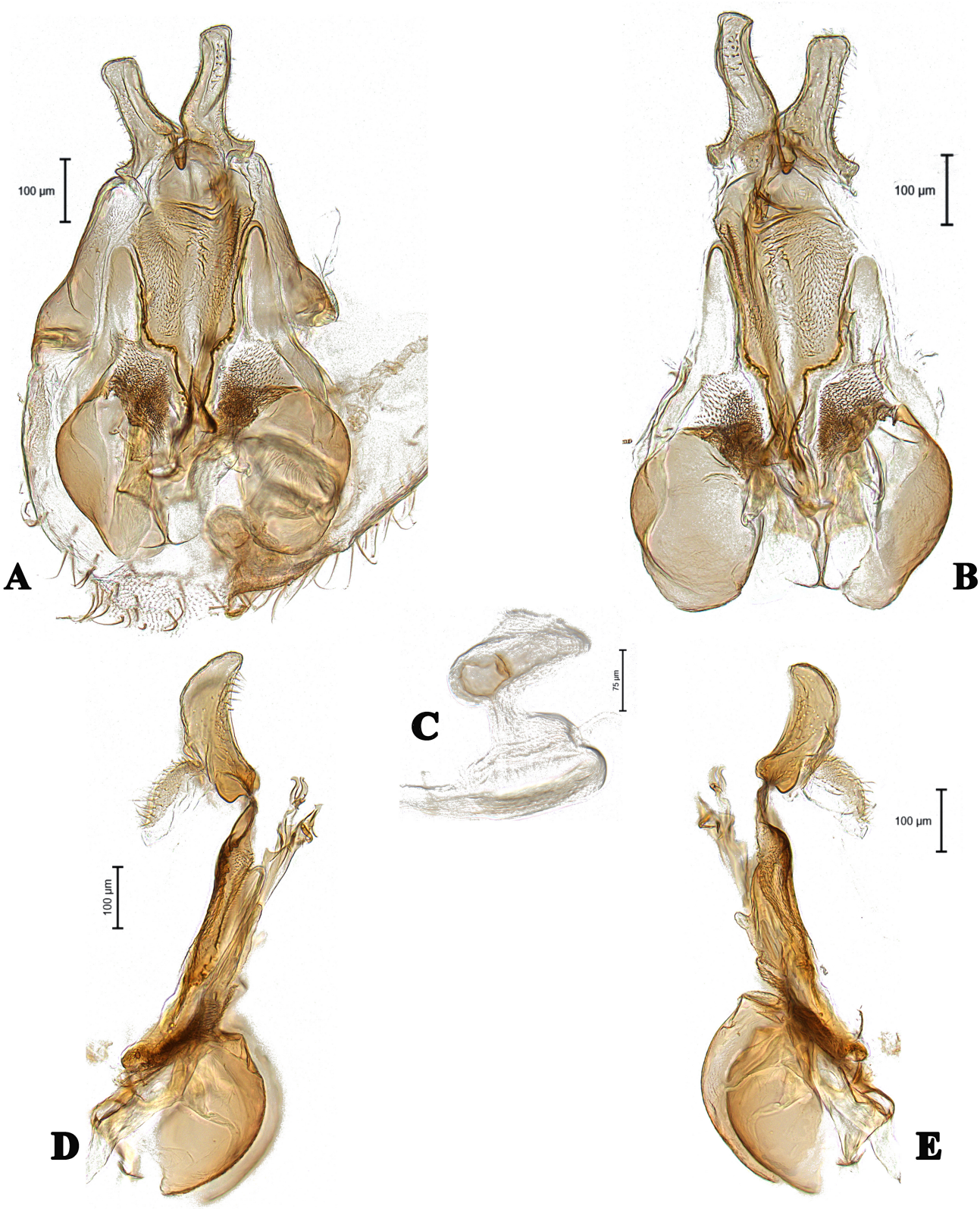



**FIGURE 28**. Male genitalia of *Tomosvaryella dactylopoda* **sp. nov.** (JSS8703, SAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

on tegula. ***Abdomen***. Dissected: tergite 1 silvery grey, Lateral bristles on first tergite present, 6–8 brown bristles in a row up to as long as 1.5–1.8 times the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.5). Surstyli symmetrical, elongated with a broad base, left slightly longer than right one (Fig. 28A). Genital capsule in ventral view: subepandrial sclerite covered with some transverse streaks except apical third close to surstyli; both gonopods with a finger-like projection extended towards surstyli, a small protrusion presented on these finger-like projections extended towards phallus, left gonopod longer than right one (Fig. 28B), phallic guide straight, with 5–6 different-sized spines dorsolaterally before apex (longer ones as wide as left surstylus); phallus with three short ejaculatory ducts. Genital capsule in lateral view: both surstyli curved towards sternite, with a small projection in basal towards hypandrium (Figs 28D–E); phallic guide with a dorsally hooked apex (turned in the photo) (Fig. 28D–E); ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 28C).

**FEMALE**: Unknown.

**Etymology**: This species is named after the finger-like projections on the gonopods (from the Greek daktylos for finger).

**Examined material**: **HOLOTYPE**: AUSTRALIA: South Australia: Great Vict[oria] Desert, vehicle net bet[ween] 145–165 km N[orth] Cook, 27°52'S, 130°22'E, 30.viii.1980, J. Forrest, JSS8703 (1♂, SAM).

**Distribution***:* Australia (South Australia), Fig (117).

**Notes:** Based on the genitalia characters, this species is similar to *Tomosvaryella mathiesoni* **sp. nov.,** where the surstyli in dorsal view lack small triangular projections at base along outer margin (Fig. 61A).

### *Tomosvaryella danielsi* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:A06616B0-29BA-4BE3-98F0-19214F9B154D
Figs 29A–E, 119, 144A

**Diagnosis:** This species can be recognized by the hind trochanter having some ventrobasal bristles and some shorter bristles in a row towards the apical margin; hind femur with 8–10 long bristles posteroventrally; surstyli elongated, with a patch of distinct bristles in its middle (Fig. 29A); both gonopods extended towards surstyli, pointed at apex in ventral view (Fig. 29B).

**Description: MALE:** Body length: 2.9–3.1 mm. ***Head***. Pedicel with two short dark upper bristles and one lower bristle. Flagellum yellow-brown, long tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Vertex dark, lacking pollinosity. Occiput silvery pollinose with scattered sort dark bristles. ***Thorax***. Postpronotum pale, with two long and one short dark bristles. Mesonotum (viewed obliquely from front) silvery brown pollinose, posterior part more brown. Scutellum silvery brown pollinose and with 5–8 bristles along distal edge. Halter, knob pale, tip brownish, stem dark. ***Legs***. Mid coxa with three long and 3–5 short dark bristles. Trochanters and femora black; knees and basal 1/6 of tibiae and tarsomeres yellow. Hind trochanter with some longer black ventrobasal bristles and some shorter bristles in a row towards apical margin; ventrobasal short spines present on all femora. Fore and mid femora with two distinct bristles ventrobasally. Hind femur without ventroapical spines, except 8–10 equally spaced sort bristles posteroventrally. Subapical (distal) spines on first four tibiae present (short). Hind metatarsus flattened, almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.1 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 long dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites black, all tergites silvery grey pollinose covered with short brown bristles. Lateral bristles on first tergite present, 5–7 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli elongated, both surstyli with a patch of distinct bristles in the middle (Fig. 29A), left surstylus broadened in the middle. Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex; phallic guide with 3–4 short dorso- dorsolateral spines, one is longer than others; subepandrial sclerite short, with a fin-shaped projection in its center (Fig. 29B); Genital capsule in lateral view: both surstyli curved towards sternite (Fig. 29D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 29C).

**FEMALE:** Unknown.

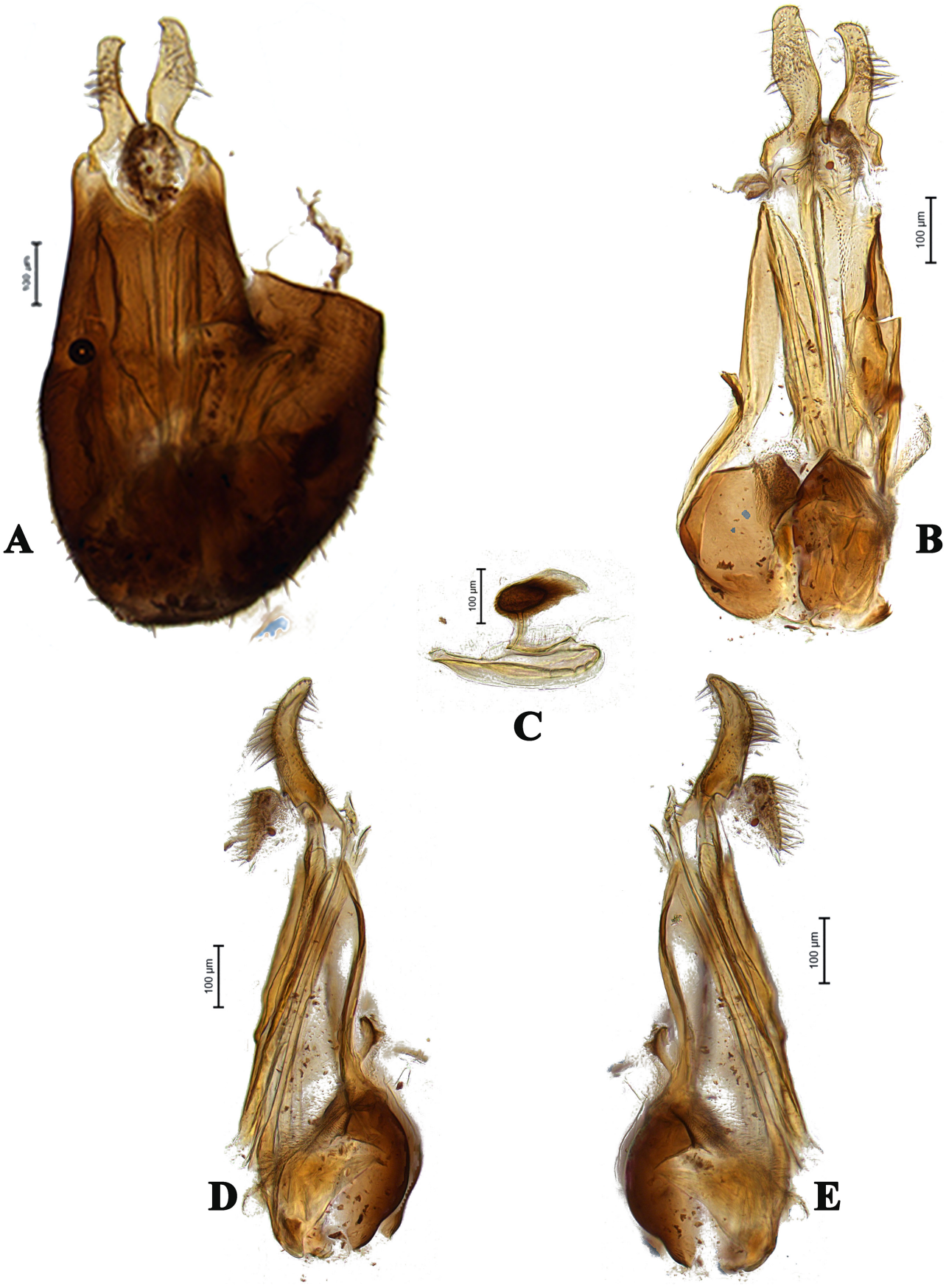



**FIGURE 29**. Male genitalia of *Tomosvaryella danielsi* **sp. nov.** (JSS8278, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Etymology:** This species in named in honour of Greg Daniels. Greg is one of the best collectors in Australia and has contributed massively to our understanding of the continental fauna. He contributed 56 specimens and 22 species to this revision (Supplementary file 2).

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Lake Broadwater n[ea]r Dalby, site B, 27°21'S, 151°6'E, feeding on blossom, *Acacia spectabilis*, 30.VIII.1986, G.&A. Daniels, JSS8924 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Brisbane, 27°28'S, 153°1'E, 28.III.1952, J. Davis, JSS8278 (1♂, QM); Kholo, 27°29'S, 152°48'E, 9.III.1973, Colbo, JSS9708 (1♂, QM); Charleville, 26°24'S, 146°14'E, 15.II.1970, A.L. Dyce, car net, ex. spirit via ethyl acetate, JSS8618 (1♂, ANIC); Western Australia: Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16114 (1♂, ANIC).

**Distribution:** AUSTRALIA (Queensland, Western Australia) (Fig. 119).

**Notes:** Although the holotype specimen notes that the specimen was feeding on an *Acacia* blossom, it was more likely simply sitting on it. There is no confirmed evidence of nectar feeding in Pipunculidae despite a paper to the contrary (Kehlmaier 2014). The paper documents two cases of pipunculids on flowers but does not conclusively document nectar feeding. JHS has observed Pipunculidae on flowers in a few instances and close observation confirmed that they were not feeding. Although we failed to obtain a sequence of JSS16114 from Western Australia, its external and genitalia features are the same as the holotype and support treatment of these widely disjunct specimens as a single species. More samples are needed to test the species concept.

### *Tomosvaryella dasyprocta* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:6CF7C812-C277-47E7-B330-7F3E204B8064

Figs 30A–E, 120

**Diagnosis**: This species can be recognized by hind trochanter with a keel covered by short erect bristles along its edge; extremely large and hairy cerci, gradually widened towards epandrium in lateral view (Fig. 30D–E); asymmetrical surstyli in dorsal view (Fig. 30A); phallus with some small spines emerging before the ejaculatory ducts; both surstyli curved toward sternite, covered by long bristles in lateral view (Fig. 30 D–E).

**Description**: **MALE**: Body length: 4.2–4.5 mm. ***Head***. Flagellum long, acuminate; brown, light brown at frontal edge, grey pollinose. Scape, pedicel dark. Upper side of pedicel with 3–4 short dark bristles. Face silvery pollinose. Frons, upper part shining black; eyes touching for distance equal to 1.2–1.4 times the length of ocellar triangle. Occiput silvery pollinose with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 3–4 short, pale bristles. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer. Scutellum brownish pollinose and with 3–6 weak bristles along the distal edge. Dorsocentral bristles short and dark, somewhat longer along frontal edge, postalar callus with two short and dark bristles. Halter, knob and stem brown at apex, black at base. ***Legs***. Mid coxa with 3–4 long, dark bristles. Trochanters, coxae and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow, tarsal segments dark brown, ventrally somewhat paler, last segment same dark brown. Hind trochanter with a keel, extended from basal to apical covered with short erect bristles along its edge. Ventroapical row of 4–5 short spines on all femora present, all femora with 10–12 long bristles dorsally, 2–3 dark short spines present on fore and mid femora ventrobasally. Subapical (distal) spines on first four tibiae absent. Hind tarsi slightly elongated, metatarsus almost as long as 2–5 combined; stronger, peg-like dark spines on metatarsus laterally along anterior edge. Pulvilli as long as last tarsal segment. ***Wing***. Length: 4.3–4.6 mm. Upper side of basal costal cell with two dark bristle, one is longer. Fourth costal section 3–3.5 times as long as third costal section (section 3 appears short). Cross-vein r-m distinctly distal to middle of discal cell. 6–8 distinct dark bristles on tegula. ***Abdomen***. Viewed obliquely from front tergites black, tergite 1 silvery grey. Dispersed strong dark bristles on all tergites present. Lateral bristles on first tergite present, 18–20 different-sized and strong bristles. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.6). Surstyli asymmetrical, widened at base, right surstylus wider, pointed towards left one before apex at inner margin; left surstylus curved towards right side away from right one, both surstyli covered by dense short bristles in basal half (Fig. 30A). Genital capsule in ventral view: gonopods pointed at apex, equal in height; hypandrium sclerotized, subepandrial sclerite long (Fig. 30B); phallus with three short ejaculatory ducts. Genital capsule in lateral view: extremely large cerci, as large as surstyli covered with long dense bristles at the end;

both surstyli curved towards sternite, broadened at the middle, covered with long bristles; phallus with some short spines before emerging ejaculatory ducts; phallic guide with some spines, one is longer. (Figs 30D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 30C).

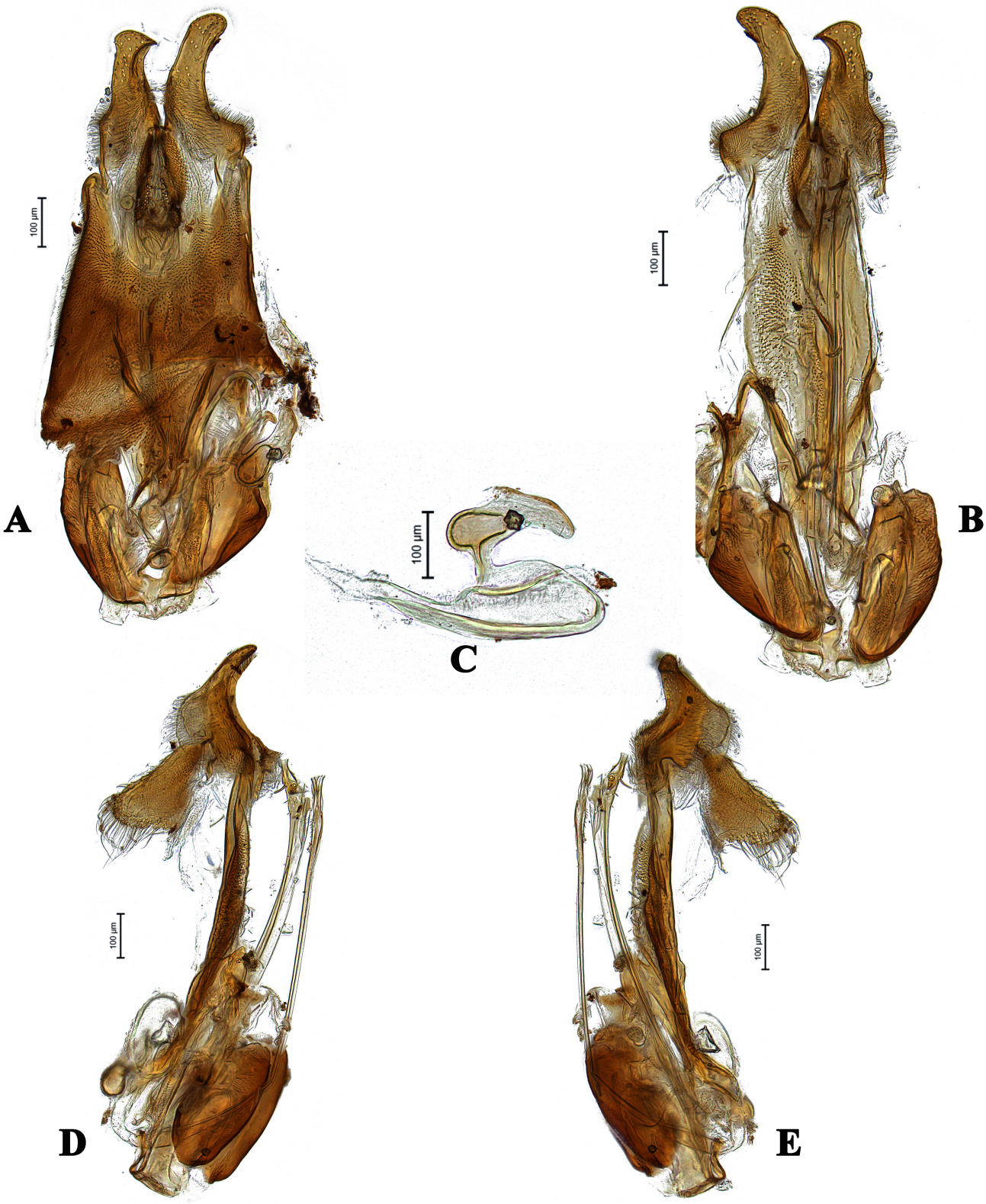



**FIGURE 30**. Male genitalia of *Tomosvaryella dasyprocta* **sp. nov.** (JSS2200, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE:** unknown.

**Etymology**: The name is derived from the Greek dasys, hairy, shaggy, tufted or dense and proktos for anus, rectum or tail, in reference to the extremely hairy cerci.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Carnarvon National Park, Hilltop north of Tombs, 25°5'S, 147°52'E, 26.XI.1997, J. Skevington & C. Lambkin, hand collected, JSS2200 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: same data as holotype, JSS2199; JSS2201–2; JSS2204–5; JSS2219–20; JSS2223 (1♂, CNC; 6♂, QM; 1♂, USNM); Isla Gorge National Park, 25°11'S, 149°58'E, 320m, 3.XI.1991, G. Daniels, JSS8904 (1♂, QM); South Australia: Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, 9.X.1997, J.&A. Skevington & C. Lambkin, JSS8378 (1♂, QM); Western Australia: Karijini National Park, Juna Downs Road, 22°43'S, 118°25'E, 799m, near rock outcrop, *Eucalyptus Eremophila* scrub, 25.IV–14.V.2003, C. Lambkin, T. Weir, Malaise trap, ANIC [Bulk Sample] 2040, JSS16046 (1♂, ANIC); 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E, 638m, wide sandy wash, 7–18.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15720 (1♂, CNC).

**Distribution:** Australia (Queensland, South Australia, Western Australia) (Fig. 120).

**Notes:** This species appears to favour dry sclerophyll forest and has been found hilltopping.

### *Tomosvaryella deltastyla* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:98F30D6E-B2CF-453B-9054-8FC8027DDABD

Figs 31A–D, 121, 155E

**Diagnosis:** This species can be recognized by triangle-shaped surstyli in dorsal view (Fig. 31A); epandrium with a depression in its middle divided into two parts by epandrial groove in dorsal view (Fig. 31A); membranous area approaching epandrium; broadened gonopods, phallic guide strong with one longer spine before apex and some condensed small spines in middle in lateral view (Fig. 31C–D); phallus with a small membranous sheath close to ejaculatory ducts, one of ejaculatory ducts with a small denticulated sheath at its base (Fig. 31C–D); subepandrial sclerite separated into two parts from its middle towards surstyli (Fig. 31B).

**Description: MALE:** Body length: 2.2–2.3 mm. ***Head***. Flagellum long acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 5–6 black erect bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish silvery pollinose and with 8–10 erect black bristles along the distal edge, in length up to the width of hind femur at base. Dorsocentral bristles massive, black, uniform in length, almost as long as bristles on scutellum, numerous black bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments brown dorsally, yellow ventrally, last segment darker. Hind trochanter gray pollinose, with 2–4 bristles close to hind coxa, ventrally slightly flattened half circle (completely flat dorsally); ventrobasal spines (2) present on fore and missing on mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 14–16 equally spaced, equally long bristles, posteroventrally, longest up to 1/4 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind metatarsus not flattened, slightly longer than 2–4 combined and with strong dark bristles dorsally, scrub-like bristles ventrally (t1 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.2 mm. Upper side of basal costal cell with one long dark bristle and 1–3 shorter bristles. Fourth costal section 2–2.2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 distinct black setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5, in length up to 1/3 width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 short dark bristles up to as long as 1/3 width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.6–1.8 times as long as ST8. Genitalia without dissection: ST8 large, rounded triangle in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous area with round part extended dorsally and narrow part approaching epandrium, mostly directed posteriorly; epandrium brown, surstyli yellow, broad at base. ***Genitalia***.

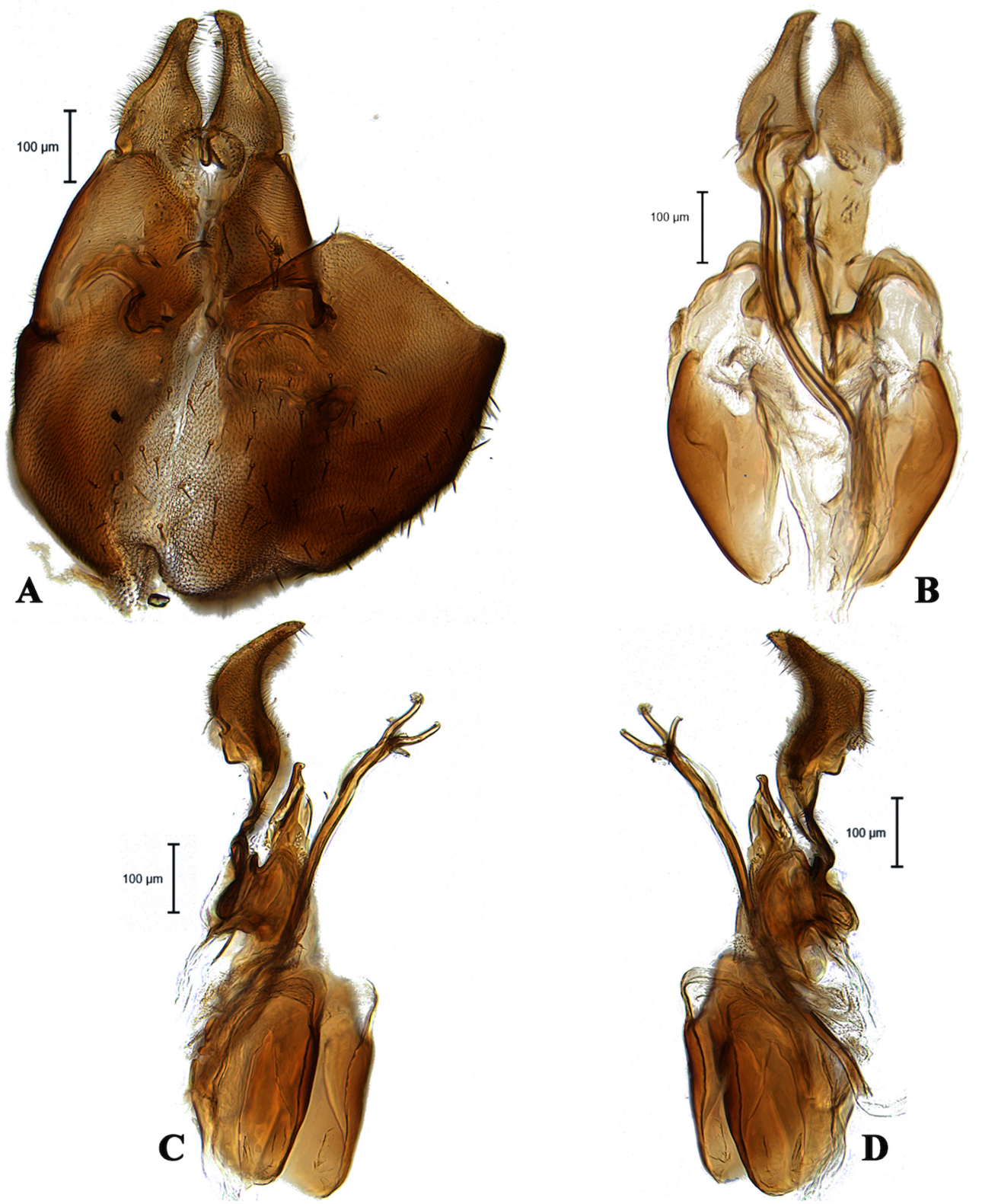



**FIGURE 31**. Male genitalia of *Tomosvaryella deltastyla* **sp. nov.** (JSS16089, WAM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

Genital capsule in dorsal view: epandrium slightly as long as wide (MLE:MWE = 1.07), with a depression in its middle divided into two parts by epandrial groove. Surstyli triangle-shaped, broadened in basal half, strongly narrowed in apical half (Fig. 31A). Genital capsule in ventral view: gonopods widened, equal in height; phallic guide strong and wide, with one upward spine dorsally before apex, subepandrial sclerite separated into two parts from its middle towards surstyli, phallus with a small membranous sheath close to ejaculatory ducts, one of ejaculatory ducts with a small denticulated sheath at its base (Fig. 31B); Genital capsule in lateral view: both surstyli broadened at middle and narrowed apically, curved towards sternite; phallic guide strong with some condensed small spines dorsally in its middle, pointed at apex (Fig. 31C–D).

**FEMALE:** As male except for the following characters. Frons, eyes separated, as wide as 1.5–1.8 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black in front of ocellar triangle, smooth change in transition zone (at 1/3 from ocellar triangle) to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–3 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** straight in ventral view, down curved at distal end and robust in lateral view (yellow piercer, brown base), reaching distal end of 3rd segment; base silvery pollinose with dispersed short dark bristles. LP:LB = 2.5. LDP:LPP = 1.8. (Fig. 155E).

**Etymology:** After the Greek capital letter delta, shaped like a triangle, in reference to the triangle shaped surstyli.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°44’S, 118°25’E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16089 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°44’S, 118°25’E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.V.2003; 25.IV–14.V.2003, C. Lambkin, T. Weir, Malaise trap, JSS16101, JSS16106 (1♂,1♀, ANIC); Queensland: Cudmore National Park (CM3M), 22°58’S, 146°23’E, 351m, *Melaleuca* heath near drying creek, 28.X.2010–2.VIII.2011, Lambkin, Starick & Bailey, Malaise trap, CNC574703 (1♂, QM); Cudmore National Park (CM1M), 22°54’S, 146°21’E, 365m, *Eucalyptus* woodland with *Spinifex*, 27.X.2010–2.VIII.2011, Lambkin, Starick & Bailey, Malaise trap, CNC576550, CNC591868 (2♂, CNC, QM); New South Wales: Ledknapper National Reserve, 5km N Beulah Homestead (LDN1M), 28°19’S, 147°10’E, *Allocasuarina*, 18.III–15.V.2010, S. O’Sullivan & C. Lambkin, Malaise trap, CNC576713 (1♂, QM); Ledknapper National Reserve, 7.3km ENE Beulah Headquarters (LDN2M), 29°21’S, 146°13’E, *E. melanopholia*, *Spinifex*, 10.XII.2009–18.III.2010, S. O’Sullivan, K. Taylor, Malaise trap, CNC576515 (1♂, QM).

**Distribution:** Australia (New South Wales, Queensland, Western Australia) (Fig. 121).

**Notes:** This is another species with a wide distribution in the Australian outback. It will be nice to fill in some of the gaps in the range over time to help understand its host, ecology and distribution in more detail. Intraspecific genetic distance is 0.0%. This species is genetically closest to *T. ngarrbekiota* **sp. nov.** (8.3% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella denhamensis* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:FDDC09BD-A50A-4D83-A02E-80FCEB0E066E

Figs 32A–E, 117

**Diagnosis:** This species can be recognized by the hind trochanter having a distinct edge and some short bristles; elongated surstyli in dorsal view (Fig. 32A); phallic guide with two long spines dorsolaterally (Fig. 32B); gonopods extended towards surstyli (Fig. 32B); both surstyli broadened with a small hump in dorsomedial margin in lateral view (Fig. 32D–E).

**Description: MALE:** Body length: 2.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 indistinct bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish silvery pollinose and with 10–12 short bristles along the distal edge. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments brown dorsally, yellow ventrally, last segment darker. Hind trochanter with edge, 45 degrees

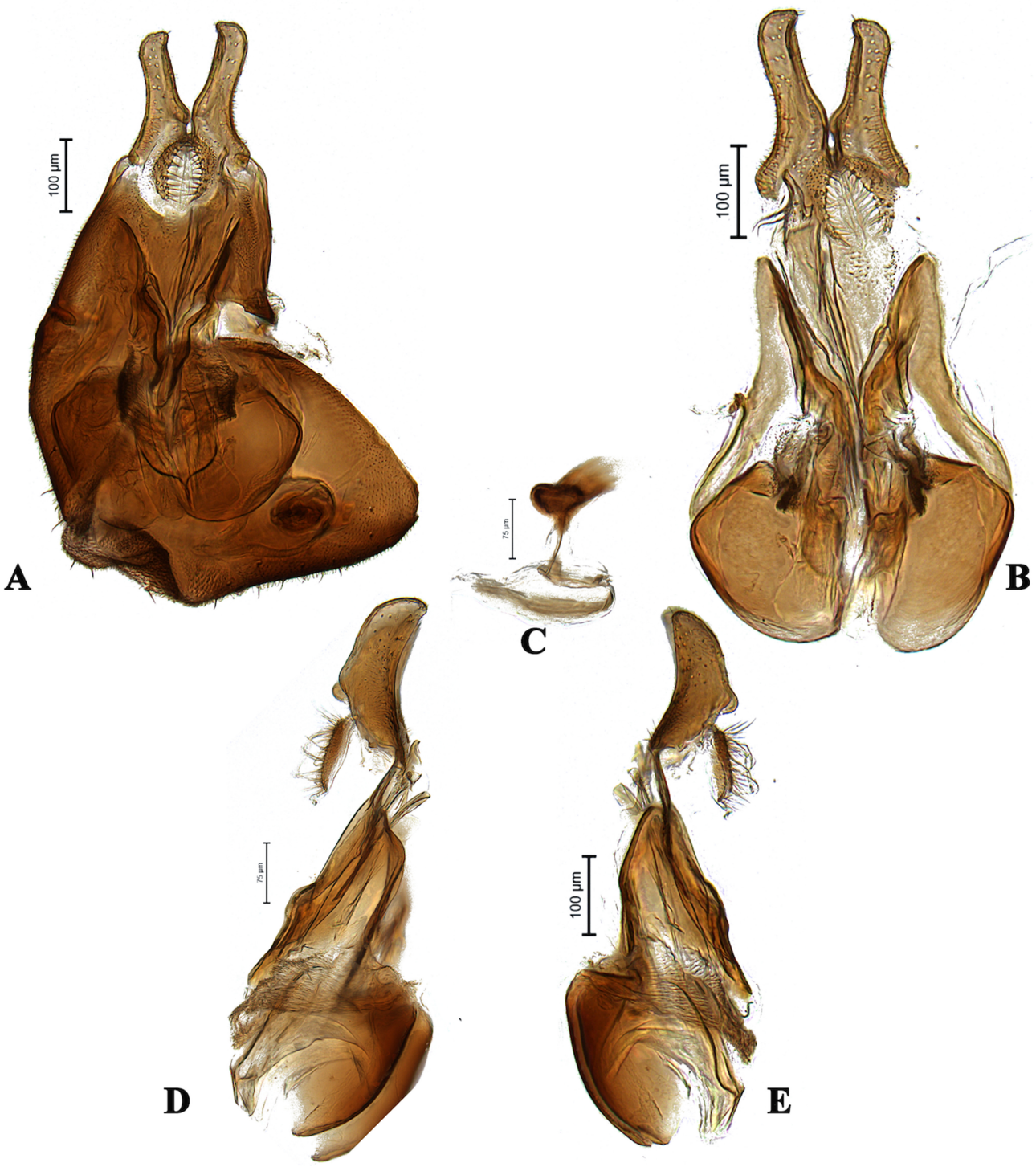



**FIGURE 32**. Male genitalia of *Tomosvaryella denhamensis* **sp. nov.** (JSS7375, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

to the long axis of trochanter, distal part shiny, 3–4 short bristles on proximal part, otherwise velvet-like coverage; ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 10–12 equally spaced, equally long bristle, posteroventrally, longest up to 1/3 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind metatarsi not flattened, as long as 2–4 combined, scrub-like bristles ventrally (t1 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2 times as long as third costal section. Cross-vein r-m slightly distal to middle

of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Dissected. tergite 1 silvery grey, Lateral bristles on first tergite present, 4–6 short dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli elongated (Fig. 32A). Genital capsule in ventral view: both gonopods extended towards sternite, equal in height; phallic guide strong with two small lateral lobes before apex, with 3–4 dorso- dorsolateral spines, two spines longer than others, subepandrial sclerite distinct (Fig. 32B); Genital capsule in lateral view: both surstyli broadened with a small hump at dorsomedial margin, smoothly curved towards sternite (Fig. 32D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 32C).

**FEMALE:** Unknown.

**Etymology:** Named after the small town closest to where the only known specimen was collected.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: ~3 km N[orth] of Denham, 25.909°S, 113.531°E, hilltop, 12.XII.1999, J. Skevington, JSS7375 (1♂, WAM).

**Distribution:** Australia (Western Australia) (Fig. 117).

**Notes:** One hundred specimens of 10 species of *Tomosvaryella* were collected on the amazing little hilltop where the only specimen of this species was found. The site is extremely arid and only one other pipunculid genus was caught here (four specimens of *Clistoabdominalis trochanteratus* (Becker 1900)). *Tomosvaryella T. denhamensis* **sp. nov.** is genetically closest to *T. bulbosa* **sp. nov.** (8.1% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella dirigostyla* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:5B9944C3-CF08-4939-B1A1-68FD8A900CD3

Figs. 33A–F, 121

**Diagnosis:** This species can be recognized by the hind trochanter bearing a few short dark bristles in a row ventrally; surstyli elongated in dorsal view (Fig. 33A); gonopods extended towards surstyli in ventral view (Fig. 33–B); phallic guide with four spines dorsomedially (one is longer); both surstyli straight, curved towards sternite in apical third in lateral view (Fig. 33D–F).

**Description**: **MALE**: Body length: 2.6–3 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 extra-long, pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 10–12 bristles along the distal edge. Dorsocentral bristles well developed, somewhat longer along frontal edge, numerous long pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long bristles. Trochanters and femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/4 and distal extremity of tibiae yellow (tibiae otherwise brown), tarsomeres yellow ventrally and brown dorsally, last segment same, brown. Hind trochanter without a keel, but with a few short dark bristles (7–8) in a row ventrally, equally spaced. Ventrobasal spines (2) present on fore and absent on mid femur. Ventroapical row of spines on fore femur absent; 5–6 short, black spines on mid femur; no spines on hind femur, only 22–24 long dark bristles equally spaced, longest at 2/3 from base (up to as long as 1.5–1.8 times the width of hind tibia at the distal end). Subapical (distal) spines on first four tibiae present (very short). Hind tarsi flattened (1–3), metatarsus almost as long as 2–3 combined. Pulvilli slightly shorter than the last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one short dark bristle. Fourth costal section 2 times as long as third costal section. Cross-vein r-m distal to middle of discal cell. 3–4 distinct brown setulae on tegula, mostly along the edges. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (both very small). Dispersed strong dark bristles on all tergites, longest on tergite 5, up to 1.2–1.4 times as long as the width of hind tibia at base. Lateral bristles on first tergite present, 4–5 short pale bristles in a row up to 1–1.2 times as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 large and wide, brown and with the occasional abdominal bristles; membranous area elongated, slim, directed posteroventrally; epandrium brown, surstyli yellow, elongated. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli brown. Epandrium longer than wide (MLE:MWE = 1.1). Surstyli rather symmetrical, broadened at base, elongated, right surstylus pointed towards left one at apex, left is wider and longer than right one (Fig. 33A). Genital capsule in ventral view: gonopods equal in height, more

extended towards surstyli and surrounding outer margin of subepandrial sclerite; hypandrium broad, subepandrial sclerite widened and covered by scattered short bristles in its upper half close to surstyli (Fig. 33B); phallus with three short ejaculatory ducts; phallic guide with four spines dorso- dorsolaterally (the longest one twice as length as others). Genital capsule in lateral view: both surstyli widened at base, straight, curved towards sternite in apical third (Figs 33D–F).

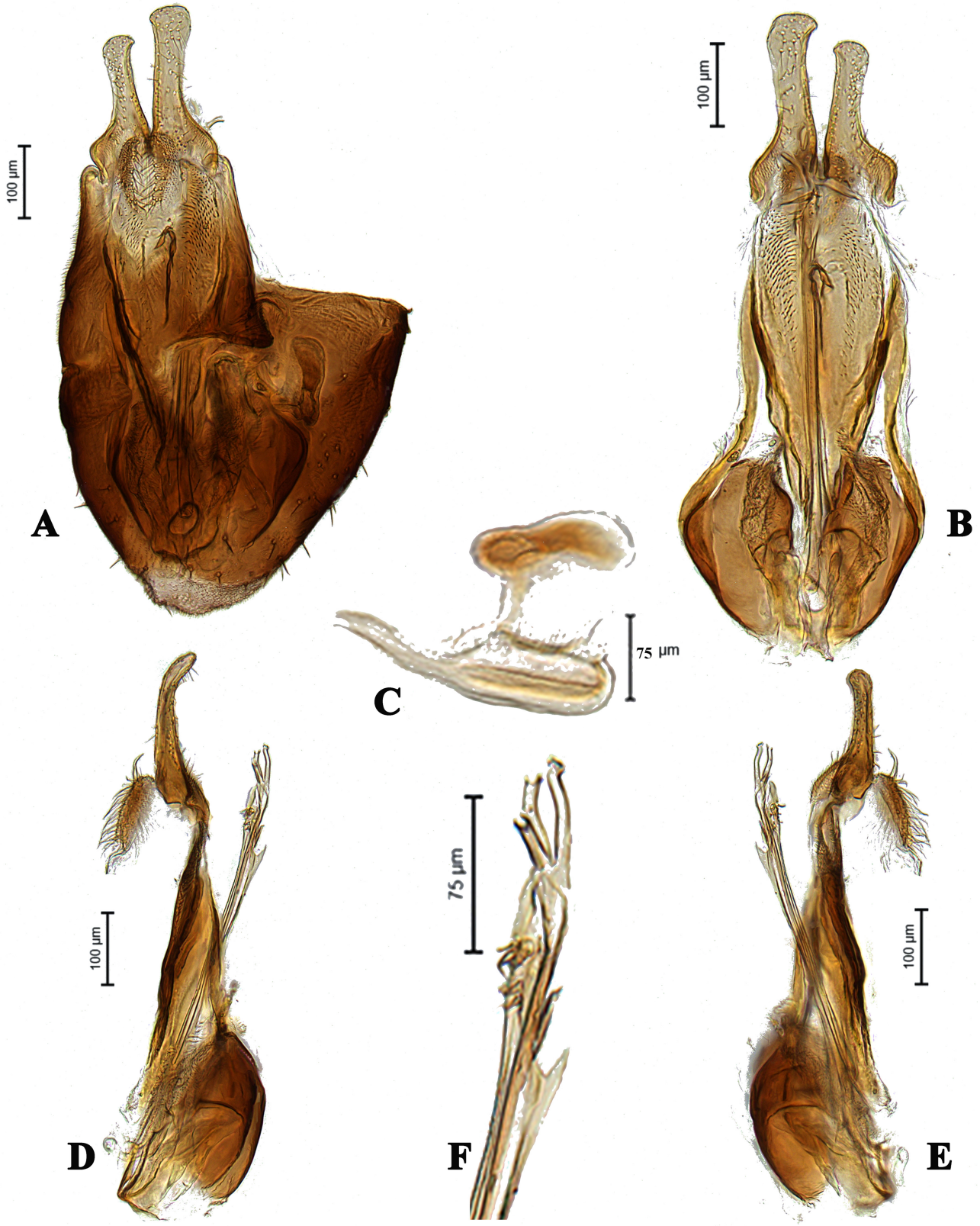



**FIGURE 33**. Male genitalia of *Tomosvaryella dirigostyla* **sp. nov.** (JSS8531, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view, **F**) phallus in lateral view.

**FEMALE:** Unknown.

**Etymology**: From the Latin dirigo, set straight or arrange in a straight line, in reference to the straight surstyli of the males.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Australian Capital Territory: Black M[oun]t[ai]n, 35°16'S, 149°6'E, xii.1987, M. Irwin, Malaise trap, JSS8531 (1♂, ANIC); **PARATYPES**: AUSTRALIA: South Australia: Wilpena Pound, Flinders Range, 31°25'S, 138°45'E, 1.x.1975, Z. Liepa, JSS9163–4 (1♂, ANIC; 1♂ CNC); Gammon Ranges National Park, south end of Weetootla Gorge, 30°29²S, 139°16²E, 537m, hilltop, 11.X.1997, J. Skevington & C. Lambkin, JSS8355 (1♂, QM); New South Wales: 20 km E of Forbes, 33°23²S, 148°1²E, in *Callitris* forest, 9.IV.1977, Z. Liepa, JSS9179 (1♂, ANIC).

**Distribution:** Australia (Australian Capital Territory, New South Wales, South Australia) (Fig. 121).

**Notes:** This is a southeastern Australian species. One specimen was captured hilltopping. This species is genetically closest to *T. macrostyla* **sp. nov.** (4.4% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella dissidens* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:163896F5-19AB-4F62-8138-8855C3EC93AC

Figs 34A–E, 122, 147F

**Diagnosis:** This species can be recognized by having two differently shaped spur-like projections on the hind trochanter (Fig. 147F); surstyli quadratic-shaped at base with rather straight apical margin in dorsal view (Fig. 34A); gonopods unequal in ventral view (Fig. 34B); phallic guide with 5–6 different-sized lateral spines (Fig. 34D–E).

**Description: MALE:** Body length: 2.7–2.9 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 short, pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 8–10 weak bristles along the distal edge. Dorsocentral bristles distinct, short and dark, somewhat longer along frontal edge, numerous pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow (tibiae otherwise black), tarsal segments yellow-brown, ventrally somewhat paler, last segment same dark brown. Hind trochanter with double spurs (pegs), anterior is thick, bent medially, posterior one is thin, very pointy (Fig. 147F). Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 22–24 equally space bristles posteroventrally, longest up to 2/3 the width of hind tibia at distal end. Subapical (distal) spines (2–3) on first four tibiae present (on mid femur longer). Hind metatarsus and second tarsomere flattened, metatarsus as long as 2–3 combined. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one dark bristle. Fourth costal section 2–3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (larger on tergite 5). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to 1.5 times the width of hind tibia at distal end. Lateral spines on first tergite present, 5–6 dark bristles up to 1.5 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 medium sized triangle shaped in dorsal view, brown and with the occasional indistinct bristles, otherwise velvet-like coverage; membranous area elongated, widening dorsally; epandrium brownish at tip, surstyli yellow and bent towards abdomen, appear to be a yellow triangle in lateral view (the corner is rounded). ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli rather symmetrical, quadratic-shaped in basal third and rather straight in apical two thirds, its medial margin covered by dense bristles, pointing towards each other at apex; left surstylus wider than left one (Fig. 34A). Genital capsule in ventral view: gonopods unequal in height, left is slightly longer than right one, subepandrial sclerite long (Fig. 34B). Genital capsule in lateral view: both surstyli broadened in middle and curved towards sternite, right surstylus constricted in dorsomedial margin; phallic guide pointed at apex, with 5–6 lateral spines (the longest one twice as length as others), with three distinct short ejaculatory ducts (Figs 34D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 34C).

**FEMALE:** Unknown.

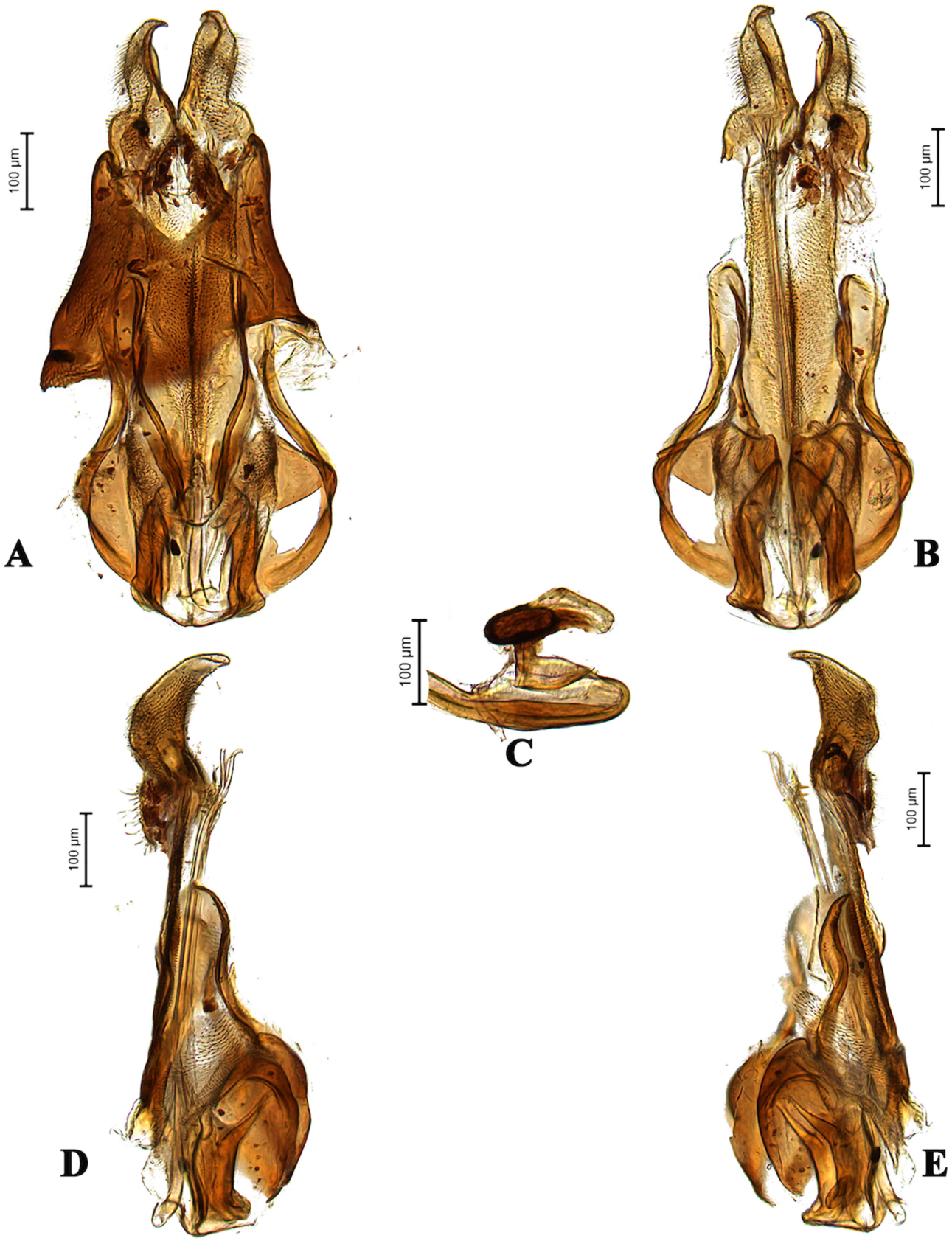



**FIGURE 34**. Male genitalia of *Tomosvaryella dissidens* **sp. nov.** (JSS16146, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Etymology**: From the Latin dissidens, differing or disagreeing, in reference to the two differently shaped spur-like projections on the hind trochanter.

**Examined material**: **HOLOTYPE**: AUSTRALIA: South Australia: Kangaroo Is[land], Flinders Chase N[ational] P[ark], 36°1'S, 136°44'E, 28.x.1993, D.K. Yeates, Malaise trap, JSS8661 (1♂, ANIC); **PARATYPES**: AUSTRALIA: New South Wales: Mount Boppy near Cobar, 31°33'S, 146°17'E, hilltop, 16.i.1999, C. Lambkin, N. Power & P. Bouchard, 10:00 AM, JSS8903 (1♂, QM); Queensland: Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 15.v.1999, J.&A. Skevington, hand collected, JSS5779; JSS15387 (2♂, QM, CNC); 17.vii.1999, J.&A. Skevington, hand collected, 12:45 to 2:00 pm, JSS6469–70 (2♂, QM); 19.iv.1998, J. Skevington, hand collected, 11:45–12:15 pm, JSS3871, JSS3876 (2♂, QM); 19.vi.1999, J.&A. Skevington, hand collected, 11:15 am to 1:00 pm, JSS6474 (1♂, QM); 7.iv.1997, C. Lambkin, JSS8305 (1♂, QM); Carnarvon National Park, hilltop north of Tombs, 25°5'S, 147°52'E, 26.xi.1997, J. Skevington & C. Lambkin, hand collected, JSS2197–8, JSS2206–10, JSS2213–4, JSS2216, JSS2218, JSS2221–2 (13♂, QM); Cooloola National Park, East Mullen hilltop, 26°0'S, 152°59'E, dry sclerophyll forest, 15.xi.2014, J.H., A.M. and A.W. Skevington, CNC374120 (1♂, CNC); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.i–19.iii.2010, C. Kelly, A. Coward, Malaise trap, 19269, CNC575361, CNC575367, CNC575377 (3♂, QM); Kroombit Tops National Park, hilltop, 24°27'N, 150°56'E, 21.xii.2014, J.H., A.M. & A.W. Skevington, CNC384417 (1♂, CNC); Mount Moffatt National Park, Mount Moffatt Section, Summit of Fly Hill, 24°58'S, 147°60'E, 17.xi.2014, J.H., A.M. & A.W. Skevington, CNC374169–72, CNC374780–2 (7♂, CNC); South Australia: Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, 9.x.1997, J.&A. Skevington & C. Lambkin, JSS8375, JSS8377, JSS8382 (3♂, QM); Victoria: Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 22.x.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373404, CNC373408, CNC373439, CNC373457 (4♂, CNC); Hattah-Kulkyne NP, Warepil Lookout, 34°43'S, 142°18'E, 18.x.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373060, CNC373171, CNC373178 (3♂, CNC); Western Australia: Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E; 22°24'S, 118°15'E, 775m, 718m, on hilltop, in open *Eucalyptus*, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16141, JSS16146, JSS16230–1 (4♂, ANIC); Yanchep National Park, 31°35'S, 115°42'E, 18–29.xii.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7700 (1♂, QM); ~3 km north of Denham, 25°55'S, 113°32'E, hilltop, 12.xii.1999, J. Skevington, JSS7337, JSS7345, JSS7353, JSS7371, JSS7381 (5♂, QM).

**Distribution:** Australia (New South Wales, Queensland, South Australia, Victoria) (Fig. 122).

Notes: This species is widespread throughout the southern half of Australia and is easily surveyed by searching on hilltops. Intraspecific genetic distance ranges from 0.2% to 1.5%. This species is genetically closest to *T. boomerang* **sp. nov.** (0–1.3% pairwise divergence) (Supplementary file 3). As these two species differ only by the shape of surstyli in lateral view and having two differently shaped spur-like projections on the hind trochanter in *T. dissidens* **sp. nov.,** it is likely that these two species are recently-diverged.

### *Tomosvaryella divaricata* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:3CC06B94-AB98-4C32-8A2D-E9C8113E18EF

Figs 35A–E, 118

**Diagnosis:** This species can be recognized by the elongated surstyli, strongly narrowed at the apical half, their tips extended outwards in dorsal view (Fig. 35A); gonopods triangle-shaped; one ejaculatory duct covered by some teeth in basal half (Fig. 35D–E); ejaculatory apodeme funnel-shaped (Fig. 35C).

**Description: MALE:** Body length: 3.5 mm. ***Head***. Scape, pedicel, arista dark, Flagellum acuminate; yellow-brown, grey pollinose, arista with four short dark upper bristles and one lower bristle. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.2 times the length of ocellar triangle. Occiput silvery pollinose with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 3–4 short pale bristles. Mesonotum (viewed obliquely from front) silvery brown (golden) pollinose. Dorsocentral and supra-alar bristles short, dark, Scutellum silvery brown pollinose with 4–6 bristles along distal edge. Halter, knob pale, stem light brown with 2–3 short dark bristles dorsally. ***Legs***. Mid coxa with four long and 2 short dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown, last tarsomeres brown. Hind trochanter without distinct feature, gray pollinose; ventrobasal bristles present (5–8) on fore and mid femur. Mid femur with two rows

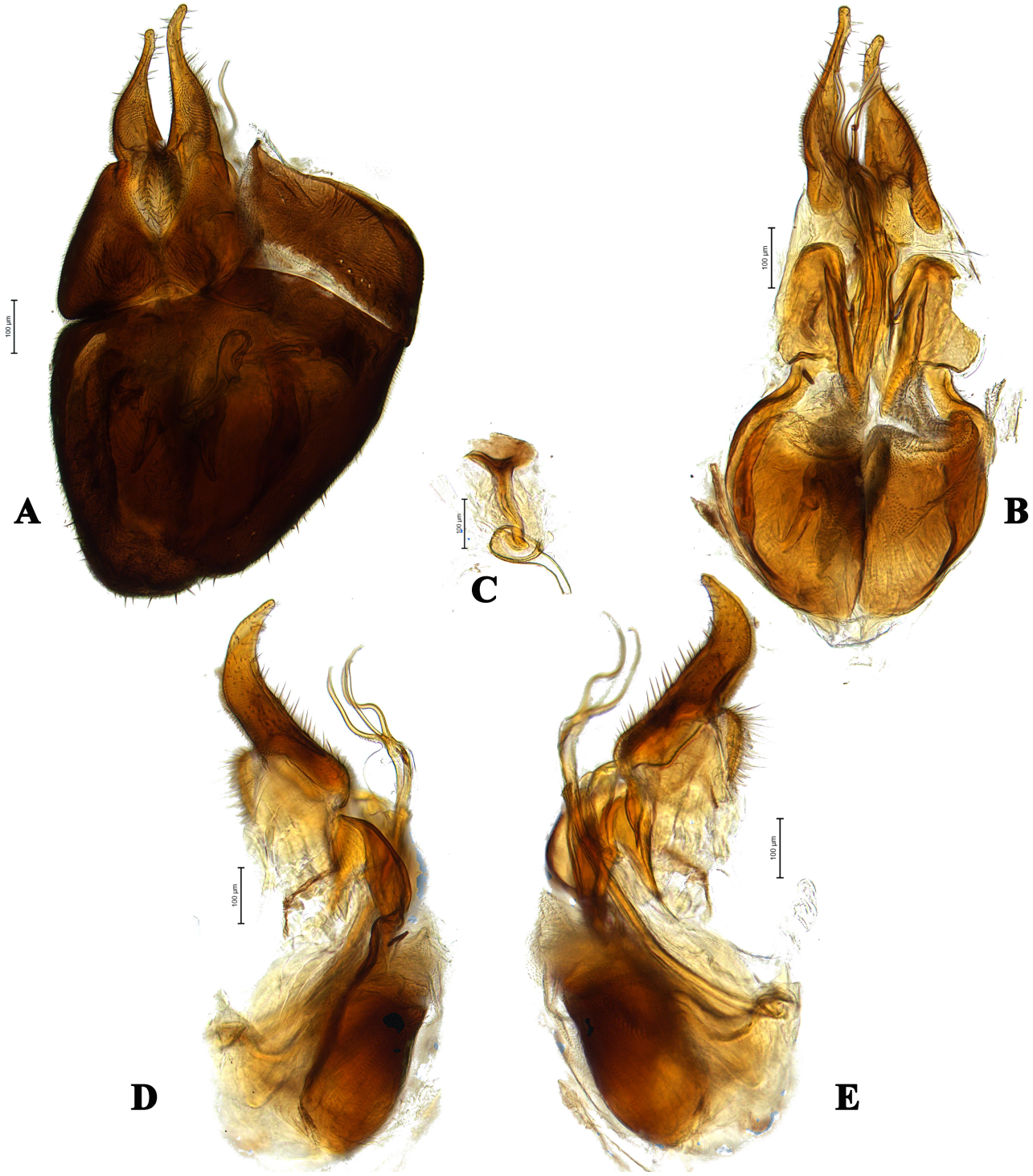



**FIGURE 35**. Male genitalia of *Tomosvaryella divaricata* **sp. nov.** (LEM_0016204, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

of short bristles posteroventrally and posterodorsally. Hind femur with 2–3 ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with 2–3 long dark brown bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black (golden), tergite 1 silvery grey. Lateral bristles on first tergite present, 4–10 short

dark bristles up to as long as one quarter of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli elongated, rather widened in basal half, strongly narrowed at the apical half, their tips extended outwards, left surstylus is longer than right one (Fig. 35A). Genital capsule in ventral view: gonopods equal in height, triangle-shaped; phallic guide without spines; subepandrial sclerite short, one of ejaculatory ducts with some teeth in basal half (Fig. 35B); Genital capsule in lateral view: both surstyli curved towards sternite (Fig. 35D–E). Ejaculatory apodeme funnel shaped (Fig. 35C). **FEMALE:** Unknown.

**Etymology:** From the Latin divaricatus, spread apart, in reference to the divergent tips of the surstyli.

**Examined material: HOLOTYPE**: AUSTRALIA: Northern Territory: near Darwin, 1km E Manton Dam, 12°53'S, 131°8'E, grass along stream near road, 3.IX.2004, J. Forrest & T. Wheeler, sweep net, LEM_0016204 (1♂, ANIC).

**Distribution:** Australia (Northern Territory) (Fig. 118).

### *Tomosvaryella dolicholoba* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:D939F6BB-3E50-4CA9-93F0-DE1134E7F0B0

Figs 36A–E, 123

**Diagnosis:** This species can be recognized by the hind trochanter having a distinct keel covered with spines on the edge; distal half of hind femur with long bristles; elongated surstyli with an extended lobe in middle in dorsal view (Fig. 36A); elongated gonopods with two small triangular lobes on inner margin (Fig. 36B); phallic guide with 4–6 dorso- dorsolateral spines (Fig. 36B, D).

**Description: MALE:** Body length: 3.3 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.2 times the length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper 1/3. ***Thorax***. Postpronotum pale, with 5–6 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brown pollinose and with 8–10 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous long bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 strong, dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow-brown (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter with a distinct keel, short spines on the edge; ventrobasal spines present on fore and absent on mid femur. Ventroapical row of spines on fore femur 3–4; 5–6 short dark spines on mid femur; hind femur without ventroapical spines, except 10–12 long bristles posteroventrally, bent towards distal tip of femur (sometimes adpressed), equally spaced on distal half, longest up to 2 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tibia bent in posterior view. Hind metatarsus flattened (especially distal half), metatarsi almost as long as 2–5 combined, with scrub-like bristles along posterior edge. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 5–6 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on tergite 5). Dispersed short dark bristles on all tergites present, longest on tergite 5 up to 1/3 of the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.9–1.1 times as long as ST8. Genitalia without dissection: ST8 medium sized, round in dorsal view, pale brown and with some distinct bristles, otherwise velvet-like coverage; membranous area round dorsally, narrow and approaching epandrium ventrally, posteriorly directed; epandrium brown, surstyli yellow, long. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Both surstyli elongated, broadened in basal third, narrowed in middle, bent apically to each other; both surstyli with extended lobe in middle (Fig. 36A). Genital capsule in ventral view: gonopods elongated towards surstyli with two small triangular lobes on inner margin, equal in height, subepandrial sclerite distinct and long; phallic guide with 4–6 dorso-dorsolateral spines, one is longer than others (Fig. 36B); Genital capsule in lateral view: both surstyli curved towards sternite, right one is wider than left one (Fig. 36D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 36C).

**FEMALE:** Unknown.

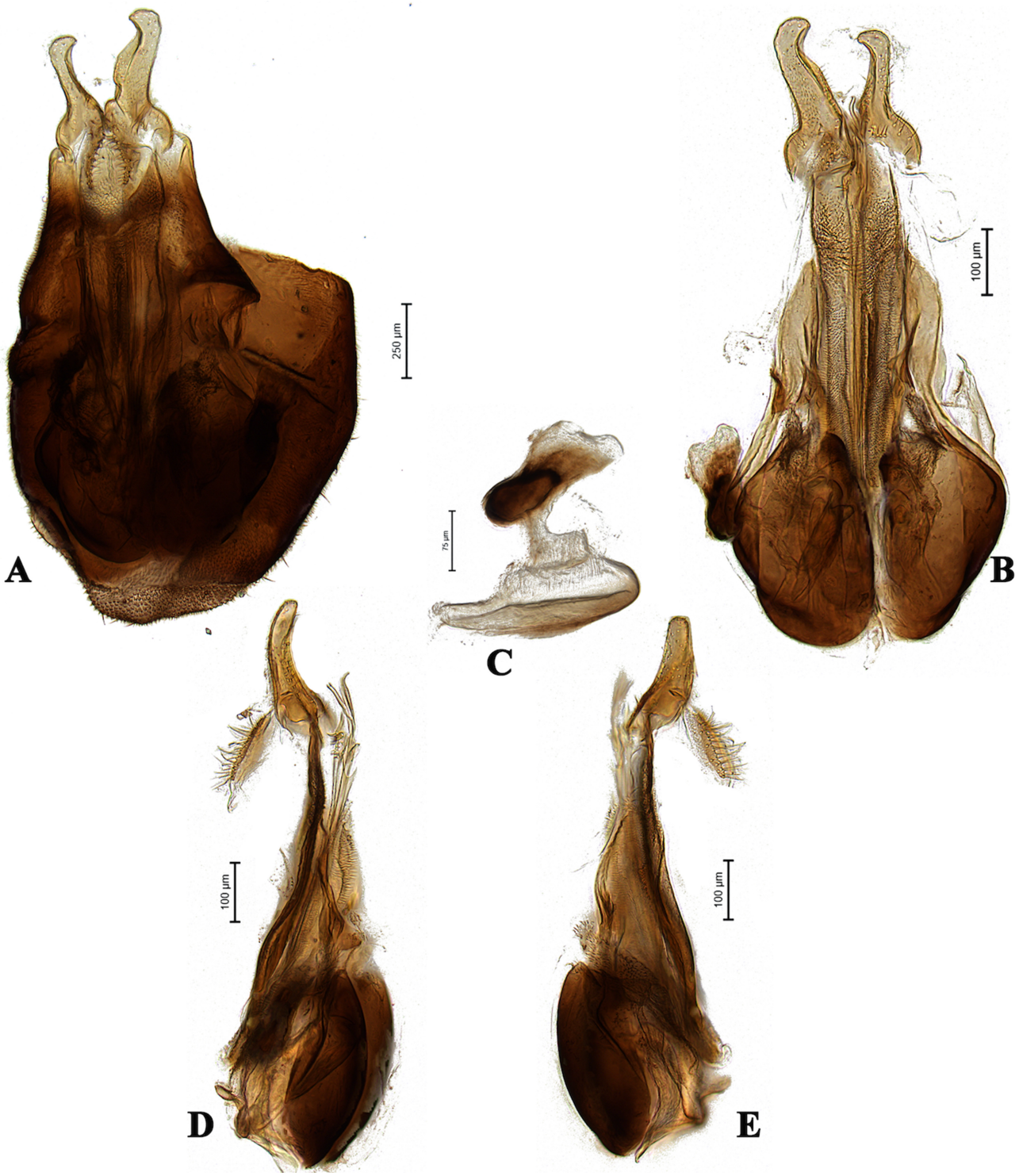



**FIGURE 36**. Male genitalia of *Tomosvaryella dolicholoba* **sp. nov.** (JSS1824, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Etymology:** The name is derived from the Greek word dolichos, long and lobos, lobe, in reference to the extended lobe in the middle of the surstylus.

**Examined material: HOLOTYPE**: AUSTRALIA: Tasmania: Freycinet National Park, 42°8'S, 148°19'E, in heath with scattered eucalypts, 26.XII.1998–10.I.1999, J.&A. Skevington, Malaise trap, JSS4665 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Carnarvon National Park, Mount Moffatt Summit, 25°4'S, 148°3'E, 1097m, hilltop, 2.XII.1997, J. Skevington & C. Lambkin, hand collected, JSS1824 (1♂, QM); 18.XI.2014, J.H.,

A.M. & A.W. Skevington, CNC374959, CNC374980, CNC374995, CNC375003 (4♂, CNC); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 20.I–18.III.2010, C. Kelly & A. Coward, Malaise trap, CNC576680, CNC576683 (2♂, QM); Hilltop ~21 km South of Coen, 14°8'S, 143°14'E, 945m, *Eucalyptus* forest, 2.XII.2014, J.H., A.M. & A.W. Skevington, CNC373639 (1♂, CNC); Western Australia: Lochada, 5.5km Southeast of Bolada Camp, 29°14'S, 116°33'E, 293m, *Callitris Acacia* woodland, 18–24.IX.2009, Lambkin & Monteith, Malaise trap, CNC575166 (1♂, QM); Heinsmen Rock, Mt Ragged Track, 30°7'S, 123°28'E, 145m, woodland near drying pools, 30.X–18.XI.2003, C. Lambkin & J. Recsei, Malaise trap, JSS16244 (1♂, ANIC); New South Wales: Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7'S, 146°56'E, *Callitrus*, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, 19314, CNC576559–60, CNC576562, CNC576566, CNC576569, CNC576573–4, CNC576583–4, CNC576586–7, CNC576589 (12♂, QM); Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7'S, 146°56'E, Blackbox, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan, N. Starick, Malaise trap, 11 DB, 19300, CNC576659 (1♂, QM); Blackbox, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan & N. Starick, Malaise trap, 11 DB, 19300, CNC576654, CNC576656, CNC576660–3 (6♂, QM); *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan, R. Ohlsen, Malaise trap, 19325, CNC576599, CNC576603, CNC576607, CNC576611, CNC576613, CNC576616, CNC576622, CNC576627, CNC576632, CNC576642–3 (11♂, QM); Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, 19322, CNC575121, CNC575124, CNC575131 (3♂, QM); 29°3'S, 146°1'E, 136m, Coolibah, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, 19312, CNC574752 (1♂, CNC); Queensland: Culgoa Floodplain National Park Headquarters, 11.8km N, 28°55'S, 147°8'E, 150m, Brigalow, 9.XII.2007–16.I.2008, N. Starick, C. Lambkin & R. Raven, Malaise trap, 15683, CNC591839 (1♂, QM); Culgoa Floodplain National Park, 10km NE Toulby Gate (CG3), 28°56'S, 147°0'E, 140m, Brigalow, 16.IX–1.X.2008, Simpson, Coward, Malaise trap, 4 DB, 17220, CNC576529 (1♂, QM); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 20.I–18.III.2010, C. Kelly & A. Coward, Malaise trap, 19271, CNC576674, CNC576693 (2♂, QM); Lonesome National Park, near Lookout (LNP4M), 25°30'S, 148°49'E, 585m, closed *Eucalyptus* woodland on rocky ridge, 26.XI.2010–11.I.2011, D. Beard & B. Sigley, Malaise trap, 19382, CNC575014 (1♂, QM).

**Distribution:** Australia (New South Wales; Queensland, Tasmania, Western Australia) (Fig. 123).

**Notes:** This widespread species has been collected in a variety of habitats (*Acacia*, *Callitris*, *Eucalyptus*) and also collected hilltopping. The distribution is suggestive that this is a species complex of as many as four species. We were unable to obtain DNA barcodes from populations in the different locations. Although the surstyli and the inner lobe of New South Wales specimens are longer, we have elected to treat this as a single species for now. Based on the terminalia characters and features of the hind trochanter, this species is similar to *T. patula* **sp. nov.** Both species have identical surstyli in dorsal and ventral view and similar keel on hind trochanter. *Tomosvaryella dolicholoba* **sp. nov.** differs by having long bristles on the hind femur. This species is genetically close to *T. unda* **sp. nov.** and *T. patula* **sp. nov.** differing by 2.6–5.0% and 3.1–4.0% pairwise divergence, respectively (Supplementary file 3).

### *Tomosvaryella epichalca* (Perkins, 1905)

Figs 37A–E, 124, 156C

*Pipunculus epichalcus* Perkins, 1905

**Diagnosis:** This species can be recognized by the shape of the surstyli, in dorsal view the right surstylus is wider and the left one is longer (Fig. 37A); widened gonopods, pointed hypandrium in lower margin in ventral view (Fig. 37B); phallic guide short and broad (Fig. 37D–E); one of ejaculatory ducts with tooth-like projection in basal third in lateral view (Fig. 37D–E); ejaculatory apodeme funnel-shaped (Fig. 37C).

**Redescription: MALE:** Body length: 3.2–3.4 mm. ***Head***. Scape, pedicel and arista brown. Pedicel with 2–3 upper bristles and 1–2 lower bristles; flagellum brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance 1.3 times the length of ocellar triangle. Occiput grey pollinose covered by scattered short brown bristles. ***Thorax***. Postpronotum light yellow, with 1–3 short pale bristles in upper margin. Mesonotum (viewed obliquely from front) brown pollinose; scutum with scattered dark bristles at anterior supra-alar area, extended to posterior and uniseriate rows of intra-alar short

bristles. Postalar callus dark brown with 1–2 short light brown bristles in the middle. Scutellum silvery pollinose and with 8–10 short dark bristles along the distal edge and a few scattered bristles in its middle. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 1–2 different-sized dark brown bristles. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/3 of tibiae yellow (tibiae otherwise dark brown), tarsomeres brown ventrally, dark dorsally. Hind trochanter silvery pollinose covered by some scattered short pale bristles ventrally, its apical third shining; two ventrobasal spines absent on fore mid femur. All femora with two rows tiny spines ventroapically. Hind tibia with two rows of short brown bristle on anterior and posterior side, all tibiae gray pollinose in apical half of both anterior and posterior sides. Hind tarsomeres slightly flattened to one side, covered by short dark brown bristles, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment, last tarsomeres with longer dark bristles. ***Wing***. Length: 3.2–3.3 mm. Upper side of basal costal cell with 1–2 long dark brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 5–7 different-sized lateral bristles; tergite 2–5 brown pollinose, covered by scattered short dark bristles. Syntergosternite 8 enlarged, dark brown and grey-brown pollinose. Membranous area ovate. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8). Surstyli different in height, left is longer, right is wider, left one broadened in basal half and narrowed in apical half, right one broadened in basal three fourths and narrowed in apical fourth (Fig. 37A). Genital capsule in ventral view: both gonopods widened, equal in height, hypandrium pointed in lower side, upper side with two feather like projections; phallic guide too broad and short; phallus with three ejaculatory ducts, one with tooth-like projection in basal third (Fig. 37B); Genital capsule in lateral view: both surstyli curved to sternite, pointed at apex with a small projection towards gonopods at the base, phallic guide too broad with two depressions in the middle of ventral margin (Fig. 37D–E); ejaculatory apodeme funnel-shaped with a bubble in its middle (Fig. 37C).

**FEMALE:** Body length: 3.1 mm. As male except for the following characters. Frons, eyes separated; completely silver-grey pollinose on lower 1/3, wider in middle, shiny black only around ocellar triangle, deep depression in just before ocellar triangle. Enlarged ommatidia shining; pulvilli and claws longer than last tarsal segment. Lateral bristles on the tergite 1 shorter than male. ***Ovipositor.*** Straight in ventral view, straight and short in lateral view (piercer brown), reaching sternite 3; basal two thirds silvery brown pollinose. LP:LB = 2.1. LDP:LPP = 3.3. (Fig. 156C).

**Examined material: LECTOTYPE [HERE DESIGNATED]:** AUSTRALIA: Queensland: Cairns, [16°55’S, 145°46’E], VII.1904, JSS4154 (1♂, ZMAN); **PARALECTOTYPES:** AUSTRALIA: Queensland: Cairns, 16°55’S, 145°46’E, VII.1904, CNCD5492–3 (2♀, BPBM); JSS4155 (1♀, ZMAN); **Other Material Examined:** AUSTRALIA: Brisbane, Department of Primary Industries, Indooroopilly site, 27°30’S, 152°59’E, I.1977; II.1977, Malaise trap, JSS8935, JSS8937 (2♂, QDPC); Brisbane, 27°28’S, 153°1’E, 2.X.1962, J.W. Turner, date recorded as 2/10/1962, JSS8251 (1♂, QM); 5.IV.1962, T. Brooks, JSS454 (1♂, QM); Iron Range, North Queensland, 12°44’S, 143°17’E, 12.VI.1971, J. Feehan, JSS8700 (1♂, ANIC); James Cook University, 27°28’S, 153°2’E, dry savannah, 21–26.V.1988, A.D. Austin, JSS8645 (1♂, ANIC); Mareeba Shire, Kuranda, Russet Park, North Queensland, 16°49’S, 145°38’E, 460m, 13.X.1987, Thomas W. Davies, flight interception trap, Thomas W. Davies Collection donated to California Academy of Sciences 1987, JSS8470 (1♂, CAS); CAMBODIA: Siem Reap, 13.365545, 103.836101, XI.1958, N.L.H. Krauss, USNM_ENT01261318 (1♂, USNM); PHILIPPINES: Mountain Province: Abatan, Buguias, 60 km S of Bontoc, 16°43’N, 120°49’E, 2000m, 25.V.1964, H.M. Torrevillas, CNCD5488–9 (1♂, 1♀, BPBM); Palawan: 13 km N of Puerto Princesa, ex. grass, 18.IV.1968, D. E. Hardy, CNCD5483–7 (3♂, 2♀, BPBM); 9.916624°N, 118.713946°E, 18.IV.1968, D.E. Hardy, JSS8488–9 (1♂, 1♀, BPBM); 15–17.IV.1968, M. D. Delfinado, CNCD5467–82 (13♂, 3♀, BPBM); Luzon: La Trinidad, 1388m, 4–5.IV.1968, D. E. Hardy, CNCD5490 (1♂, BPBM); Mindanao: Maninit Str., Manolo Fortich Bukidnon, 24.IV.1968, M. D. Delfinado, CNCD5491 (1♂, BPBM).

**Distribution:** AUSTRALIA (Queensland), CAMBODIA, PHILIPPINES (Luzon, Mindanao, Mountain Province, Palawan) (Fig. 124).

**Notes:** This is one of the few Australian species of *Tomosvaryella* that occurs in other countries. Unlike most Australian *Tomosvaryella* which favour dry habitats, *T. epichalca* is coastal. It should be expected in Indonesia and New Guinea as well. Perkins (1905) described this species and never indicated the holotype. There are four specimens in the syntype series including one male (JSS4154) and three females (CNCD5492–3 and JSS4155). As the male specimens present more diagnostic characteristics than female, specimen JSS4154 is hereby nominated as

the lectotype to fix and ensure consistent interpretation of the name. Unlike most of Perkins species, this one was not reared.

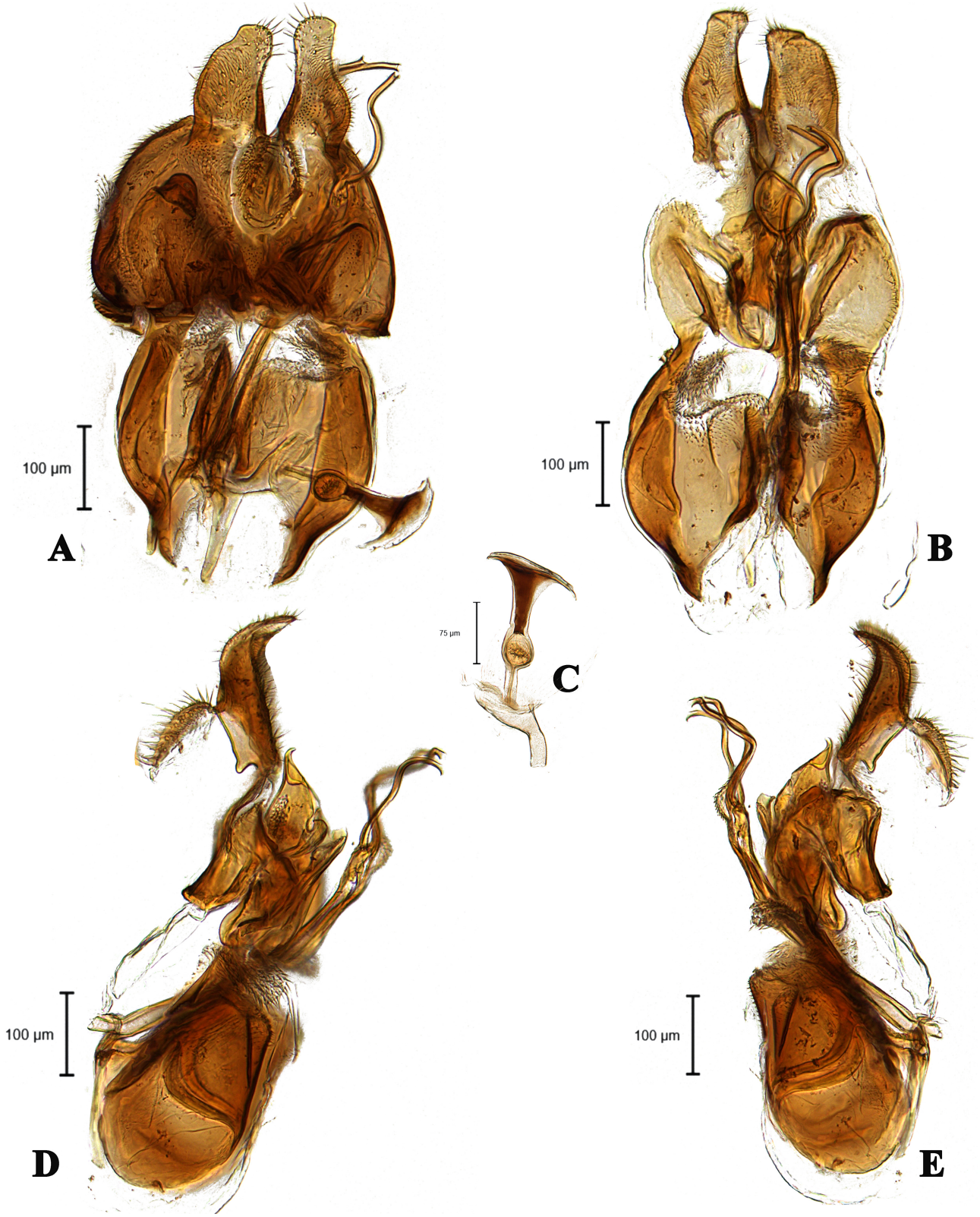



**FIGURE 37**. Male genitalia of *Tomosvaryella epichalca* (JSS4154, ZMAN) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella eremia* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:0B9CD8FE-0473-4405-A8D3-5AFDD4D6809F
Figs 38A–E, 118

**Diagnosis:** This species can be recognized by the line of bristles at the base of the hind trochanter; elongated surstyli in dorsal view (Fig. 38A); extended gonopods towards surstyli, right one with a triangular lobe on inner margin in ventral view; phallus with a small membranous sheath at base of ejaculatory ducts, one of ejaculatory ducts divided into branches (Fig. 38D); gonopods with a small hump-like projection dorsally in lateral view (Fig. 38E).

**Description: MALE:** Body length: 2.9–3.1 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 indistinct bristles. Mesonotum (viewed obliquely from front) greyish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish silvery pollinose and with 4–6 weak bristles along the distal edge. Dorsocentral bristles indistinct, pale, longer along frontal edge, numerous short pale bristles around postpronotum present. Halter, knob pale with brown tinge, stem brown. ***Legs***. Mid coxa with 2–3 long brown bristles. Trochanters brown, femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown dorsally, yellow ventrally, last segment darker. Hind trochanter with a shiny band ventrally (like a helix) and a line of bristles gradually turning into small bristles at the base; weak ventrobasal spines (2) present on fore and absent on mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 10–12 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/2 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (distinct). Hind tibia bent in posterior view. Hind metatarsus not flattened, almost as long as 2–4 combined, all segments with semi-erect bristles dorsally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell (can be slightly distal to middle). 3–4 distinct, dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown pollinose, tergite 1 silvery grey, large silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, short and indistinct. Lateral spines on first tergite present, 4–6 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.9–1.1 times as long as ST8. Genitalia without dissection: ST8 large, rounded in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous area with round part extended dorsally and narrow part approaching epandrium, mostly directed posteriorly; epandrium dark brown, surstyli brown, broad. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli elongated, curved to each other at apex (Fig. 38A). Genital capsule in ventral view: both gonopods widened at base, extended towards sternite, right one with a small triangular lobes on inner margin; phallic guide with 3–4 dorso- dorsolateral spines, one spine longer than others, subepandrial sclerite distinct, phallus with a small membranous sheath at the base of ejaculatory ducts, one of ejaculatory ducts divided into branches (Fig. 38B); Genital capsule in lateral view: both surstyli broadened at basal two thirds and moderately narrowed to apex, gonopods with a small hump-like projection dorsally, curved towards sternite (Fig. 38DE). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 38C).

**FEMALE:** Unknown.

**Etymology:** Eremia is Greek for desert and refers to the desert habitat that this species occurs in.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: ~3 km N[orth] of Denham, 25.909°S, 113.531°E, hilltop, 12.XII.1999, J. Skevington, JSS7340 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Mount Magnet, Mount Waramboo, 28°2'S, 117°49'E, hilltop, 14.XII.1999, J. Skevington, JSS7481 (1♂, QM); ~3 km North of Denham, 25.909°S, 113.531°E, hilltop, 12.XII.1999, J. Skevington, JSS7322, JSS7326, JSS7328, JSS7330, JSS7332–5, JSS7341–2, JSS7344, JSS7346, JSS7349, JSS7351, JSS7354, JSS7355, JSS7358-9, JSS7361, JSS7364, JSS7382–5, JSS7391–2, JSS7395, JSS7399, JSS7403, JSS7410–1 (2♂ CNC, 26♂, QM, 1♂ USNM; 2♂ WAM).

**Distribution:** Australia (Western Australia) (Fig. 118).

**Notes:** This is another possible Western Australian endemic. All known specimens have been encountered on hilltops. It is genetically most similar to *T. brancha* **sp. nov.,** *T. bulbosa* **sp. nov.** and *T. cona* **sp. nov.** differing by 6.2–7.6% pairwise divergence (Supplementary file 3).

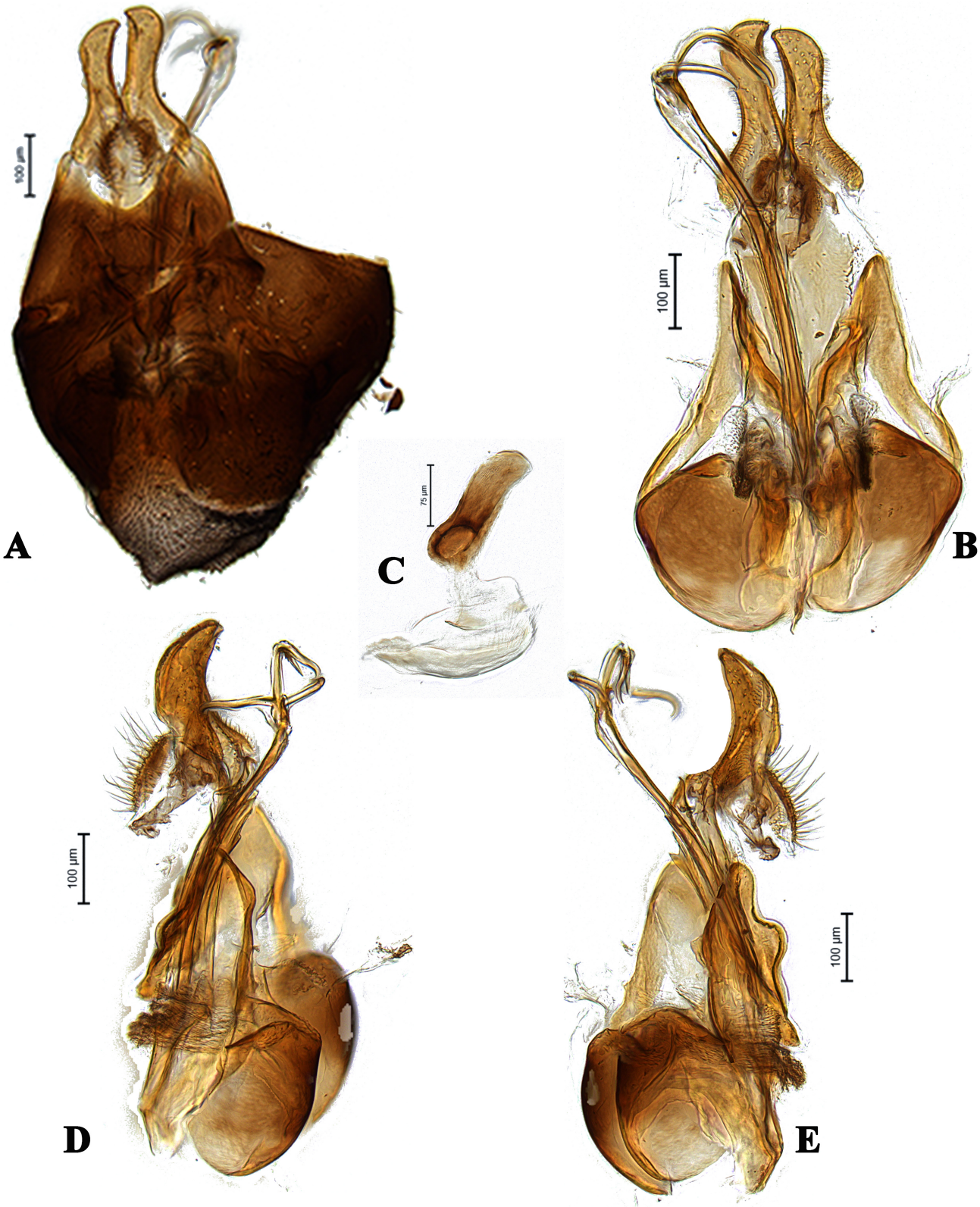



**FIGURE 38**. Male genitalia of *Tomosvaryella eremia* **sp. nov.** (JSS7322, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella eucalypti* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:0BFF9791-E176-4A82-AD32-C5C119A6EBD3
Figs 39A–E, 121

**Diagnosis:** This species can be recognized by having 2–4 dark bristles ventrobasally on the hind trochanter; elongated surstyli, moderately narrowed before apex, bent to each other at the apex, both surstyli with a small lobe at base along inner margin in dorsal view (Fig. 39A); both gonopods extended towards surstyli with a semicircular projection on inner margin; phallic guide long and pointed at the apex with 3–4 dorso- dorsolateral spines in ventral margin (Fig. 39B); both surstyli widened at basal half, strongly narrowed at the apical half in lateral view: (Fig. 39D–E).

**Description: MALE:** Body length: 2.8 mm. ***Head***. Flagellum long tapering, yellow-brown, brown pollinose. Scape and pedicel dark. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 medium dark bristles. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Scutellum silvery brown pollinose and with 6–8 short dark bristles along distal edge. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with 2–4 dark bristles ventrobasally; 2–4 ventrobasal spines present on fore and shorter on mid femur. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres moderately flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey with 8–10 long dark lateral bristles; other tergites brown pollinose; membranous area rounded. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli equal in height, elongated, widened at the base, moderately narrowed before apex, bent to each other at the apex, both surstyli with a small lobe ventrobasally (Fig. 39A). Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex, gonopods with a semicircular projection on inner margin; phallic guide long and pointed at the apex with 3–4 dorso- dorsolateral spines, one is longer; subepandrial sclerite distinct (Fig. 39B); Genital capsule in lateral view: both surstyli widened at basal half, curved to the sternite, strongly narrowed at the apical half (Fig. 39D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 39C).

**FEMALE:** Unknown.

**Etymology:** This species is named after the *Eucalyptus* forest habitat that the only known specimen was captured in.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Lonesome National Park, near Lookout (LNP4M), 25°30’S, 148°49’E, 535m, closed *Eucalyptus* woodland on rocky ridge, 3–26.XI.2010, Lambkin *et al.*, Malaise trap, CNC591805 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 121).

**Notes:** Based on the terminalia characters, this species is close to *Tomosvaryella ledknapperensis* **sp. nov.** and *Tomosvaryella prolata* **sp. nov.** The shape of surstyli in lateral view differs from these two species.

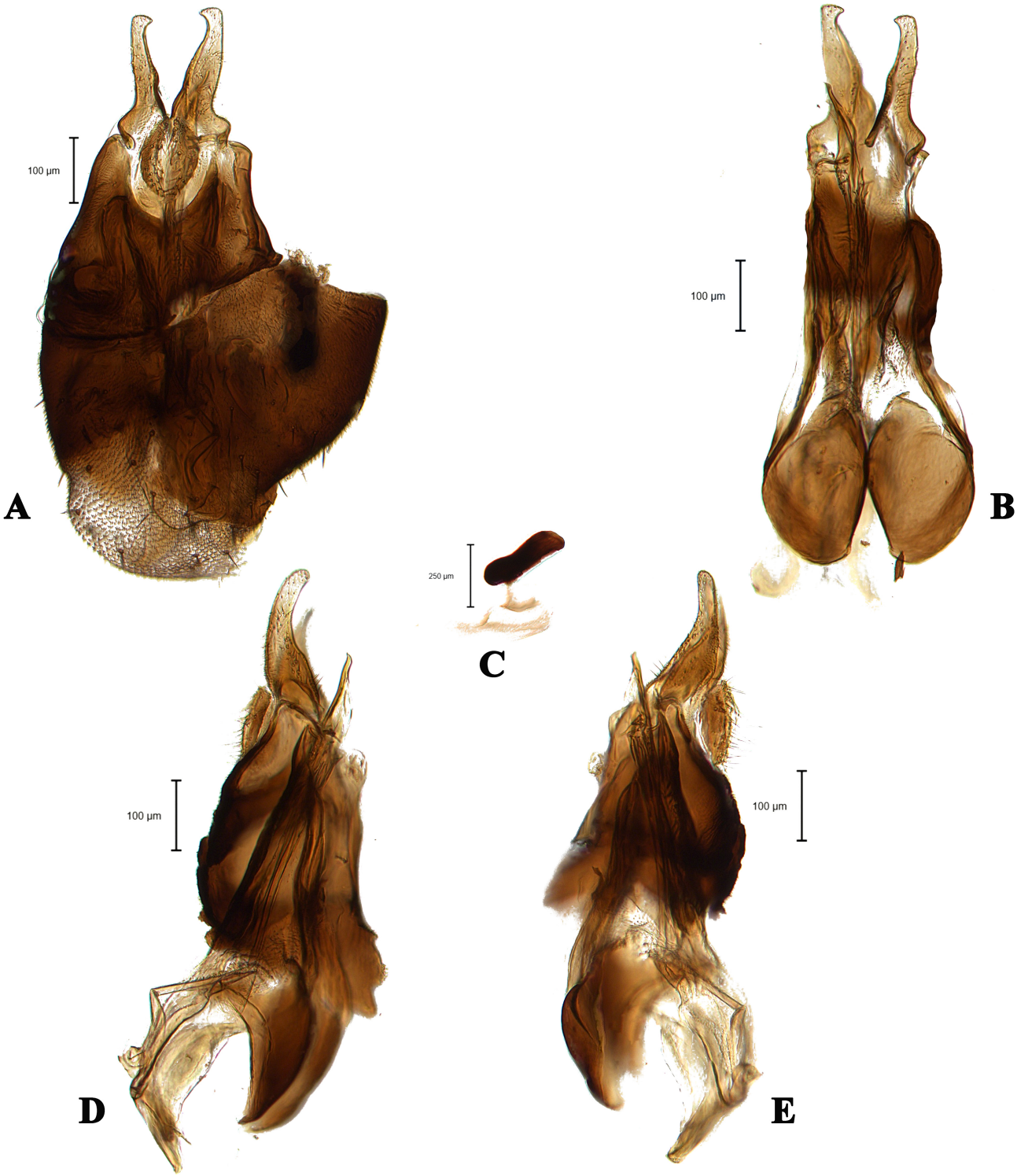



**FIGURE 39**. Male genitalia of *Tomosvaryella eucalypti* **sp. nov.** (CNC591805, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella exigua* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:566CBD5E-A7C0-4694-A63E-06F2C327EF91
Figs 40A–E, 119

**Diagnosis:** This species can be recognized by a distinct triangular protrusion on the hind femur ventrobasally, tiny surstyli covered by long and distinct bristles on the dorsal and central margin before the apex in dorsal view (Fig. 40A), straight in lateral view (Fig. 40D–E); gonopods small, wide hypandrium, phallic guide with some dorso-dorsolateral spines in ventral view (Fig. 40B).

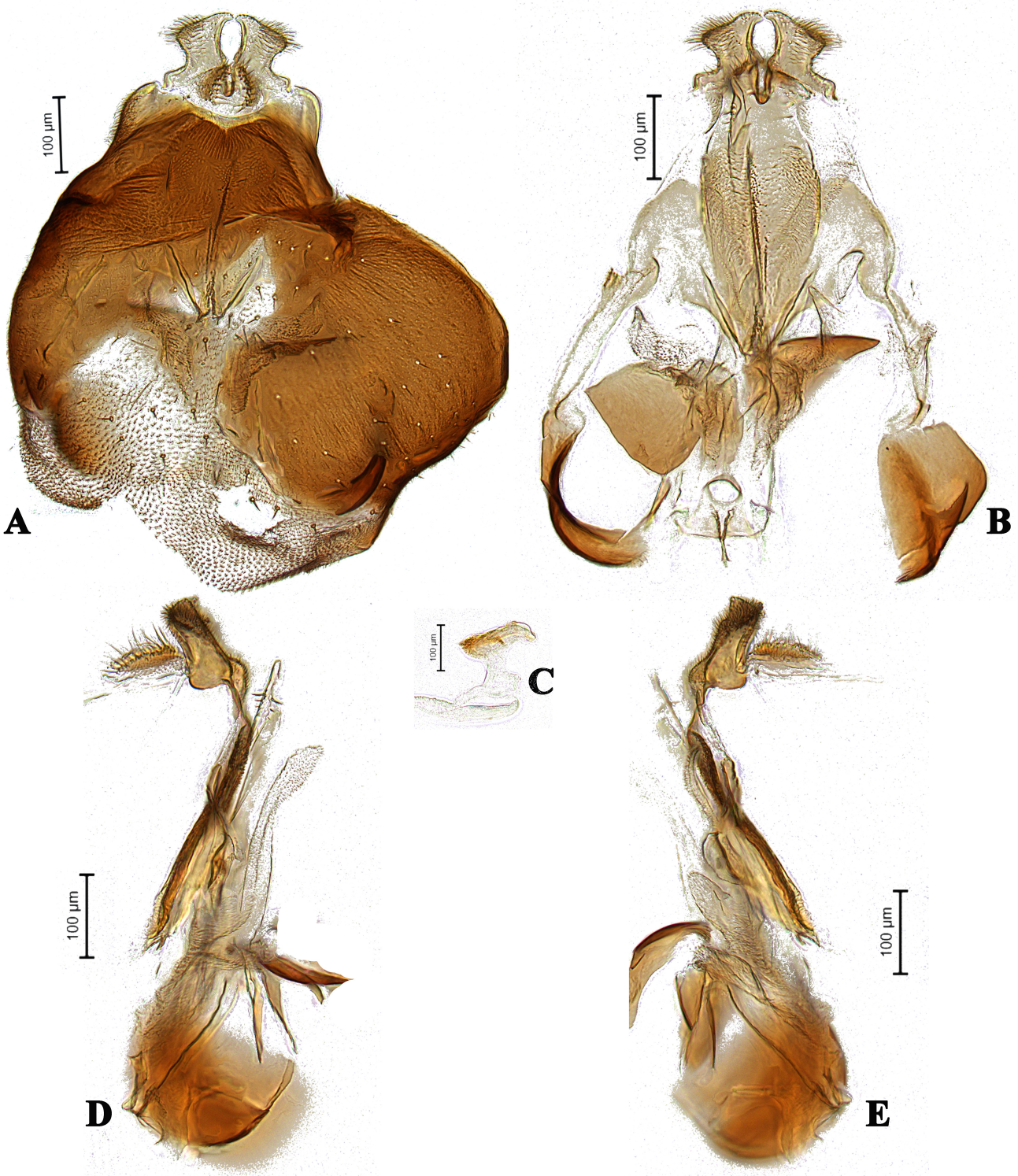



**FIGURE 40**. Male genitalia of *Tomosvaryella exigua* **sp. nov.** (JSS8909, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Description: MALE:** Body length: 2.4 mm. ***Head***. Scape, pedicel and Flagellum dark brown, flagellum tips rather light brown, grey pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with three long light brown bristles and one short one. Mesonotum (viewed obliquely from front) silvery pollinose, posterior part more brownish. Scutellum silvery brown pollinose without bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, some dark bristles around postpronotum present. ***Legs***. Mid coxa with three long and one short dark bristle. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter grey pollinose without distinct feature; ventrobasal spines present (1) on fore and absent on mid femur. Hind femur without ventroapical spines, with a distinct triangular protuberance ventrobasally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.4 mm. Upper side of basal costal cell with one long brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 brown in its middle, grey-brown pollinose. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium wider at base, longer than wide (MLE:MWE = 1.2). Surstyli tiny, broadened at base, then strongly constricted and broadened at apex with condensed long and distinct bristles on central and outer margin before apex, some bristles as wide as surstyli; both surstyli pointed to each other at apex (Fig. 40A). Genital capsule in ventral view: gonopods small, equal in height; wide hypandrium; phallic guide with 3–6 short dorso- dorsolateral spines; subepandrial sclerite distinct (Fig. 40B); Genital capsule in lateral view: both surstyli short and straight covered by some bristles apically, gonopods with two long membranous sheaths towards surstyli (Fig. 40D–E). Ejaculatory apodeme tube-like, bent (Fig. 40C).

**FEMALE:** Unknown.

**Etymology:** From the Latin exiguus, little, short, scanty, poor or meagre, in reference to the tiny surstyli of the male.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: n[ea]r Teddington Weir SE of Maryborough, 25°39'S, 152°42'E, rainforest margin, 9.XI.1990, G. & A. Daniels, JSS8909 (1♂, QM); **PARATYPE**: AUSTRALIA: Western Australia: 8 km E Salmon Gums, 32°58'S, 121°42'E, 6.I.1987, G. & A. Daniels, JSS8915 (1♂, QM).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 119).

**Notes:** This is another widespread species collected from two different habitats far from each other, from rainforest in the east to *Eucalyptus* forest in the west. Because of the distinctive triangular protuberance on the hind femur and the similarity of their genitalia, we treat these specimens as the same species. Fresh specimens are needed to allow for DNA sequencing and comparison.

### *Tomosvaryella falcata* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:4075EC42-2845-46CB-A6BC-229B05EACF83

Figs 41A–E, 120

**Diagnosis**: This species can be recognized by hind femur with 6–10 long bristles posterventrally; hind tibia covered with dense short light brown bristles ventroapically; surstyli symmetrical, straight in basal third, then falcate in dorsal view (Fig. 41A); gonopods with two small triangle-shaped projections in ventral view (Fig. 41B); one of ejaculatory ducts with two teeth at base (Fig. 41D); phallic guide long with one long spine before apex (Fig. 41D).

**Description**: **MALE**: Body length: 2.5 mm. ***Head*** (detached, stuck on the point). Scape and pedicel black, flagellum brown. Face silvery-brown pollinose; eyes touching for distance equal to 1.2–1.4 times the length of ocellar triangle. Occiput dark, silvery pollinose with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 3–4 long pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose. Scutellum brownish pollinose and with 7–8 dark bristles along the distal edge. Scutum with two uniseriate rows of conspicuous intra-alar bristles and two uniseriate rows of dorsocentral bristles, some long bristles on upper side of supra-alar area; postalar callus with three short dark bristles. Halter, knob yellow, stem brownish. ***Legs.*** Mid coxa with 3–5 long, brown bristles. Trochanters and femora dark brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibia otherwise black), tarsal segments dark brown, ventrally somewhat paler. Hind trochanter light

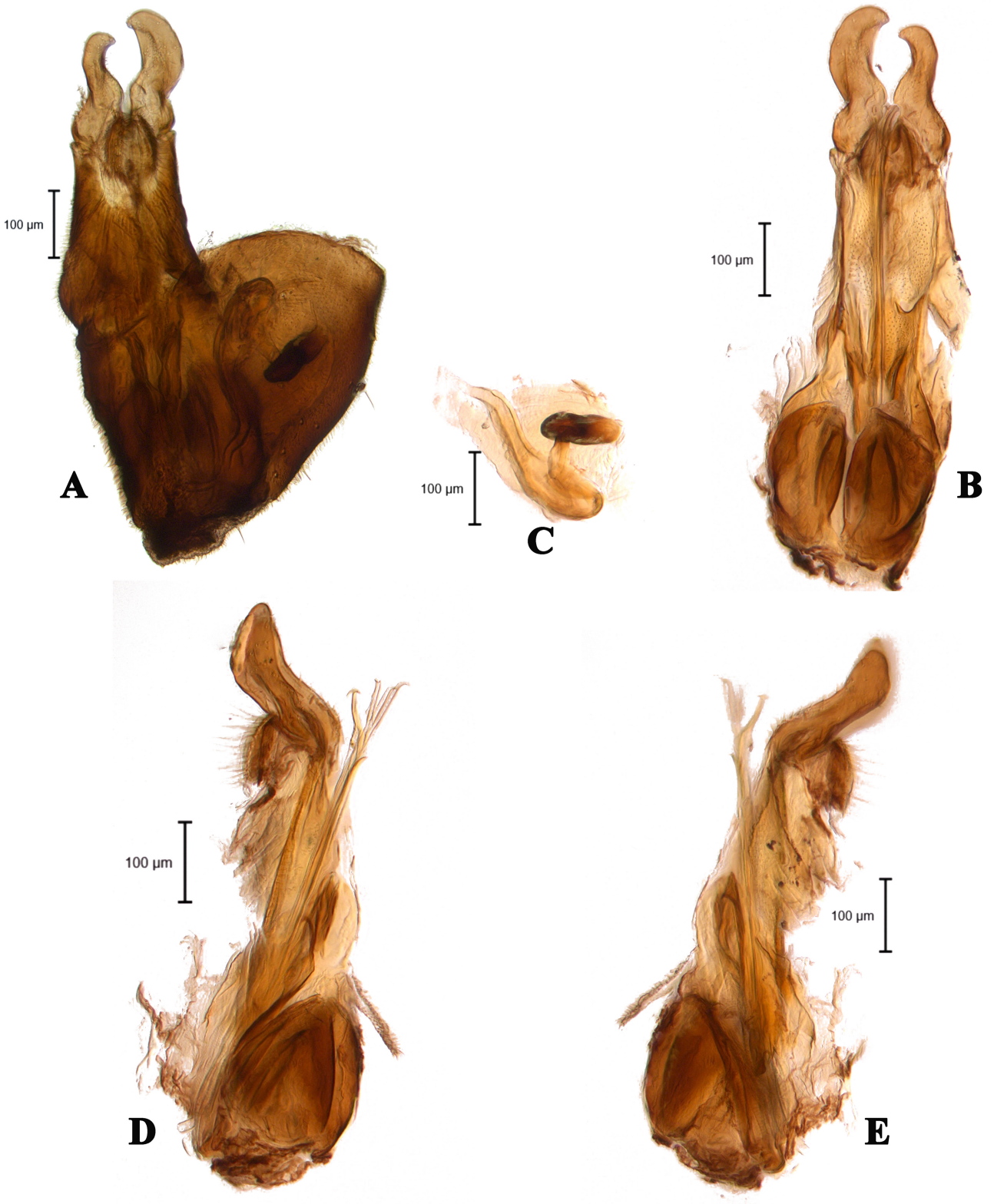



**FIGURE 41**. Male genitalia of *Tomosvaryella falcata* **sp. nov.** (JSS13720, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

brown, broadened distally, without a keel, only a few short bristles ventrally. Ventroapical row of 4–8 very weak spines on fore femur present; 5–6 dark spines on distal third on hind femur; hind femur flattened apically, with 6–10 long, brown bristles posterventrally. Subapical (distal) spines on mid tibiae present, hind tibia covered with dense short light brown bristles ventroapically. Hind tarsi flattened, metatarsus almost as long as 2–5 combined; stronger, peg-like brown spines on metatarsus ventrally. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.5mm. Upper side of basal costal cell with 1–2 short dark bristle. Fourth costal section 3–3.5 times as long as third costal section (section 3 appears short). Cross-vein r-m distinctly distal to middle of discal cell. Two dark bristles on tegula. ***Abdomen***. Tergites black, tergite 1 silvery grey, 6–10 lateral bristles on first tergite. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli brown. Epandrium longer than wide (MLE:MWE = 1.6). Surstyli symmetrical, straight in basal third, then falcate, left surstylus a little longer and wider than right one; (Fig. 41A). Genital capsule in ventral view: gonopods with two small triangular projections extended towards surstyli, hypandrium broad and sclerotized, subepandrial sclerite long (Fig. 41B); phallus with three ejaculatory ducts, one of ejaculatory ducts with two teeth at base. Genital capsule in lateral view: left surstylus broadened toward middle, bent in the middle; right surstylus straight in basal two third, then bent towards sternite; phallic guide long with one long spine before apex, (Fig. 41D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 41C).

**FEMALE:** unknown.

**Etymology**: Falcatus is Latin for sickle-shaped or hooked and refers to the shape of the male surstyli.

**Examined material: HOLOTYPE**: Australia: Queensland: near Brisbane, 27°30'S, 153°1'E, X–XI.2000, JSS13720 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 120).

**Notes:** The surstyli are shaped like those of *Tomosvaryella leipoa* **sp. nov.** (Fig. 56A–D). *Tomosvaryella falcata* **sp. nov.** differs by having only one spine on the phallic guide, two spines on one of ejaculatory ducts, two triangle-shaped projections on the gonopods in ventral view (Fig. 41D–E), and lack of the large triangular protuberance on the hind trochanter. This species is genetically closest to *T. luma* **sp. nov.** (3.5–4.7% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella gaimarii* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:953F0804-AFEB-43E4-8D04-DFECA8C7A7DE
Figs 42A–E, 123, 144B

**Diagnosis:** This species can be recognized by the two distinct spines on the hind trochanter (Fig. 144B); abdominal sternites 3–4 with some spine-like bristles along posterior margin; surstyli slender and long in dorsal view (Fig. 42A); gonopods widened with a distinct lobe towards each other in ventral view (Fig. 42B); two ejaculatory ducts with spines (Fig. 42B, D); surstyli with a distinct triangle-shaped lobe dorsobasally in lateral view (Fig. 42D–E).

**Description: MALE:** Body length: 2.6 mm. ***Head***. Scape, pedicel and Flagellum dark brown; scape with two short upper bristles. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery-brown pollinose with scattered pale short bristles. ***Thorax***. Postpronotum pale, with 4–5 long pale bristles. Mesonotum (viewed obliquely from front) silvery-brown pollinose, with some longer supra-alar bristles behind postpronotum. Scutellum brown pollinose and with 4–6 bristles along distal edge. Halter, knob pale, tip yellow, stem brown. ***Legs***. Mid coxa with 3–4 long brown bristles. Trochanters brown, femora dark brown, shining ventrally; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright brown. Fore coxa with three short pale bristles ventromedially. Hind trochanter with two distinct spines (Fig. 144B), ventromedial one darker, posteroventral one lighter and longer, hook like shape; ventrobasal spines present (1) on fore and absent on mid femur. Hind femur without ventroapical spines, two rows short light bristles posteroventrally. Fore femur with two distinct and long bristles ventrobasally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres distinctly flattened except last one, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one long light brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, covered with short light brown bristles, tergite 1 brown-silvery grey. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base. Sternite 3–4 with 4–6 short spine-like bristles along posterior margin. ***Genitalia***. Genital capsule in

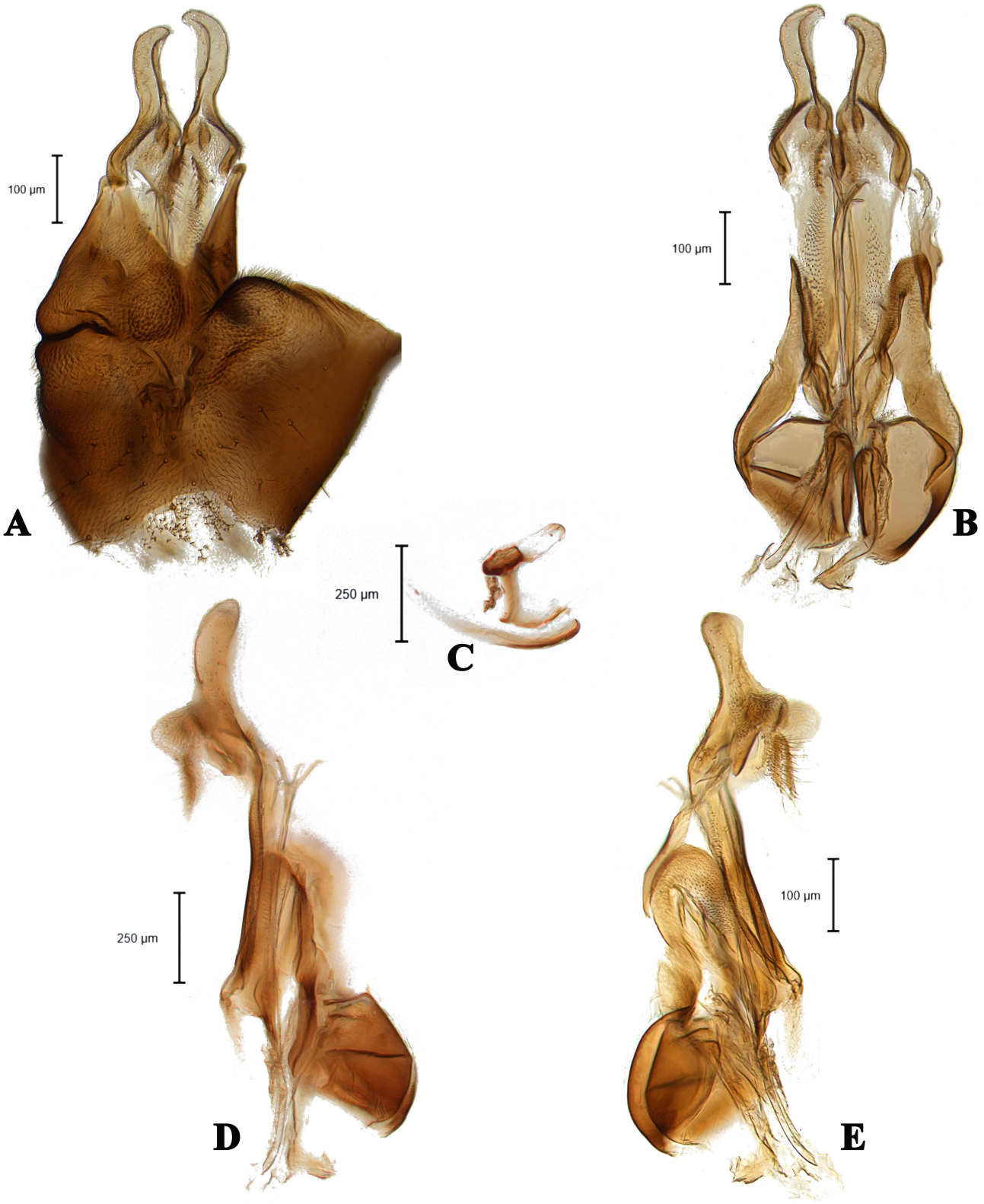



**FIGURE 42**. Male genitalia of *Tomosvaryella gaimarii* **sp. nov.** (JSS16633, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

dorsal view: epandrium wider than long (MLE:MWE = 0.5). Surstyli slender and elongated, curved to each other at apex, left surstylus is little longer (Fig. 42A), both surstyli with a distinct lobe at the base. Genital capsule in ventral view: both gonopods extended towards surstyli and widened, pointed at apex with a distinct lobe on inner margin towards each other; phallic guide long, pointed at apex; phallus with three ejaculatory ducts, two ejaculatory ducts with spines, one spine is longer; subepandrial sclerite long (Fig. 42B); Genital capsule in lateral view: both surstyli gently curved towards sternite, both with a distinct triangle-shaped lobe dorsobasally (Fig. 42D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 42C).

**FEMALE:** Unknown.

**Etymology:** Named in honour of Stephen D. Gaimari, one of the collectors of the only known specimen and a major contributor to Diptera research.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Brisbane Forest Park, top of Scrub Road, 27°25'S, 152°51'E, 370m, sclerophyll *Eucalyptus* forest, 1–7.XII.1995, Irwin, Gaimari, JSS16633 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 123).

**Notes:** It is surprising that only a single specimen of this species has been found as it is in a well-collected area. Different people have run long term Malaise trapping programs here and there has been a lot of hand collecting as well. The area contains a mixture of dry sclerophyll and wet sclerophyll (vine) forest.

### *Tomosvaryella gibberensis* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:30B5CADF-DD84-4154-A584-6920BAE6F6FC
Figs 43A–E, 120

**Diagnosis:** This species can be recognized by the hind trochanter having a semicircular keel, with 2–3 short spines along its edge; surstyli elongated, left one longer, broadened at apex in dorsal view (Fig. 43A); hypandrium distinctly widened, subepandrial sclerite with three protrusions in its center; one of ejaculatory ducts bifurcate; phallic guide with a dorsal spine before apex in ventral view (Fig. 43B).

**Description: MALE:** Body length: 2.9 mm. ***Head***. Scape, pedicel, base of flagellum ark brown, otherwise light brown; flagellum tapering; grey pollinose; pedicel with two short upper bristles and one short lower bristle. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 3–4 long pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, with some long supra-alar bristles behind postpronotum lobes. Scutellum light grey, silvery pollinose and with 2–4 tiny dark bristles along distal edge. Halter, knob pale, tip brownish, stem light brown, base dark brown. ***Legs***. Mid coxa with 3–4 long light brown bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments dark brown dorsally, light brown ventrally. Hind trochanter with a semicircular keel, provided with 2–3 short spines along its edge; two ventrobasal spines on fore and mid femora, two row ventroapical spines present on fore and mid femora. Hind femur without ventroapical spines, except 4–6 equally spaced short bristles posteroventrally, longer on distal half, longest up to 1/2 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres slightly flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with two different-sized dark bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 brown, silvery brown pollinose. Lateral bristles on first tergite present, 7–8 brown bristles up to as long as half of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium wider at its base (MLE:MWE = 1.0). Surstyli slender and elongated, widened at the base, narrowed in the middle; left surstylus slightly broadened at apex; right surstylus shorter, bent towards left one at apex. (Fig. 43A). Genital capsule in ventral view: both gonopods widened at base, extended towards surstyli, pointed at apex; hypandrium distinctly widened, subepandrial sclerite with three small protrusions in its center; phallus with three ejaculatory ducts, one divided two branches at the base; phallic guide with a small spine laterally before apex (Fig. 43B); Genital capsule in lateral view: both surstyli straight in basal two thirds, bent towards sternite apically, phallic guide long, pointed at apex (Fig. 43D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 43C).

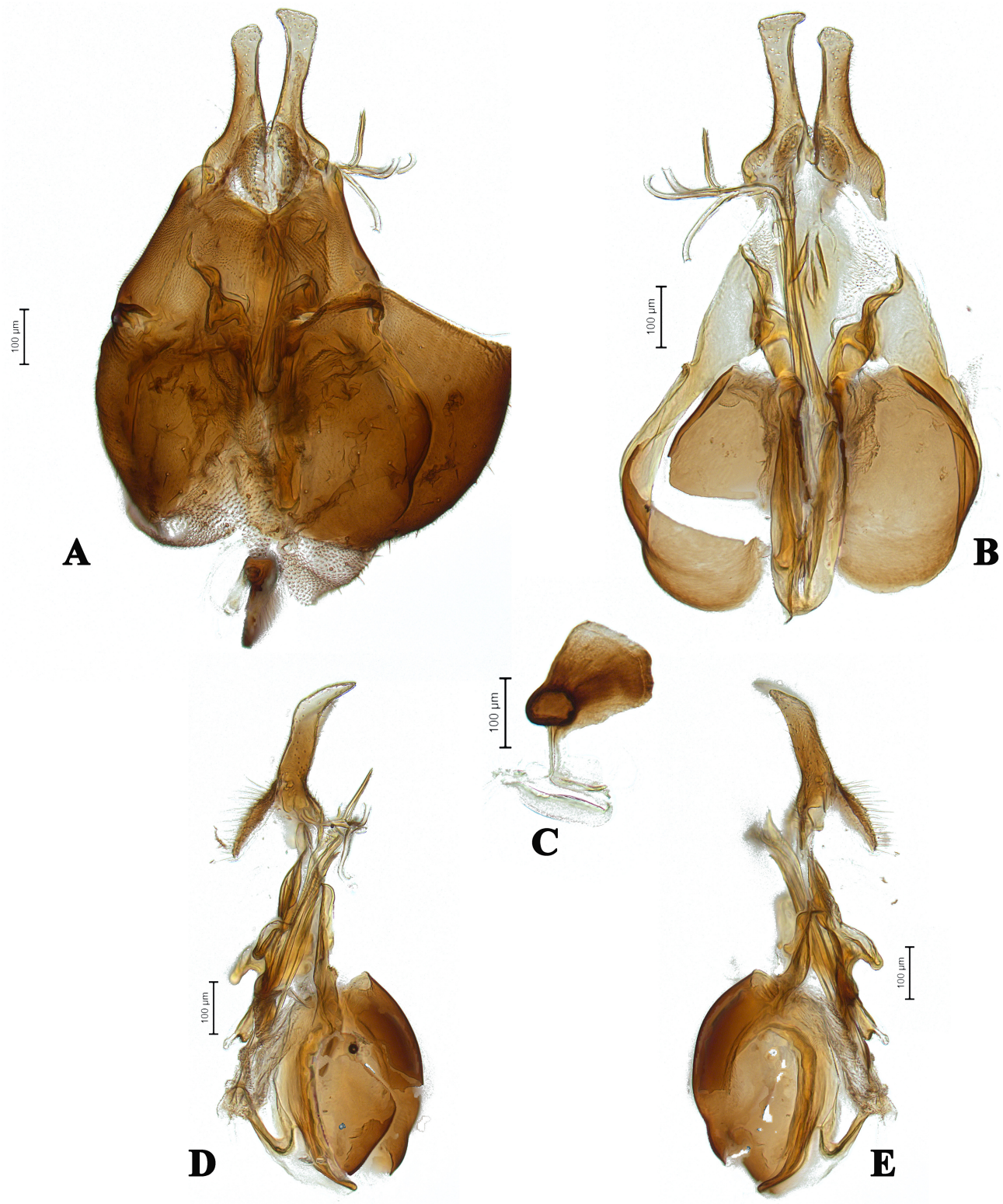



**FIGURE 43**. Male genitalia of *Tomosvaryella gibberensis* **sp. nov.** (CNC575037, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE:** Unknown.

**Etymology:** Named after the gibber (desert pavement) habitat the only known specimen was collected in. Gibber is a rocky desolate habitat with a specialized flora and fauna and intrinsic beauty.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Plevna Downs, 2.3km SSW Arima (PD2), 26°32'S, 142°31'E, 134m, gibber, 16.IX–20.X.2008, Starick, Lambkin & Mackenzie, Malaise trap, CNC575037 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 120).

**Notes:** Few pipunculids have been collected in gibber desert. More work is needed to find out if this species is a gibber specialist or is more widespread and simply under-collected.

### *Tomosvaryella gidgee* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:2DE636D8-742F-4F56-99D1-B19D2EADA702

Figs 44A–E, 122

**Diagnosis:** This species can be recognized by the triangle-shaped protrusion on the hind femur ventrobasally; surstyli tiny covered by long bristles basally in dorsal view (Fig. 44A); both gonopods extended towards surstyli, phallic guide with 2–3 short dorso-dorsolateral spines in ventral view (Fig. 44B).

**Description: MALE:** Body length: 2.6–2.7 mm. ***Head***. Scape, pedicel, flagellum brown, arista dark, Flagellum tapering; yellow-brown at tips, brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching as long as the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 2–3 long pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose with a row of short supra-alar bristles and some longer bristles after postpronotum. Scutellum silvery brown pollinose with 6–10 short dark bristles along distal edge. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 2 long and 1–2 short dark brown bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow completely. Hind trochanter with 4–5 dark bristles ventrobasally; ventrobasal spines absent on femora. Hind femur with a triangle-shaped protrusion ventrobasally. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.6 mm. Upper side of basal costal cell with one brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 silvery grey, silvery pollinose lateral spots on tergites 4 and 5. Lateral bristles on first tergite present, 2–4 long dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium widened at base, longer than wide (MLE:MWE = 1.7). Surstyli tiny, widened at the base with some condensed long bristles, moderately narrowed toward apex, pointed to each other at apex. (Fig. 44A). Genital capsule in ventral view: both gonopods equal in height, extended towards surstyli, gonopods with a distinct projection on inner margin; phallic guide with 2–3 short dorso- dorsolateral spines; subepandrial sclerite distinct with transverse suture in the middle, (Fig. 44B); Genital capsule in lateral view: both surstyli tiny, triangle-shaped (Fig. 44D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 44C).

**FEMALE:** Unknown.

**Etymology:** Gidgee may refer to any of a number of species of *Acacia* native to arid or semi-arid regions of Australia, or to the vegetation communities in which these species dominate. This is the most typical habitat of *Tomosvaryella* species in Australia and is noted on the labels of all known specimens of this species.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Plevna Downs, Tompilly Hill base (PD6 M), 26°44'S, 142°39'E, 187m, gidgee, 25.XI–18.XII.2008, R. Mackenzie, Malaise trap, CNC576416 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Plevna Downs, Tompilly Hill base (PD6 M), 26°44'S, 142°39'E, 187m, gidgee, 25.XI–18.XII.2008, R. Mackenzie, Malaise trap, CNC576410, CNC576414 (2♂, CNC, QM).

**Distribution:** Australia (Queensland) (Fig. 122).

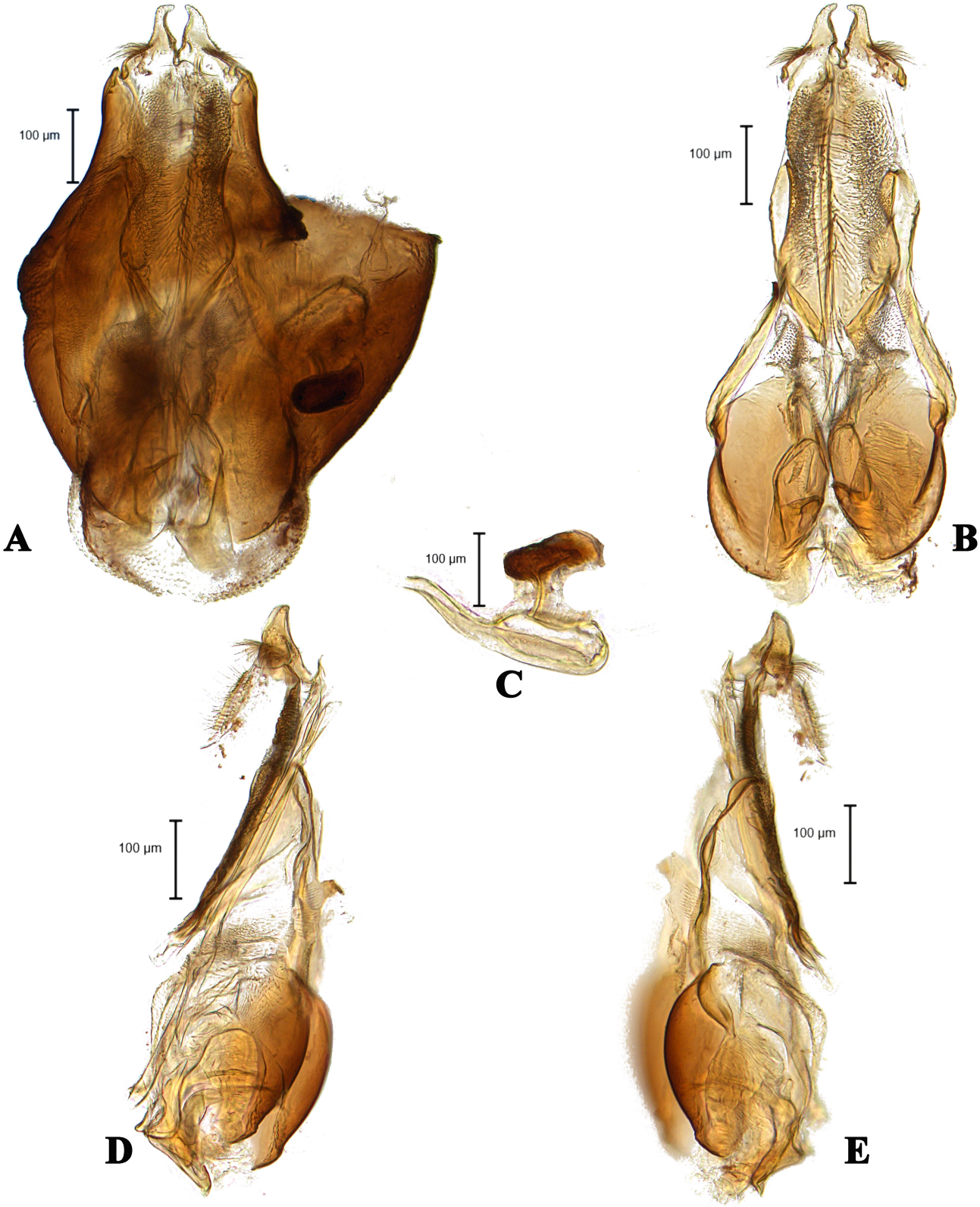



**FIGURE 44**. Male genitalia of *Tomosvaryella gidgee* **sp. nov.** (CNC576416, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella hardyi* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:4DE49584-1E6A-47A8-B4A4-73DF92F3EAED
Figs 45A–D, 122

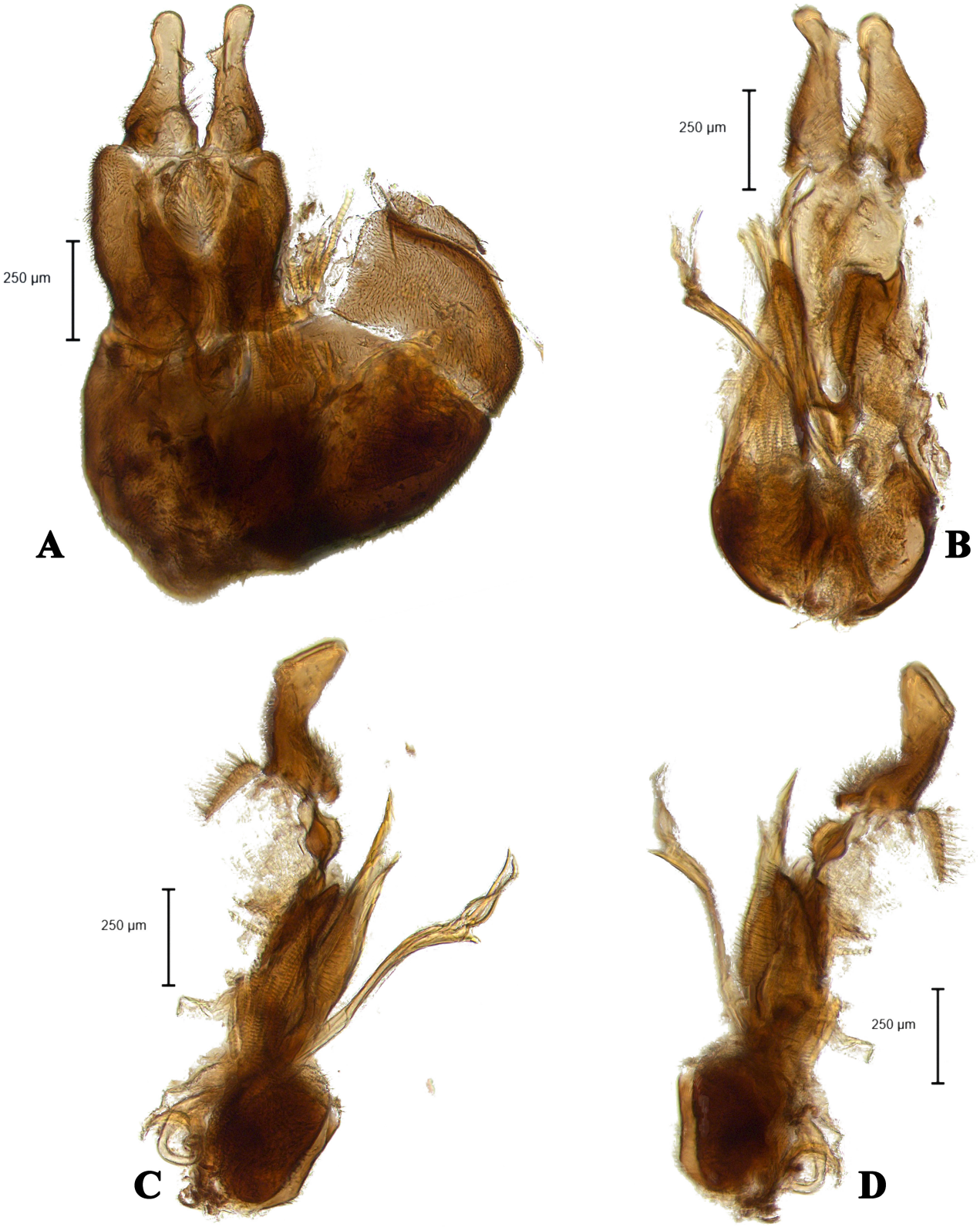



**FIGURE 45**. Male genitalia of *Tomosvaryella hirta* **sp. nov.** (JSS8906, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Diagnosis:** This species can be recognized by elongated surstyli with two distinct triangle-shaped projections at the inner margin before the apex in dorsal view (Fig. 45A); gonopods equal in height, extended towards surstyli, right gonopod wider with three dentations at apex in ventral view (Fig. 45B); phallus with a small triangular projection before emerging ejaculatory ducts in lateral view (Fig. 45C–D).

**Description: MALE:** Body length: 1.1 mm (without head and abdomen). ***Thorax***. Postpronotum light yellow, with 2–3 short pale bristles. Mesonotum (viewed obliquely from front) silvery-brown pollinose; scutum with scattered dark bristles at anterior supra-alar area, extended to posterior. Postalar callus dark brown with 1–2 short light brown bristles in the middle. Scutellum silvery pollinose and with a few (3–5) short dark bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 2–3 dark bristles. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/3 of tibiae light brown (tibiae otherwise dark brown), tarsomeres brown. Fore and mid trochanter with two short dark bristles; hind trochanter silvery pollinose covered by scattered short light brown bristles; two ventrobasal spines absent on fore mid femur; two ventroapical spines present on fore mid femur. Hind femur with two rows short spines ventrally. Hind tibia with two rows of short brown bristle on anterior and posterior side. Hind tarsomeres not flattened, covered by short light brown bristles ventrally and short brown bristles dorsally, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. (one wing missing). Length: 3.1 mm. Upper side of basal costal cell with two short dark brown bristles and two same-sized light brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Tergites 1 silvery pollinose with 5–6 different-sized lateral bristles; ***Genitalia***. Genital capsule in dorsal view: epandrium slightly longer than wide (MLE:MWE = 1.1). Surstyli symmetrical, elongated, widened at base, moderately narrowed before apex, with two distinct triangle-shaped projections at inner margin before apex (Fig. 45A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, right gonopod wider with three dentations at apex (Fig. 45B); phallic guide strong; subepandrial sclerite small and wide (Fig. 45B); Genital capsule in lateral view: both surstyli widened at the base, narrowed and straight at the middle, then bent towards sternite, phallus with a small triangular projection before emerging ejaculatory ducts (Fig. 45C–D).

**FEMALE:** unknown.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Cairns, 16°55'S, 145°46'E, VIII.1904, CNCD5550 (1♂, BPBM)

**Etymology:** This new species is named in honor of D. Elmo Hardy, who discovered it as a new species but never published a description.

**Distribution:** AUSTRALIA: (Queensland) (Fig. 122).

**Notes:** The sole specimen of this species is a syntype of *T. synadelpha* but Hardy recognized it was different from the others and likely a new species.

### *Tomosvaryella hirta* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:AF711ADD-C5B6-4879-AD97-B2D8AE57A052

Figs 46A–E, 123, 153C

**Diagnosis:** This species can be recognized by scattered long dark bristles on scutellum; flattened hind tibia with condensed bristles apically; hind trochanter with a long keel and 3–10 short bristles; sternites 2–3 with different-sized spines, sternite 4 with a long keel in posterior margin; right gonopod with a small projection at inner margin before apex; phallic guide with 3–6 different-sized spines dorso- dorsolaterally in ventral view (Fig. 46B); phallus with two downward small spines in lateral view (Fig. 46D–E).

**Description: MALE:** Body length: 3.8–3.9 mm (without head). ***Thorax***. Postpronotum light yellow, with 10–12 brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer; scutum with scattered bristles at anterior supra-alar area, extended to posterior and uniseriate rows of intra-alar bristles. Postalar callus dark brown with three dark bristles in upper margin. Scutellum black, silvery pollinose covered with scattered long dark bristles entirely (not posterior margin). Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 3–5 distinct, long dark bristles and 4–5 long light brown bristles; hind coxa with 2–4 short brown bristles. Coxae, trochanters, femora dark brown, hind femur shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsomeres light brown ventrally and dark dorsally. Mid trochanter with 2–6 different-sized bristles ventroapically. Hind trochanter silvery pollinose, with a distinct and long keel and 3–10 short

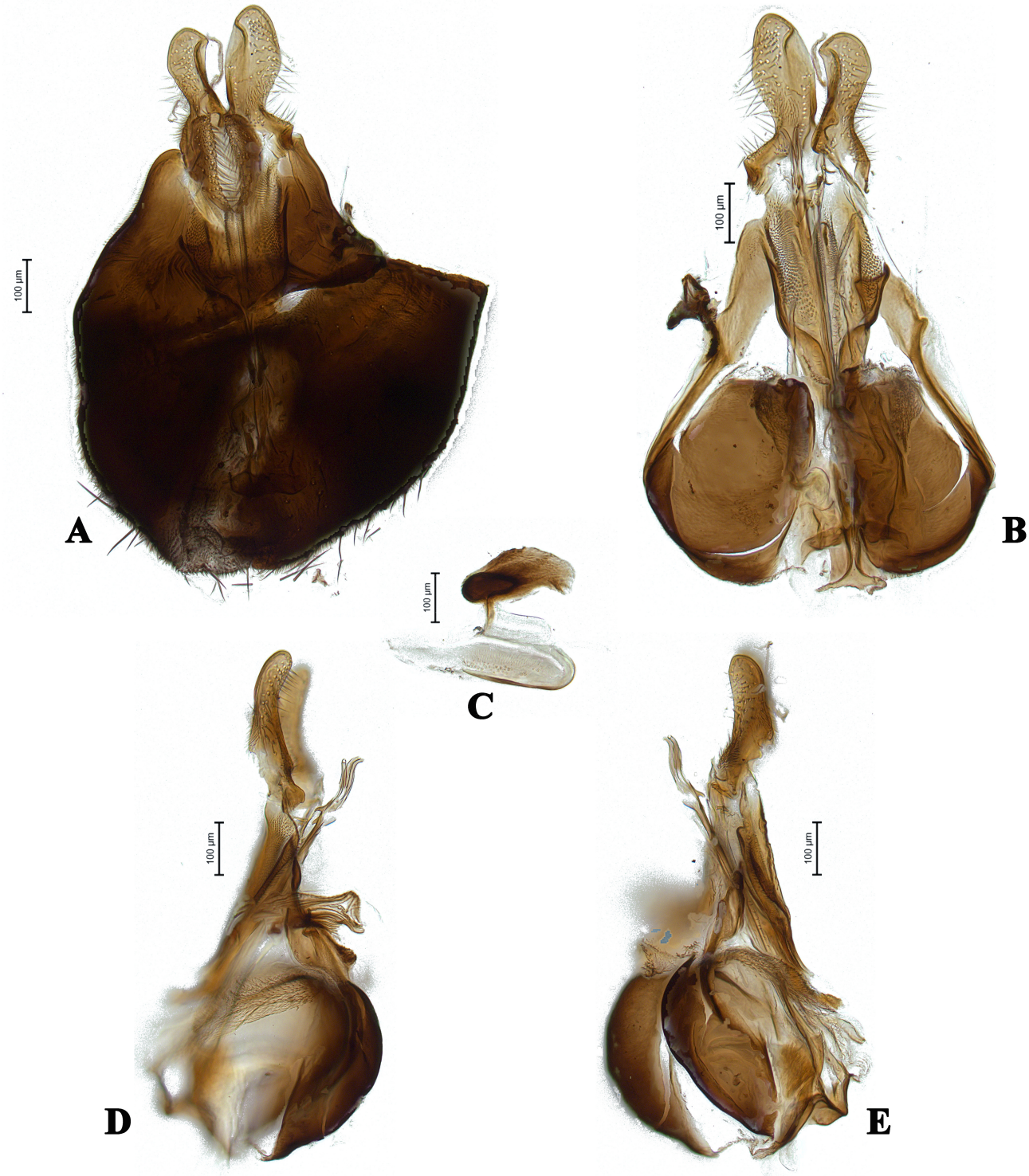



**FIGURE 46**. Male genitalia of *Tomosvaryella hardyi* **sp. nov.** (CNCD5550, BPBM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

bristles ventromedially and ventrobasally; ventrobasal spines absent on fore and mid femur. Hind femur with two rows ventroapical spines. Hind tibia moderately flattened from basal to apical, with a wrinkled indentation in the middle, two rows of short black bristle on anterior and posterior side covered by dense and long dark bristles (longer bristles condensed apically). Hind tarsomeres distinctly flattened, covered by dense dark bristles dorsally and brown bristles ventrally, last hind tarsomere rather rounded, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 5 mm. Upper side of basal costal cell with one or two long dark brown bristle and

two short light brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 8–10 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 20–30 long dark bristles, extending from lateral onto dorsal surface, moderately shortened from lateral to dorsal; tergite 4–5 with two gray spots laterally, all tergites with scattered distinct dark bristles. sternite 2 with 3–6 small dark spines in the middle of posterior margin. Sternite 3 with two long spines and sternite 4 with two distinct rectangular-shaped keels along posterior margin. Syntergosternite 8 enlarged, dark brown and grey pollinose. Membranous area long and broad in middle. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.9). Surstyli small, left surstylus longer and wider than right one, right surstylus with a triangular edge at inner margin before apex (Fig. 46A). Genital capsule in ventral view: both gonopods widened, unequal in height, left gonopod longer than left one, right gonopod with a small projection at inner margin before apex; phallic guide with 3–6 different-sized spines dorso- dorsolaterally, one is longer than others; subepandrial sclerite small (Fig. 46B); Genital capsule in lateral view: both surstyli rather straight in basal two thirds, curved to sternite in basal third (Fig. 46D–E); phallus with two downward small spines; ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 46C).

**FEMALE:** Body length: 3.9 mm. As male except for the following characters. Frons, eyes separated, as wide as the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black only around ocellar triangle, smooth depression in just before ocellar triangle. Enlarged ommatidia silvery shining. Length of bristles on hind tibia shorter than male; last hind tarsomere not rounded (elongated); pulvilli and claws about 1.2–1.5 times as long as last tarsal segment. Abdominal sternites without spines. ***Ovipositor.*** Straight in ventral view, straight, in lateral view (yellow piercer, dark brown base), reaching middle of sternite 3; base silvery brown pollinose. LP:LB = 4.1. LDP:LPP = 2.7. (Fig. 153C).

**Etymology:** The specific name is derived from the Latin word ‘hirta’, meaning hairy, referring to bristles on the scutellum and hind tibia.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Isla Gorge Nat[ional] Park, 25°11’S, 149°58’E, 320m, 4.X.1992, G. Daniels, JSS8906 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Isla Gorge National Park, 25°11’S, 149°58’E, 320m, 3.III.1991; 4.X.1992, G. Daniels, JSS8905, JSS8907 (1♂, 1♀ QM).

**Distribution:** Australia (Queensland) (Fig. 123).

**Notes:** The only known specimens are all from Isla Gorge National Park, a spectacular area of sandstone cliffs and dry sclerophyll forest. This species is genetically most similar to *T. millstreamensis* **sp. nov.** (2.2–3.2% pairwise divergence) and *T. tribula* **sp. nov.** (2.7–3.2%) (Supplementary file 3).

### *Tomosvaryella indistincta* Földvari, Skevington & Motamedinia sp. nov.

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Figs 47A–E, 125

**Diagnosis**: This species can be recognized by shape of surstyli in dorsal view, broadened at base, gradually narrowed toward apex in dorsal view (Fig. 47A); long hypandrium, round gonopods at apex, indistinct subepandrial sclerite and sinuous ejaculatory ducts in ventral view (Fig. 47B); broadened surstyli in lateral view (Fig. 47D–E).

**Description**: **MALE**: Body length: 3.8 mm. ***Head***. Flagellum tapering; brown, gray pollinose. Scape, pedicel black. Face silvery pollinose. Frons shining black; eyes touching for distance equal to 1.1 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 4–6 extra short, pale bristles. Mesonotum (viewed obliquely from front) greyish pollinose, anterior part greyer. Scutellum silvery pollinose and with 7–8 weak bristles along the distal edge. Dorsocentral bristles with very short and pale in a row, somewhat longer along frontal edge. Halter, knob pale, stem brown. ***Legs***. Mid coxa with three long, dark bristles. Coxae, trochanters and femora black, shining ventrally, silvery pollinose posteriorly; knees and basal 1/5 of tibiae and femora yellow, tarsal segments brown, ventrally somewhat paler, last segment same dark brown. Mid trochanter with 6–8 short bristles. Hind trochanter without a keel, only some short bristles ventrally. Ventroapical row of 4–5 very weak spines on fore femur present; 5–6 small, black spines on mid femur. Ventrobasal spines absent on fore and mid femora; hind tibia with a wrinkle in the middle. Hind tarsi long, metatarsus almost as long as 2–5 combined; stronger, peg-like dark spines on metatarsus laterally along anterior edge. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.8 mm. Upper side of basal costal cell with three long pale and three shorter bristles short dark bristle. Fourth costal section 3–3.5 times as long as third costal section. Cross-vein r-m distinctly distal to middle of discal cell. ***Abdomen***.

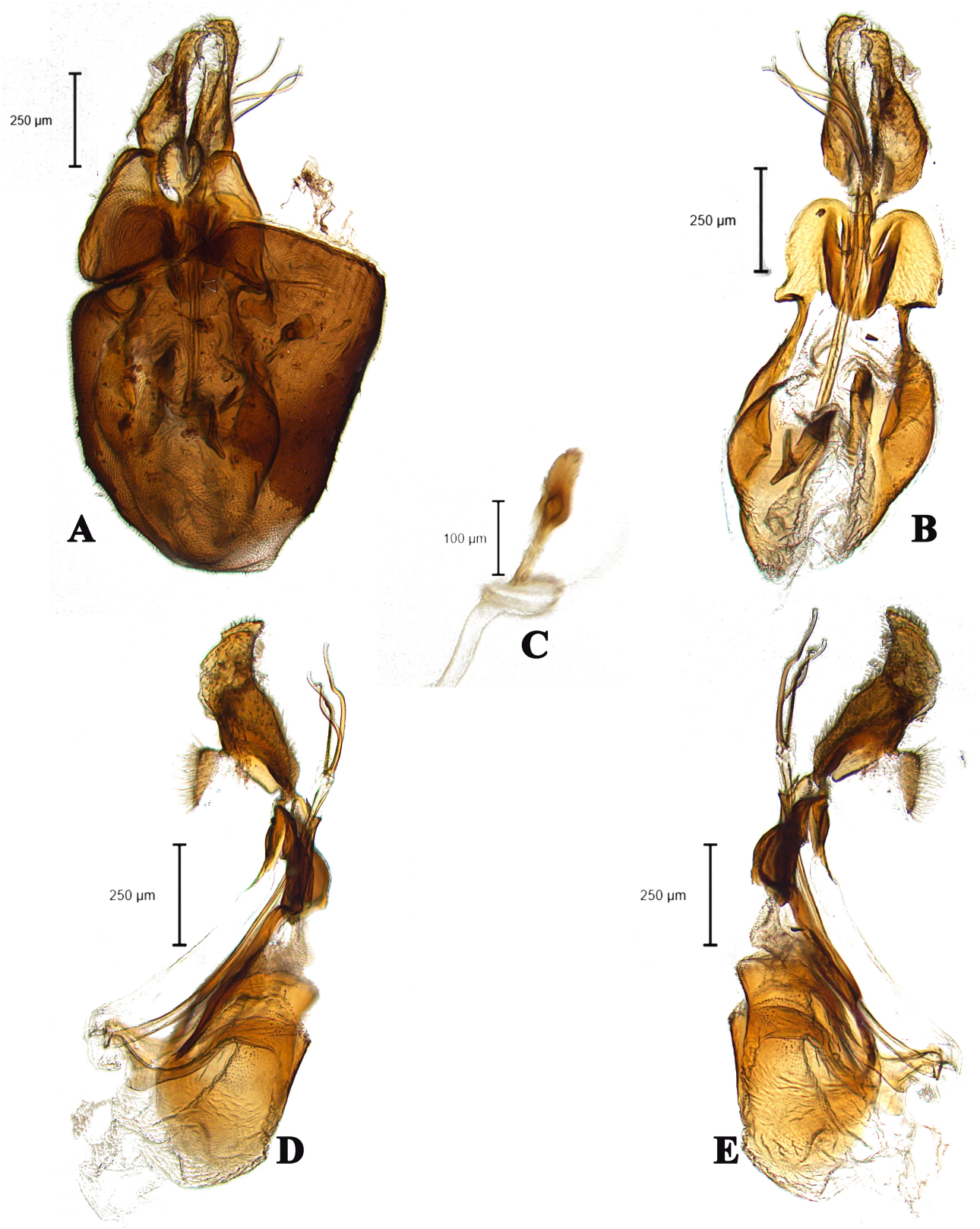



**FIGURE 47**. Male genitalia of *Tomosvaryella indistincta* **sp. nov.** (JSS8368, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

detached. ***Genitalia***. capsule in dorsal view: epandrium and surstyli brown. Epandrium as long as wide (MLE: MWE = 0.0). Surstyli rather symmetrical, elongated; both surstyli broadened at base, moderately narrowed towards apex; right surstylus wider than left one basally, left surstylus damaged before apex (Fig. 47A). Genital capsule in ventral view: gonopods rounded at apex, equal in height; hypandrium long and sclerotized, subepandrial sclerite short and indistinct, only short distance between gonopod and base of surstyli (Fig. 47B); phallus with three distinct long sinuous ejaculatory ducts. Genital capsule in lateral view: both surstyli broadened and gently curved towards sternite before apex; phallic guide broad, pointed at apex (Figs 47D–E). Ejaculatory apodeme spade-shaped (Fig. 47C).

**FEMALE:** unknown.

**Etymology**: Indistinctus is Latin for obscure or dim and refers to the indistinct subepandrial sclerite found in the male genitalia.

**Examined material: HOLOTYPE**: Australia: New South Wales: Kinchega National Park, near Ranger h[ead]q[uarters], 32°24'S, 142°23'E, on paper daisy flower, 15.X.1997, J. Skevington, S. Winterton & C. Lambkin, JSS8368 (1♂, QM).

**Distribution:** Australia (New South Wales) (Fig. 125).

**Note:** This species is genetically most similar to *T. biloba* **sp. nov.** (9.8–18.1% pairwise divergence) (Supplementary file 3).

***Tomosvaryella infundibula*** **Motamedinia, Skevington & Földvari sp. nov.**

urn:lsid:zoobank.org:act:ABEB880A-DE59-4FB8-A631-A1A66F6205DA

Figs 48A–E, 125

**Diagnosis:** This species can be recognized by elongated surstyli; broadened in basal half, narrowed before apex, apex slightly broadened in dorsal view (Fig. 48A); equal gonopods in height, rounded at apex; phallic guide short, broadened at base with final hook-like projection in lateral view; one of ejaculatory ducts covered by teeth in basal half (Fig. 48D); ejaculatory apodeme funnel-shape (Fig. 48C).

**Description: MALE**. Body length: 3.0–3.5 mm. ***Head***. Pedicel brown with 2–3 upper bristles and 1–2 lower bristles; flagellum acuminate; brown. Face silvery pollinose. Frons, upper part close to antennae black, lower part grey pollinose; eyes touching for distance equal to 2.5–3 times ocellar triangle. Occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale brown, with 2–3 short whitish bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part indistinctly brown pollinose, slightly brownish also from the side. Scutellum with dorsocentral bristles weakly developed, dark, somewhat longer on frontal part. Halter, knob pale, stem dark brown. ***Legs***. Mid coxa with 2–3 dark bristles. Trochanters and base of femora brown, femora dark brown, shining ventrally, femora silvery pollinose posteriorly except shiny hind femur; knees, basal 1/3 of tibiae yellow, tarsal segments pale brown, last segment dorsally darker. Ventroapical row of spines on fore femur tiny, 4–6, 8–10 short, black spines on mid femur; 6–8 spines on hind femur, no bristles posteriorly. Subapical (distal) spines on first four tibiae absent. Hind trochanter grey pollinose, without bristles on smoothly curved ventral side, ventrobasal spines absent on fore and mid femora. Hind tarsi not distinctly flattened but wider than fore and mid tarsi, first tarsomere slightly shorter than 2–5 combined; ventral bristles scrub-like. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.8–3.1 mm. Upper margin of basal costal cell with two long distinct bristles. Fourth costal section 2–3 times as long as third costal section. Cross-vein r-m distinctly distal to middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites golden-brownish pollinose, tergite 1 silvery grey pollinose with 6–8 short lateral bristles (up to 0.15 mm), sides faintly silvery on tergites 4 and 5 (the latter with larger spot, but weakly colored). Dispersed short dark bristles on tergites absent. Postabdomen in dorsal view: T6, S7 invisible; T5 twice as long as ST8. Genitalia without dissection: ST8 small, mainly shiny brown; membranous area lanceolate, shaped like a sunflower seed, vertical; surstyli relatively small, brown; hairy cerci visible without dissection in lateral view. ***Genitalia***. Surstyli hairy, wide at base in ventral view, narrowing at 2/3 of the length and broadening at tip, both uniformly wide in lateral view and pointed at tip; epandrium short and wide; cerci symmetrically placed, small; ST8 with a narrowing membranous area towards epandrium. Genital capsule in dorsal view: epandrium and surstyli dark brown. Epandrium wider than long (MLE:MWE = 0.6). Both surstyli broadened in basal half, then strongly narrowed before apex, apex rather broadened less than basal (Fig. 48A). Genital capsule in ventral view: subepandrial sclerite short and narrow, hidden behind phallic guide, without spines; gonopods symmetrical broad,

apex rounded; phallus trifid, one of ejaculatory ducts covered by teeth in basal half (Fig. 48B). Genital capsule in lateral view: both surstyli straight in basal half, strongly bent (right angle) towards sternite (Figs 48D–E). phallic guide broadened with final thin hook-like projection, visible in lateral view (Fig. 48D); ejaculatory apodeme funnel shape (Fig. 48C).

**FEMALE**. Unknown.

**Etymology:** From the Latin infundibulum, funnel, in reference to the funnel-shaped ejaculatory apodeme.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, ANIC [Bulk Sample] 2090, JSS15570 (1♂, WAM); **Paratypes:** AUSTRALIA: Western Australia: Millstream-Chichester National Park near Crossing Pool, 21°35'S, 117°4'E, 276m, over creek, *Melaleuca* riverine forest, 28.iv–5.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS15965; JSS16190 (2♂, ANIC); 304m, *Melaleuca* riverine forest, 5–11.v.2003, C. Lambkin, D. Yeates & J. Recsei, Malaise trap, JSS15598 (1♂, ANIC); New South Wales: Crowdy Bay National Park, 40 km northeast of Taree, 31°39'S, 152°46'E, 16.iii.1981, B.J. Loudon, JSS8740 (1♂, ASCU); Queensland: JSS4188 (1♂, ZMAN) [previous syntype of *T. pseudophanes*]; Carnarvon National Park, north of Ranger Station near Mount Rugged, 24°55'S, 148°0'E, near road, 12.X.2002, S. Boucher, sweeping, LEM_0016213 (1♂, LEM); Carnarvon Station, near Homestead, 24°48'S, 147°45'E, 753m, flowering herbs, 12–15.X.2014, Lambkin, Wright, J. & K. Wilson, Malaise trap, burnt 2014, 37270, CNC597136–7 (2♂, CNC); Halifax, 18°35'S, 146°17'E, IV.1920, F. Muir, CNCD5557–8 (2♂, BPBM); 1 km W Cooktown, 15°28'S 145°15'E, 12.v.1981, D.H. Colless, JSS177 (1♂, ANIC); 29 km S of Lakeland, 16°5'S, 144°47'E, 16.iv.1980, G.F. Hevel and J.A. Fortin, JSS10538 (1♂, USNM); 5 miles west Ravenshoe, 17°38'S, 145°29'E, 780m, 6.xi.1962, E.S. Ross & D.Q. Cavagnaro, JSS8475 (1♂, USNM); 6 km North of Mt. Molloy, 16°41'S, 145°20'E, 16.iv.1980, G.F. Hevel & J.A. Fortin, JSS10519 (1♂, USNM); Big Mitchell Creek Mareeba-Molloy Road, North Queensland, 16°48'S, 145°21'E, 04.v.1967, D.H. Colless, JSS135 (1♂, ANIC), Rocky Creek, 7 m [11.2 km] North Atherton, North Queensland, 17°7'S, 145°29'E, 3.V.1967, D.H. Colless, JSS8530 (1♂, ANIC); Brisbane Forest Park, top of Scrub Road, 27°25'S, 152°51'E, sclerophyll *Eucalyptus* forest, 04.xi.1995, Irwin & Gaimari, JSS8833, JSS8900 (2♂, INHS); Brisbane Forest Park, 27°25'S, 152°51'E, sclerophyll *Eucalyptus* forest, 8.xi.1995, Irwin & Gaimari, JSS8838 (1♂, INHS); Brisbane, 27°28'S, 153°01'E, 12.iii.1960, E.M. Exley, JSS8263 (1♂, QM); Brown Lake, Stradbroke Island, 27°29'S 153°25'E, 01.iii.1980, G. Daniels, JSS8918 (1♂, QM); Bunya Mountains, 26°51'S, 151°33'E, 20.v.1962, G. Monteith, JSS8260 (1♂, QM); Burnett River, Bundaberg, 24°52'S, 152°21'E, 15–17.iii.1972, H. Frauca, JSS8538–9 (2♂, ANIC); Cape York, Stewart Range, 14°04'S, 143°41'E, 500m, 3.v–29.ix.1961, L.&M. Gressitt, CNCD5553 (1♂, BPBM); Carnarvon National Park, Consuelo land, 24°57'S 148°6'E, mahogany forest, 12.x.2002, M. von Tschirnhaus, JSS13951 (1♂, CNC); Carnarvon National Park, Mount Moffatt Section, 3 km SE Headquarters, 25°5'S, 148°01'E, 740m, 20.xi.1995, M.E. Irwin & S.D. Gaimari, JSS8901 (1♂, INHS); Carnarvon National Park, Mount Moffatt Section, 24°52'S, 148°01'E, 840m, next to water pool, 24.xi.1995, M.E. Irwin, Malaise trap, JSS8831, JSS8843 (2♂, INHS); Carnarvon National Park, Mount Moffatt Section, Malaise traps near Mount Moffatt, 25°04'S, 148°03'E, 19–23.i.1998, J.&A. Skevington & S.Winterton, Malaise trap, JSS2717 (1♂, QM); Carnarvon National Park, Mount Moffatt Section, Top Shelter Shed, 24°55'S, 148°03'E, 1100m, hilltop, 22.xi.1995, D.K. Yeates, JSS8310, JSS8314–6 (4♂, QM); Carnarvon Station, near Piebald Spring (CN1M1), 24°50'S, 147°45'E, 821m, *Eucalyptus/Callistemon*, in rocky gully, 13.xii.2010–15.vi.2011, C. Zwick & C. Wilson, Malaise trap, CNC576485, CNC576488 (2♂, CNC); Durham downs, Nokandra, 26°07'S, 149°04'E, 13.xi.1949, S.J. Paramonov, JSS8677 (1♂, ANIC); 29.iii–4.iv.1998, N. Power, Malaise trap, JSS7900 (1♂, QM); Noosa, 26°23'S, 153°06'E, 27.viii.1959, F.A. Perkins, JSS8254 (1♂, QM); Peawaddy Gorge, Mount Moffatt National Park, 24°56'S, 148°04'E, 1100m, 26.ii.1996, C.J. Burwell, S. Evans, JSS9745 (1♂, QM); SW Brisbane College, 27°28'S, 153°02'E, *Eucalyptus*, 1.ii.1961, J. L. Gressitt, CNCD5556 (1♂, BPBM); 16–23.i.1998, S. Winterton, N. Power & D. White, Malaise trap, JSS8431–3 (3♂, QM); 26.ix–3.x.1997, S. Winterton, N. Power & D. White, Malaise trap, JSS8849 (1♂, QM); Flinder's Peak, 27°49'S, 152°48"E 10.iii.1963, G. Monteith, CNCD5569 (1♂, BPBM); Western Australia: 11 km E Marble Bar at Brockman Creek, 21°09'S, 119°52'E, 187m, damp, sandy creek bed, 2–14.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15684 (1♂, CNC); 22 km E Cobra Station, 24°13'S, 116°33'E, 381m, small dry wash, 26.iv–10.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15681 (1♂, CNC); 4 miles SE by S of Minilya, 23°49'S, 114°36'E, 17.x.1970, D.H. Colless, JSS8701 (1♂, ANIC); Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS15968, JSS16117 (2♂, ANIC); 25.iv–14.v.2003, C. Lambkin

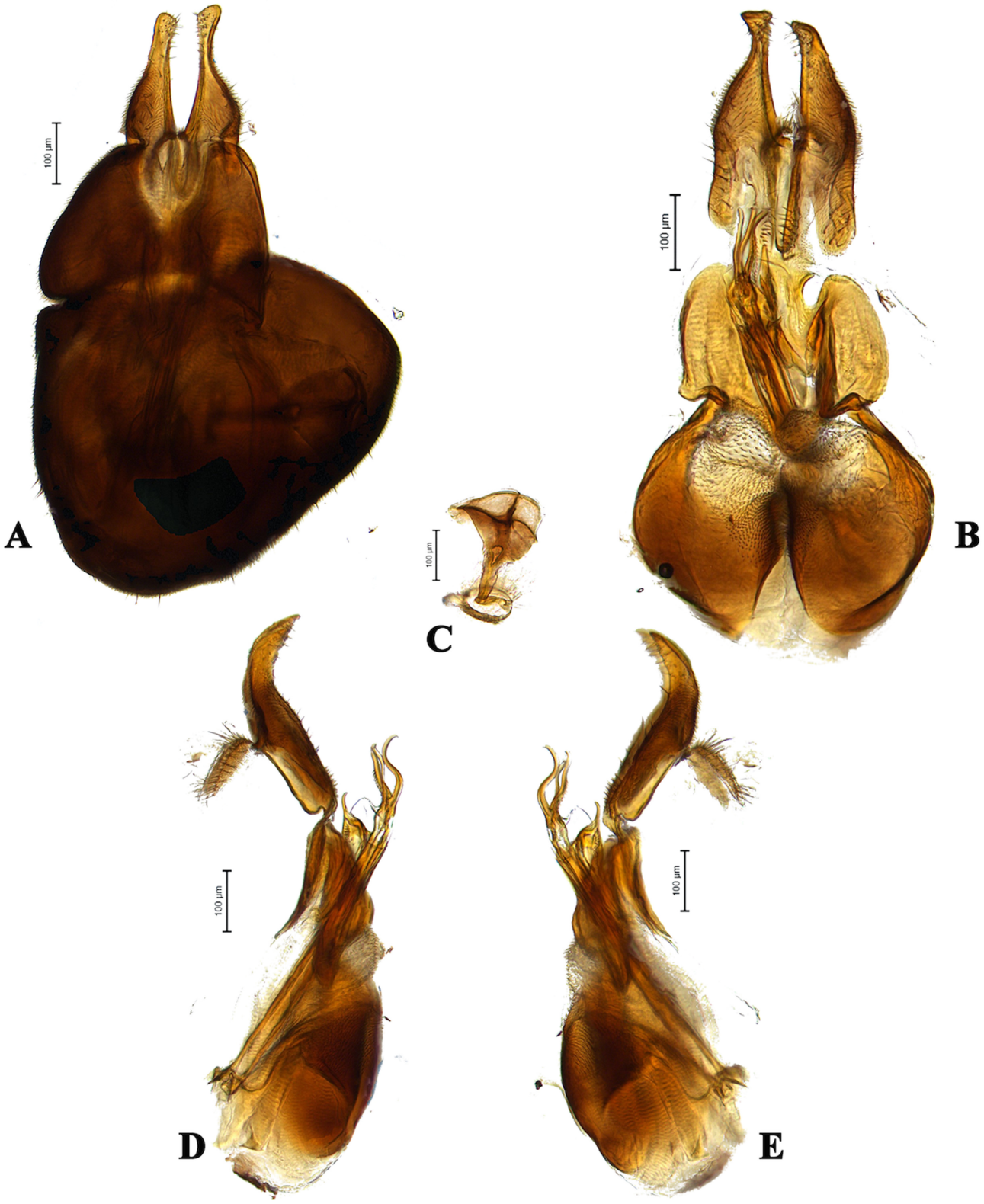



**FIGURE 48**. Male genitalia of *Tomosvaryella infundibula* **sp. nov.** (CNC597137, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

& T. Weir, Malaise trap, JSS15986, JSS15989–90, JSS15992, JSS15994–6, JSS15998, JSS16000 (9♂, ANIC); Karijini National Park, Weano Gorge Road, 22°21'S, 118°15'E, 695m, grassy dry creek, *Eucalyptus Acacia* scrub, 20–25.iv.2003, C. Lambkin & T. Weir, Malaise trap, JSS16032–4 (3♂, ANIC); 25.iv–15.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16079 (1♂, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3830, CNCD3847 (2♂, QM); Millstream-Chichester National Park, Roebourne Road, 21°26'S, 117°09'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 27.iv–3.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16074, JSS16195, JSS16197, JSS16199 (4♂, ANIC).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland, Western Australia) (Fig. 125).

**Notes:** Specimen JSS4188 was previously recognized as a syntype of *T. pseudophanes*. Based on the different shape of terminalia and external characters, we include it in *T. infundibula* **sp. nov.** The hind femur of *T. infundibula* **sp. nov.** has no bristles posteriorly while *T. pseudophanes* has posterior bristles. *T. infundibula* **sp. nov.** also has two long distinct bristles on the upper margin of basal costal cell. The shape of surstyli is also different in dorsal and lateral view (Fig. 48A, D–E).

### *Tomosvaryella irwini* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:D92C0BDA-191D-423D-B8B8-1C4AA4269BA2
Figs 49A–F, 126

**Diagnosis:** This species can be recognized by the small patch of bristles on the hind trochanter; elongated surstyli, left surstylus broader than right one in middle in dorsal view (Fig. 49A); elongated gonopods; subepandrial sclerite with some horizontal wrinkles (Fig. 49B); phallic guide with 3–4 dorso- dorsolateral spines (Fig. 49F); both surstyli curved to sternite, straight in middle in lateral view (Fig. 49D–F).

**Description: MALE:** Body length: 2.2 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale, with 4–5 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, greyish also from the side. Scutellum not visible (glue blocks the view). Dorsocentral bristles distinct, dark, somewhat longer on frontal edge, numerous long bristles around postpronotum present. Halter, knob brown, stem brown. ***Legs***. Mid coxa with 3 long, dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow-brown (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter with a small patch of extra short bristles; ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; absent on mid femur; hind femur without ventroapical spines, bristles not visible on specimen. Subapical (distal) spines on first four tibiae absent. Hind trochanter with a small patch of extra short bristles; ventrobasal spines absent on fore and mid femora. Hind tibia not bent in posterior view. Metatarsi slightly flattened, almost as long as 2–4 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.1 mm. Upper side of basal costal cell with one light bristle. Fourth costal section 2 times as long as third costal section. Cross-vein r-m at 2/5 of discal cell (proximal to middle). 2–3 distinct brown setulae on tegula. ***Abdomen***. Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.8). Surstyli elongated towards surstyli, broadened at base, straightened in middle, left surstylus wider than right one, distally curved to each other (Fig. 49A). Genital capsule in ventral view: gonopods elongated, tapering at apex, unequal in height, left is longer than right one; subepandrial sclerite with 3–4 horizontal wrinkles (Fig. 49B); phallic guide with 3–4 dorso- dorsolateral spines (Fig. 49F). Genital capsule in lateral view: both surstyli curved towards sternite, straight in middle (Fig. 49D–F). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 49C).

**FEMALE:** Unknown.

**Etymology:** This species is named in honour of Mike Irwin, one of the collectors of the only known specimen. Mike collected 9% of the specimens used in this revision and 23% of the species (Supplementary file 2).

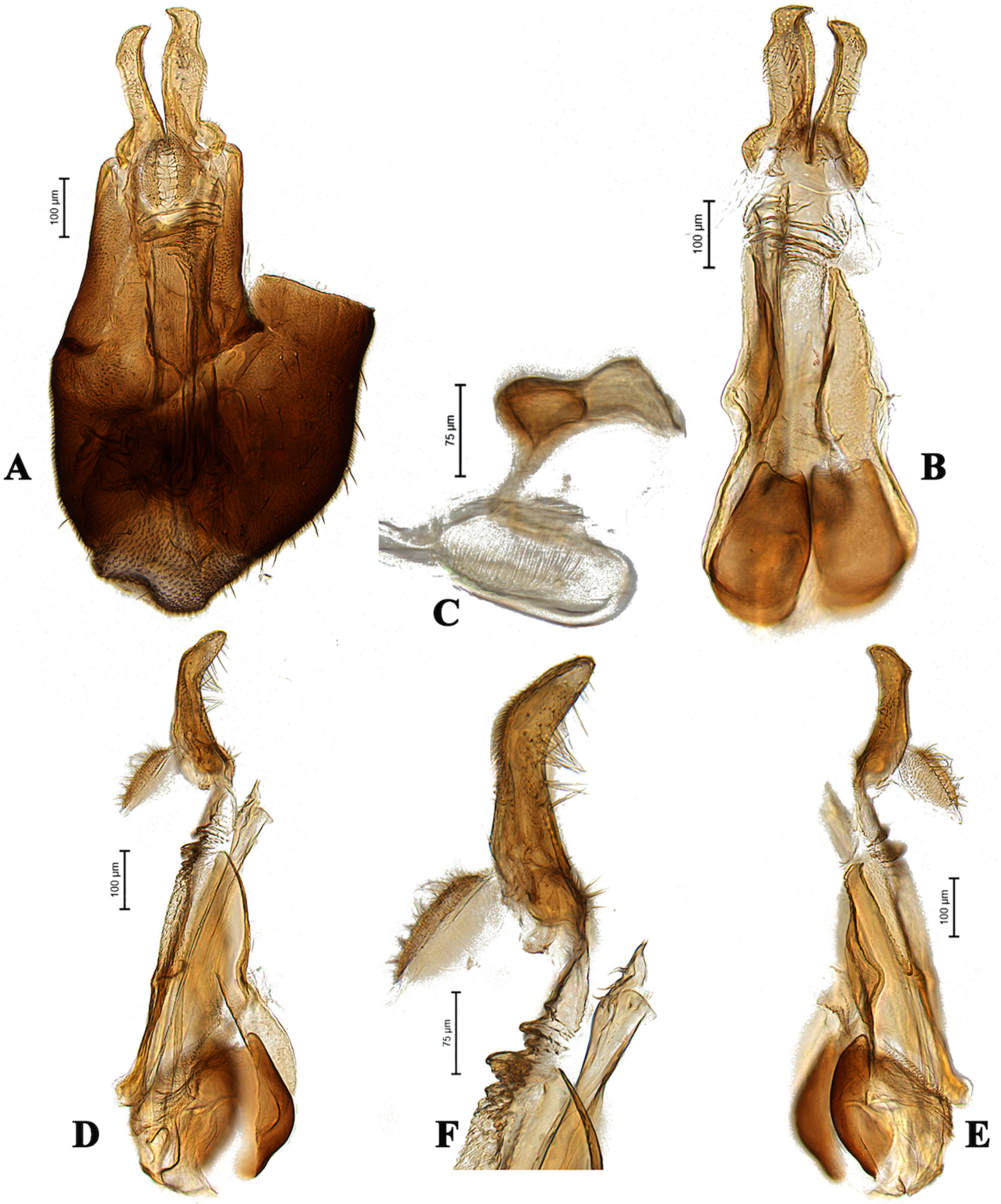



**FIGURE 49**. Male genitalia of *Tomosvaryella irwini* **sp. nov.** (JSS8842, QM) **A**) dorsal view, B) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view, **F**) left surstylus and phallic guide in lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Brisbane Forest Park, 27°25'S, 152°51'E, sclerophyl[l] *Eucal[y]ptus* forest, 4.XI.1995, Irwin & Gaimari, JSS8842 (1♂, QM); **PARATYPES:** New South Wales: 8 km S Mendooran, 31°50'S, 149°6'E, 28.I.1987, G.&A. Daniels, JSS8913 (1♂, QM); Queensland: Brisbane Forest Park, Enoggera Creek at Scrub Road Crossing, 27°26'S, 152°50'E; 27°26'S, 152°51'E; 27°29'S, 152°50'E,

200m, tropical rainforest with *Eucalyptus*, 30.X–2.XI.1995; 2–6.XI.1995; 6–9.XI.1995, 7–27.XII.1995, M.E. Irwin, Malaise trap; CNCD3774, CNCD134860, CNCD134863–4, CNCD134867, CNCD134873, CNCD134889, CNCD134898, CNCD134900, CNCD137146–7, CNCD137154–5, CNCD137157, CNCD137167; CNCD137176, CNCD137191, CNCD137198, CNCD137200, CNCD137202, CNCD137404, CNCD137409, CNCD147446, CNCD147461, CNCD147469–70, CNCD147486, CNCD147495–96 (18♂,1♀, CNC; 8♂, QM; 2♂, USNM); Brisbane Forest Park, 27°26'S, 152°51'E, 200m, 9–14.XI.1995, M.E. Irwin, CNCD136727, CNCD136740, CNCD136746, CNCD136760, CNCD136764 (5♂, CNC); Mount Glorious, Property of Tony Hiller, 27°20'S, 152°46'E, 30.X–15.XI.1995, M.E. Irwin, CNCD136079, CNCD136087 (1♂,1♀, CNC).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 126).

**Notes:** This species has a very narrow range in NE New South Wales and SE Queensland. Intraspecific genetic distance is 0.9%. It is genetically most similar to *T. creagra* **sp. nov.** (8.2% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella kooncheraensis* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:A4D00570-EDA1-4ED8-9B4A-7C399F7E4884
Figs 50A–E, 125

**Diagnosis:** This species can be recognized by the hind femur being broadened at the base; surstyli with a hump-like projection in the dorsomedial margin, covered by long and distinct bristles along outer margin in dorsal view; gonopods extended towards surstyli, pointed at apex; phallic guide with at least two distinct spines in ventral view (Fig. 50B); both surstyli straight in lateral view (Fig. 50D–E).

**Description: MALE:** Body length: 2.4 mm. ***Head.*** (damaged). ***Thorax***. Postpronotum pale, with 3–4 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose. Halter, knob and stem pale, tip brownish. ***Legs***. Mid coxa with 3–4 dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments brown. Hind trochanter gray pollinose without any features. Ventrobasal spines present (1) on fore and mid femur. Hind femur without ventroapical spines. Hind femur shinny posteroventrally, broadened at base and moderately narrow towards knee. Hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one long brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey. Lateral bristles on first tergite present, 4–6 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli symmetrical, broadened at the base, then narrowed strongly, widened in the middle, curved to each other towards apex, both surstyli with long condensed bristles at outer margin, longer at the middle (Fig. 50A). Genital capsule in ventral view: both gonopods unequal in height, left is slightly longer than right one, extended towards surstyli, pointed at apex; phallic guide with at least two long dorso- dorsolateral spines; subepandrial sclerite rectangular-shaped (Fig. 50B); Genital capsule in lateral view: both surstyli straight, broadened at base, moderately narrow to apex (Fig. 50D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 50C).

**FEMALE:** Unknown.

**Etymology:** This species is named after the type locality, Koonchera Waterhole. This location is in the northeastern corner of South Australia, a remote location south of Birdsville, Queensland near the Simpson Desert. This was Jeff Skevington's first major field trip as a graduate student at the University of Queensland and the team of Christine Lambkin, Shaun Winterton, Angela Skevington, Andreas Zwick and Hugh and Jeri Dingle all collected and studied the natural history of this region together. The trip proved to be a bit too early for most pipunculids, but several species of arid land specialists were collected, including this singleton specimen of a new species.

**Examined material: HOLOTYPE**: AUSTRALIA: South Australia: Koonchera Dune near Koonchera Waterhole, 26°41'S, 139°30'E, on dune top under large tree, 3.IX.1997, J.&A. Skevington, JSS8320 (1♂, QM).

**Distribution:** Australia (South Australia) (Fig. 125).

**Notes:** Pipunculid specimens of a number of species collected in this location appeared to be hilltopping along

the dune ridge. More specimens are needed to confirm this behaviour in this species. Based on the DNA sequencing, this species is genetically most similar to *T. pterygia* **sp. nov.** (1.1% pairwise divergence) (Supplementary file 3).

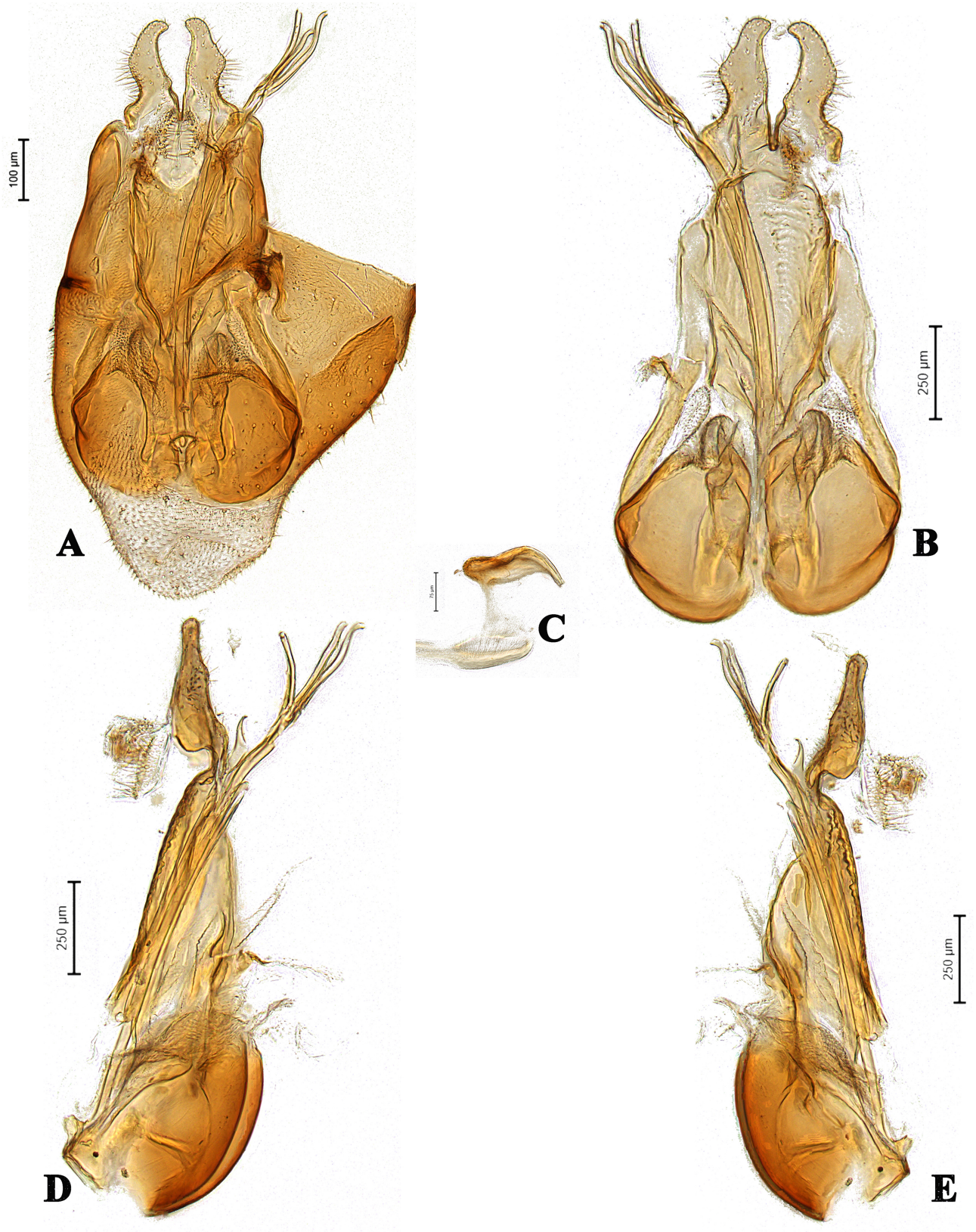



**FIGURE 50**. Male genitalia of *Tomosvaryella kooncheraensis* **sp. nov.** (JSS8320, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella lambkinae* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:D6CA6298-C379-4EC9-BCEE-12376D745C22
Figs 51A–E, 126,147A

**Diagnosis:** This species can be recognized by having the hind trochanter without a keel, but with some dark spines in a row ventrobasally (Fig. 147A); hind femur with some long bristles posteriorly (Fig. 147A); elongated surstyli in dorsal view (Fig. 51A); gonopods elongated towards surstyli with two small projection towards phallus (Fig. 51B); phallic guide with six spines dorsolaterally; subepandrial sclerite elongated in ventral view (Fig. 51B).

**Description: MALE**: Body length: 3.3 mm. ***Head***. Flagellum short acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose, slightly grayish also from the side. Scutellum brownish pollinose and with 6–8 weak bristles along the distal edge. Dorsocentral bristles indistinctly developed, dark, more visible on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with brownish spot at tip, stem brown. ***Legs***. Mid coxa with two long and one short bristles. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 and distal 1/6 of tibia yellow (tibia otherwise brown), tarsal segments yellow dorsally, whitish yellow ventrally, last segment brown dorsally. Fore and mid trochanters with 1–2 dark anterior bristles. Hind trochanter without a keel, but with dark spines (22–24) in a row ventrobasally (Fig. 147A). Ventroapical row of spines on fore femur 4–5 indistinct; 8–10 very short, black spines on mid femur; no spines on hind femur, hind femur with only 22–24 pale bristles equally spaced posteriorly, longer on distal half (longest up to as long as 1–1.2 times the width of hind tibia at the distal end) (Fig. 147A). Subapical (distal) spines on first four tibiae present (medium sized); ventrobasal spines (1) present on fore and absent on mid femur. Hind metatarsus flattened almost as long as 2–5 combined, with dorsal bristles missing in the middle, arranged in rows along the edges; with scrub-like bristles ventrally. Pulvilli as long as or slightly longer than last tarsal segment. ***Wing***. Length: 3.1 mm. Upper side of basal costal cell with one dark and long bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 10–11 dark setulae on tegula, mostly along the distal edge. ***Abdomen***. Dissected. tergite 1 silvery grey. Lateral spines on first tergite present, 6–8 brown bristles in a double row up to as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: Dissected. Genitalia without dissection: Dissected. ***Genitalia.*** Genital capsule in dorsal view: surstyli rather symmetrical, broadened at base, slenderized after basal third. Left surstylus longer than right one (Fig. 51A). Genital capsule in ventral view: gonopods unequal, left slightly longer than right one, elongated towards sternite, with two small projections extended towards phallus; lobes of hypandrium sclerotized, subepandrial sclerite elongated and covered with transverse streaks; phallic guide with six spines dorsolaterally (three left spines longer than others; the longest one twice as length as others) (Fig. 51B); Genital capsule in lateral view: both surstyli gently curved toward sternite (Fig. 51D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 51C).

**FEMALE:** Unknown.

**Etymology**: This species is named in honour of Christine Lambkin, who collected the only known specimen and is a major contributor to Australian Diptera research. Chris collected or was involved in collecting 26% of the known Australian *Tomosvaryella* specimens and 58 percent of the Tomosvaryella species treated in this paper, making her the top contributor to our knowledge of this genus in Australia (Supplementary file 2). This revision clearly could not have been completed without her input.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Western Australia: Pine Hill, Cape Arid N[ational] P[ark], Balladonia Road, 33°18’S, 123°22’E, 130m, mallee woodland, 31.x–18.xi.2003, C. Lambkin & J. Recsei, Malaise trap, JSS15593 (1♂, QM).

**Distribution:** Australia (Western Australia) (Fig. 126).

**Notes:** The only known specimen was collected in mallee habitat (a dry, savanna-like habitat dominated by shrubby species of *Eucalyptus*). Based on the DNA sequencing, this species is genetically most similar to *T. ngarrbekiota* **sp. nov.** (7.7–13.6% pairwise divergence) (Supplementary file 3).

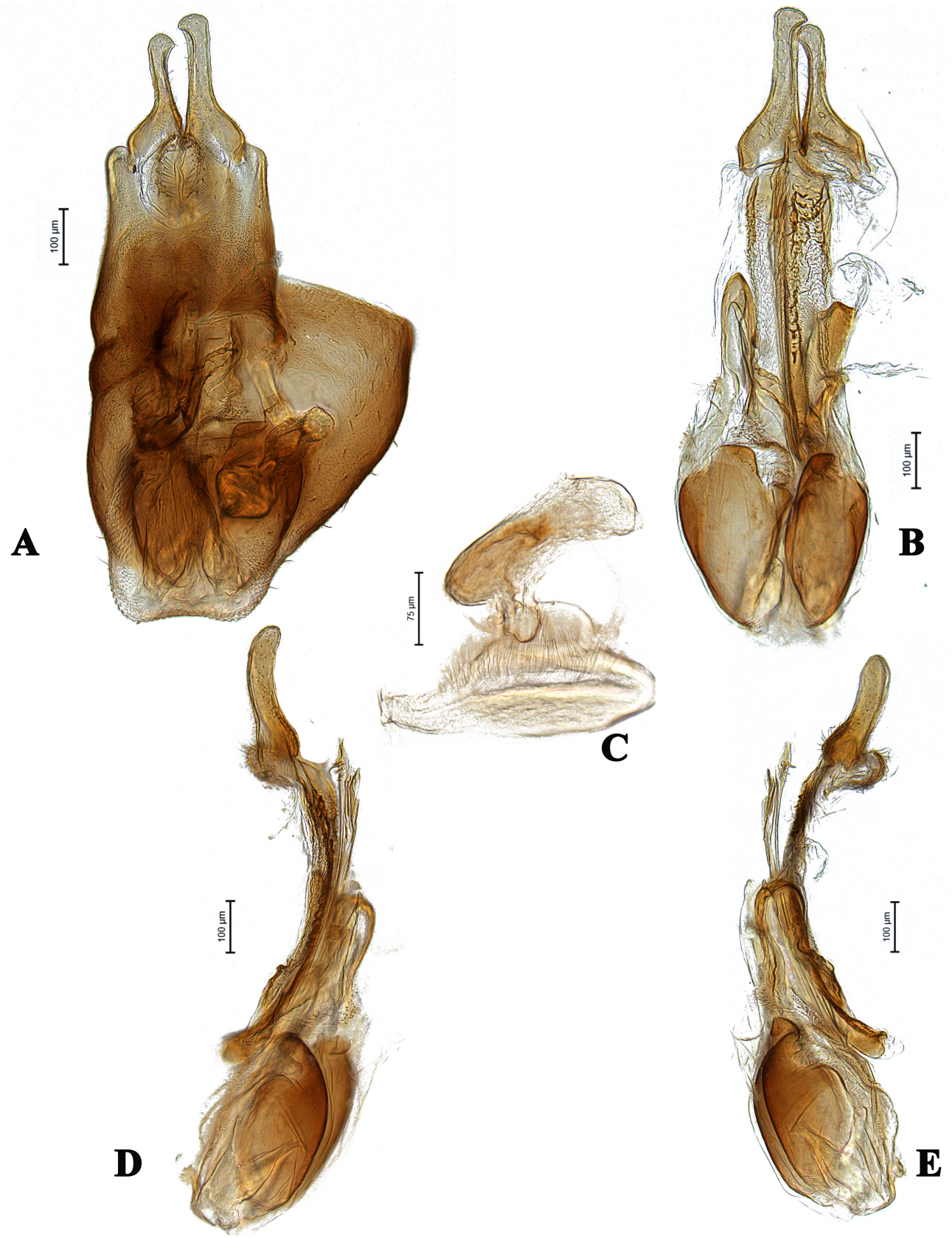



**FIGURE 51**. Male genitalia of *Tomosvaryella lambkinae* **sp. nov.** (JSS15593, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella lanterna* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:88BB65A9-BB6C-4D0A-92DE-9F080677ADAE
Figs 52A–E, 126, 153D

**Diagnosis:** This species can be recognized by the shiny thorax and abdominal tergites; wide surstyli at basal two thirds in dorsal view (Fig. 52A); both gonopods equal in height, with a finger-like projection towards surstyli in ventral view (Fig. 52B); phallic guide broadened in the middle, with two protrusions ventromedially, pointed at apex in lateral view (Fig. 52D–E).

**Description: MALE:** Body length: 2.9–3.2 mm. ***Head***. Scape, pedicel and arista dark brown. Pedicel with two upper bristles; flagellum brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance twice as the length of ocellar triangle. Occiput grey pollinose. ***Thorax***. Postpronotum light yellow, with 4–5 long brown bristles in upper margin. Mesonotum (viewed obliquely from front) gray pollinose, rather shiny; scutum with scattered dark bristles at anterior supra-alar area, extended to posterior and uniseriate rows of intra-alar dark bristles. Postalar callus dark brown with 1–2 light brown bristles in the middle. Scutellum rather shiny, with 15–20 short pale bristles, scattered throughout it. Halter, knob pale, stem light brown, base dark. ***Legs***. Fore coxa with 2–3 light brown bristles, mid coxa with four long dark bristles. Coxae, trochanters, femora dark, all femora shining ventrally, knees and basal 1/3 of tibiae yellow (tibiae otherwise dark brown), tarsomeres brown ventrally, dark dorsally. Hind trochanter silvery pollinose covered by some (8–12) scattered short brown bristles ventrally; two ventrobasal spines present on fore mid femur. Hind tibia with two rows of short brown bristle on anterior and posterior side. Hind metatarsus not flattened, covered by short dark bristles, as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with 2–3 long brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 5–9 different-sized lateral bristles; tergite 2–3 brown spots on dorsal margin, otherwise shiny; all tergites covered by scattered short pale bristles. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.0). Surstyli symmetrical, widened at base, moderately narrowed to apex (Fig. 52A). Genital capsule in ventral view: both gonopods equal in height, with a finger-like projection towards surstyli, right one wider than left one; subepandrial sclerite long (Fig. 52B); Genital capsule in lateral view: both surstyli wide, curved to sternite; phallic guide broadened in the middle, with two protrusions ventromedially, pointed at apex (Fig. 52D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 52C).

**FEMALE:** Body length: 3.0 mm. As male except for the following characters. Frons, eyes separated; completely silver-grey pollinose on lower 1/3, wider in middle, shiny black only around ocellar triangle, depression in just before ocellar triangle. Enlarged ommatidia shining; pulvilli and claws longer than last tarsal segment. Lateral bristles on the tergite 1 shorter than male, tergite 2–3 without brown spots (4–8). ***Ovipositor.*** Straight in ventral view, straight and short in lateral view (piercer brown), reaching sternite 3; basal two thirds silvery brown pollinose. LP: LB = 3.5. LDP:LPP = 3.0. (Fig. 153D).

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Neerabup Lake National Park, 31°38'S, 115°43'E, 18–29.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7642 (1♂, WAM); **PARATYPES**: AUSTRALIA: New South Wales: Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7'S, 146°56'E, *Callitrus*, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, CNC576567, CNC576577 (2♂, QM); *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, CNC576602, CNC576605, CNC576609, CNC576614–15 (5♂, QM), C. Lambkin, R. Olsen & B. Shieban, CNC575141, CNC575149 (2♂, USNM); Culgoa National Park, 8km WNW Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan & N. Starick, Malaise trap, DB 9 (2nd bottle), CNC593680–81 (2♂, QM); Culgoa National Park, 8km West–Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575123; CNC575129; CNC575135 (3♂, QM); Urila Rd, Tilembeya 14.2 km E Williamsdale, 35°34'S, 149°17'E, 804m, in dry ravine, 20.XI–19.XII.2004, C. Lambkin, N. Starick, Malaise trap, ANIC Bulk sample 2559, JSS50569 (1♀, ANIC); Queensland: Carnarvon, National Park Marlong Creek, 24°56'S, 147°57'E, 13.X.2002, C. Chenard, sweep net, LEM_0016193 (1♂, LEM); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, 19269, CNC575378 (1♂, QM); Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M), 28°57'S, 146°52'E, 138m, *Callitris*, 19.III–20.V.2010, C. Kelly, A. Coward, Malaise trap, 19280, CNC575029 (1♂, QM);

Plevan Downs, 2.3km South–Southwest of Arima (PD2 M), 26°32'S, 142°31'E, 134m, Gidgee, 13.I–3.IV.2008, R. Mackenzie, Malaise trap, 17284, CNC595390 (1♂, QM); Plevna Downs, 2.3km SSW Arima (PD2 M), 26°32'S, 142°31'E; 28°32'S, 142°31'E, 134m, Gidgee, 25.XI–17.XII.2008; 13.I–3.IV.2008, R. Mackenzie, Malaise trap, 17292; 17284, CNC595265, CNC595267, CNC575360 (3♂, QM); Plevna Downs, 2.3km South–Southwest Arima (PD2 M), 28°32'S, 142°31'E, 134m, Gidgee, 13.I–3.IV.2008, R. Mackenzie, Malaise trap, 17284, CNC575359 (1♂, QM); Plevna Downs, 2.5km WNW Homestead (PD3), 26°40'S, 142°35'E, 133m, Gidgee, 16.IX–2.X.2008, Starick, Lambkin & Mackenzie, Malaise trap, 16272, CNC591860 (1♂, QM); Plevna Downs, Tompilly Hill base (PD6 M), 26°44'S, 142°39'E, 187m, Gidgee, 25.XI–18.XII.2008, R. Mackenzie, Malaise trap, 17329, CNC576411, CNC576413 (2♂, QM); 23 km SE Tamworth, 31°13'S, 151°7'E, 25.XI.1982, D.S. Horning, Jr., JSS9155 (1♂, ANIC); Murray River 50 miles west of Wentworth, 34°3'S, 141°3'E, 22.XI.1967, A. Neboiss, JSS8799 (1♂, MVMA); Culgoa National Park, 8km WNW Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan, N. Starick, Malaise trap, DB 9 (2nd bottle), 19302, CNC593678–9 (2♂, CNC); Queensland: Lolworth National Park, site 2, 19°50'S, 146°5'E, 280m, vinescrub on basalt, 13–14.XII.2006, S. Wright, yellow pan trap, CNC593654 (1♂, CNC); 23 km SE Tamworth, 31°13'S, 151°7'E, 26.XI.1982, D.S. Horning, Jr., JSS9148, JSS9152 (2♂, ANIC); Culgoa National Park, 8km West-Northwest of Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°1'E, 136m, Coolibah, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, CNC574750–1 (2♂, CNC); Carnarvon Station, near Piebald Spring (CN1M1), 24°50'S, 147°45'E, 821m, *Eucalyptus/Callistemon*, in rocky gully, 13.XII.2010–15.VI.2011, C. Zwick & C. Wilson, Malaise trap, CNC595241, CNC595257 (2♂, QM); Cudmore National Park (CM1M), 22°54'S, 146°21'E, 365m, *Eucalyptus* woodland with *Spinifex*, 27.X.2010–2.VIII.2011, Lambkin, Starick & Bailey, Malaise trap, CNC591851 (1♂, QM); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, CNC575365 (1♂, QM); 12.7km South-Southeast of Plevna Downs Homestead (PD8 M), 26°47'S, 142°39'E, 145m, sandy creek bank, 25.XI–18.XII.2008, R. Mackenzie, Malaise trap, CNC593801 (1♂, QM); 204 km west Windorah, 25°42'S, 140°53'E, Malaise in dry creek bed, 4.IX.1997, S. Winterton, J.&A. Skevington, JSS8337 (1♂, QM); 91.2 km west Windorah, 25°22'S, 141°47'E, Malaise in dry creek bed, 31.VIII–5.IX.1997, S. Winterton, J.&A. Skevington, JSS8343 (1♂, QM); South Australia: Sulphur Peninsular, Madigan Gulf, Lake Eyre N., 28°22'S, 137°22'E, 30.X.1966, G.F. Gross, JSS8707 (1♂, SAM); Koonchera Dune near Koonchera Waterhole, 26°41'S, 139°30'E, 2.IX.1997, J.&A. Skevington, JSS8429 (1♂, QM); SE corner Yumbarra CP, 31°39'S, 133°22'E, 27.IX.1988, J.A. Forrest, JSS8824 (1♂, SAM); Scorpion Springs CP along main North-South track, 35°27'S, 140°53'E, 15.XII.1983, Museum party, JSS8825–6 (2♂, SAM); Simpson Desert between Purni Bore & 54 km ENE on French Track, 26°7'S, 138°37'E, 8.X.1987, J.A. Forrest, car net, JSS8820–1 (2♂, SAM); Simpson Desert, 25 km west Poeppel Corner, 26°7'S, 138°37'E, 8.X.1987, J.A. Forrest, at light, JSS8823 (1♂, SAM); Western Australia: Cadda Road , 30°24'S, 115°25'E, 244m, *Eucalyptus* Woodland, 20.IX–10.X.2003, C. Lambkin, N. Starick & J. Recsei, Malaise trap, ANIC BULK Sample 2177, JSS50567–68; JSS50570 (1♂,2♀, ANIC); 23km E. Marble Bar, 21°11'S 119°57'E, 222m, Sandy wash, 15.V.2003, F.D. Parker, M.E. Irwin, pan trap, CSIRO–SCHLINGER PILBARA EXPEDITION 19.iv.–23.v.2003, CNCD6950, CNCD6952 (2♂, ANIC); 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E, 638m, in wide sandy wash, 18–21.V.2003; 24.IV–7.V.2003; 7–18.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15706, JSS15709, JSS15715–6, JSS15722–3, JSS15732, JSS16416 (6♂, 2♀, CNC); 70 km S Newman on Great Northern Highway, 23°54'S, 119°45'E, 626m, small wash with *Eucalyptus*, 24.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15881, JSS15883 (1♂, 1♀, CNC); Cape Range National Park; Milyering Ranger House, 22°2'S, 113°56'E, 22m, below cliff near *Ficus*, 28.IV–11.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15655–6 (2♂, CNC); Karijini National Park, Hamersley-Mount Bruce Road, 22°37'S, 118°21'E, 755m, dry rocky creek bed, open *Eucalyptus* scrub, 20–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS15969 (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°40'S, 118°26'E; 22°44'S, 118°25'E, 797m; 798m, in open mulga with flowering *Ptilotus*; dry Turee Creek, grassy open *Eucalyptus* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16002, JSS16097 (1♂, 1♀, ANIC); Millstream-Chichester National Park near Crossing Pool, 21°35'S, 117°4'E, 276m, over creek, *Melaleuca* riverine forest, 28.IV–5.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16189 (1♂, ANIC); Neerabup Lake National Park, 31°38'S, 115°43'E, 18–29.XII.1999; 8–18.XII.1999, J.&A. Skevington, C. Lambkin & P. Bouchard, Malaise trap, JSS7635–6, JSS7639–40, JSS7647–9, JSS7652 (8♂, QM); base of "The Governor" on Great Northern Highway, 23°3'S, 118°50'E, 722m, dry wash in wooded area, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15688, JSS15690–2, JSS15694–7 (1♂, 7♀, CNC).

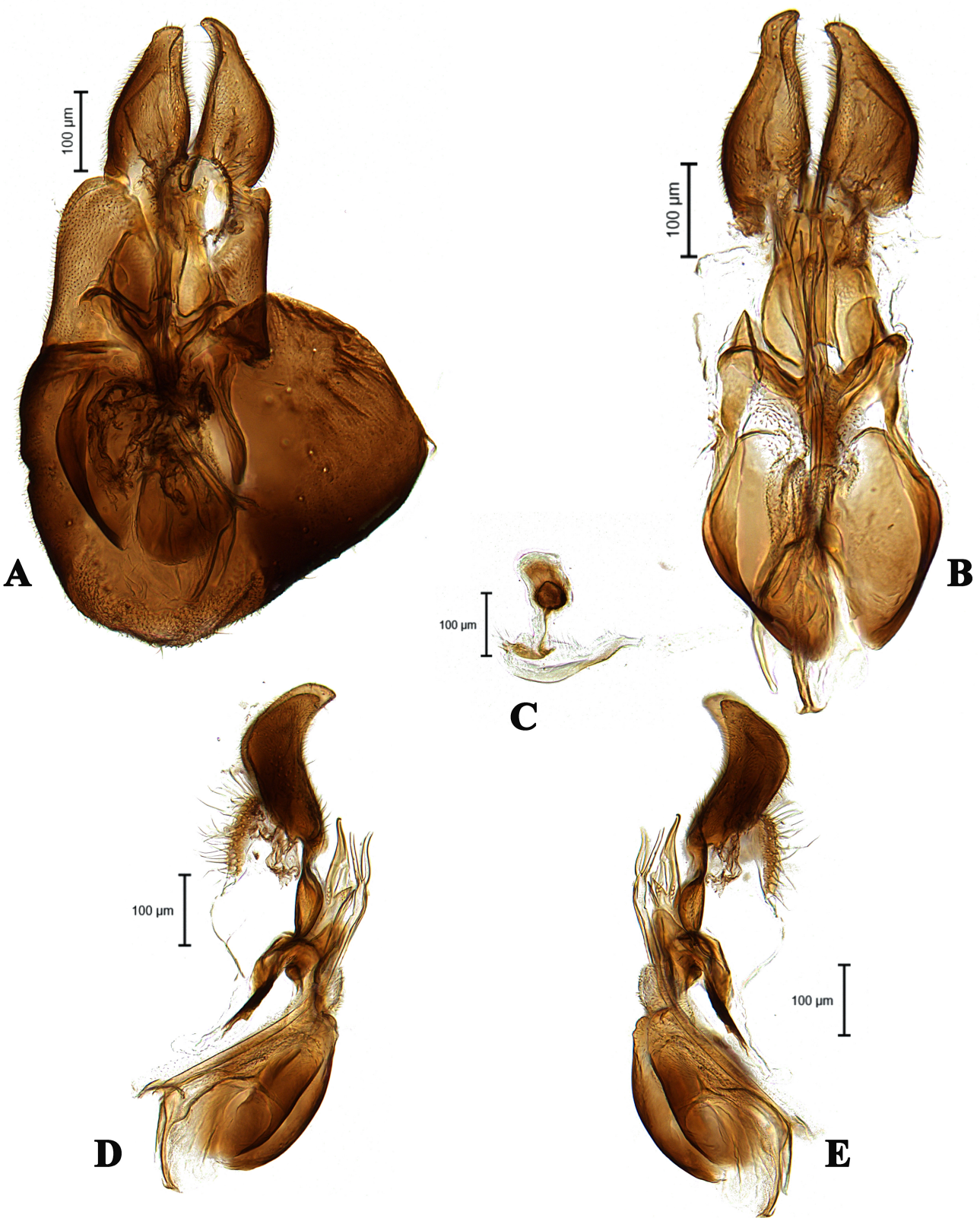



**FIGURE 52**. Male genitalia of *Tomosvaryella lanterna* **sp. nov.** (JSS8337, QM) A) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Etymology:** The specific name is derived from the Latin word 'lanterna', meaning shine, referring to the shiny thorax and abdominal tergites.

**Distribution:** Australia (New South Wales, Queensland, South Australia, Western Australia) (Fig. 126).

**Notes:** This is a widespread common species in the Australian outback. It apparently does not use hilltops as a mating site as it appears to be common enough not to need to employ a landmark mating system. Intraspecific genetic distance ranges from 0.0% to 2.5%. It is genetically most similar to *T. quadrata* **sp. nov.** (8.2% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella latipoda* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:95AB7B27-544B-417D-A861-0C3C0431CE30
Figs 53A–E, 127, 151A

**Diagnosis:** This species can be recognized by a distinct ventrobasal protuberance on the hind femur (Fig. 151A); broadened surstyli and tapering in basal third with patch of bristles in its medial in dorsal view (Fig. 53A); subepandrial sclerite covered with transverse streaks in ventral view; gonopods flat, right one with a lobe extended towards surstyli (Fig. 53B); phallic guide with three to five spines dorsally before apex.

**Description: MALE:** Body length: 2.3–2.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part silvery pollinose; eyes touching for distance equal to 1–1.5 times ocellar triangle. Occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale brown, with 2–3 whitish bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silvery pollinose; also silvery from the side. Scutellum gray pollinose, without bristles. Dorsocentral bristles weakly developed, pale, somewhat longer on frontal part. Halter, knob pale, stem dark black. ***Legs***. Trochanters and base of femora brown, femora dark brown, shining ventrally (hind femur also posteriorly), knees, basal 1/6 of tibiae, tarsal segments yellow (otherwise brown), last segment dorsally brown. Fore femur with two distinct ventrobasal spines, mid femur with 4–6 very short, black ventroapical spines; no spines on hind femur, only 3–4 flattened thick bristles on keel. Hind femur with a distinct ventrobasal protuberance bearing three to six spines (Fig. 151A). Hind trochanter smooth with 4–5 indistinct dark bristles on ventral side. Subapical (distal) spines on first four tibiae absent. Hind metatarsus slightly flattened, first tarsomere longer than 2–4 combined. Pulvilli slightly shorter than last tarsal segment. ***Wing***. Length: 2.6–2.7 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 2.5–3 times as long as third costal section. Cross-vein r-m at middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, hind margin silvery gray on tergite 1, sides completely silvery on tergites 4 and 5. Dispersed short dark bristles absent. Lateral bristles on first tergite: 2–3, pale brown, as long as width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 appears large, mainly dark brown and forming a right-angle corner (90 degrees) in lateral view at the lower end of membranous area; membranous area slit-like, vertical, distal part of epandrium paler and surstylus tips whitish, surstyli relatively small. ***Genitalia.*** Genital capsule in dorsal view: epandrium brown, surstyli light brown. Epandrium wider than long (MLE:MWE = 0.9), ca. 0.5 times as long as ST8, cerci symmetrically placed, small; ST8 with slit-like membranous area. Genital capsule in dorsal view: surstyli, both surstyli broadened at base, pointing tips at its apical inner corner, medially covered with patch of long bristles (Fig. 53A). Genital capsule in ventral view: Subepandrial sclerite covered with transverse streaks; gonopods asymmetrical and flat with right gonopod bearing a lobe pointing towards surstyli, phallic guide with a membranous projection to the side (Fig. 53B); phallus trifid, branches short (Fig. 53B). Genital capsule in lateral view: both surstyli broadened in basal two thirds, tapering in apical third (Fig. 53D–E). Phallic guide with three to five spines dorsally before apex, phallus with three ejaculatory ducts; ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 53C).

**FEMALE:** Unknown.

**Etymology:** From the Latin latus, broad or wide, in reference to the flattened gonopods of the male genitalia.

**Examined material: HOLOTYPE**: AUSTRALIA: Victoria: Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 21.x.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373275 (1♂, QM); **PARATYPES**: AUSTRALIA: Victoria: Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 22.x.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373438 (1♂, CNC); South Australia: vehicle net between Wynbring Rocks RS & Malbooma RS, 30°33'S, 133°32'E, 2.x.1988, J.A. Forrest, JSS8819 (1♂, SAM);

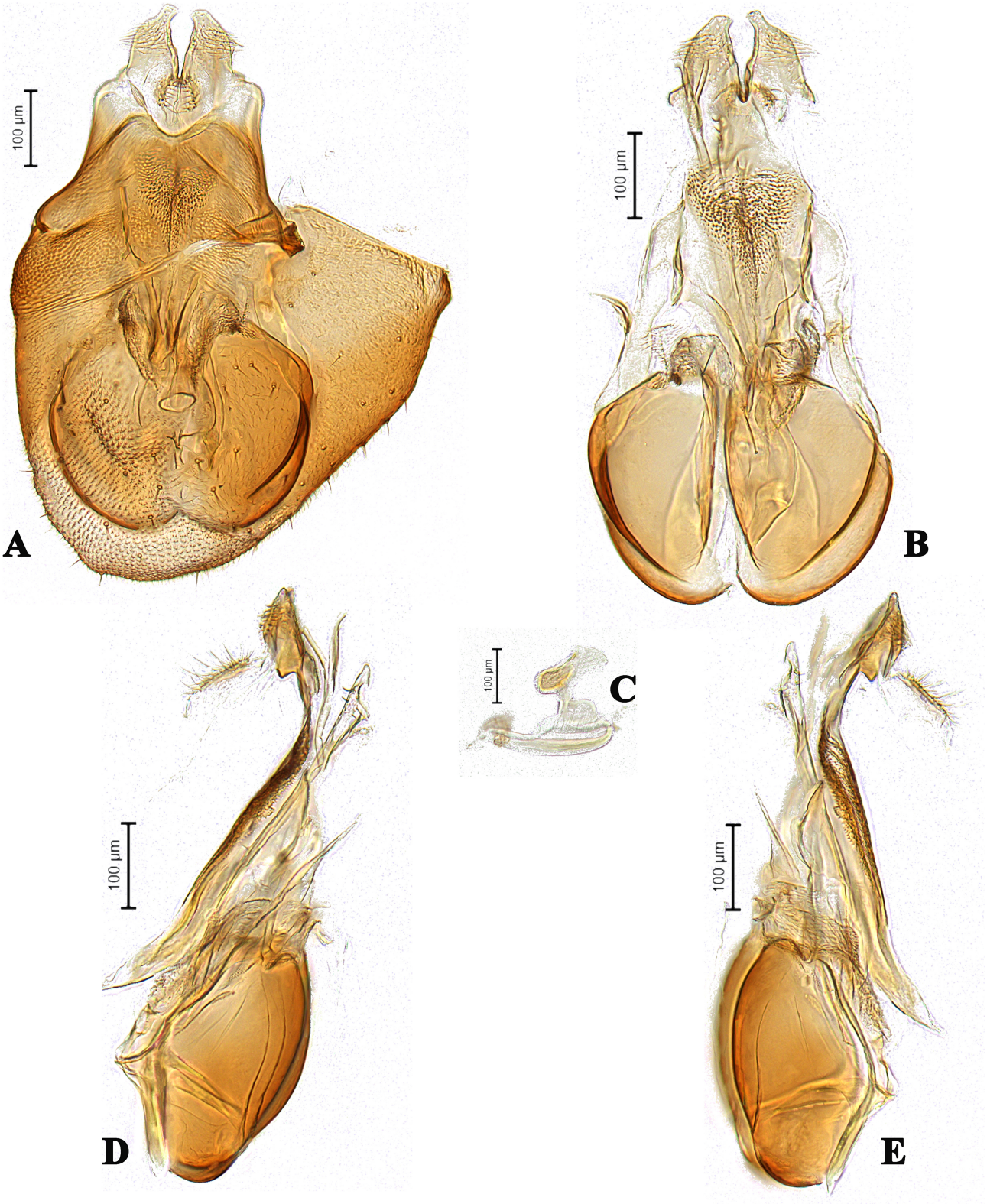



**FIGURE 53**. Male genitalia of *Tomosvaryella latipoda* **sp. nov.** (JSS13226, HNHM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon, 29°3'S, 146°60'E, Coolibah, 30.i–18.v.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575145–6 (2♂, QM); Culgoa National Park, 8km West-Northwest of Cawwell Homestead, Diemunga Lagoon, 29°3'S, 146°1'E, 136m, Coolibah, 21.xii.2009–30.i.2010, B. Schiebaan, Malaise trap, CNC574747–8, CNC574753–4 (4♂, QM); Northern Territory: 56 km S by E of Alice Springs, 23°42'S, 133°53'E, 3.x.1978, D.H. Colless, Malaise trap, JSS9250 (1♂, ANIC); 4.x.1978, D.H. Colless, Malaise trap, JSS9251 (1♂, ANIC); Queensland: 15.1km Southwest of Currawinya National Park Headquarters, 28°55'S, 144°26'E, 131m, *Eremophila* scrub, 18.ii–4.iii.2009, A. Townsend & J. Burke, Malaise trap, CNC574711 (1♂, QM); 204 km west Windorah, 25°42'S, 140°53'E, Malaise in dry creek bed, 4.ix.1997, S. Winterton, J. & A. Skevington, JSS8339 (1♂, QM); Carbrook, Logan River Delta, 27°40'S, 153°15'E, mangrove, 25.x.2002, M. Földvari, JSS13226 (1♂, HNHM); Culgoa Floodplain National Park, 11.8km N Headquarters, 28°54'S, 147°8'E, 151m, Brigalow Black box, 17.xii.2009–20.i.2010, C. Kelly & A. Coward, Malaise trap, CNC574517 (1♂, QM); Currawinya National Park, 15.1km Southwest of Headquarters, 28°55'S, 144°26'E, 131m, *Eremophila*, 12–26.ix.2008, Lambkin, Starick & Townsend, Malaise trap, CNC574664 (1♂, QM); Port Douglas, North Queensland, 16°29'S, 145°28'E, 9.vii.1971, Z. Liepa, JSS9207 (1♂, ANIC); Western Australia: ~3km N. of Denham, 25°55'S, 113°32'E, hilltop, 12.XII.1999, J. Skevington, CNC944146 (1♂, CNC).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria, Western Australia) (Fig. 127).

**Notes:** This is a widespread species that has been captured hilltopping. Most specimens have been collected in mallee and other scrubby desert areas but two have been collected in very unexpected habitats. The specimen from Carbrook was in mangroves and the Port Douglas specimen would have most likely been in mangroves or coastal rainforest. These unusual outliers are morphologically consistent with the other specimens and we believe that they are the same species. To test this, we need fresh specimens from these areas that we can obtain DNA from. This species is closest to *Tomosvaryella pterygia* **sp. nov.**, see the notes under the latter.

### *Tomosvaryella latistyla* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:417D700A-555D-4B82-9CAF-D81A5B28F808
Figs 54A–E, 128

**Diagnosis:** This species can be recognized by the hind trochanter having a keel and 2–3 short dark bristles proximally; elongated surstyli, left one flattened at apex in dorsal view (Fig. 54A); wide gonopods at base, pointed at apex, with a distinct projection on inner margin, their projections with small finger-like process in the middle; phallic guide with some dorso- dorsolateral spines, four same size spines longer than others (Fig. 54B, D–E); one of ejaculatory ducts with a short spine (Fig. 54D).

**Description: MALE:** Body length: 3.1–3.3 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 10–12 bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter, knob pale, slightly brownish, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown dorsally, yellow ventrally, last segment darker. Hind trochanter with 45 degree keel, and 2–3 short dark bristles proximally; ventrobasal spines absent on fore and mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/2 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres moderately flattened, hind metatarsus almost as long as 2–4 combined, with semi-erect dark bristles dorsally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.4 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell (can be more distal). 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base.

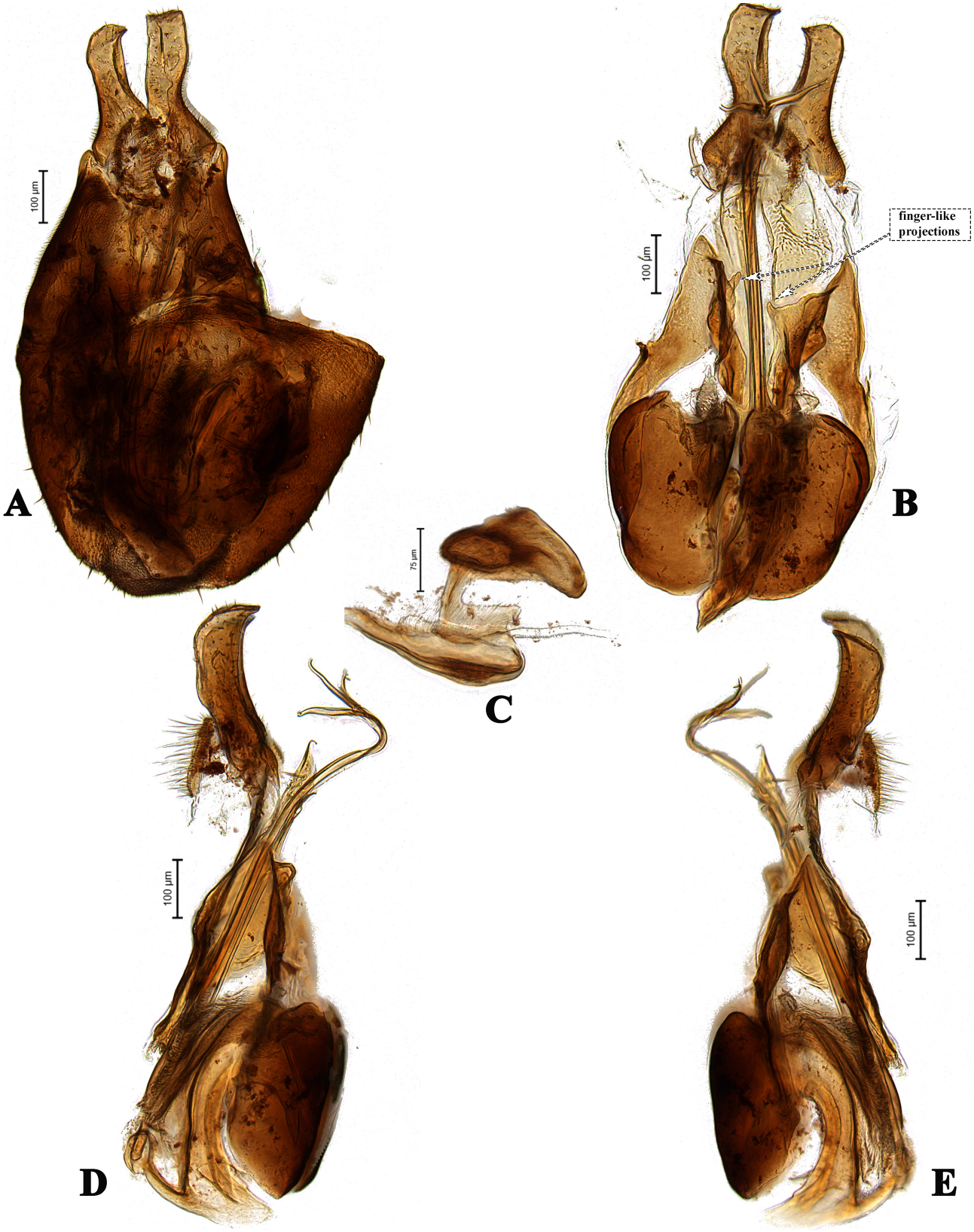



**FIGURE 54**. Male genitalia of *Tomosvaryella latistyla* **sp. nov.** (JSS7548, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

Postabdomen in dorsal view: T6, S7 invisible; T5 1.2–1.3 times as long as ST8. Genitalia without dissection: ST8 small to medium sized, round, globular, brown and with distinct bristles, otherwise with velvet-like coverage; membranous area is slit-like, mostly directed posteriorly; epandrium brown, surstyli brown. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.3). Surstyli elongated, broaden at base, left surstylus constricted after basal fourth and flattened at its tip, right surstylus curved towards left surstylus (Fig. 54A). Genital capsule in ventral view: both gonopods widened at base, extended towards surstyli, pointed at apex, equal in height, gonopods with a distinct projection on inner margin, both projections with an upwards small finger-like process in the middle; phallic guide with 5–6 dorso- dorsolateral spines, four same size spines longer than others; subepandrial sclerite widened in the middle (Fig. 54B); Genital capsule in lateral view: both surstyli straight, moderately broadened to apex, curved towards sternite apically; phallus with three ejaculatory ducts, one of ejaculatory ducts with a short spine (Fig. 54D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 54C).

**FEMALE:** Unknown.

**Etymology:** The name is derived from the Latin latus, broad or wide, in reference to the flattened tip of the left surstylus.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Barakula State Forest No. 302, Summit Round Mountain, 26°22'S, 150°58'E, hilltop, 8.I.2000, J.&A. Skevington & M. Mathieson, JSS7546 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: same data as holotype, JSS7547–51, JSS7557, (6♂, QM); hilltop, 21–25.II.2000, M. Mathieson, JSS9326 (1♂, CNC); Western Australia: Mount Magnet, Mount Waramboo, 28°2'S, 117°49'E, hilltop, 14.XII.1999, J. Skevington, JSS7469 (1♂, CNC); ~3 km North of Denham, 25°55'S, 113°32'E, hilltop, 12.XII.1999, J. Skevington, JSS7377, JSS7393 (2♂, QM).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 128).

**Notes:** All specimens of this species have been collected at hilltops. Given the distribution it is presumably widespread but rare. Intraspecific genetic distance ranges from 0.0% to 2.4%. It is genetically most similar to *T. cona* **sp. nov.** (4.4–10.7% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella ledknapperensis* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:840F72E1-8137-48E6-9C99-DCB99BA8B44C

Figs 55A–E, 128

**Diagnosis:** This species can be recognized by the hind trochanter having a keel covered with small teeth along its edge; elongated surstyli, widened at the base and bent toward each other at the apex in dorsal view (Fig. 55A); both surstyli bent towards sternite in apical third in lateral view (Fig. D–E); subepandrial sclerite with fin-shaped projection in its center, both gonopods elongated and pointed at the apex, hypandrial apodeme distinct in ventral view (Fig. 55C).

**Description: MALE:** Body length: 2.5 mm. ***Head***. Scape, pedicel dark brown, flagellum light yellow, pollinose. Pedicel with three short upper bristles. Flagellum tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3 with scattered short dark bristles. ***Thorax***. Postpronotum pale, with 2–3 long pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose with 2–4 short bristles along distal edge. Halter, knob and tip light brown. ***Legs***. Mid coxa with 3–4 different-size dark bristles. Trochanters light brown, femora brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae light yellow (tibiae otherwise light brown), tarsal segments bright yellow completely. Hind trochanter with a keel covering small teeth along its edge in a row; ventrobasal spines present on fore and mid femora. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.4 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 silvery grey. Lateral bristles on first tergite present, 4–5 long dark bristles up to as long as hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE: MWE = 1.3). widened at the base, elongated, moderately narrowed to apex, pointed, bent to each other at the apex

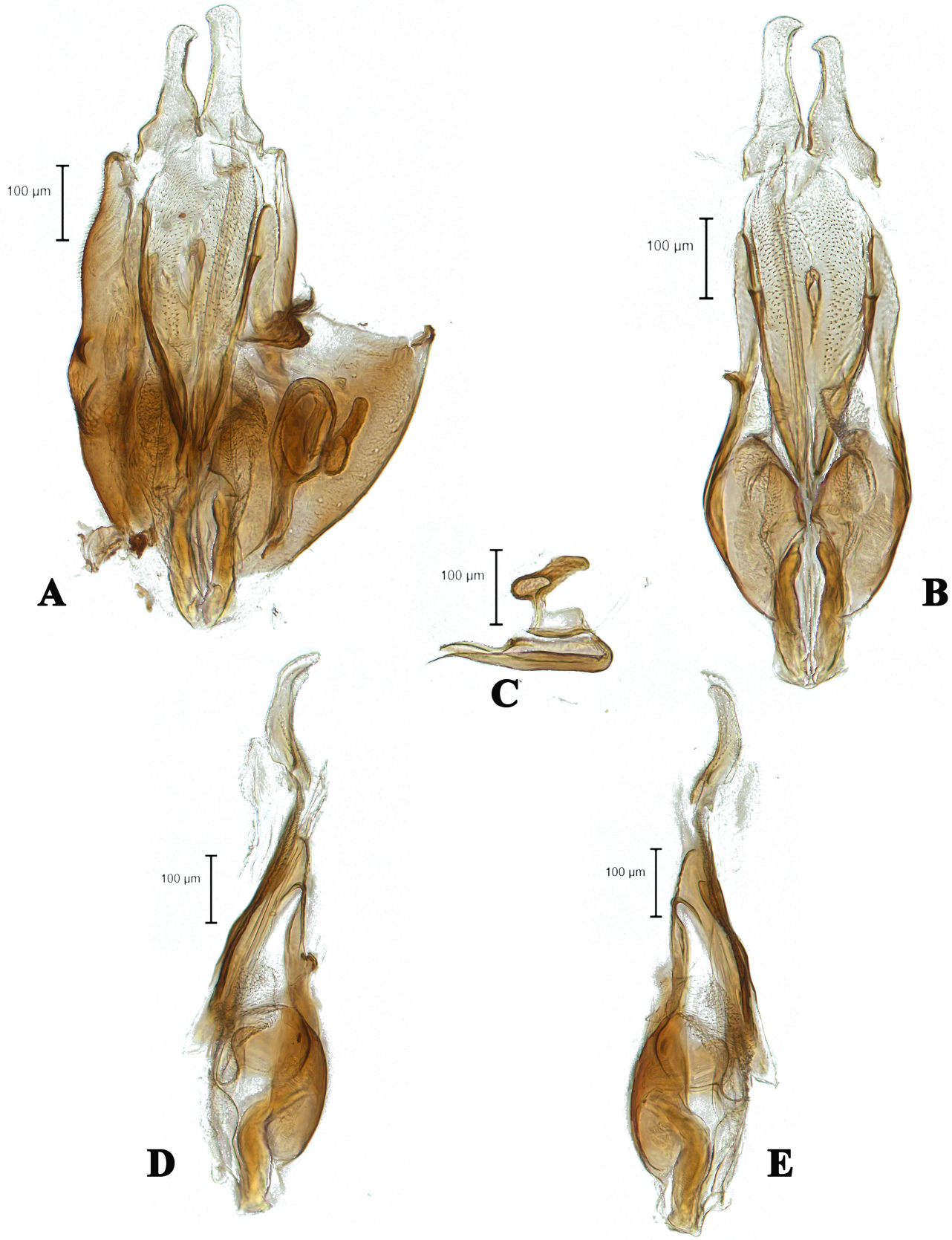



**FIGURE 55**. Male genitalia of *Tomosvaryella ledknapperensis* **sp. nov.** (CNC576517, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

(Fig. 55A). Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex with a distinct projection on inner margin; phallic guide with 3–4 short dorso- dorsolateral spines, one is longer; subepandrial sclerite widened, with a fin-shaped projection in its center, hypandrial apodeme distinct (Fig. 55B); Genital capsule in lateral view: both surstyli straight in basal two thirds, then bent towards sternite in apical third (Fig. 55D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 55C).

**FEMALE:** Unknown.

**Etymology:** This species is named after the type locality. Eight species of *Tomosvaryella* have been collected in this reserve and the only known specimen of this species is from there.

**Examined material: HOLOTYPE**: AUSTRALIA: New South Wales: Ledknapper National Reserve, 7.3km ENE Beulah Headquarters (LDN2M), 29°21'S 146°13'E, *E. melanopholia*, *Spinifex*, 10.XII.2009–18.III.2010, S. O'Sullivan, K. Taylor, Malaise trap, CNC576517 (1♂, QM).

**Distribution:** Australia (New South Wales) (Fig. 128).

**Notes:** Based on the shape of surstyli in dorsal view, this species is close to *T. prolata* **sp. nov.** It differs by the shape of surstyli, which are bent towards the sternites in the apical third in lateral view, with a fin-shaped projection in the middle of the subepandrial sclerite and a distinct hypandrial apodeme in ventral view (Fig. 55A–E).

### *Tomosvaryella leimonias* (Perkins, 1905)

Figs 56A–E, 129, 150F

*Pipunculus leimonias* Perkins, 1905

**Diagnosis:** This species can be recognized by the mid tibia with one distinct and long apical spur, as long as the mid metatarsus (Fig. 150F); surstyli elongated, apical margin flattened in dorsal view (Fig. 56A); both gonopods extended towards surstyli with a small triangular projection in its middle; phallic guide with 3–6 dorso-dorsolateral spines before apex in ventral view (Fig. 56B).

**Redescription: MALE:** Body length: 2.6 mm. ***Head***. Scape, pedicel and arista drak brown. Pedicel with 2–3 upper bristles; flagellum brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance as long as the length of ocellar triangle. Occiput grey pollinose covered by scattered short dark bristles. ***Thorax***. Postpronotum light yellow, with 4–5 long brown bristles in upper margin. Mesonotum (viewed obliquely from front) gray pollinose; scutum with scattered dark bristles at anterior supra-alar area, extended to posterior and uniseriate rows of intra-alar same sized dark bristles. Postalar callus dark brown with 2–3 long, as long as bristles in scutum, light brown bristles in the middle. Scutellum silvery pollinose and with 25–30 long, as long as scutum bristles, dark bristles, scattered throughout it. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 3–4 long dark brown bristles. Coxae, trochanters, femora dark, all femora shining ventrally, knees and basal 1/3 of tibiae yellow (tibiae otherwise dark brown), tarsomeres brown ventrally, dark dorsally. Mid trochanter with 4–8 short dark bristles ventrally. Hind trochanter silvery pollinose covered by some (10–15) scattered short brown bristles ventrally; two ventrobasal spines absent on fore mid femur. Hind tibia with two rows of short brown bristle on anterior and posterior side. Mid tibia with one distinct and long apical spur, as long as mid metatarsus (Fig. 150F). Hind tarsomeres slightly flattened to one side, covered by short dark brown bristles, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long and two short dark brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 15–17 different-sized lateral bristles; tergite 2–5 brown pollinose, covered by scattered short dark bristles. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.6). Surstyli symmetrical, left surstylus longer than right one, broadened at base, then strongly constricted, elongated to apex, apical margin flattened (Fig. 56A). Genital capsule in ventral view: both gonopods equal in height, extended towards surstyli with a small triangular projection in its middle; phallic guide with 3–6 dorso-dorsolateral spines before apex, one is longer than others; subepandrial sclerite small (Fig. 56B); Genital capsule in lateral view: both surstyli curved to sternite, widened in the middle (Fig. 56D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 56C).

**FEMALE:** unknown.

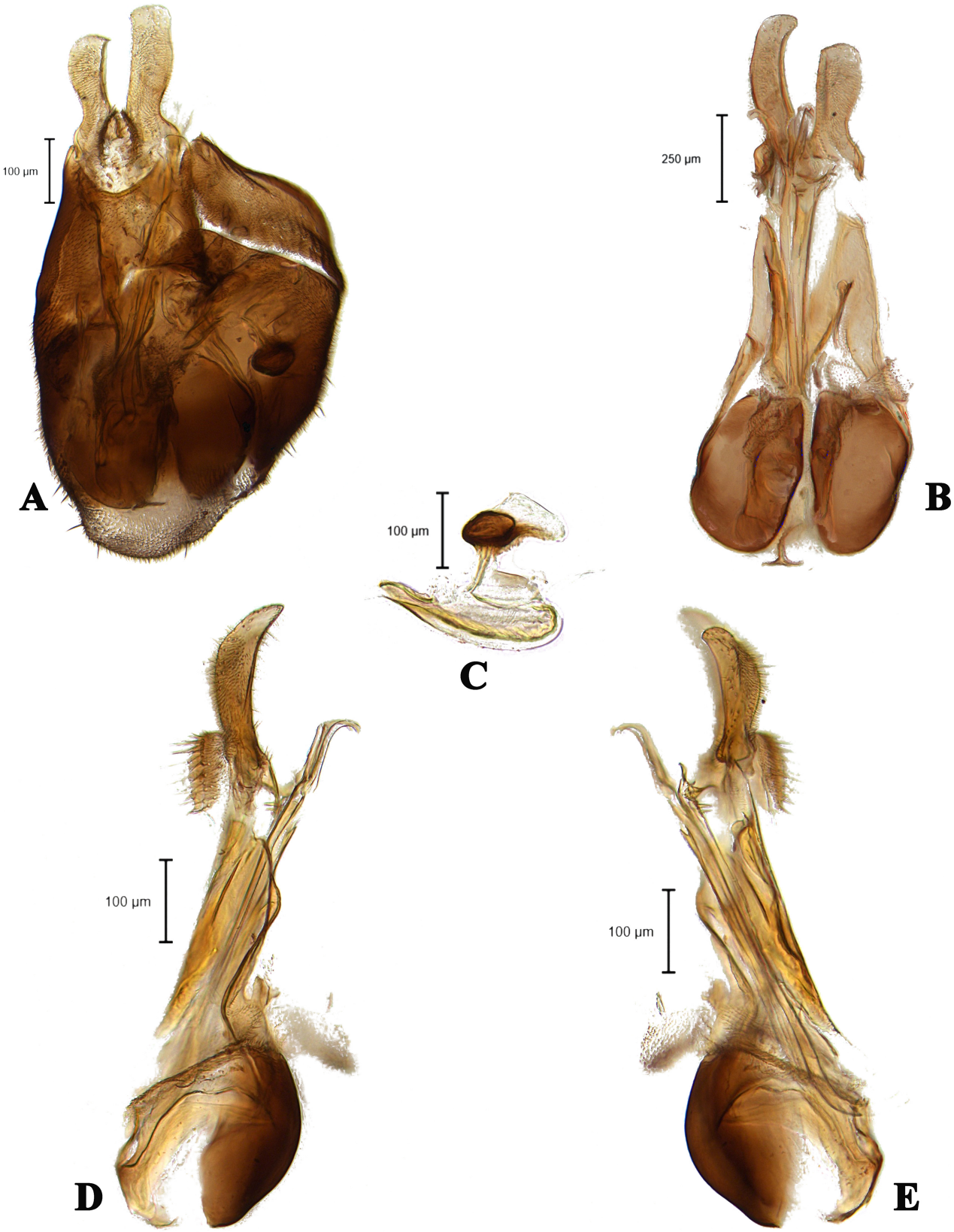



**FIGURE 56**. Male genitalia of *Tomosvaryella leipoa* **sp. nov.** (JSS16053, ANIC) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Brisbane, 27°28'S, 153°1'E, VI.1904, JSS4150 (1♂, ZMAN); **Non-type material examined:** New South Wales: Nelligen, 35°38'S, 150°8'E, (tidal flat), 1.II.1973, D.H. Colless, JSS8499 (1♂, ANIC).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 129).

**Notes:** It appears that Perkins only based this species on one specimen, so this is the holotype. The New South Wales specimen was taken on a tidal flat so efforts to find this species should likely focus on mangrove habitats.

***Tomosvaryella leipoa* Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:8B615CEB-0BB7-4993-8D8B-E51B3B2A9682

Figs 57A–D, 127

**Diagnosis:** This species can be recognized by the hind trochanter having a large triangular protuberance covered with numerous dark bristles; both surstyli strongly curved, hook- shaped in dorsal view (Fig. 57A); gonopods equal, elongated towards surstyli in ventral view; subepandrial sclerite wide (Fig. 57B); phallic guide with 5–6 dorso-dorsolateral spines (one is longer and sinuous-shaped) (Fig. 57B–D).

**Description: MALE:** Body length: 3.2–3.5 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper 1/3. ***Thorax***. Postpronotum pale, with 10+ pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and with 7–9 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 3 long, broad, dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise dark brown), tarsal segments dark brown, ventrally yellow, last segment darker. Hind trochanter with a large triangle in posterior view, covered with numerous dark bristles; ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur absent; 12–14 small, black spines on mid femur; hind femur without ventroapical spines, except 12–14 bristles posteroventrally, longer and closer to each other on distal half, longest up to 1/3 of the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (very short). Hind tibia bent in posterior view. Hind tarsomeres slightly flattened, metatarsus as long as 2–4 combined, ventrally with scrub-like bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m distinctly distal to middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites slivery pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on tergite 5). Dispersed short dark bristles on all tergites, longest on tergite 5 up to 1/3 the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–6 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 2.3–2.5 times as long as ST8. Genitalia without dissection: ST8 medium sized, round in dorsal view, dark brown and with some distinct bristles, otherwise velvet-like coverage; membranous area rounded elongate, forming a ridge ventrally on ST8, mostly directed posteriorly; epandrium dark brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium slightly longer than wide (MLE: MWE = 1.07). Surstyli broadened in basal fourth and rectangular-shaped then strongly curved to each other, hook-liked shaped, right surstylus smaller than left one (Fig. 57A). Genital capsule in ventral view: gonopods elongated towards surstyli, tapering at apex, equal in height; subepandrial sclerite wide, egg-like shaped (Fig. 57B); phallic guide with 5–6 dorso-dorsolateral spines (one is longer and sinuous-shaped). Genital capsule in lateral view: both surstyli curved towards sternite (Fig. 57C–D).

**FEMALE:** Unknown.

**Etymology**: This species carries the genus name given to the monotypic mound-building bird, Malleefowl (*Leipoa ocellata*). Leipoa is a Finnish word that refers to the alternating pressing motion with the two front paws of a cat, a behaviour like that of the Malleefowl as they tend to their mounds. All the specimens of this new pipunculid species were collected in in old growth mallee habitat where Malleefowl were plentiful. Mallee is a dry, semi-open habitat dominated by multi-stemmed *Eucalyptus* under 10m in height.

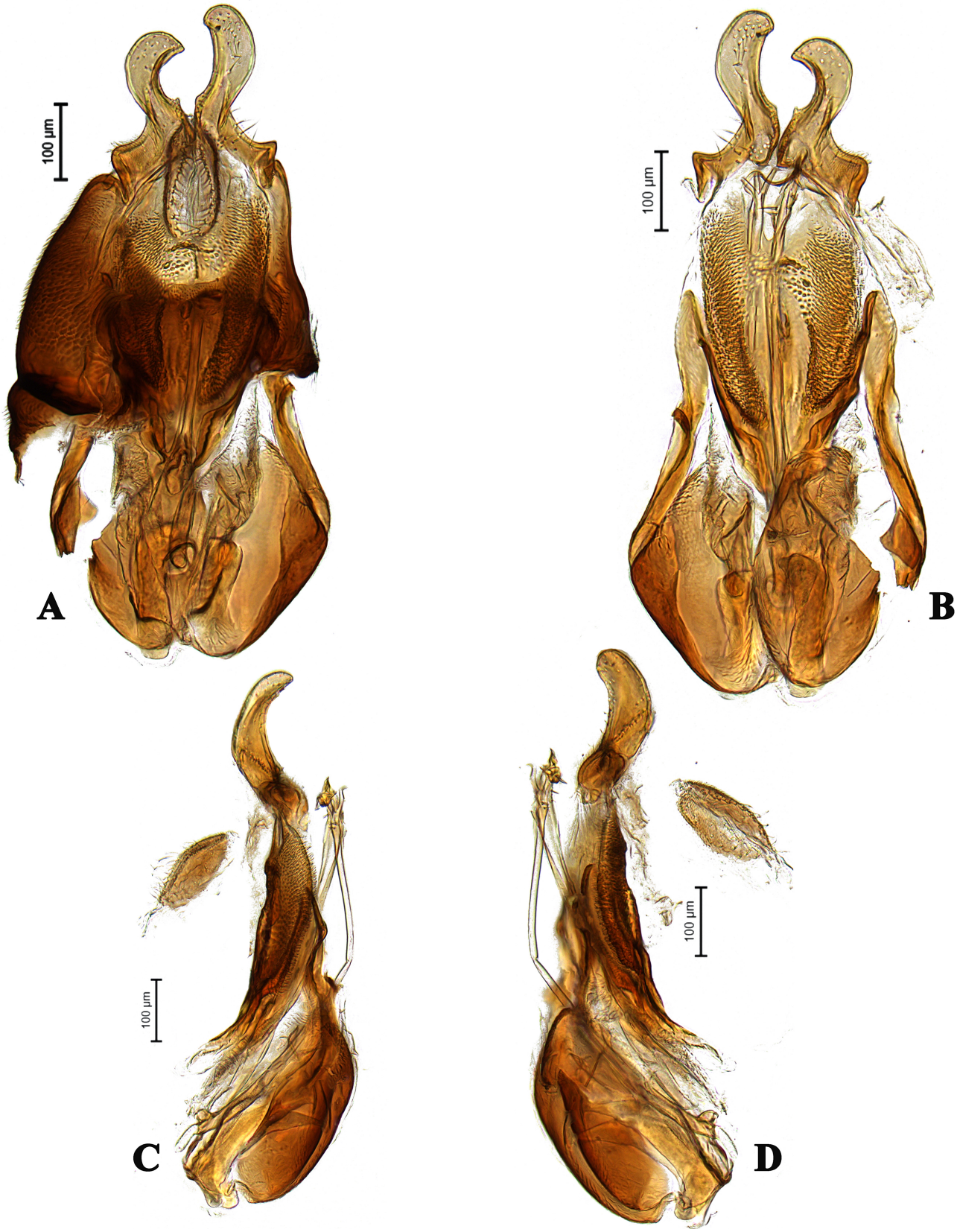



**FIGURE 57**. Male genitalia of *Tomosvaryella limonias* **sp. nov.** (JSS8499, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Yathong Nature Res[erve], Malleefowl conservation area, 32°35'S, 145°24'E, 155m, across sandy track in closed low mallee, 4–25.X.2003, C. Lambkin & N. Starick, Malaise trap, JSS16053 (1♂, ANIC); **PARATYPES**: AUSTRALIA: New South Wales: same data as holotype, JSS16051–2, JSS16054 (3♂, ANIC); South Australia: Gluepot Reserve, 33°47'S 140°13'E, 1.IX.2004, J. Skevington, CNCD1319–21 (2♂, CNC, 1♂, QM).

**Distribution:** Australia (New South Wales, South Australia) (Fig. 127).

**Notes:** All known specimens have been collected in mallee reserves that contain significant old growth mallee areas. This species is genetically most similar to *T. cona* **sp. nov.** (3.1–7.7% pairwise divergence) (Supplementary file 3).

***Tomosvaryella lophia* Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:0B70DA74-1181-406B-9428-5A41A196FE05

Figs 58A–E, 127, 149C

**Diagnosis:** This species can be recognized by the hind trochanter having a pronounced hump ventrobasally covered by crest-like bristles and a few short bristles ventroapically (Fig. 149C); surstyli slender in dorsal view (Fig. 58A); phallic guide with 5–6 dorso-dorsolateral spines; two long membranous sheaths associated with the ejaculatory ducts; hypandrium with a small projection and a small hairy membranous sheath (Fig. 58B, D–E).

**Description: MALE:** Body length: 2.8 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 4–5 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 4–6 weak bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous long dark bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise dark brown), tarsal segments yellow-brown, ventrally somewhat paler, last segment darker. Hind trochanter with a pronounced little hump and crest-like bristles, distal part with 1–2 short spines (Fig. 149C); ventrobasal (one) long bristle on fore and mid femora. Ventroapical row of indistinct spines on fore femur 3–4; 8–10 small, black spines on mid femur; hind femur without ventroapical spines, except 12–14 equally spaced bristles posteroventrally, longer on the distal half, in length up to 0.8 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (distinct, longer on mid tibia). Hind metatarsus flattened and almost as long as 2–4 combined and with strong, thick bristles ventrally. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 small brown setulae on tegula. ***Abdomen***. Dissected. tergite 1 and anterior 2/3 of tergite 2 silvery grey. Lateral bristles on first tergite present, 4–5 pale bristles up to 1.5 times as long as hind femur's width at base. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.3). Surstyli symmetrical, broadened at base, slender and elongated, both curved to each other in middle, left surstylus longer than right one (Fig. 58A). Genital capsule in ventral view: phallus with three short ejaculatory ducts and two long membranous sheath covered by small hair; gonopods elongated towards surstyli, equal in height, right is slightly wider than left one, subepandrial sclerite long, hypandrium with a small projection towards gonopod and a small hairy membranous sheath (Fig. 58B). Genital capsule in lateral view: both surstyli curved towards sternite, more broadened at middle; phallic guide with 5–6 lateral spines (the longest one twice as length as others) (Fig. 58D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 58C).

**FEMALE:** Unknown.

**Etymology:** The name lophia is Greek for a mane, crest, comb, tuft or ridge and refers to the crest-like bristles on the hind trochanter.

**Specimen examined: HOLOTYPE:** AUSTRALIA: Western Australia: Heinsmen Rock, M[oun]t Ragged Track, 30°7'S, 123°28'E, 145m, woodland near drying pools, 30.x–18.xi.2003, C. Lambkin & J. Recsei, Malaise trap, JSS16241 (1♂, WAM).

**Distribution:** Australia (Western Australia) (Fig. 127).

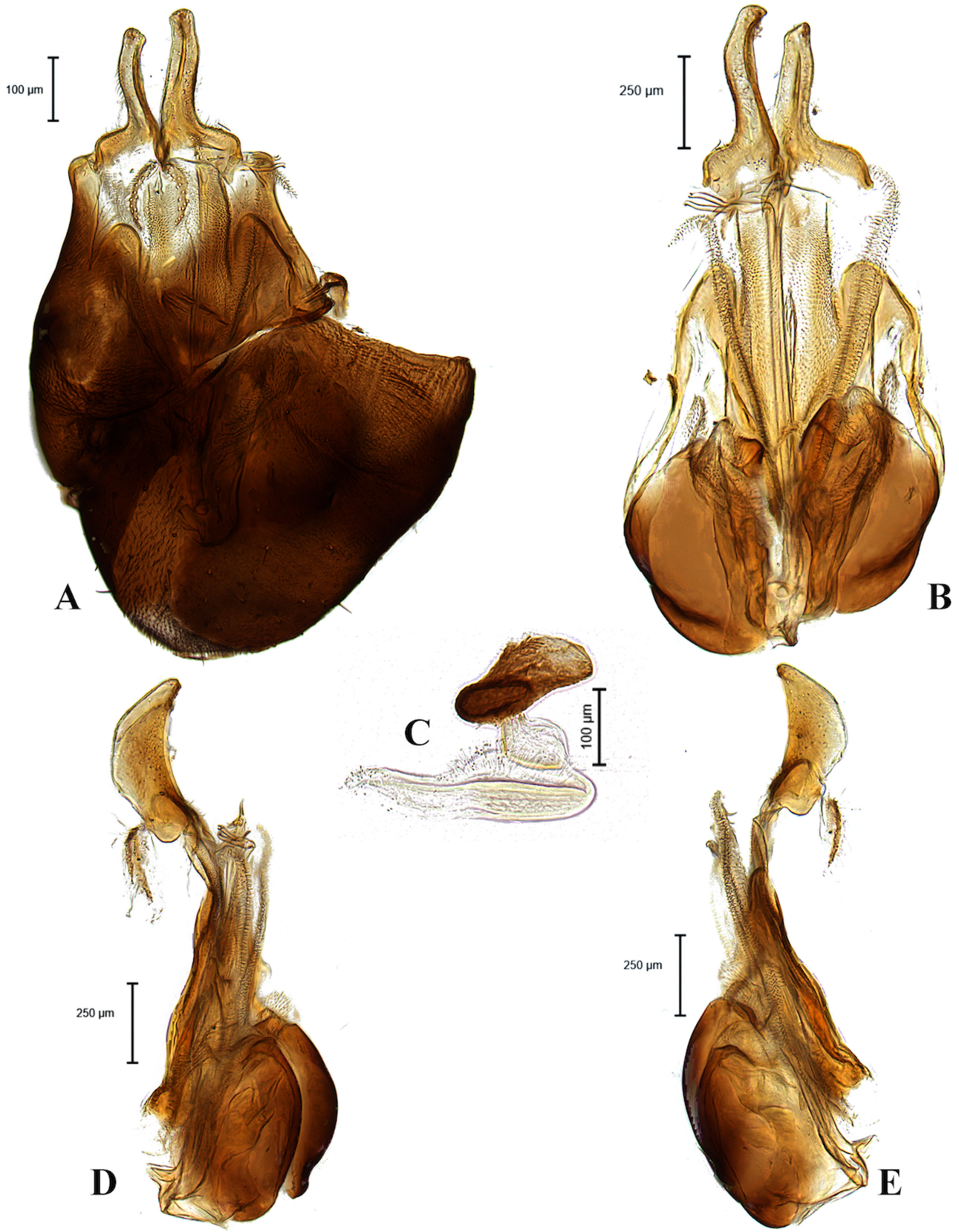



**FIGURE 58**. Male genitalia of *Tomosvaryella lophia* **sp. nov.** (JSS16241, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella luma* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:11460478-B5E9-4A81-A563-3A4CA9C2F953
Figs 59A–E, 130, 157A

**Diagnosis:** This species can be recognized by the hind trochanter having 2–3 short bristles ventrobasally; elongated surstyli in dorsal view (Fig. 59A); widened gonopods with inwards extended edge on inner margin in ventral view (Fig. 59B); phallic guide long without spines; one of the ejaculatory ducts with a distinct and long downwards spine in lateral view (Fig. 59D–E).

**Description: MALE:** Body length: 2.2–2.5 mm. ***Head***. Scape, pedicel and arista dark brown. Pedicel with 2–3 upper bristles; flagellum brown, gray pollinose and tapering. Face silvery pollinose. Frons distinctly silver pollinose; eyes touching for distance equal the length of ocellar triangle. Occiput grey pollinose, covered by short dark bristles. ***Thorax***. Postpronotum light yellow, with 2–4 brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer; scutum with scattered dark bristles at anterior supra-alar area, extended to posterior and uniseriate rows of intra-alar bristles. Postalar callus dark brown with 2–3 short dark bristles in the middle. Scutellum silvery pollinose and with a few (6–8) short dark bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 3–4 dark bristles, 1–2 bristles longer than others. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise dark brown), tarsomeres light brown ventrally and dark dorsally. Hind trochanter silvery pollinose, with 2–3 short bristles ventrobasally; two ventrobasal spines present on fore and absent on mid femur. Hind femur with two rows ventroapical spines. Hind tibia with two rows of short black bristle on anterior and posterior side. Hind tarsomeres not flattened, covered by short dark bristles dorsally and brown bristles ventrally, last hind tarsomere not rounded as long as 3–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.2 mm. Upper side of basal costal cell with one dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short light brown setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 4–8 long brown bristles; tergite 2–5 covered by scattered dark bristles. Syntergosternite 8 enlarged, dark brown and grey-brown pollinose. Membranous area long and broad in middle. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.0). Surstyli elongated (somewhat rectangular-shaped), curved to each other at apex; left surstylus slightly longer (Fig. 59A). Genital capsule in ventral view: both gonopods widened, right gonopod longer; both with an extended inwards edge on inner margin; subepandrial sclerite long and distinct with patch of short bristles basally (Fig. 59B); Genital capsule in lateral view: both surstyli curved towards sternite, right surstylus widened at basal half, then narrowed, left surstylus widened in basal third, strongly narrowed, one of the ejaculatory ducts with a distinct downwards spine; phallic guide long, bent towards surstyli in apical third and pointed, without spines (Fig. 59D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 59C).

**FEMALE:** Body length: 2.2–2.3 mm. As male except for the following characters. Frons, eyes separated, wider in middle; completely silver-grey pollinose on lower 1/3, shiny black only around ocellar triangle, deep depression in just before ocellar triangle. Enlarged ommatidia silvery shining; Upper side of basal costal cell with one long dark and 2–3 short bristles; pulvilli and claws as long as last tarsal segment. Tergites 4–6 with two grey lateral spots of gray pollinosity. ***Ovipositor.*** Straight in ventral view, rather curved towards sternite in lateral view (piercer dark at its base and brown in apical two thirds), reaching sternite 1; base silvery brown pollinose. LP:LB = 2.5. LDP:LPP = 4.2. (Fig. 157A).

**Etymology:** The specific name is derived from the Latin word ‘luma’, meaning thorn, referring to the distinct thorn on one of the ejaculatory ducts.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°40’S, 118°26’E, 797m, in open mulga with flowering *Ptilotus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16003 (1♂, WAM); **PARATYPES**: AUSTRALIA: Australian Capital Territory: Black Mountain Reserve, 35°16’S, 149°6’E, 4.I.1980, Z. Liepa, JSS9185 (1♂, ANIC); Black Mountain, 35°16’S, 149°6’E, 21.II.1980; 29.XII.1979; 30.I.1980; 5.II.1980, D.H. Colless, Malaise trap, JSS8508, JSS8518–20 (4♂, ANIC); 29.II.1968, I.F.B. Common, light trap, JSS8503 (1♂, ANIC); 2.II.1967, Z. Liepa, JSS9182 (1♂, ANIC); Canberra, Black Mountain, 35°16’S, 149°6’E, 11–19.I.1999, G. Gibson, sweep net, CNCD4468 (1♂, CNC); Black Mountain, 35°16’S, 149°6’E, 11–13.I.1980; 15.I.1980; 18.I.1980; 21–22.IV.1980; 21.II.1980; 23.I.1980; 28–30.III.1980; 29.XII.1979; 30.XII.1979; 5–6.I.1980, D.H. Colless, Malaise site 1, JSS8678, JSS8681–3, JSS8685, JSS8689, JSS8691, JSS8693–5 (10♂, ANIC); Black Mountain, Canberra, 35°16’S, 149°6’E, 18–23.II.1985, W.W. Middlekauff, flight interception

trap, JSS8452 (1♂, CAS); Blundells Creek, 35°22’S, 148°50’E, ex undergrowth; II.1987, D.H. Colless, sweeping; Malaise trap, JSS8627–9, JSS8632–3 (5♂, ANIC); near Condor Creek, 35°19’S, 148°50’E, 6.III.1970, R. Lindsay, JSS8675 (1♂, ANIC); New South Wales: 23 km SE Tamworth, 31°13’S, 151°7’E, 26.XI.1982, D.S. Horning, Jr., JSS9147 (1♂, ANIC); 4 miles SW of Tarago, 35°7’S, 149°36’E, 20.III.1966, Z. Liepa, JSS9218 (1♂, ANIC); Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7’S, 146°56’E, *Callitrus*, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, CNC576579 (1♂, QM); *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, CNC576631, CNC576635 (2♂, QM); Monga, near Braidwood, 35°33’S, 149°56’E, 13.II.1966, Z. Liepa, JSS9210 (1♂, ANIC); Yathong Nature Reserve near 8 Mile Tank, 32°38’S, 145°41’E, 205m, field of flowers:open woodland, 3–25.X.2003, C. Lambkin & N. Starick, Malaise trap, CNCD3638 (1♂, CNC); Grafton Experimental Farm, 29°40’S, 152°56’E, 1.XII.1960, M.F. Day, JSS8642 (1♂, ANIC); Pearl Beach, near Woy Woy, 33°33’S, 151°18’E, 9–11.XII.1988, M.J. Fletcher & J. A. Macdonald, Malaise trap, JSS8742 (1♂, ASCU); Yathong Nature Reserve near Triangle Tank, 32°38’S, 145°33’E, 200m, in sandy wash in low closed mallee, 3–25.X.2003, C. Lambkin & N. Starick, Malaise trap, JSS16039 (1♂, ANIC); Queensland: Brisbane, Department of Primary Industries, Indooroopilly site, 27°30’S, 152°59’E, II.1977, Malaise trap, JSS8936 (1♂, QDPC); Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M), 28°57’S, 146°52’E, 138m, *Callitris*, 19.III–20.V.2010, C. Kelly & A. Coward, Malaise trap, CNC575021, CNC575024 (2♂, QM); Mount Coot-tha, 27°29’S, 152°57’E, 170m, hilltop, 26.IV.1998, C. Lambkin, hand collected, JSS7739–41 (3♂, QM); Bundaberg, 24°52’S, 152°21’E, 15–28.II.1972, H. Frauca, JSS8617 (1♂, ANIC); Charleville, 26°24’S, 146°14’E, 15.II.1970, A.L. Dyce, car net, JSS8624 (1♂, ANIC); Western Australia: Charles Darwin Reserve, Wanarra Road, 29°35’S, 116°60’E, York Gums, *Acacia*, flowering herbs, 19–23.IX.2009, Lambkin & Monteith, Malaise trap, CNC575172 (1♂, QM); 158 km S Newman, 9 km N Kumarina Road House, 24°38’S, 117°37’E, 638m, in wide sandy wash, 18–21.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS16409 (1♂, CNC); 171 km East of Marble Bar, 21°17’S, 121°14’E, 300m, dry wash with flowers, 2–15.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15874–6 (2♂, 1♀, CNC); 47 km S Pardoo Road House on Shay Gap Road, 20°23’S, 120°1’E, 170m, dry wash near *Spinifex*, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15703 (1♀, CNC); 67 km SW Pardoo Road House on Shay Gap Road, 20°28’S, 120°10’E, 177m, dry sandy ravine with flowers, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15663 (1♂, CNC); 70 km S Newman on Great Northern Highway, 23°54’S, 119°45’E, 626m, small wash with *Eucalyptus*, 6–18.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15879 (1♀, CNC); Karijini National Park, Juna Downs Road, 22°40’S, 118°26’E, 797m; in open mulga with flowering *Ptilotus*, 19–25.IV.2003, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16287, JSS16289, JSS16308 (2♂, 1♀, ANIC); 22°44’S, 118°25’E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.IV–14.V.2003; 14–19.V.2003, JSS16096, JSS16111 (2♀, ANIC); Mount Augustus National Park; south slope on Saddle Trail, 24°18’S, 116°48’E, 400m, small dry wooded wash, 25.IV–7.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15887 (1♂, CNC); Mount Augustus National Park, 24°22’S, 116°50’E, 427m, wash on southern slope of mountain, 25.IV–7.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15878 (1♀, CNC); base of “The Governor” on Great Northern Highway, 23°3’S, 118°50’E, 722m, dry wash in wooded area, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15689, JSS15693, JSS15698 (3♀, CNC); Victoria: Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31’S, 147°27’E, 4.III.1973, JSS8760 (1♂, MVMA); Dartmouth Survey, Mitta Mitta River, Loc. EA, 36°31’S, 147°27’E, 9.II.1973, JSS8771 (1♂, MVMA); Mitcham, 37°49’S, 145°12’E, XII.1982, C. Lai (D. Yu), Malaise trap, JSS14387 (1♂, DEBU); Walhalla, 37°57’S, 146°27’E, 5.III.1981, Z. Liepa, JSS9177 (1♂, ANIC).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Queensland, Western Australia, Victoria) (Fig. 130).

**Notes:** This is another common and widespread species that has never been recording hilltopping. Intraspecific genetic distance ranges from 0.0–1.5%. It is genetically most similar to *T. latistyla* **sp. nov.** (8.8% pairwise divergence) (Supplementary file 3).

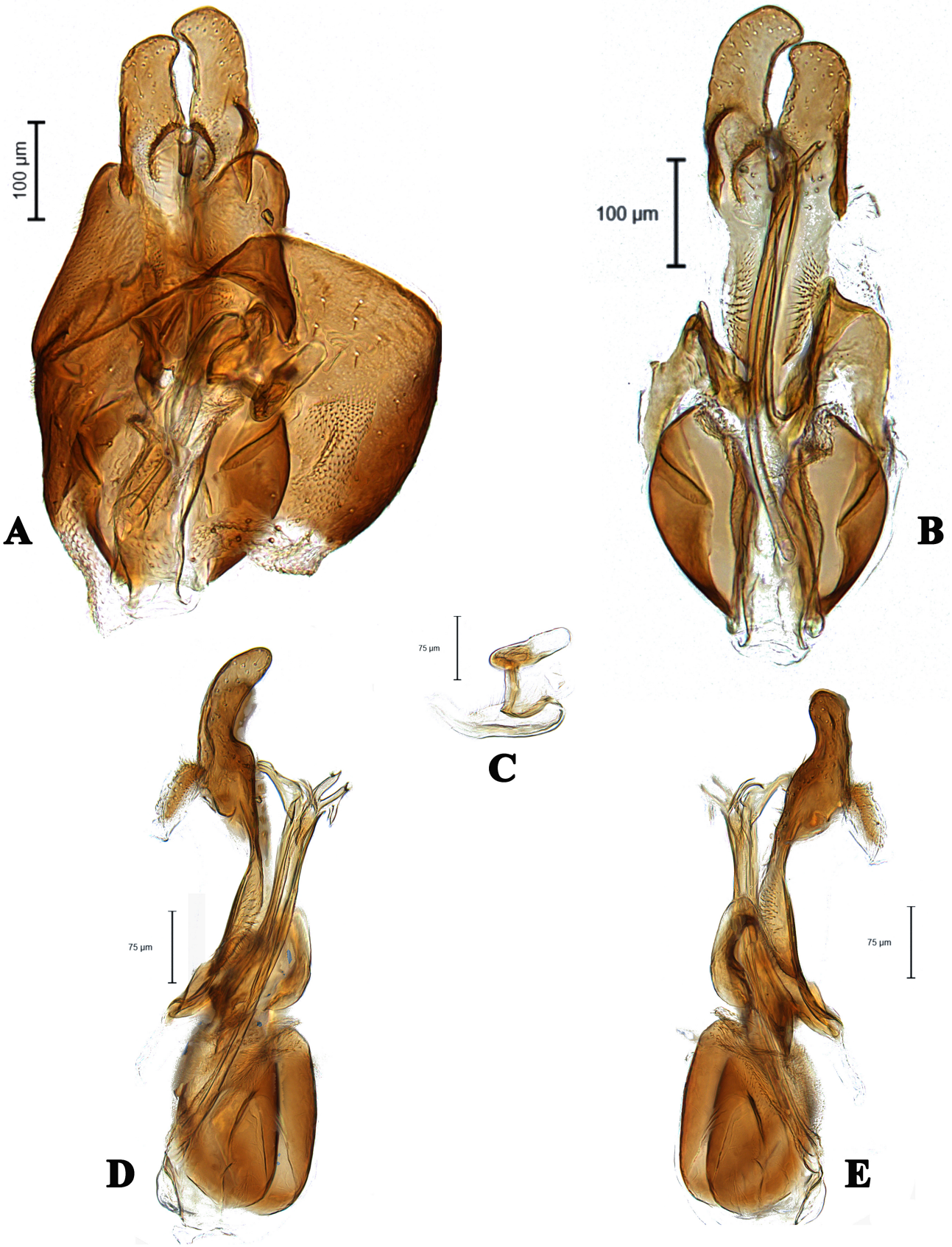



**FIGURE 59**. Male genitalia of *Tomosvaryella luma* **sp. nov.** (JSS16039, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella macrostyla* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:965172F0-3E63-4DC0-9849-3016BF872686
Figs 60A–I, 131, 157E

**Diagnosis:** This species can be recognized by a distinct keel on the hind trochanter that bears 9–11 bristles; elongated surstyli in lateral view (Fig. 60A, E); both surstyli bent towards sternite at the apex in lateral view (Fig. 60C–D, 60H–I); phallic guide with two small spines towards epandrium in lateral view (Fig. 60C–D).

**Description: MALE**: Body length: 2.2–2.5 mm. ***Head***. Flagellum brown and acuminate; face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.3–2 times the length of ocellar triangle; occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale, with 4–5 whitish bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part indistinctly silver pollinose, slightly grayish also from the side. Scutellum silvery pollinose and without bristles. Dorsocentral bristles weakly developed, dark, longer on frontal part. Halter, knob pale, stem dark brown. ***Legs***. Mid coxa with 2–3 spines. Trochanters and base of femora brown; femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 of tibiae yellow, tarsal segments yellow-brown, last segment dorsally darker. Ventroapical row of spines on fore femur missing, 4–6 short, black spines on mid femur; no spines on hind femur, only 12–14 short bristles posteriorly equally distributed, longer on distal half. Subapical (distal) spines on first four tibiae present (short). Hind trochanter with a keel bearing 9–11 distinct bristles. Distitarsi slightly flattened, first tarsomere slightly longer than 2–4 combined; ventral bristles yellow and scrub-like. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.4–2.5 mm, LW:MWW = 2.0. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 2.5–3 times as long as third costal section. Cross-vein r-m at middle or slightly proximal to middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silver-grey with 2–3 short brown lateral bristles (up to 0.1 mm), sides silvery pollinose on tergites 4 and 5 (the latter with larger spot). Dispersed short dark bristles on tergites present, the longest on tergite 5 and as long as width of hind tibia at base. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 large, brown; membranous area long and broad, widest on dorsal part, vertical; surstyli relatively long, broad and flat. Genital capsule in dorsal view: epandrium dark brown; surstyli light brown. Epandrium longer than wide (MLE:MWE = 1.13). Both surstyli elongated, left longer than right one, left smoothly curved over right one or straight (Fig. 60A, E). Genital capsule in ventral view: Subepandrial sclerite short to long; gonopods short or elongated towards surtsyli; phallus trifid, ejaculatory ducts short (Fig. 60B, F). Genital capsule in lateral view: both surstyli elongated, bent towards sternite at the tips (Figs 60C–D, 60H–I). Phallic guide shortened with two small spines dorsally. Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 60G)

**FEMALE:** Body length (excluding antennae and head): 1.7 mm. ***Thorax***. Postpronotal lobe light yellow, gray pollinose, with 1–2 light brown bristle along the upper margin (up to 0.01 mm). Prescutum and scutum, scutellum black, light brown pollinose in dorsocentral area and gray pollinose in prescutum. Pleura black, prosternum and metasternum brown. Wing. Length: 2.5 mm. LW:MWW = 3.3. ***Legs***. Mid coxae with two long and one short dark anterior bristle. Hind trochanter with a row of short dark bristles ventrally. All femora bearing one wrinkled indentation in basal. ***Abdomen.*** Tergites 1–6 gray pollinose with scattered short dark bristles. Tergite 1 with 2 long and 2–3 short black lateral bristles. ***Ovipositor.*** Base of ovipositor dark, gray pollinose, piercer light brown. Viewed laterally (Fig. 157E), base of piercer curved, piercer long and straight. LP:LB = 4.7. LDP:LPP = 3.0.

**Etymology:** The specific name is derived from the Greek word makros for long, which combined with stylus refers to the long surstyli of males of this species.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42’S, 118°25’E, 789m, 25.iv–14.v.2003, C. Lambkin, T. Weir, Malaise trap, CNCD3861 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42’S, 118°25’E, 789m, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3813, CNCD3827–8, CNCD3831, CNCD3834, CNCD3836, CNCD3838, CNCD3841–2, CNCD3844, CNCD3846, CNCD3848–9, CNCD3852, CNCD3854–5, CNCD3857–60, CNCD3864–5 (4♂, 1♀, CNC; 14♂, 3♀, QM); Karijini National Park, Juna Downs Road, 22°42’S, 118°25’E, 789m, between drying pools in rocky Turee Creek, 19–25.iv.2003, C. Lambkin & T. Weir, Malaise trap, JSS16257 (1♀, QM); 22°44’S, 118°25’E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16094 (1♀, QM); Karijini National Park, Weano Gorge Road, 22°22’S, 118°15’E, ~775m, on hilltop, open *Eucalyptus*, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16137; JSS16140

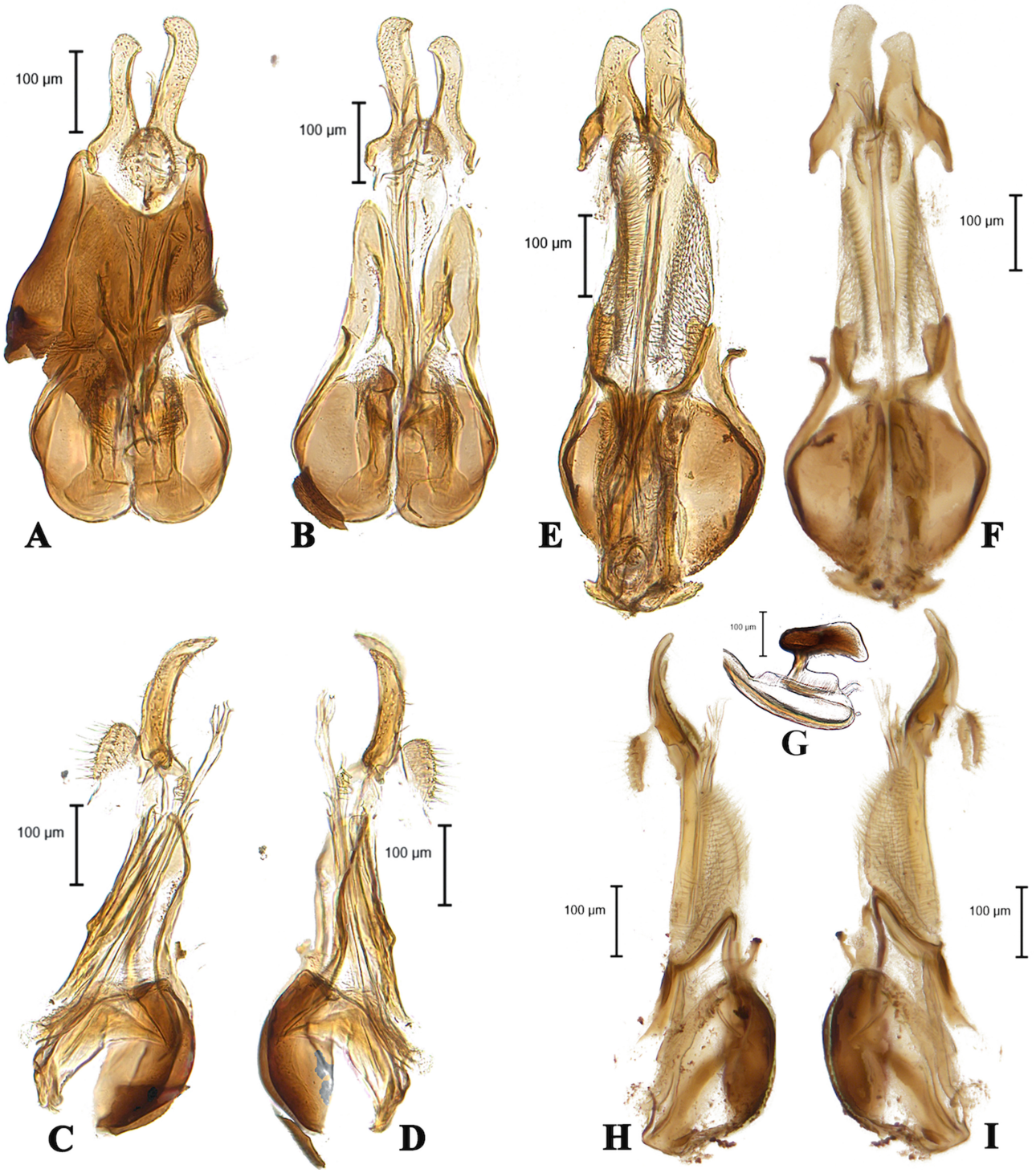



**FIGURE 60**. Male genitalia of *Tomosvaryella macrostyla* **sp. nov.** (JSS9264, ANIC) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view, (CNCD3836, CNC) **E**) dorsal view, **F**) ventral view, **G**) ejaculatory apodeme, **H**, **I**) lateral view.

(2♂, ANIC); Millstream-Chichester National Park, Black Hill Pool, 21°20'S, 117°15'E, 176m, over wide dry rocky creek bed, *Eucalyptus*, 7–12.v.2003, C. Lambkin & D. Yeates, Malaise trap, JSS16314 (1♂, ANIC); Millstream-Chichester Nat[ional] Park, Pipeline Road, 21°36'S, 117°5'E, 324m, in *Acacia Spinifex* scrub, 2–11.V.2003, C. Lambkin & D. Yeates, J. Recsei, Malaise trap, JSS16153 (1♂, ANIC); Queensland: Mornington Island, 16°33'S, 139°24'E, 18.IV.1983, J.F. Donaldson, D-Vac, JSS8962–64; JSS8966 (4♂, QDPC); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C.

Kelly & A. Coward, Malaise trap, CNC575366 (1♂, QM); Culgoa Floodplain National Park, 7km NNW Toulby Gate (CG4AM), 28°56'S, 146°55'E, 160m, Gidgee, 20.i–19.iii.2010, C. Kelly, A. Coward, Malaise trap, CNC576379, CNC576382–3, CNC576386–90 (6♂, QM; 2♂, USNM); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.i–19.iii.2010, C. Kelly, A. Coward, Malaise trap, CNC575373–6 (2♂, CNC; 2♂, QM); New South Wales: Culgoa National Park, 8km West-Northwest of Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°1'E, 136m, Coolibah, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, CNC574749 (1 ♂, QM); Tasmania: 10 km NW by N St. Helens, 41°15'S, 148°10'E, 14.I.1983, I.D. Naumann, J.C.Cardale, yellow pan trap, JSS9264 (1♂, ANIC).

**Distribution**: Australia (New South Wales, Queensland, Tasmania, Western Australia) (Fig. 131).

**Notes:** Based on genitalia, there are two putative species in what we are treating as one species here. The COI sequences are overlapping and both species occur at the same locations on the same dates, so we have opted to be conservative and treat them as a single species. More research should be conducted on this potential species complex. Host data and other genetic markers would be useful to help determine if it is one or two species. One putative species has the dorsomedial margin of the surstyli curved in lateral view (Fig. 60H–I) and includes CNC576390, CNCD3827, CNCD3834, CNCD3836, CNCD3841, CNCD3848, CNCD3852, CNCD3854–5, CNCD3857, CNCD3859–60, CNCD3865, JSS16094, JSS16137 and JSS16140. The second putative species has the dorsomedial margin of surstyli straight in lateral view and more elongated gonopods in ventral view (Fig. 60A–D) which includes CNCD3813, CNCD3838, CNCD3842, CNCD3844, CNCD3846, CNCD3849, CNCD3861, JSS16314, CNC576379, CNC576382, CNC576383, CNC57638–9, CNC575373–6, JSS9262–4, JSS8966 and JSS9264. Genetic distance between sequenced specimens is low (0.0 to 0.7% pairwise divergence). Intraspecific genetic distance ranges from 0.0–1.6%. This species is genetically most similar to *T. bulbosa* **sp. nov.** and *T. warrumbunglensis* **sp. nov.** (3.2% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella mathiesoni* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:DE65A684-80F0-40CE-8DAF-F334A69E7BBC

Figs 61A–E, 130

**Diagnosis:** This species can be recognized by the hind trochanter having a few short dark spines ventrobasally; elongated surstyli in dorsal view (Fig. 61A); extended gonopods towards surstyli in ventral view (Fig. 61B); phallic guide with some different-sized spines, longer one as wide as left surstylus in ventral view (Fig. 61B); membranous sheath covered by small hairs.

**Description: MALE**: Body length: 2.4–2.5 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 4–5 distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose; slightly grayish also from the side. Scutellum silver pollinose and with 4–7 weak bristles along the distal edge. Dorsocentral bristles developed, dark, longer on frontal part and numerous short dark bristles around postpronotum. Halter, knob pale, stem dark brown. ***Legs***. Mid coxa with 2 bristles (one thicker). Trochanters and base of femora black, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 of tibiae yellow (otherwise dark brown), tarsal segments yellow ventrally, yellow-brown dorsally, last segment dorsally darker. Hind trochanter with a few short dark spines (5–7) ventrobasally; ventrobasal spines absent on fore and mid femora. Ventroapical row of spines on fore femur missing, 4–6 very short, black spines on mid femur; no spines on hind femur, only 14–16 pale bristles posteriorly, more frequent on distal half (as long as 1/2 the width of hind tibia at the distal end); hind tibia slightly bent at middle in posterior view. Subapical (distal) spines on first four tibiae absent. Hind metatarsus flattened (1 and 2 especially), first tarsomere slightly longer than 2, both metatarsus with dorsal row of bristles along the edges but missing in the middle. Pulvilli as long as 2/3 of last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with 1–3 long distinct bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with larger spots). Dispersed short dark bristles on tergites present, the longest on tergite 5 and ST8 and up to 0.5–07. times as long as width of hind tibia at base. Lateral bristles on first tergite present, 5–6 brown bristles up to as long as width of hind femur at distal tip. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long

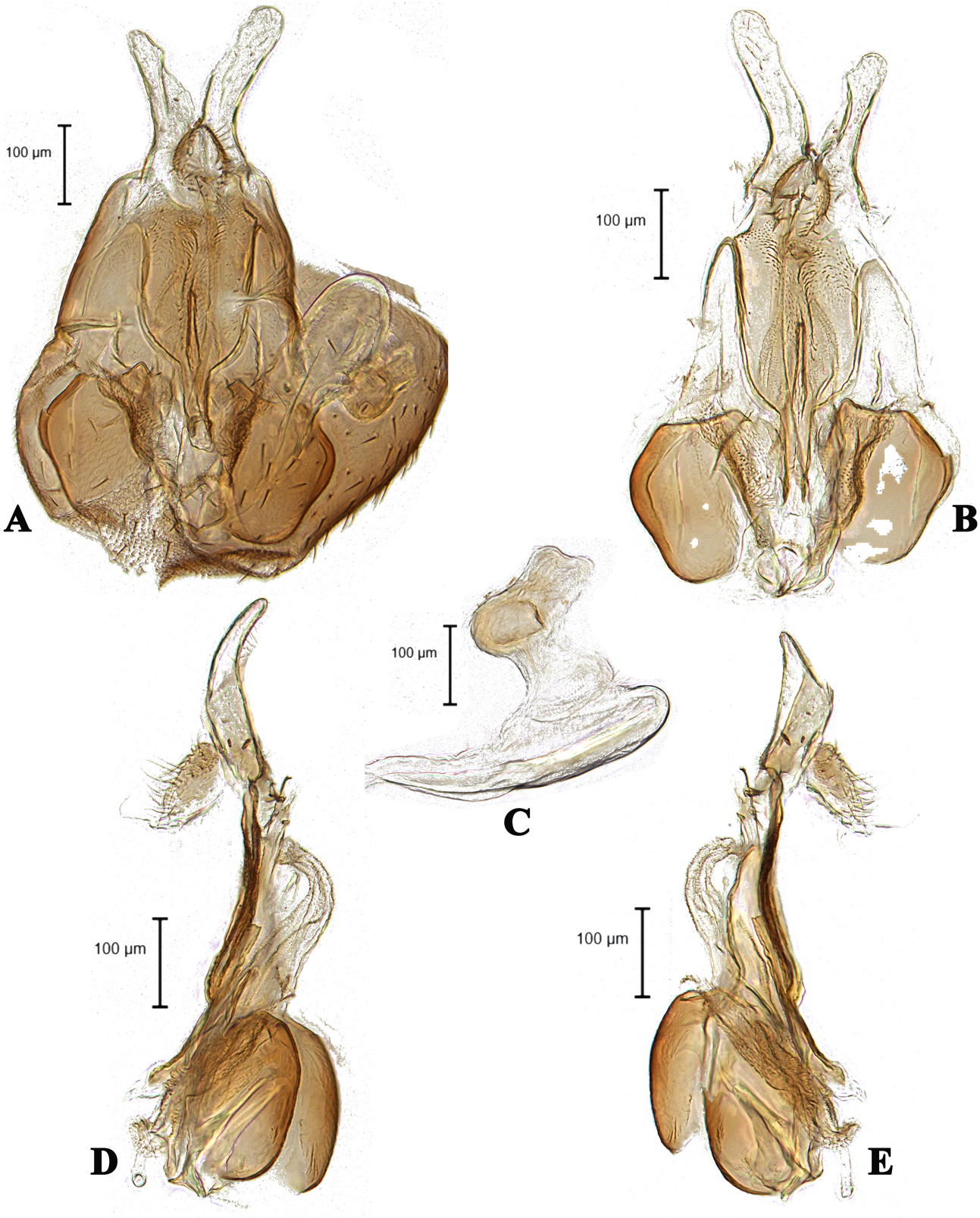



**FIGURE 61**. Male genitalia of *Tomosvaryella mathiesoni* **sp. nov.** (JSS7552, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

as ST8. Genitalia without dissection: ST8 medium sized, brownish, hairy; membranous area slit-like, long; epandrium brown; surstyli paler, appear slim. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE: MWE = 0.7). Surstyli rather asymmetrical, elongated, left slightly longer than right one (Fig. 61A), right surstylus with a depression ventromedially before apex. Genital capsule in ventral view: subepandrial sclerite covered with some transverse streaks in upper margin near surstyli; gonopods extended towards surstyli, left longer than right one, hypandrium with distinct hypandrial apodeme (Fig. 61B), phallic guide with 5–6 different-sized spines dorsolaterally (longer ones extended towards left surstylus), longer one is as wide as left surstylus, membranous sheath covered by small bristles. Genital capsule in lateral view: both surstyli curved towards sternite, moderately narrowed towards apical, right surstylus shorter and wider than left one (Fig. 61D–E); ejaculatory apodeme flat, sperm pump elongate, linear (Fig. 61C).

**FEMALE:** Unknown.

**Etymology:** This species is named in honour of Michael Mathieson. Michael introduced JHS to the type locality (Round Mountain) which proved to be an excellent location for sampling pipunculid diversity. Michael was also part of the team that collected both known specimens of this species. He has collected 9% of the known species of *Tomosvaryella* (Supplementary file 2).

**Examined material: HOLOTYPE**: AUSTRALIA. Queensland: Barakula State Forest No. 302, Summit Round Mountain, 26°22'S, 150°58'E, 8.i.2000, J.&A. Skevington & M. Mathieson, JSS7552 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: same data as holotype, JSS7553 (1♂, QM).

**Distribution***:* Australia (Queensland) (Fig. 130).

**Notes:** The only two known specimens of this species were caught hilltopping on Round Mountain. Intraspecific genetic distance is 0.0%. This species is genetically most similar to *T. powerae* **sp. nov.** (2.3% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella melaleuca* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:FCCB5B6E-0308-4FB1-AD8C-15A5FA655830

Figs 62A–E, 130, 144C

**Diagnosis:** This species can be recognized by the hind trochanter having a small keel with 2–3 short dark spines (Fig. 144C); small surstyli with two ventromedial lobes in dorsal view; both gonopods extended towards surstyli, right one with a distinct projection on inner margin; phallic guide with some dorso-dorsolateral spines in ventral view (Fig. 62B); both surstyli straight in lateral view (Fig. 62D–E).

**Description: MALE:** Body length: 2.4 mm. ***Head***. Scape, pedicel dark brown; flagellum tapering, light brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.1 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 2–3 long brown bristles. Mesonotum (viewed obliquely from front) silvery pollinose, with some short supra-alar bristles behind postpronotum lobes. Scutellum silvery brown pollinose and with 5–8 short dark bristles along distal edge. Halter, knob yellow, tip brownish, stem yellow, base dark brown. ***Legs***. Mid coxa with 3–4 dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with a small keel providing with 2–3 short dark spines (Fig. 144C); ventrobasal spines absent on femora. Hind femur without ventroapical spines, except 8–10 equally spaced short bristles posteroventrally, longest up to 2/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one brown bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 brown pollinose. Lateral bristles on first tergite present, 8–10 long brown bristles up to as long as hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium rectangular-shaped (MLE:MWE = 1.1). Surstyli rather short, widened in the basal fourth, then constricted, broadened in the middle, both surstyli with a small lobe in dorsomedial margin, curved to each other at apex, left surstylus is longer (Fig. 62A). Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex, right one with a distinct projection on inner margin, gonopods unequal in height, left slightly longer; phallic guide with 3–6 short dorso- dorsolateral spines; two left ones longer than others; subepandrial sclerite distinct (Fig. 62B); Genital capsule in lateral view: both surstyli straight (Fig. 62D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 62C).

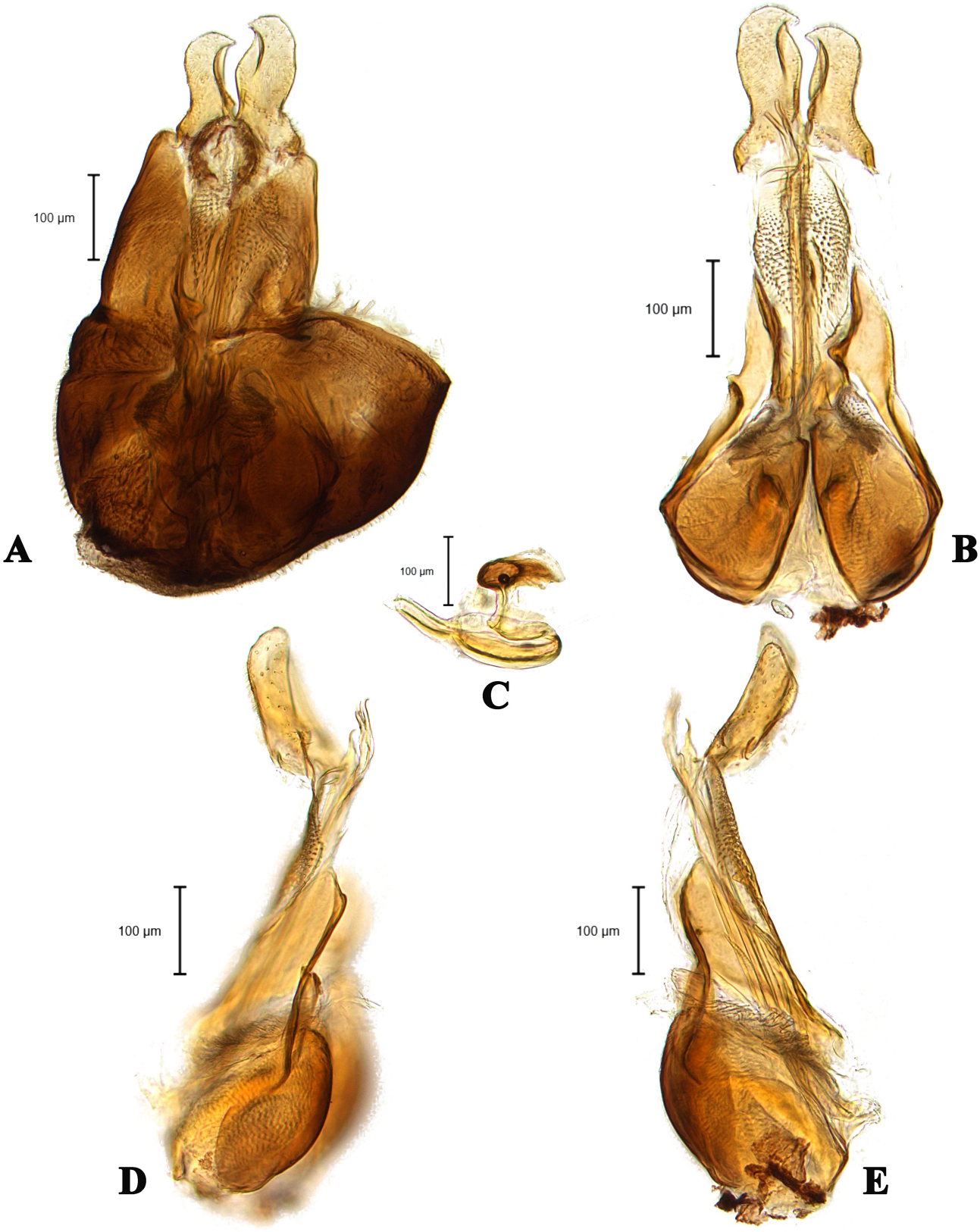



**FIGURE 62**. Male genitalia of *Tomosvaryella melaleuca* **sp. nov.** (CNC596961, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE:** Unknown.

**Etymology:** This species is named after the paperbark trees (*Melaleuca* spp.) that dominate the floodplain in the otherwise treeless type locality.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Edgbaston National Reserve (EBM1), 22°44'S, 145°26'E, 237m, *Melaleuca* floodplain, 29.X–15.XII.2010, C. Lambkin *et al.*, Malaise trap, CNC596961 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 130).

### *Tomosvaryella merinater* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:D1650A82-AF8E-4110-B1AC-4E7AD3037649

Figs 63A–F, 131

**Diagnosis:** This species can be recognized by the presence of four long, dark bristles on mid coxa; hind trochanter with 4–5 pale bristles in a row; elongated surstyli, bent outwards by 90° distally, with two small protrusions before apex at inner margin in dorsal view (Fig. 63A); gonopods covered by short bristles (Fig. 63B); phallic guide with a long spine dorsomedially in lateral view (Fig. 63D–F).

**Description**: **MALE**: Body length: 3.2 mm. ***Head***. Flagellum long acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 1–2 indistinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part slightly silver pollinose, very faintly grayish also from the side. Scutellum brownish pollinose and with 6–8 weak bristles along the distal edge. Dorsocentral bristles developed, short, somewhat longer on frontal half, numerous pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with four long, dark bristles. Trochanters and femora brown-black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 and distal extremity of tibia yellow (tibia otherwise brown), tarsal segments yellow, last segment brown. Fore and mid trochanters with 2–3 short bristles. Hind trochanter without a keel, but with a few pale bristles (4–5) in a row that looks like a half circle (flat dorsally). Ventroapical row of spines on fore femur missing; 6–8 short, black spines on mid femur; no spines on hind femur, only 14–16 pale bristles equally spaced posteriorly, uniform in length (up to as long as 0.4–0.5 times the width of hind tibia at the distal end). Subapical (distal) spines on first four tibiae present (short). Ventrobasal spines (2) present on fore and absent on mid femur. Hind metatarsus not flattened, metatarsus almost as long as 2–5 combined; last tarsomere unusually long almost as long as segments 3–4 combined. Pulvilli as long as the last tarsal segment, shorter on metatarsi. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one dark and short bristles. Fourth costal section 2–2.2 times as long as third costal section. Cross-vein r-m at middle of discal cell. Three distinct dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black with a greenish hint, tergite 1 silvery grey, sides silvery pollinose on tergites 5. Dispersed strong dark bristles on all tergites present, the longest on tergite 5 and up to as long as half the width of hind tibia at base, otherwise tergites covered with very faint, velvet-like bristles. Lateral bristles on first tergite present, 4–5 long pale bristles in a row up to 0.8–1 time as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 2.4–2.6 times as long as ST8. Genitalia without dissection: ST8 medium sized, wide, with occasional small bristles; membranous area elongated, broadening on dorsal part; epandrium and surstyli uniformly brown, surstyli appear to be long and with broad base. ***Genitalia***. Genital capsule in dorsal view: epandrium square-shaped (MLE:MWE=1.0). surstyli symmetrical, broadened at base, gradually slenderized before apical fourth, bent outwards by 90° distally, with two small protrusions shortly before apex at inner margin (Fig. 63A). Genital capsule in ventral view: gonopods equal, extended towards surstyli, both gonopods covered by short bristles; lobes of hypandrium sclerotized; subepandrial sclerite shortened with some scattered short bristles in its middle (Fig. 63B); Genital capsule in lateral view: both surstyli broadened at base and apex, constricted in middle (Fig. 63D–E); phallic guide straight, with a long spine dorsomedially; phallus with three ejaculatory ducts (Fig. 63F). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 63C).

**FEMALE:** Unknown.

**Etymology**: The name is in reference to the four long, dark bristles on the mid coxa and is derived from the Greek word merinx (bristle) and the Latin ater (black).

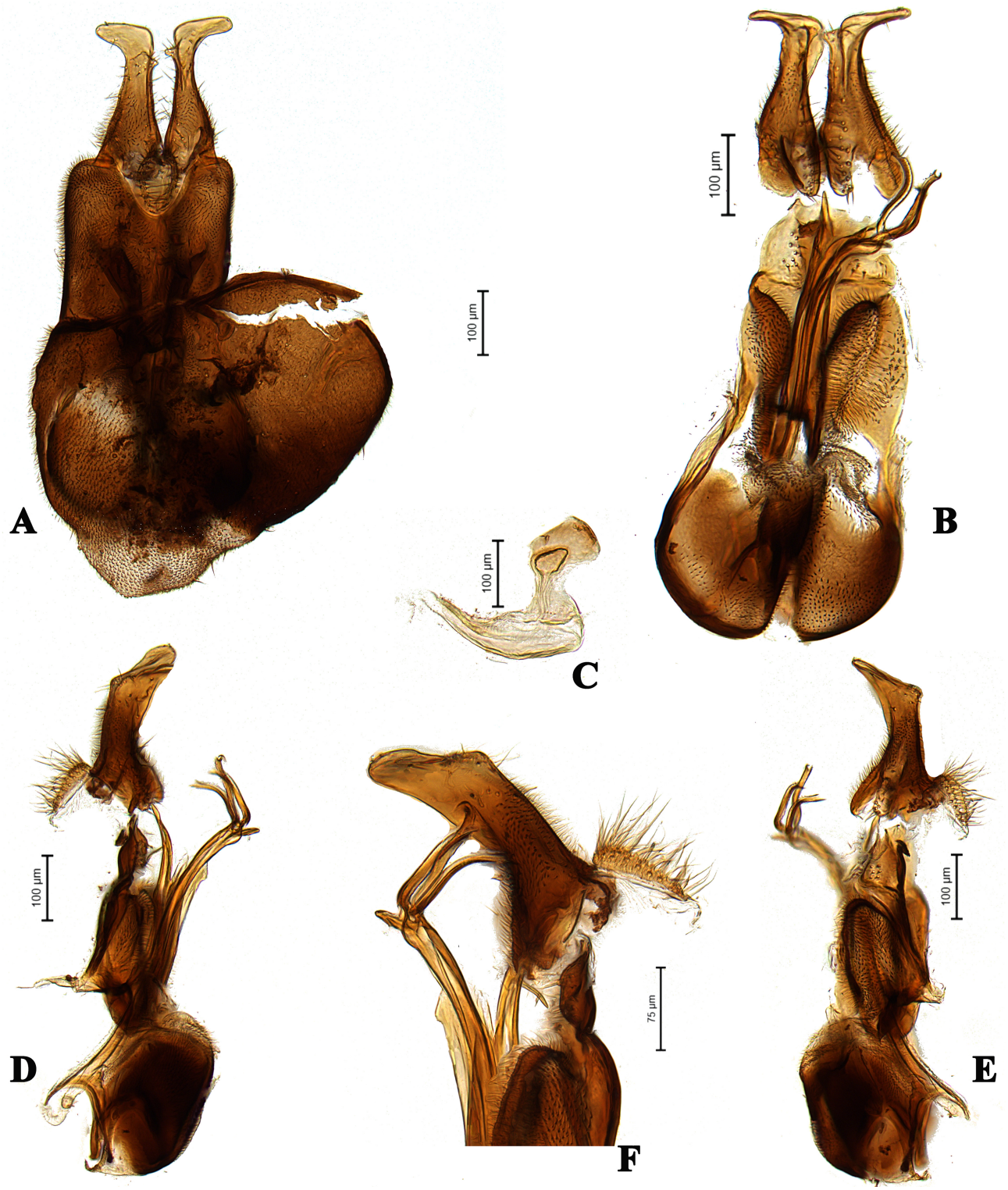



**FIGURE 63**. Male genitalia of *Tomosvaryella merinater* **sp. nov.** (JSS8306, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view, **F**) right surstylus and phallus in lateral view.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Queensland: Forest Station, Bulburin State Forest via Many Peaks, 24°32'S, 151°34'E, 600m, long grass, wet sclerophyll forest, 12–15.iv.1974, I. Naumann, JSS8306 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: Brisbane, 27°28'S, 153°1'E, 24.i.1960, Haseler, JSS8301 (1♂, QM); Northern Territory: McArthur River, 48 km SW by S of Borroloola, 15°54'S, 136°40'E, 14.IV.1976, D.H. Colless, JSS9221–22 (2♂, ANIC).

**Distribution**: Australia (Northern Territory, Queensland) (Fig. 131).

**Notes:** One specimen was collected in wet sclerophyll forest and the Northern Territory specimen was found near the coast in what would presumably be wet, monsoon forest. Future searches for this species should likely focus on wet forest types.

### *Tomosvaryella millstreamensis* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:BAFBA3B7-C458-4F85-A6D2-A9D91B95F3E9

Figs 64A–E, 129

**Diagnosis:** This species can be recognized by the triangle-shaped of the cerci in lateral view (Fig. 64D–E); hind trochanter with a small keel and some short bristles ventromedially; small surstyli, both surstyli constricted in apical third at inner margin in dorsal view (Fig. 64A); left gonopod slightly longer, right one wider, both gonopods with a short finger-like projection laterally; phallic guide with some different-sized spines dorso- dorsolaterally; subepandrial sclerite and hypandrial apodeme distinct (Fig. 64B, D–E).

**Description: MALE:** Body length: 3.2–3.5 mm. ***Head***. Scape and pedicel dark brown. Pedicel with 2–3 upper bristles; flagellum light brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.5–3 times the length of ocellar triangle. Occiput grey pollinose, covered by short dark bristles. ***Thorax***. Postpronotum light yellow, with 3–5 light brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer; scutum with scattered bristles at anterior supra-alar area. Postalar callus dark brown with a batch of (3–5) pale bristles in its middle. Scutellum black, silvery pollinose with 10–12 short bristles along distal edge. Halter, knob pale, stem light brown. ***Legs***. Mid coxa with 4–5 long dark bristles, two longer than others. Coxae, trochanters, femora dark brown, hind femur shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsomeres yellow ventrally and light brown dorsally, last segment darker. Mid trochanter with two short bristles ventroapically. Hind trochanter silvery pollinose, with a small keel and 3–6 short bristles ventromedially; ventrobasal spines absent on fore and mid femur, two rows ventroapical spines present. Hind femur with two rows ventroapical spines. Tibiae with two rows of short black bristle on anterior and three rows on posterior side. Hind tarsomeres distinctly flattened (especially tarsomeres 1–4), hind metatarsus as long as 2–4 combined; posterior corners with distinct bristles on all tarsomeres. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one short dark brown bristle and 2–3 longer light brown bristles. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 3–4 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose; tergite 2–5 grey-brown pollinose with scattered short dark bristles (more on tergite 5). Lateral bristles on first tergite present, 7–10 long brown bristles up to as long as hind femur's width at base; sternite 2 with 3–6 small dark spines in the middle of posterior margin. Syntergosternite 8 enlarged, dark brown and grey pollinose. Membranous area long and broad in middle with a triangular edge close to cerci in lateral view; cerci triangle-shaped in lateral view. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.6). Surstyli asymmetrical, small, left surstylus longer than right one, right surstylus with a triangular edge at inner margin before apex, both surstyli constricted in apical third at inner margin (Fig. 64A). Genital capsule in ventral view: gonopods rather unequal in height, left gonopod slightly longer, right one wider than left one, both gonopods with a short finger-like projection laterally; phallic guide with 2–3 different-sized spines dorso- dorsolaterally, one is longer than others; subepandrial sclerite and hypandrial apodeme distinct (Fig. 64B); Genital capsule in lateral view: both surstyli widened, strongly curved towards sternite, left surstylus moderately narrowed after basal half (Fig. 64D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 64C).

**FEMALE:** unknown.

**Etymology:** This species is named after the type locality, Millstream-Chichester National Park. This park is particularly diverse for *Tomosvaryella* species with 17 species recorded, all of them undescribed until now.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Narrina Pool, 21°21'S, 117°16'E, 159m, rocky creek bed, *Eucalyptus*, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, JSS16186 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 814m, open *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15581, JSS15583, JSS15584 (3♂, ANIC); 22°34'S, 118°18'E, 815m, across dry gully,

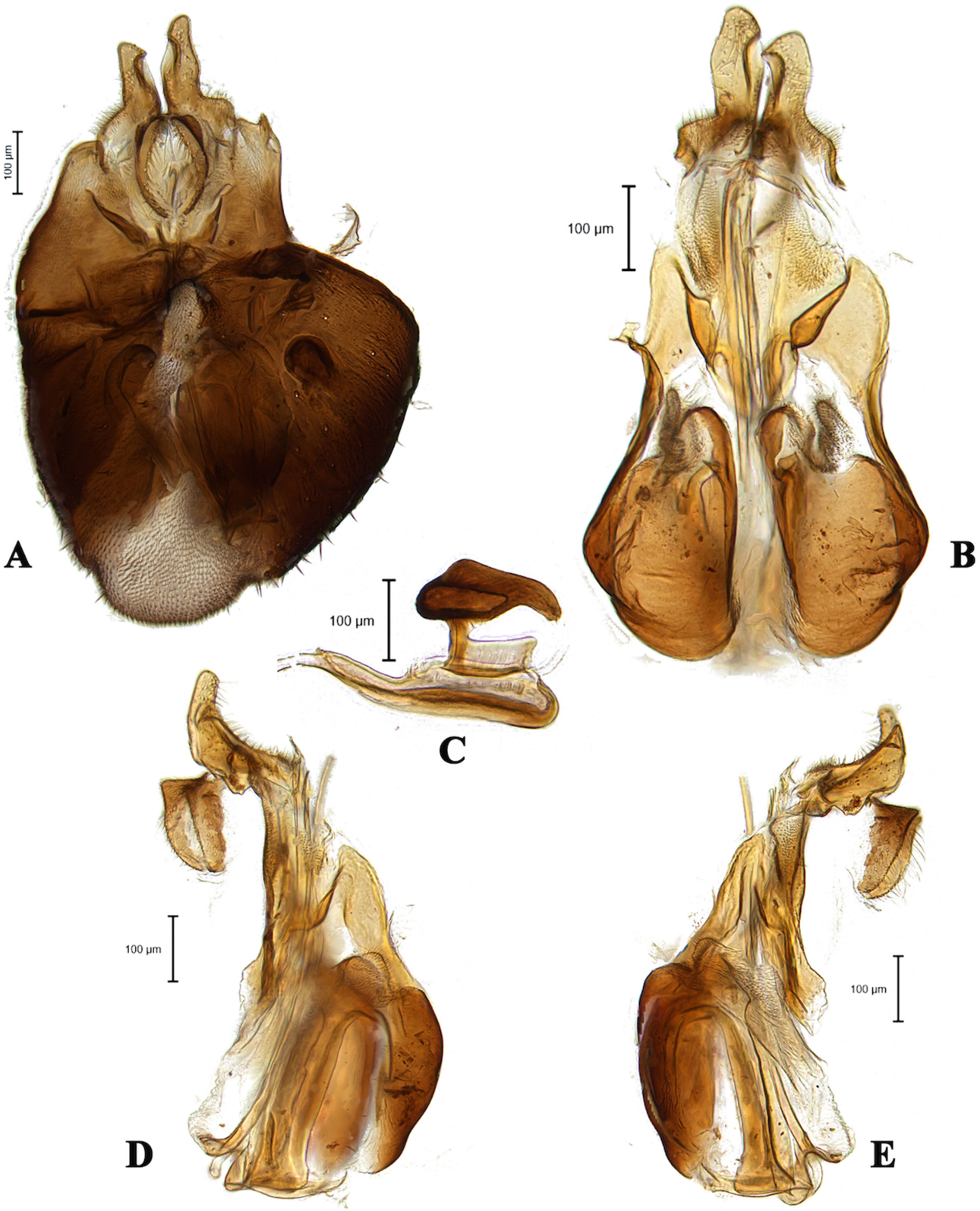



**FIGURE 64**. Male genitalia of *Tomosvaryella millstreamensis* **sp. nov.** (JSS16187, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

*Acacia* scrub, 19–25.IV.2003, JSS16157, (1♂, CNC); Millstream-Chichester National Park, Narrina Pool, 21°21'S, 117°16'E, 159m, rocky creek bed, *Eucalyptus*, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, JSS16182–5, JSS16187 (4♂, ANIC; 1♂, QM); beside bank of rocky creek bed, *Eucalyptus*, 27–30.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16192 (1♂, ANIC); Millstream-Chichester National Park, Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, JSS15569, JSS15571–2 (3♂, ANIC); 21°20'S, 117°11'E; 21°26'S, 117°9'E, 360m; 337m, *Spinifex* with scattered *Acacia* & *Eucalyptus*; sandy creek, *Eucalyptus Spinifex* grassland, 27.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16072–3, JSS16198, JSS16261–3 (6♂, ANIC); Millstream-Chichester National Park, Black Hill Pool, 21°20'S, 117°15'E, 176m, across wide dry rocky creek bed, *Eucalyptus*, 30.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16043 (1♂, ANIC).

**Distribution:** Australia (Western Australia) (Fig. 129).

**Notes:** This species has only been found in Millstream-Chichester National Park and Karijini National Park in Western Australia. No specimens have been found hilltopping. Intraspecific genetic distance ranges from 0.0% to 1.0%. It is genetically most similar to *T. tribula* **sp. nov.** (0.8–2.5% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella miltocentra* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:69ECA24E-347E-43D4-AD5A-8772C37C4D3D

Figs 65A–E, 131, 144D

**Diagnosis:** This species can be recognized by the hind trochanter having a keel covered by some short spines along its edge (Fig. 144D); mid metatarsus flattened at its base, extended inward; elongated surstyli, curved to each other from middle to apex in dorsal view (Fig. 65A); gonopods extended towards surstyli, subepandrial sclerite distinct with a fin-shaped projection in its center in ventral view (Fig. 65B); right surstylus with hump-like edge dorsomedially in lateral view (Fig. 65D–E).

**Description: MALE:** Body length: 3.2 mm. ***Head***. Flagellum tapering, pale at the apex, light brown at the base; scape and pedicel dark. Pedicel with two short dark upper bristles. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 1–2 short dark bristles. Mesonotum (viewed obliquely from front) brown pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 1–2 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments brown. Hind trochanter with a keel covered by some short spines along its edge (Fig. 144D). Ventrobasal spines absent on fore and absent on mid femur. Hind femur without ventroapical spines, except 3–6 short bristles posteroventrally. Subapical (distal) spines on first four tibiae present (short). Mid metatarsus flattened at its base, extended inward. Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.1 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites black, tergite 1 silvery brown pollinose, others brown pollinose. Lateral bristles on first tergite present, 4–6 long pale bristles up to as long as of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.8). Surstyli elongated, widened at the base with two small lobes ventrobasally. curved to each other at apex, left surstylus is longer than right one (Fig. 65A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, rounded at apex, gonopods with a small semicircular projection on inner margin; phallic guide unclear, perhaps detached; subepandrial sclerite distinct with a fin-shaped projection in its center (Fig. 65B); Genital capsule in lateral view: both surstyli curved towards sternite, right surstylus with hump-like edge dorsomedially (Fig. 65D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 65C).

**FEMALE:** Unknown.

**Etymology:** From the Greek miltos, red earth and kentron, centre, in reference to the Red Centre (Alice Springs Region) of Australia where this specimen was collected.

**Examined material: HOLOTYPE**: AUSTRALIA: Northern Territory: Waterhouse Range, 39 km SW by S of Alice Springs, 24°1'S, 133°25'E, 11.X.1978, D.H. Colless, JSS9239 (1♂, ANIC).

**Distribution:** Australia (Northern Territory) (Fig. 131).

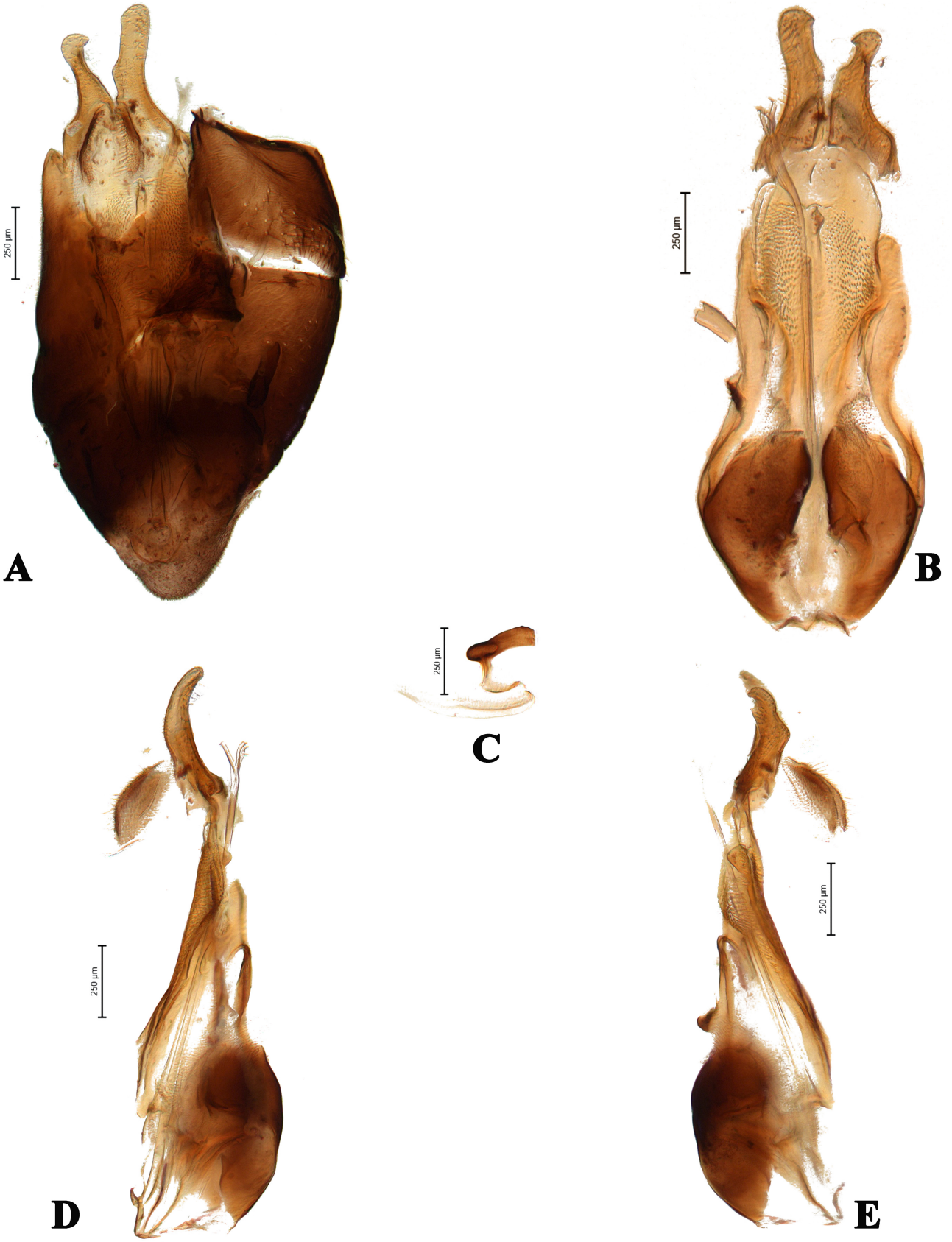



**FIGURE 65**. Male genitalia of *Tomosvaryella miltocentra* **sp. nov.** (JSS9239, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella minychoma* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:586A03D4-CDE6-4C9F-8671-18314CAB00F3
Figs 66A–D, 124, 150D

**Diagnosis**: This species can be recognized by the 8–10 pale long bristles along the distal half of the hind femur (Fig. 150D); surstyli with five long bristles along dorsomedial margin in dorsal view (Fig. 66A); gonopods broadened at the base and elongated towards surstyli in ventral view (Fig. 66B); phallic guide with three to four spines dorsally in lateral view (Fig. 66C–D).

**Description**: **MALE**: Body length: 2.4–2.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.5 times the length of ocellar triangle. Occiput silvery pollinose, including upper half. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish also from the side. Scutellum silvery pollinose and without bristles. Dorsocentral bristles weakly developed, dark, longer on frontal part. Halter, knob pale, stem dark brown. ***Legs***. Mid coxa with 2–3 dark anterior bristles on inner apical corner. Hind trochanter without a keel or projection, 4–5 indistinct bristles possible at ventral base. Femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 of tibiae yellow (otherwise pale brown), tarsal segments yellow, last segment dorsally brown. Ventroapical row of spines on fore femur missing, 8–10 short, black spines on mid femur, no spines on hind femur, only 8–10 pale long bristles posteriorly equally distributed on distal half, directed towards the distal end of femur (as long as width of hind tibia at the distal end) (Fig. 150D). Subapical (distal) spines on first four tibiae present (short). Hind metatarsus flattened, first tarsomere slightly longer than 2–5 combined; ventral yellow scrub-like bristles. Pulvilli as long as 2/3 of last tarsal segment. ***Wing***. Length: 2.5–2.6 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 2–3 times as long as third costal section. Cross-vein r-m slightly proximal to middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with side spots touching in the middle). Dispersed short dark bristles on tergites present, the longest on ST8 and half as long as width of hind tibia at base. Lateral bristles on first tergite present, 2–3 brown bristles as long as width of hind femur at distal tip. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 large, brown; membranous area round, positioned dorsally; epandrium paler, surstyli appear relatively short, tips often concealed. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli light brown. Epandrium longer than wide (MLE:MWE = 1.2). Surstyli rather symmetrical. Both surstyli triangle-shaped pointing tips at its apical inner corner, left slightly wider than right one (Fig. 66A). Both surstyli with five long bristles along dorsomedial margin before apex. Genital capsule in ventral view: gonopods equal in height, broadened at the base and elongated towards surstyli (Fig. 66B). Subepandrial sclerite elongated (Fig. 66B). Genital capsule in lateral view: both surstyli slender and slightly curved in ventromedial margin (Fig. 66C–D). Phallic guide with three to four spines dorsally before apex, phallus with three ejaculatory ducts.

**FEMALE**: Unknown.

**Etymology**: Named from the Greek minys for little, small or short and choma for bank or mound, in reference to the fact that all specimens were collected at the summit of a low rise (a hilltop of sorts).

**Examined material: HOLOTYPE**: **AUSTRALIA**: Western Australia: ~3 km N[orth] of Denham, 25°55’S, 113°32’E, hilltop, 12.xii.1999, J. Skevington, JSS7363 (1♂, WAM); **PARATYPES**: Same data as holotype, CNC944147–8, JSS7331, JSS7350, JSS7352, JSS7356–7, JSS7370, JSS7378 (3♂, CNC; 6♂, QM).

**Distribution:** Australia (Western Australia) (Fig. 124).

**Notes:** All known specimens were collected from a low hilltop near the coast north of Dehnam, Western Australia. A small trail led through the arid shrublands to the hilltop where a bench with a roof over it afforded a view of Shark Bay and protection from the sun for those stopping to sit. The hill was barely longer than the surrounding land but together with this small structure it clearly offered an important landmark for mating insects. There were hundreds of flies and other insects using this simple structure as a hilltopping site. One hundred and four pipunculid specimens were collected here by JHS in a short period of time on 12 December 1999 (and included ten undescribed species of *Tomosvaryella* and *Clistoabdominalis trochanteratus* (Becker 1900)).

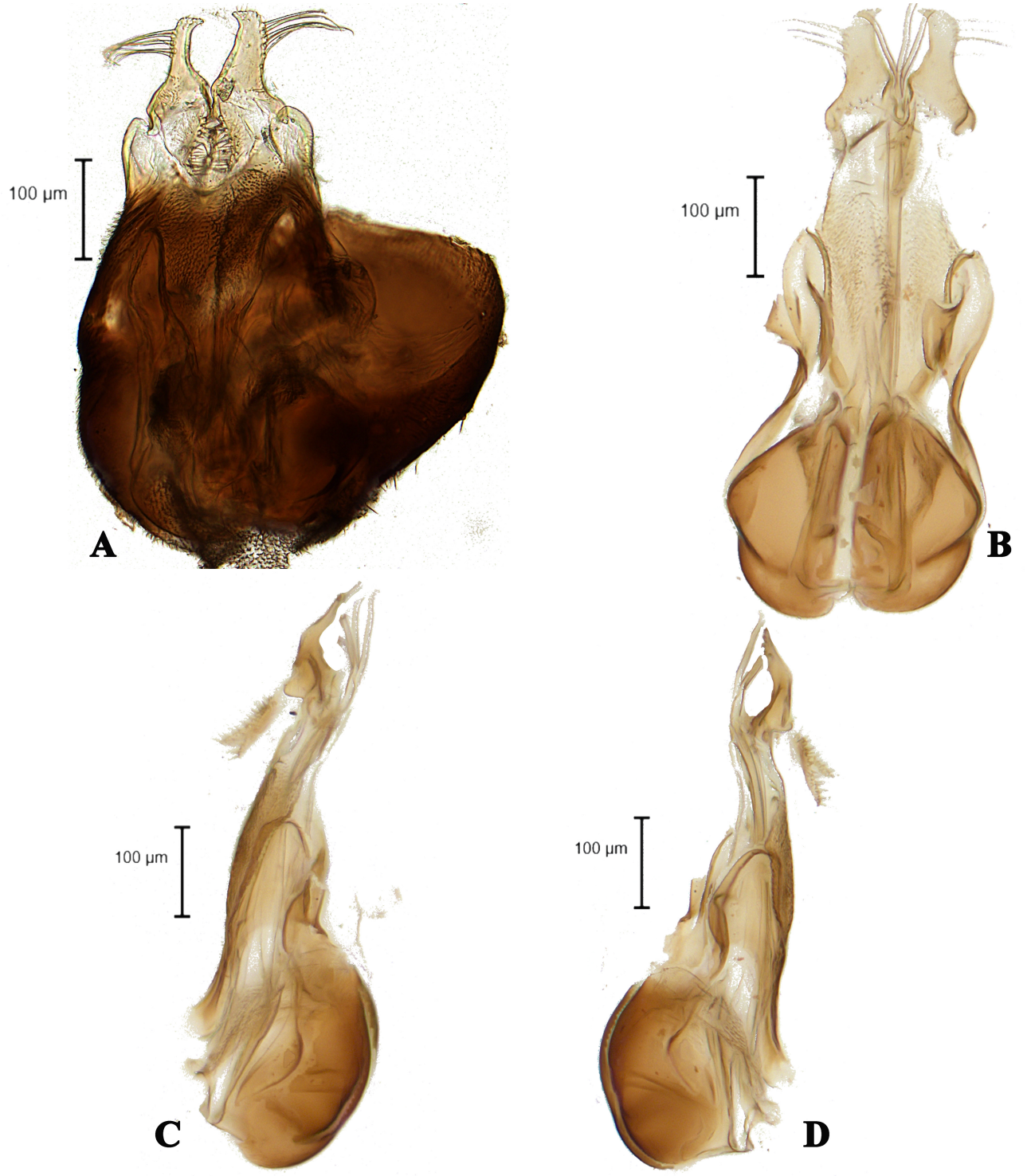



**FIGURE 66**. Male genitalia of *Tomosvaryella minychoma* **sp. nov.** (JSS7331, CNC) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

***Tomosvaryella moffattensis* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:953571D1-7C04-4675-881D-EE7ED062543A
Figs 67A–E, 129, 148C, 152C

**Diagnosis**: This species can be recognized by the tuft of short dark longer spines on the hind trochanter ventrobasally (Fig. 148C); elongated surstyli in dorsal view (Fig. 67A); elongated gonopods with an inwards projections (Fig. 67B); hypandrium with two hairy membranous sheaths (Fig. 67C–E); subepandrial sclerite with a small fin-shaped protrusion (Fig. 67B); one of ejaculatory ducts with three spines (Fig. 67C–E); phallic guide with some dorso-dorsolateral spines in lateral view (Fig. 67C–E).

**Description**: **MALE**: Body length: 2.3 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and with 8–10 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale with a brownish tinge, stem brown. ***Legs***. Mid coxa with 3 long dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments brown, ventrally paler, last segment darker. Hind trochanter with tuft of short dark longer spines (7–10) ventrobasally in one group: "echidna"-like (Fig. 148C); basal spines longer; ventrobasal spines (1) absent on fore and present on mid femur. Ventroapical row of spines on fore femur 2–3; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 6–7 equally spaced bristles posteroventrally on distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tibia with a slight bending in posterior view. Hind metatarsus flattened, almost as long as 2–4 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.1 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2.5 times as long as third costal section. Cross-vein r-m distal to middle of discal cell. 4–5 distinct brown setulae on tegula. ***Abdomen***. Dissected. tergite 1 silvery grey. Lateral spines on first tergite present, 4–5 dark bristles up to 1–1.2 times as long as hind femur's width at base. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.9). Surstyli symmetrical, elongated, right surstylus smaller than left one, right one with a small protrusion at inner margin before apex (Fig. 67A). Genital capsule in ventral view: gonopods unequal in height, left slightly longer than right one, elongated towards surstyli with two small inward projection before apex, subepandrial sclerite rather wide with a small fin-shaped protrusion in its center; hypandrium with two hairy membranous sheaths extended towards phallus (Fig. 67B). Genital capsule in lateral view: both surstyli curved towards sternite, right surstylus broadened in middle; phallus with three short ejaculatory ducts, one with three small spines, phallic guide with 6–7 dorso-dorsolateral spines (one is longer) (Fig. 67C–E).

**FEMALE:** Unknown.

**Etymology**: Named after Mount Moffatt Section of Carnarvon National Park. This is an incredibly diverse park for Diptera and 30 species of *Tomosvaryella* have been collected there, including the holotype for this species. Mount Moffatt is the centrepiece of this diversity and is without a doubt the best hilltop for concentrating Diptera in all of Australia. Two thousand four hundred and nine specimens of pipunculids have been collected in Mount Moffatt section of Carnarvon with 399 specimens on the summit of Mount Moffatt being the most collected in a single day (18 November 2014).

**Examined material: HOLOTYPE:** AUSTRALIA: Queensland, Carnarvon National Park, Mount Moffatt Section, Mount Moffatt Summit, 25°4'S, 148°3'E, 1097m, 20.I.1998, hilltop, J.&A. Skevington & S. Winterton, JSS2938 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: 3 km NE of Mount Webb, 15°3'S, 145°9'E, 1.V.1981, D.H. Colless, Malaise trap, JSS218, JSS8602 (2♂, ANIC); Cape York, Stewart Range, 14°4'S, 143°41'E, 500m, 29.IV-3.V.1961, L.&M. Gressitt, CNCD5554 (1♂, BPBM); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, Brigalow, 20.I–18.III.2010, C. Kelly & A. Coward, Malaise trap, 19271, CNC576686 (1♂, QM); Elizabeth Creek, Boodjamulla National Park, 18°14'S 138°5'E, 170m, Bloodwood open forest, 18–22.IX.2005, M. Mathieson & G. Smith, Malaise trap, 12398, JSS50573 (1♂, QM); Mount Moffatt summit, 25°4'S, 148°3'E, 18.XI.2014, J.H., A.M. & A.W. Skevington, CNC374913 (1♂, CNC).

**Distribution:** Australia (Queensland) (Fig. 129).

**Notes:** The third abdominal tergite of JSS8602 is divided by a suture in the middle (Fig. 152C) but the terminalia characters are similar to the holotype except that in the ventral view, the subepandrial sclerite has two finger-like projections basally close to gonopods. The different shape of the abdomen may be either an eclosion aberration or perhaps was triggered by a mutation or a parasitoid. There are no known adult pipunculid parasitoids.

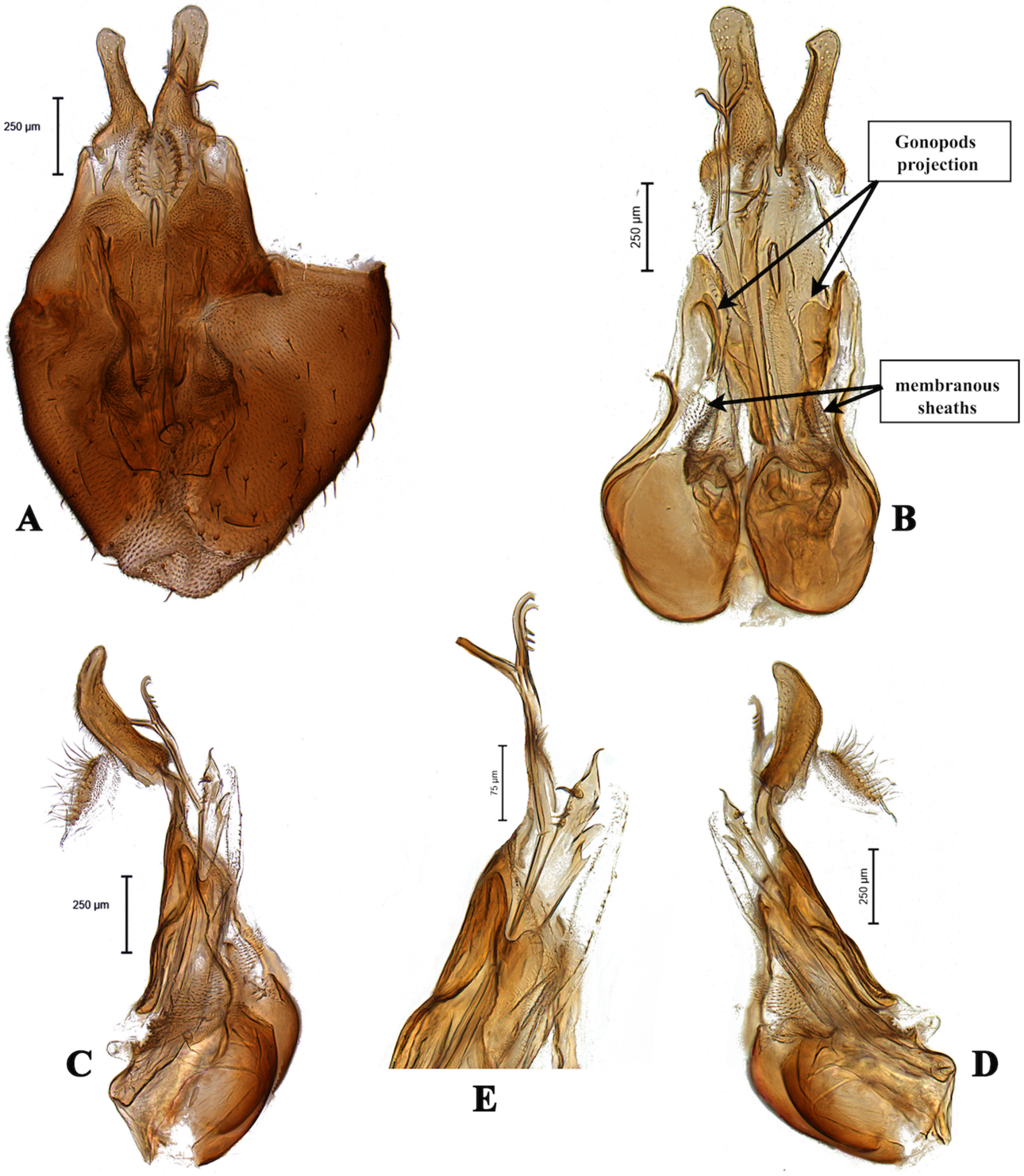



**FIGURE 67**. Male genitalia of *Tomosvaryella moffattensis* **sp. nov.** (JSS2938, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view, **E**) phallus and phallic guise in lateral view.

***Tomosvaryella neboissi* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:B5FCFF17-7FBA-494C-9308-550BFAED6E10
Figs 68A–E, 113, 152A

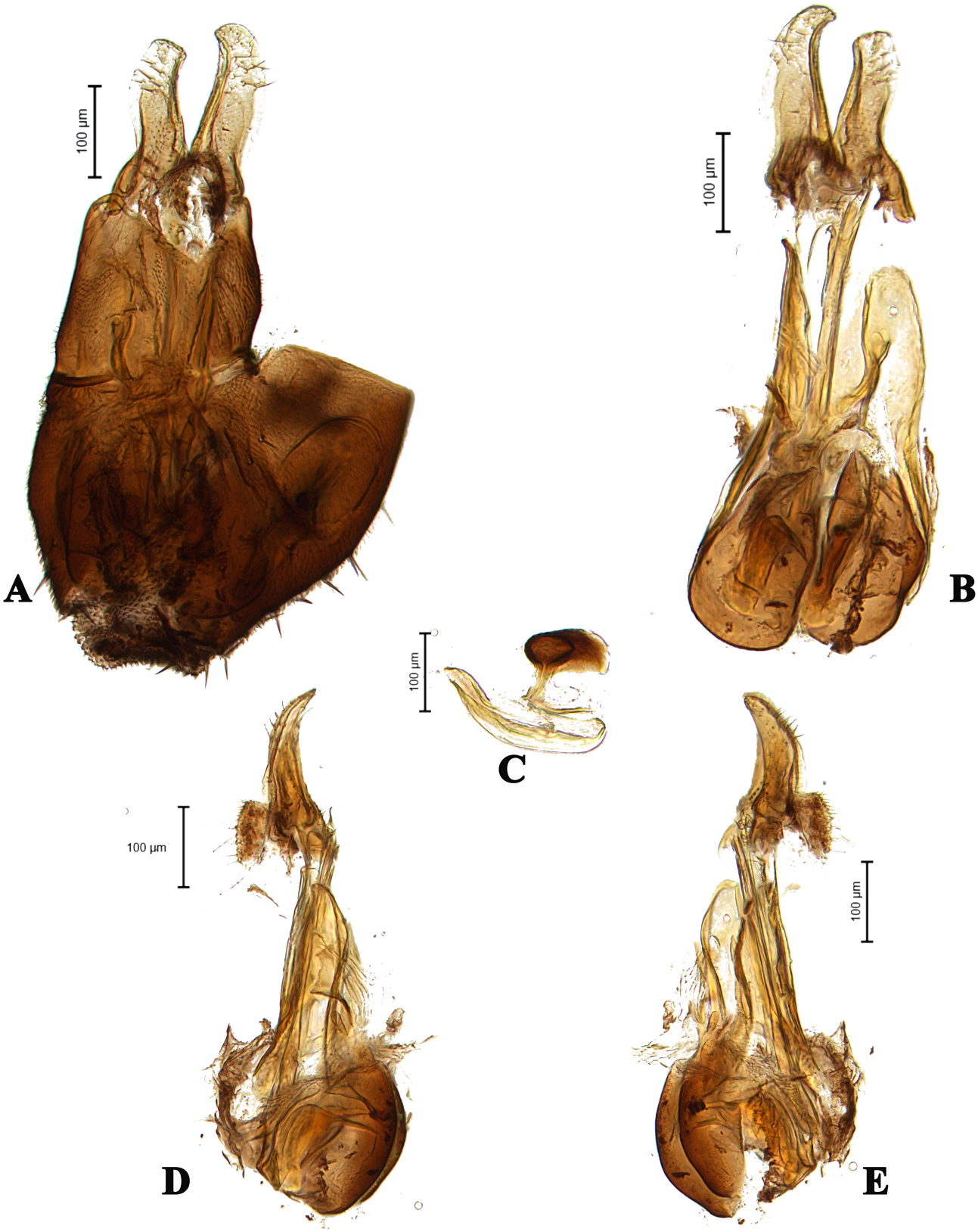



**FIGURE 68**. Male genitalia of *Tomosvaryella neboissi* **sp. nov.** (JSS8776, MVMA) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Diagnosis:** This species can be recognized by a Y-shaped spine along the posterior margin of abdominal sternite 4 (Fig. 152A); elongated surstyli, constricted in basal fourth, curved to each other, with some short bristles before apex in dorsal view (Fig. 68A); gonopods extended towards surstyli, pointed at apex (Fig. 68B); phallic guide with 3–4 short dorsolateral spines in ventral view.

**Description: MALE:** Body length: 2.5 mm. ***Head***. Flagellum brown and tapering; brown pollinose, scape and pedicel dark. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching as long as the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 short pale bristles. Mesonotum black (viewed obliquely from front), silvery pollinose. Scutellum silvery pollinose with scattered short dark bristles. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter without specific feature, grey pollinose with 4–6 short brown bristles ventroapically; ventrobasal spines present (1) on fore and mid femora. Hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres rather flattened (t1–3), hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.4 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Viewed obliquely from front tergites black, tergite 1 silvery grey. Dispersed strong dark bristles on all tergites present. Lateral bristles on first tergite present, 3–5 dark bristles up to as long as half of hind femur's width at base; abdominal sternite 4 with Y shaped spine along posterior margin (Fig. 152A). Genitalia without dissection: ST8 large, round, globular in dorsal view, covered by some dark bristles; membranous area is slit-like; epandrium brown, surstyli brown. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.0). Surstyli elongated, wide at basal fourth, then strongly constricted, curved to each other at apex, left surstylus is longer, both with some distinct short bristles before apex (Fig. 68A). Genital capsule in ventral view: both gonopods extended towards surstyli, pointed at apex; phallic guide with 3–4 short dorso- dorsolateral spines; subepandrial sclerite distinct (Fig. 68B); Genital capsule in lateral view: both surstyli curved towards sternite (Fig. 68D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 68C). **FEMALE:** Unknown.

**Etymology:** This species is named in honour of Arturs Neboiss, who collected two of the three known specimens of this species as well as eight other species and 33 specimens of Australian *Tomosvaryella*.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Prince of Wales Isl[and], Torres Strait, 10°41'S, 142°11'E, 27–30.V.1969, Neboiss, JSS8782 (1♂, MVMA); **PARATYPES**: AUSTRALIA: Queensland: Prince of Wales Island, Torres Strait, 10°41'S, 142°11'E, 27–30.V.1969, Neboiss, JSS8779 (1♂, MVMA); Victoria: Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31'S, 147°27'E, 4.III.1973, JSS8776 (1♂, MVMA).

**Distribution:** Australia (Queensland, Victoria) (Fig. 113).

**Notes:** There is no variation in diagnostic characters between the specimens, so we are confident that all represent one species despite the strongly disjunct populations. We attempted to sequence the specimens, but they failed to amplify.

### *Tomosvaryella ngarrbekiota* Földvari, Skevington & Motamedinia sp. nov.

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Figs 69A–E, 111, 145F, 157B

**Diagnosis:** This species can be recognized by the hind trochanter lacking a keel, but having a distinct spur at the distal end and a group of 10–12 dark short spines ventrobasally (reminiscent of the spiny fur of echidnas (Fig. 145F); short subepandrial sclerite, covered with transverse streaks in ventral view (Fig. 69B); phallic guide with three different-sized spines dorsally (Fig. 69B); hypandrial apodeme divided into two projections distally in ventral view (Fig. 69B); gonopods elongated with a small projection towards phallic guide in ventral view (Fig. 69B).

**Description: MALE**: Body length: 2.6–2.9 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–3 times the length of ocellar triangle. Occiput silvery pollinose, including upper half. ***Thorax***. Postpronotum brownish, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish also from the side. Scutellum silvery pollinose and with a few indistinct pale bristles along the distal

edge. Dorsocentral bristles developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with 2–3 stronger bristles at inner apical corner. Trochanters and base of femora brown, femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/6 of tibiae yellow (otherwise brown), tarsal segments yellow-brown, last segment dorsally darker. Hind trochanter without keel, but distinct spur at the distal end and a group of 10–12 dark short spines ventrobasally (Fig. 145F). Fore femur with two long spines ventrobasally and without ventroapical row of spines, mid femur with 4–6 short, black ventroapical spines and 1–2 long ventrobasal bristles, no spines on hind femur, only 6–8 pale bristles posteriorly equally distributed on distal ¼ (half as long as width of hind tibia at the distal end). Subapical (distal) spines on first four tibiae present (short); ventrobasal spines (2) present on fore and mid femora. Hind metatarsus flattened (all 5), first tarsomere as long as 2–3 combined; ventral bristles scrub-like, yellow. Pulvilli as long as 2/3 of last tarsal segment. ***Wing***. Length: 3.0–3.2 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 4–5 times as long as third costal section (3rd costal section very short). Cross-vein r-m at middle of discal cell. 5–6 dark bristles on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter spots are larger). Dispersed short dark bristles on tergites present, the longest on ST8 and up to twice as long as width of hind tibia at base. Lateral bristles on first tergite present, 8–10 black bristles up to twice as long as width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 large, shiny black; membranous area roundish, mostly positioned posteriorly; epandrium paler, narrow; surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium dark brown, wider than long (MLE:MWE = 0.7). Surstyli light brown, rather symmetrical, elongated with broad base and inward bent tips, left surstylus longer than right one (Fig. 69A). Genital capsule in ventral view: subepandrial sclerite short, covered with transverse streaks; gonopods elongated towards surstyli with a small projection towards phallic guide (Fig. 69B), phallic guide with three different-sized spines dorsally (longer one closer to apex); hypandrial apodeme divided into two projections distally (Fig. 69B). Genital capsule in lateral view: surstyli rather curved toward sternite (Fig. 69D–E); phallus with three ejaculatory ducts, one bearing a small spine; ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 69C).

**FEMALE:** Body length: 3.6 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.5 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, somewhat pollinose in the middle. Enlarged ommatidia silvery shining. Hind trochanter with two patch of spines, ventrobasal spines denser than ventroapical ones, without spur at the distal end. Pulvilli and claws about 1–1.2 times as long as last tarsal segment on metatarsi. Female abdomen with silver spots on sides of tergites 3–6. Base of ovipositor dark, gray pollinose with scattered bristles, piercer light brown. Viewed laterally, piercer straight, reaching middle of 3rd segment. LP:LB = 2.0. LDP:LPP = 2.2. (Fig. 157B).

**Etymology:** Named in reference to the spiny native mammal, Short-beaked Echidna (*Tachyglossus aculeatus* (Shaw 1792)), which comes to mind when looking at the dense, spiny area of the trochanter of males of this species. The Kunwinjku people of Western Arnhem Land have a lovely name for echidna: ngarrbek. We add the Greek 'iota' to the ending of the name as it refers to anything small.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: ~3 km N[orth] of Denham, 25°55'S, 113°32'E, hilltop, 12.xii.1999, J. Skevington, JSS7379 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E; 775m, on hilltop, open *Eucalyptus*, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16151 (1♀ ANIC); 22°24'S, 118°15'E, 718m, JSS16219 (1♂ ANIC); Mount Magnet, Mount Waramboo, 28°2'S, 117°49'E, hilltop, 14.xii.1999, J. Skevington, JSS7435, JSS7453, JSS7464, JSS7466, JSS7470–1 (1♂, CNC; 5♂, QM); ~3 km North of Denham, 25°55'S, 113°32'E, ~hilltop, 12.xii.1999, J. Skevington, JSS7318, JSS7321, JSS7323, JSS7327, JSS7329, JSS7336, JSS7347–8, JSS7366–8, JSS7372–3, JSS7388–9, JSS7394, JSS7401, JSS7404–5, JSS7408-9, JSS7483 (1♂, CNC; 20 ♂, QM; 1♂, USNM).

**Distribution:** Australia (Western Australia) (Fig. 111).

**Notes:** All known specimens were collected at hilltops in Western Australia, most of them at one hilltop north of Denham. See the note for *T. minychoma* **sp. nov.** for more information on this remarkable little hilltop. Intraspecific genetic distance ranges 0.5–2%. This species is genetically most similar to *T. cona* **sp. nov.** (5.3–10.2% pairwise divergence) (Supplementary file 3).

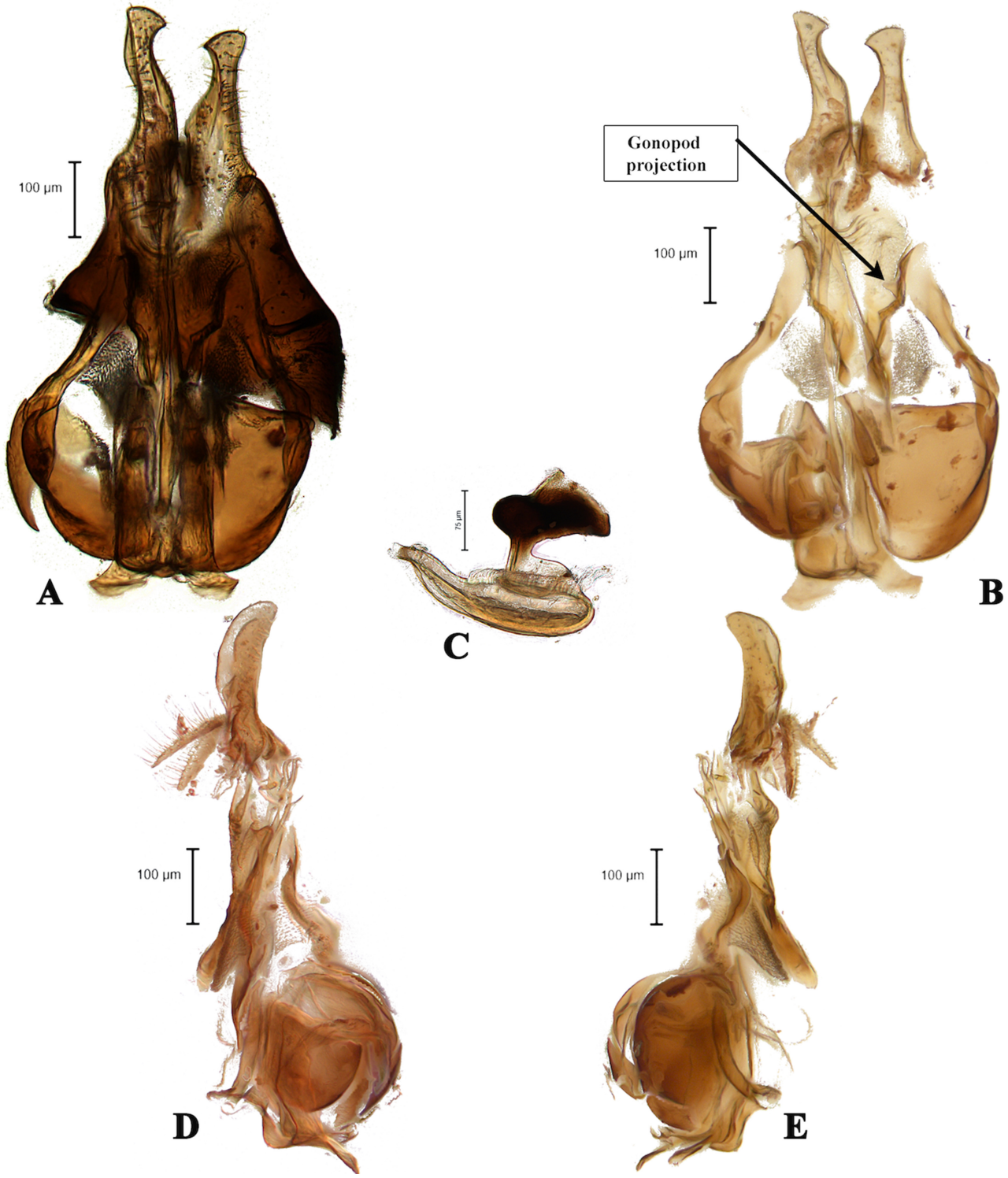



**FIGURE 69**. Male genitalia of *Tomosvaryella ngarrbekiota* **sp. nov.** (JSS7379, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella novaezealandiae*** **Tonnoir, 1925**
Figs 70A–E, 132, 151B, 153A

**Diagnosis:** This species can be recognized by hind trochanter with 8–12 short spines in a row; hind femur with 15–20 long bristles posteroventrally (Fig. 151B); elongated surstyli in dorsal view (Fig. 70A); phallic guide with 4–6 dorso-dorsolateral spines; one of ejaculatory ducts with 3–5 spines in ventral view (Fig. 70D); elongated gonopods with two small triangular lobes on inner margin (Fig. 70B).

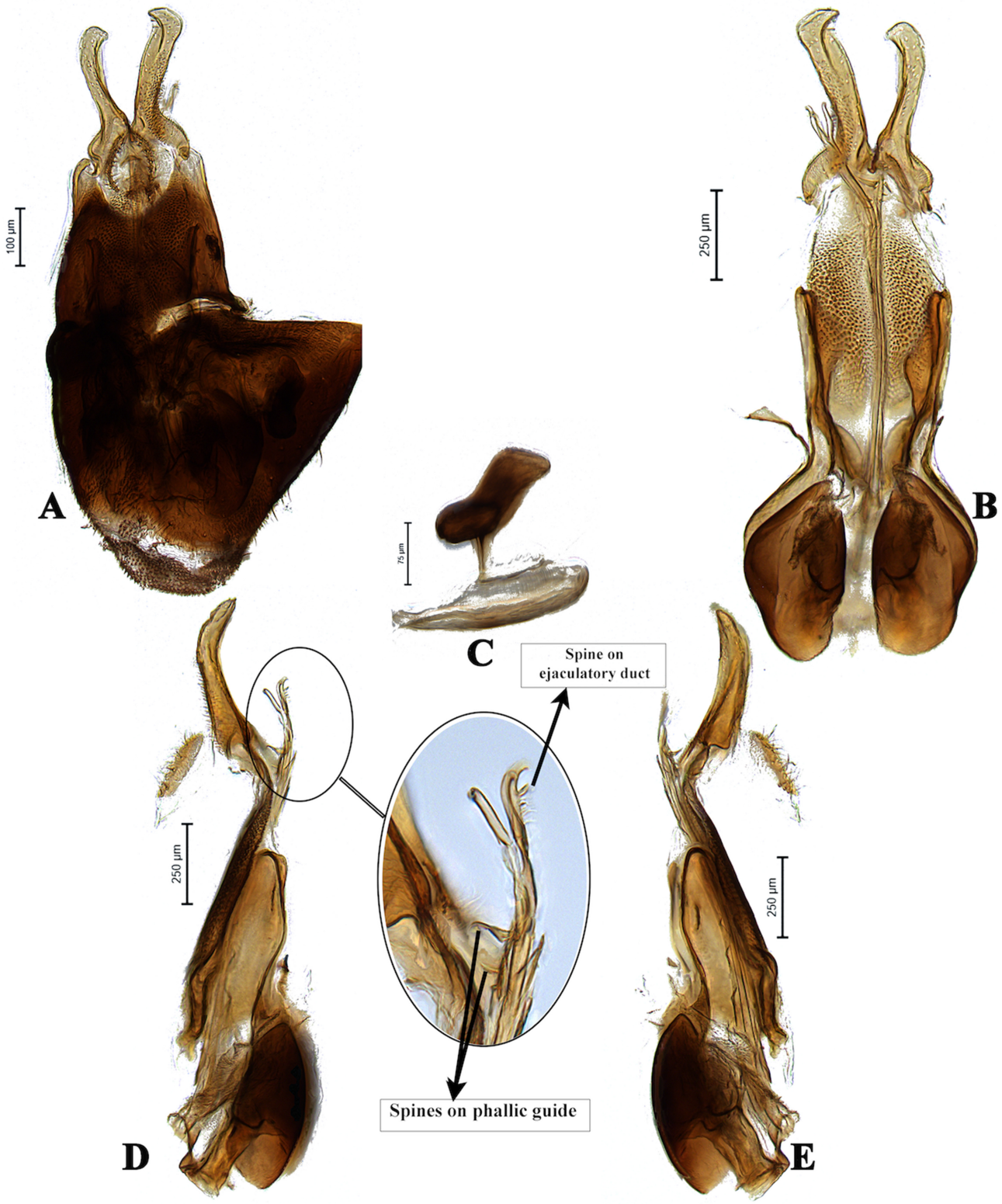



**FIGURE 70**. Male genitalia of *Tomosvaryella novaezealandiae* (CNC374981, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Redescription: MALE:** Body length: 3.0–3.1 mm. ***Head***. Flagellum acuminate; dark brown, grey-white pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for a distance of 9 facets. Occiput silvery pollinose, slightly less so on upper 1/3 with scattered short black bristle. ***Thorax***. Postpronotum pale, with 4–5 long dark brown bristles. Mesonotum (viewed obliquely from front)

brownish pollinose, anterior part greyer with scattered long bristles at anterior supra-alar area. Scutellum brown pollinose and with 6–8 short back bristles along the distal edge. Dorsocentral bristles distinct in two rows. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 strong, dark bristles. Trochanters and femora dark brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow-brown (tibiae otherwise dark brown), tarsal segments dark brown, ventrally paler, last segment darker. Hind trochanter grey pollinose with some short spines in a row; ventrobasal spines present on mid and absent on fore femur. Ventroapical row of spines on fore femur 3–4; 5–6 short dark spines on mid femur; hind femur without ventroapical spines, except 12–14 long bristles posteroventrally, bent towards distal tip of femur, longest up to 2 times the width of hind tibia at distal end (Fig. 151B). Subapical spines on first four tibiae present (short). Hind tibia bent in posterior view. Hind metatarsus and tarsomeres 2–3 moderately flattened, metatarsi almost as long as 2–5 combined, with scrub-like bristles along posterior edge. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with two dark bristles, one is longer. Fourth costal section 2 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Viewed obliquely from front tergites brown pollinose, tergite 1 silvery grey. Dispersed short dark bristles on all tergites present, longest on tergite 5 up to 1/3 of the width of hind tibia at distal end. Lateral bristles on first tergite present, 5–8 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible. Genitalia without dissection: ST8 medium sized, ovate in dorsal view, pale brown and with some distinct bristles; membranous area ovate dorsally, narrow and approaching epandrium ventrally; epandrium brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.6). Both surstyli elongated, broadened in basal fourth, narrowed in middle, inclined apically to each other; left surstylus is longer and wider than right one (Fig. 70A). Genital capsule in ventral view: gonopods elongated towards surstyli with two small triangular lobes on inner margin, equal in height; phallic guide with 4–6 dorso-dorsolateral spines, one is longer than others, subepandrial sclerite wide; phallus with three ejaculatory ducts, one with 3–5 spines (Fig. 70B); Genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite in apical third; right surstylus curved towards sternite (Fig. 70D–E). Ejaculatory apodeme tube-like, bent (Fig. 70C).

**FEMALE:** Body length: 2.9 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.5–1.7 times the width at antennae; completely silver-grey pollinose, only shiny black directly in front of ocellar triangle, ca. 1/6 of the frons, very short transition zone; frons with a short ridge in front of the ocelli in the median line. Enlarged ommatidia, ocellar triangle shining. Pulvilli and claws about two times as long as last tarsal segment, smaller than metatarsi; Upper side of basal costal cell with one dark bristle and two shorter bristles. Female abdomen with silver spots on sides of tergite 3–6. ***Ovipositor.*** Straight in ventral view, robust and long, curved upwards in lateral view (yellow piercer, dark brown base), reaching distal end of 2nd segment; base grey pollinose with occasional brown bristles. LP:LB = 2.6. LDP:LPP = 2.7. (Fig. 153A).

**Examined material: Type material examined: PARATYPE**: NEW ZEALAND: Cass, 6.XII.1924, A. Tonnoir, 639, JSS50572 (1♂, CMNZ); **Other material examined:** AUSTRALIA: Australian Capital Territory: Black Mountain Reserve, 35°16'S, 149°6'E, 4.I.1980, Z. Liepa, JSS9187 (1♂, ANIC); Black Mountain, 35°16'S, 149°6'E, 25.X.1981, Z. Liepa, JSS9188 (1♂, ANIC); Black Mountain, Canberra, 35°16'S, 149°6'E, 18–23.II.1985, W.W. Middlekauff, flight interception trap, JSS8455 (1♂, CAS); Queensland: Kroombit Tops National Park, hilltop, 24°27'N, 150°56'E, 21.XII.2014, J.H., A.M. & A.W. Skevington, CNC384418 (1♂, CNC); Mount Moffatt summit, 25°4'S, 148°3'E, 1097m, 18.XI.2014, J.H., A.M. & A.W. Skevington, CNC374958, CNC374981 (2♂, CNC); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 7.III.1998, J.&A. Skevington, hand collected, JSS3633 (1♂, QM); Victoria: Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 21.X.2014, 22.X.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373276–81, CNC373283–91, CNC373395–401, CNC373403, CNC373405–7, CNC373409–19, CNC373421, CNC373423, CNC373425, CNC373427–37, CNC373440–56, CNC373458–62, CNC373541 (62♂, CNC; 10♂ QM; 2♂, USNM); Tasmania: 3 km south of Spreyton, 41°15'S, 146°20'E, dry sclerophyll forest, 21.XII.0–9.I.1999, J.&A. Skevington, Malaise trap, JSS5057 (1♂, QM); Near Mertha Park, 41°14'S, 147°11'E, [in dry sclerophyll forest], 14.XII.1998–9.I.1999, J.&A. Skevington & S. Winterton, Malaise trap, JSS5074 (1♀, QM); Victoria: Dart/Mitta River Junction, Locality L, 36°31'S, 147°27'E, 23–25.X.1973, Dartmouth Survey, JSS8749 (1♂, MVMA); Dartmouth Survey, Eight Mile Creek, Locality JA, 37°13'S, 146°26'E, 12.IV.1973, JSS8764 (1♂, MVMA); Warrandyte, 37°44'S, 145°13'E, 18.XI.1928, G.F. Hill, JSS8676 (1♂, ANIC); Hattah-Kulkyne NP, Warepil Lookout, 34°43'S, 142°18'E, 18.X.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373059, CNC373063, CNC373153, CNC373162, CNC373170, CNC373173–4, CNC373181 (4♂, CNC; 4♂, USNM); Wyperfeld National Park, Eastern Lookout,

35°36’S, 142°7’E, 22.X.2014, J.H., A.M. & A.W. Skevington, CNC383849–70 (22♂, CNC); New South Wales: 14 km NW of Braidwood, 35°26’S, 149°48’E, 4.XI.1975, D.H. Colless, JSS8522 (1♂, ANIC); 8 km S Mendooran, 31°50’S, 149°6’E, 28.I.1987, G.&A. Daniels, JSS8912 (1♂, QM); Cudgegong River, 16 km N Mudgee, 32°48’S, 149°49’E, 30.XI.1982, D.S. Horning, Jr., Malaise trap, JSS9156 (1♂, ANIC); Eucumbene Dam, 36°6’S, 148°36’E, 18.XI.1962, D.H. Colless, JSS8665 (1♂, ANIC); Jindabyne, 36°25’S, 148°37’E, 21.II.1969; 22.II.1969, Neboiss, JSS8780; JSS8787–88 (3♂, MVMA); Royalla, 35°31’S 149°9’E, 29.III.1961, D.H. Colless, JSS8639 (1♂, ANIC); Warrumbungle National Park, Buckley’s Creek, 31°17’S, 149°0’E, 12–17.XII.1995, Sharkey, CNCD3594 (1♂, CNC); Warrumbungle National Park, 31°14’S 149°1’E, 19.X–3.XI.1997, J. Skevington & S. Winterton, Malaise trap, JSS8438 (1♂, QM); Wombat, near Young, 34°25’S, 148°15’E, 13.XI.1966, Z. Liepa, JSS9211 (1♂, ANIC); South Australia: Vivonne Bay, Kangaroo Island, 35°45’S, 137°37’E, II.1926, Museum Expedition, JSS8722 (1♂, SAM); Western Australia: Charles Darwin Reserve, Edna Springs, 29°30’S, 117°3’E, Granite sheet, *Acacia* flowering herbs, 14–19.IX.2009, Lambkin & Monteith, Malaise trap, 18309, CNC591802 (1♂, QM); Fitzgerald River National Park, Old Ongerup Road near Hammersley River, 33°45’S, 119°40’E, ANIC Bulk Sample 2189, 219m, mallee granite outcrop, 2–16.XI.2003, J. Recsei & C. Lambkin, Malaise trap, ANIC Bulk Sample 2189, JSS16210 (1♂, ANIC); Karara, 16.9km Southeast of Bolada Camp, 29°15’S, 116°41’E, 312m, *Acacia* woodland, flowering herbs, 18–24.IX.2009, Lambkin & Monteith, Malaise trap, 18407, CNC575347 (1♂, QM); Thomas River estuary, Esperance District, 33°52’S, 123°1’E, 4.XI.1977; 8.XI.1977, D.H. Colless, Malaise trap, JSS9226, JSS9231 (2♂, ANIC); Charles Darwin Reserve, Edna Springs, 29°30’S, 117°3’E, Granite sheet, *Acacia,* flowering herbs, 19–23.IX.2009, Lambkin, Monteith, Malaise trap, 18439, CNC575119 (1♂, QM); Lochada, 430m S Bolada Camp, 29°12’S, 116°31’E, 288m, *Acacia Eremophila* scrub, 15–16.IX.2009, Lambkin, Monteith, Malaise trap, CNC576392 (1♂, QM); Northern Territory: Kakadu National Park, Mirrai Lookout, 12°52’S, 132°42’E, hilltop, 27.IX.1998, J.&A. Skevington, hand collected, JSS4136 (1♂, QM); NEW ZEALAND: Goldney Saddle, 43°16’S, 171°35’E, 671m, 1.II.1962, E.G. White, sweep net, JSS14524–5 (2♂, LUNZ); Lincoln College, 43°39’S, 172°29’E, ex. weeds, 9.I.1969, M.G. McPherson, sweep net, JSS14519 (1♂, LUNZ); NC, Arthur Pass National Park, Arthur Pass Village, 42°57’S, 171°34’E, 750m, meadow, 5–7.III.2000, H. Goulet, yellow pan trap, CNCD137560 (1♂, CNC); Northland: Castaway Camp area, Great I., Three King Is., D.S.I.Q. Exp., 34°9’S, 172°8’E, 120m, XI.1973, bleached by alcohol, JSS14130 (1♂, NZAC).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia, Tasmania, Victoria, Western Australia), New Zealand (North Island, Northland, South Island, Three Kings Island) (Fig. 132).

**Notes:** Widespread in forested regions of Australia and New Zealand as far north as Kroombit Tops in Queensland. Intraspecific genetic distance is 0.2%. This species is genetically most similar to *T. velutina* **sp. nov.** (3.9–6.0% pairwise divergence) (Supplementary file 3).

### ***Tomosvaryella nyctias*** **(Perkins, 1905)**

Figs: 71A–E, 133, 154B

*Pipunculus nyctias* Perkins, 1905

**Diagnosis:** This species can be recognized by short surstyli curved towards each other in dorsal view (Fig. 71A); long subepandrial sclerite; elongated gonopods, right one with a triangular projection; distinct hypandrial apodeme in ventral view (Fig. 71B); phallic guide with dense hairs dorsomedially in lateral view (Fig. 71D–E).

**Redescription: MALE:** Body length: 2.5–2.8 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, longer than usual; lower part distinctly silver pollinose, shorter than usual; eyes touching for distance equal to 1–1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) shiny brown, without greyish pollinosity. Scutellum shiny with 4–6 weak bristles along the distal edge. Dorsocentral bristles distinct, pale, somewhat longer along frontal edge, pale bristles around postpronotum absent. Halter, knob pale with dark brown spot at tip, stem brown. ***Legs***. Mid coxa with 3 long dark bristles (one is shorter). Trochanters pale brown with some yellow distally, femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal ¼ of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown,

ventrally somewhat paler, last segment darker. Hind trochanter with no special features, in posterior view it looks like a half circle, straight on dorsal side; ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur 3–4; 6–7 small, black spines on mid femur; hind femur without ventroapical spines, except 20–22 equally spaced bristles posteroventrally, longer on the distal half, longest at 2/3 from the base, in length up to the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tibia slightly bent in posterior view. Hind metatarsus slightly flattened and almost as long as 2–5 combined and with scrub-like bristles ventrally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5–2.6 mm. Upper side of basal costal cell with one long brown bristle. Fourth costal section 1.5–1.7 times as long as third costal section (fourth section appears to be very short). Cross-vein r-m at proximal 1/3 of discal cell, sometimes more proximal. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites shining brown, tergite 1 silvery grey, no silvery pollinose on tergites. Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to 0.5 times the width of hind tibia at distal end. Lateral bristles on first tergite present, 2–3 weak bristles up to 0.4–0.5 times as long as width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.8–2.2 times as long as ST8. Genitalia without dissection: ST8 medium sized rounded in dorsal view, brown and with the occasional distinct bristles, otherwise velvet-like coverage; membranous area round, directed posteriorly; epandrium brown (sometimes yellow distally), surstyli pale brown and short. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.7). Surstyli symmetrical and short, widened at base, moderately narrowed in middle, both surstyli inclined together (Fig. 71A). Genital capsule in ventral view: phallic guide straight and slender, gonopods equal in height, elongated towards surstyli, right one with a triangular projection, subepandrial sclerite long, widened at base; hypandrial apodeme distinct (Fig. 71B). Genital capsule in lateral view: right surstylus straight, bent towards sternite in apical fourth; left surstylus straight in ventral margin; both surstyli more broadened at middle; phallic guide pointed at apex with dense hairs dorsomedially (Fig. 71D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 71C).

**FEMALE:** Body length: 2.5 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.5 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, in the transition zone, pollinose area grades to shiny black; frons slightly depressed at the point where it is widest. Enlarged ommatidia silvery shining. Pulvilli and claws about 2–2.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with no silver spots on sides of tergites. ***Ovipositor.*** Base of ovipositor dark brown with some scattered short dark bristles, piercer straight. LP:LB = 3.3. LDP:LPP = 3.5. (Fig. 154B).

**Examined material: Type material examined: LECTOTYPE [HERE DESIGNATED]:** AUSTRALIA: Queensland: Bundaberg, 24°52’S, 152°21’E, vi.1904, CNCD5532, (1♂, BPBM); **PARALECTOTYPES**: AUSTRALIA: same data as lectotype, BMNH(E)964034, CNCD5531, CNCD5533 (1♂, BMNH; 1♂,1♀, BPBM); North Queensland, 16°54’S, 145°45’E, JSS4168 (1♂, ZMAN); **Other material examined:** AUSTRALIA: New South Wales: Cabbage Tree Creek, Clyde Mountain, 35°35’S, 150°1’E, 1.II.1973, D.H. Colless, JSS8553 (1♂, ANIC); Coocumbac Island Nature Reserve, Taree, 31°54’S, 152°27’E, ex. floodplain, rainforest, 21–30.XI.1994, G. & T. Williams, [specimen badly faded], JSS15984 (1♂, QM); Bruxner Park, 30°14’S, 153°6’E, 19.IV.1970, D.H. Colless, “site (1) & (2) see field notes”, JSS8673 (1♂, ANIC); Brunswick Heads, 28°32’S, 153°33’E, 22.v.1966, Z. Liepa, JSS9208 (1♂, ANIC); Coocumbac Island Nature Reserve, Taree, 31°55’S, 152°27’E, floodplain rainforest, 24–25.x.1994, G.&T. Williams, JSS8730 (1♂, AMS); Nelligen (tidal flat), 35°38’S, 150°8’E, 1.ii.1973, D.H. Colless, JSS8498 (1♂, ANIC); Pisgah Ridge near Glenbrook, Blue Mountains National Park, 33°50’S, 150°33’E, 210m, 5.ii–25.iii.1988, G.R. Brown, Malaise trap, JSS8747 (1♀, ASCU); Royal National Park, E waterfall rail. stat., 34°9’S, 151°1’E, diff. types forest, 12.x.2002, leg. B. Merz/10, JSS14362 (1♂, MHNG); Sydney, Centennial Park, 33°53’S, 151°13’E, ex. eucalypt forest, 9.x.1994, B.J. Sinclair, [badly eaten out by dermestids], JSS9686–7 (2♂, CNC); Toukley, 33°16’S, 151°32’E, 18.i.1963, Z. Liepa, JSS9233 (1♂, ANIC); Northern Territory: 5 km NNW of Cahills Crossing, East Alligator River, 12°5’S, 132°35’E, 9.VI.1973, D.H. Colless, JSS8658 (1♂, ANIC); 22 km WSW Borroloola, 16°8’S, 136°7’E, 17.iv.1976, D.H. Colless, at light, JSS9212 (1♂, ANIC); Barramundi Creek, 13°19’S, 132°26’E, woodland, 13.v.1998, R. Lynch, Malaise trap, JSS7750 (1♂, QM); woodland, 14.v.1998, R. Lynch, Non-Riparian Zone; Malaise trap 3, JSS7904 (1♂, QM); Koolpin Crossing, [South Alligator River], 13°33’S, 132°33’E, riparian zone, 20.v.1998, R. Lynch, Malaise trap 3, JSS7906 (1♂, QM); Queensland: 1 km N of Eclectus, Iron Range, 12°46’S, 143°17’E, 20m, 10.VII.1997, G. and A. Daniels, JSS50571 (1♂, QM); 2 km East Almaden, 17°20’S, 144°41’E, 22.IV.1983, J.F. Donaldson & J.F. Grimshaw, D.vac, JSS8958 (1♂, QDPC);

2 km SE Drillham, 26°38’S, 150°0’E, along creek, 8.X.1974, I.D. Galloway, JSS8940 (1♂, QDPC); 20 km E Mareeba, 17°0’S, 145°26’E, 15.IV.1980, G.F. Hevel & J.A. Fortin, JSS10522 (1♂, USNM); 3 km NE of Mount Webb, 15°3’S, 145°9’E, 30.IV.1981, D.H. Colless, Malaise trap, JSS8609 (1♂, ANIC); Acacia Ridge, 27°35’S, 153°1’E, 23.IX.1962, E.B.Teh, JSS103 (1♂, QM); Birthday Creek trail near Paluma, 18°59’S, 146°9’E, 774m, 22.XI.2014, J.H., A.M. & A.W. Skevington, CNC374674 (1♂, CNC); Camp Mountain, SE Queensland, 27°24’S, 152°53’E, open sclerophyll gully, 27.XI–7.XII.1979, Marks, Malaise trap, JSS8930 (1♂, QDPC); Carnarvon Station (CN2M1), 24°49’S, 147°45’E, 757m, brigalow on grassy hillside, 24.XI–13.XII.2010, C. Zwick, Malaise trap, CNC575279 (1♂, QM); Maroochy Horticulture Research Station, Nambour, SE Queensland, 26°37’S, 152°57’E, 15–22.III.1985, Malaise trap, JSS8949–50 (2♂, QDPC); Prince of Wales Island, Torres Strait, 10°41’S, 142°11’E, 29.V.1969, Neboiss, JSS8784 (1♂, MVMA); Connor’s River, 99.7 km SWS Sarina, 22°41’S, 149°7’E, 5.vii.1971, Z. Liepa, JSS9161 (1♂, ANIC); Mount Coot-tha foothills, 27°29’S, 152°57’E, 26.vi.1985, Z. Liepa, JSS9203–4 (2♂, QM); Mount Glorious, Scrub Creek Road, Brisbane Forest Park, 27°25’S, 152°50’E, 9–16.i.1998, N. Power, Malaise trap, JSS7778 (1♂, QM); Pine Mountain, summit, central Queensland, 21°45’S, 148°50’E, 600m, vine scrub, 5–6.x.1999, C.J. Burwell, S.G. Evans, Malaise trap, JSS9145 (1♂, QM); Proserpine, Lilly pool Site:XY18, 16°52’S, 179°53’W, 30m, 15–22.viii.2007, J. Stanisic, Malaise trap, 15048, CNCD159558 (1♀, CNC); West Burleigh, 28°6’S, 153°26’E, 4.v.1970, Z. Liepa, JSS9175–6 (2♂, ANIC); 4 km up Black Mountain Road via Kuranda, 16°49’S, 145°38’E, 14.IX–12.X.1982, Malaise trap, JSS8968 (1♂, QDPC); Brisbane Forest Park, Enoggera Creek at Scrub Road Crossing, 27°26’S, 152°50’E, 200m, 6–9.XI.1995, M.E. Irwin, CNCD147459 (1♂, CNC); Kuranda, 15 km NW Cairns, 16°49’S, 145°38’E, tropical rainforest and riverine habitat, 9.X.1983, E.I. Schlinger & M.E. Irwin, JSS3944 (1♂, INHS); Brisbane Forest Park, Scrub Creek, 27°26’S, 152°50’E, 28.IX–15.X.2002, J. Skevington, J.M. Cumming, Malaise trap, JSM564, JSS13115 (1♂, CNC); Lamington National Park, 28°12’S, 153°10’E, 25.V.1962, J. Cribb, JSS8250 (1♂, QM); Mareeba Shire, Kuranda, Russet Park, North Queensland, 16°49’S, 145°38’E, 460m, 22.X.1987; 28.X.1987; 30.X.1987, Thomas W. Davies, flight interception trap, Thomas W. Davies Collection donated to California Academy of Sciences 1987, JSS8465, JSS8467, JSS8471, JSS8473 (4♂, CAS); Nairana National Park (NR2M), 21°34’S, 146°55’E, 196m, closed *Acacia* woodland, 10.XI–7.XII.2010, R. Raven, H. & D. Hanrahan, Malaise trap, CNC576499, CNC576504 (2♂, QM); near Teddington Weir S of Maryborough, 25°39’S, 152°40’E, 25.IX.1994, G. & A. Daniels & C.J. Burwell, JSS5139 (1♂, QM); Australian Capital Territory: Black Mountain, 35°16’S, 149°6’E, sclerophyll gully, 20–31.III.1980, B.K. Cantrell, Malaise trap, JSS8945 (1♂, QDPC); Victoria: Dartmouth Survey, Dart-Mitta River Junction, Locality L, 36°31’S, 147°27’E, 4.III.1973, JSS8765 (1♂, MVMA); INDONESIA: West Java: Bogor Botanical Gardens (Kebon Raja) [Kebun Raya], 6°36’S, 106°48’E, 3.VIII.1964; 4.VIII.1964, M. Delfinado, CNCD5526–27 (1♂, 1♀, BPBM); Bogor, West Java, 6°35’S, 106°48’E, 22.VIII.1964, J.L. Gressitt, CNCD5525 (1♂, BPBM); Mussau, Boliu, 1°32’S, 149°39’E, 3.VI.1962, Noona Dan Expedition 61–62, CNCD5529 (1♂, BPBM); Mussau, Schadel Bay, 1°30’S, 149°40’E, 3.VI.1962, Noona Dan Expedition 61–62, CNCD5530 (1♂, BPBM); Yalom, 4°25’S, 151°45’E, 1000m, 20.V.1962, Malaise trap, Noona Dan Expedition 61–62, CNCD5528 (1♂, BPBM); MALAYSIA: Sarawak: SW of Tapuh, Borneo, 1°18’N, 110°25’E, 4–9.VII.1958, T.C. Maa, CNCD5523–5524; JSS8478 (3♀, BPBM); Sadong, Kampong, Tapuh, Borneo, 1°10’N, 110°34’E, 450m, 4–9.VII.1958, T.C. Maa, CNCD5522; JSS8477 (2♂, BPBM); NEW CALEDONIA: Noumea, 22°16’S, 166°26’E, 22–23.XI.1963, R. Straatman, CNCD5607 (1♂, BPBM); Tao, 20°34’S, 164°48’E, 10.II.1963; 8–10.II.1963, C. Yoshimoto and N. Krauss, Malaise trap, CNCD253913; CNCD5611 (2♂, BPBM); Yahoue, 22°11’S, 166°30’E, 20.II.1963, C. Yoshimoto and N. Krauss, Malaise trap, CNCD5615 (1♂, BPBM); PAPUA NEW GUINEA: East New Britain: Bainings Mountains: Raunsepna, 4°26’S, 151°47’E, 19–26.V.1999, C. Mitparingi, Malaise trap, CNCD29005; CNCD28999; CNCD29004; CNCD29007 (4♂, CNC); West New Britain: Lindenhafen, S coast, 6°15’S, 150°28’E, 2m, Cocoa grove, 23.IV.1956, J. L. Gressitt, JSS5521 (1♀, BPBM); Maprik, 3°38’S, 143°3’E, 21.III.1964, D.H. Colless, JSS9266 (1♂, ANIC); Woitape, Wharton Range, 19.X.1963, D.K. McAlpine, JSS8732 (1♂, AMS); PHILIPPINES: Palawan: Mantalingajan, Pinigisan, 8°49’N, 117°40’E, 600m, outside forest, 9.IX.1961, G.A. Samuelson, Malaise trap, Noona Dan Expedition 61–62, JSS5520 (1♂, BPBM); THAILAND: Chanthaburi: Prew, 12°37’N, 102°8’E, 25–30.IV.1958, T. C. Maa, CNCD5517 (1♂, BPBM); Trang: Khaophappha, Khaochang, 7°32’N, 99°36’E, 200 to 400m, 2.I.1964, G.A. Samuelson, light trap, JSS5518–19 (2♂, BPBM).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Northern Territory, Queensland, Victoria), Indonesia (Java), Malaysia (Sarawak), New Caledonia, Papua New Guinea (New Britain), Philippines (Palawan), Thailand) (Fig. 133).

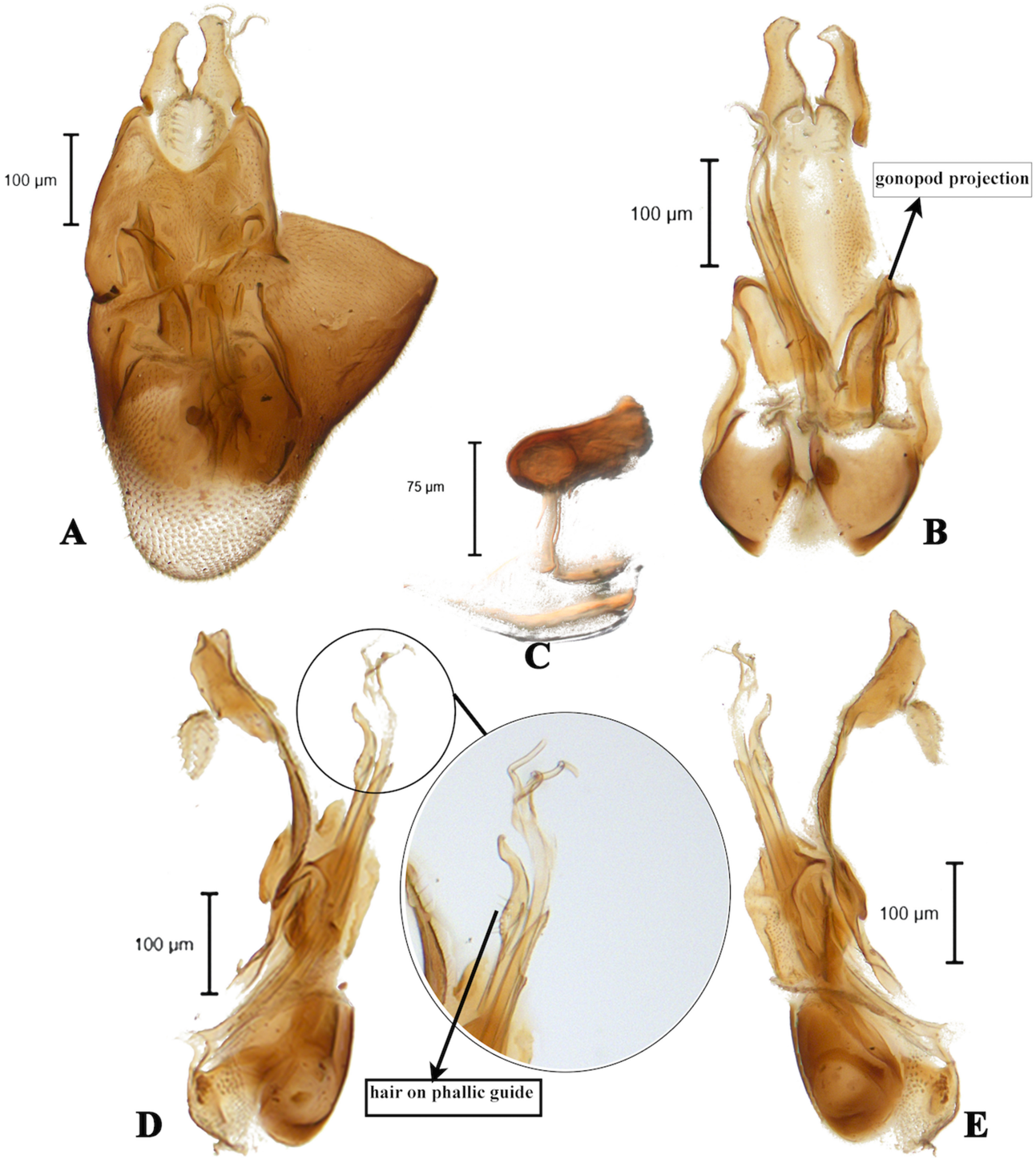



**FIGURE 71**. Male genitalia of *Tomosvaryella nyctias* (JSS7904, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Notes:** Based on terminalia characters, some specimens from Thailand (CNCD5517, JSS5518–19), Philippines (JSS5520), Malaysia (CNCD5522–4, JSS8477–8), Indonesia (CNCD5525–30), New Caledonia (CNCD5607, CNCD5611, CNCD5615, CNCD253913) and New Guinea (JSS5521, CNCD28999, CNCD29004–5, CNCD29007, JSS9266) are very close to Australian *T. nyctias*. Among New Guinea specimens, the specimen JSS8732 appears identical to the lectotype whereas Indonesian specimens are the most different. The latter present a few differential genitalia features, including the shape of surstyli in dorsal view, left surstylus in lateral view and the shape of gonopods. As these specimens from outside of Australia are too old to easily sequence, we leave them as *T. nyctias*

until further study provides fresh specimens for DNA sequencing. Specimen CNCD5532 is hereby nominated as the lectotype to fix and ensure consistent interpretation of the name. *Tomosvaryella nyctias* is genetically most similar to *T. luma* **sp. nov.** (8.7–11.1% pairwise divergence) (Supplementary file 3).

***Tomosvaryella parkeri* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:5BFE6F07-15FE-4F5F-B6DF-7FB80DBE9136
Figs 72A–E, 111, 155C

**Diagnosis:** This species can be recognized by elongated surstyli that are moderately narrowed to the apex (Fig. 72A); unequal gonopods, right gonopod shorter with two triangle-shaped projections on inner margin in ventral view (Fig. 72B); distinct and long hypandrial apodeme (Fig. 72B); phallic guide with 3–5 dorsolateral spines (Fig. 72B, D–E).

**Description: MALE:** Body length: 3.1 mm. ***Head***. Flagellum short acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) grey pollinose, anterior part more intensely pollinose, grayish also from the side. Scutellum silvery pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles short, dark, somewhat longer along frontal edge, numerous pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with two dark bristles, one longer than the other. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown dorsally, ventrally yellow, last segment darker. Hind trochanter with a half circle (flat part dorsally), no distinct bristles; ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black, spines on mid femur; hind femur without ventroapical spines. Subapical (distal) spines on first four tibiae absent. Hind metatarsus distinctly flattened (tarsomeres 1–3 most flattened), first tarsomere slightly longer than 2–4 combined, with scrub-like bristles ventrally (tarsomeres 1–2 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2.2 times as long as third costal section. Cross-vein r-m distinctly distal to middle of discal cell. 5–6 distinct brown setulae on tegula. ***Abdomen***. Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.4). Surstyli rather symmetrical, elongated, moderately narrowed to apex, left surstylus longer than right one, right surstylus bent to left one before apex (Fig. 72A). Genital capsule in ventral view: gonopods unequal in height, left is longer, right is wider, right gonopod with two different-sized triangular projections on inner margin, left gonopod with one smaller triangular projection; distinct, long hypandrial apodeme; phallic guide with 3–5 dorso- dorsolateral spines, one is longer, distinct subepandrial sclerite (Fig. 72B); Genital capsule in lateral view: both surstyli broadened at base, moderately narrowed to apex, curved towards sternite, phallic guide strong, pointed towards sternite at apex (Fig. 72D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 72C).

**FEMALE:** Body length: 2 mm (without head). As male except for the following characters. Frons, eyes: NO HEAD. Pulvilli and claws about 2–2.8 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergite 5 only. ***Ovipositor.*** Straight in ventral view, strongly bent (90 degrees at the base of piercer) in lateral view (yellow piercer, brown base), reaching proximal end of 5th segment; base silvery pollinose with occasional bristles. LP:LB = 2.4. LDP:LPP = 4.0. (Fig. 155C).

**Etymology:** This species is named in honour of Frank D. Parker who collected both known specimens with Mike Irwin. Frank was involved in the collection of 6% of the specimens and 15% of the species used in this paper (Supplementary file 2).

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: 47 km S Pardoo R[oa]d House on Shay Gap R[oa]d, 20°23'S, 120°1'E, 170m, dry wash n[ea]r *Spinifex*, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15702 (1♂, WAM); **PARATYPE**: AUSTRALIA: Western Australia: same data as holotype, JSS15704 (1♀, QM).

**Distribution:** Australia (Western Australia) (Fig. 111).

**Note:** Intraspecific genetic distance is 0.0%. This species is genetically most similar to *T. quadrata* **sp. nov.** (7.5% pairwise divergence) (Supplementary file 3).

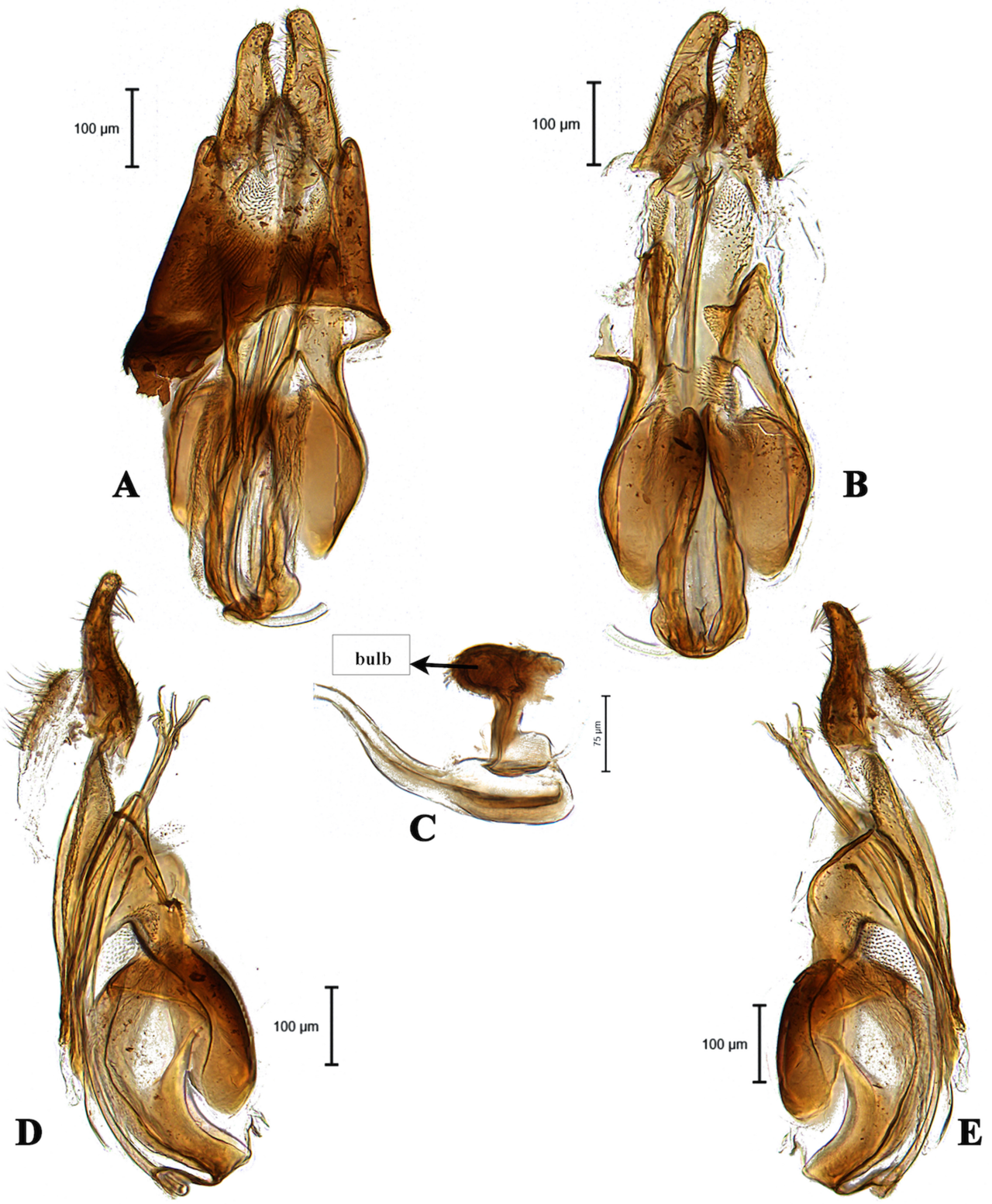



**FIGURE 72**. Male genitalia of *Tomosvaryella parkeri* **sp. nov.** (JSS15702, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella parvistyla* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:7A690E39-223B-48B1-9CDE-70E397F5B2A9
Figs 73A–E, 114, 150C

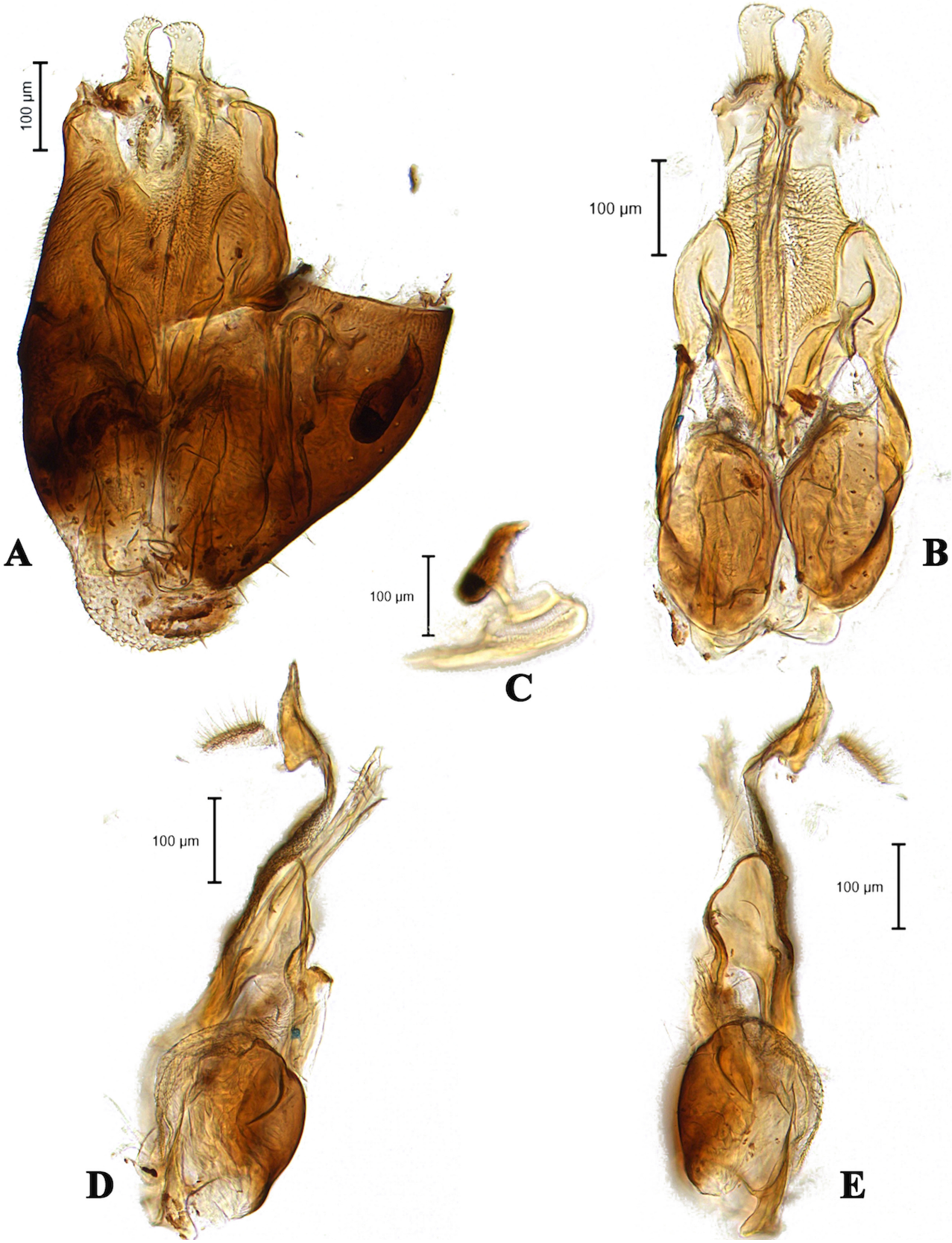



**FIGURE 73**. Male genitalia of *Tomosvaryella parvistyla* **sp. nov.** (CNC575122, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Diagnosis:** This species can be recognized by the hind femur with a small triangular keel on the posterior side close to the base (Fig. 150C); tiny surstyli, widened at base, curved in basal two thirds and straight in apical third in dorsal view (Fig. 73A); gonopods extended towards surstyli, widened at the apex in ventral view (Fig. 73B); phallic guide with 3–4 short dorsolateral spines in ventral view (Fig. 73B).

**Description: MALE:** Body length: 2.4 mm. ***Head***. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 2–3 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part greyer. Scutellum silvery pollinose and with 6–8 short pale bristles along distal edge. Halter, knob and stem pale, base brownish. ***Legs***. (Fore and mid legs missing beyond coxa). Mid coxa with 3–4 long brown bristles. Trochanters brown, hind femur black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of hind tibia yellow (tibiae otherwise brown), tarsal segments bright yellow. Hind trochanter gray pollinose with scattered short pale bristles. Hind femur with ventroapical spines. Hind femur with small triangular keel (shark fin) on the posterior side close to base (Fig. 150C). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, except tergite 1 silvery grey. Lateral bristles on first tergite present, 6–8 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli small, widened at the base, then straight and bent to each other at the apex (Fig. 73A). Genital capsule in ventral view: both gonopods extended towards surstyli, widened at apex, with a distinct projection on inner margin, pulled towards each other; phallic guide with 3–4 short dorsolateral spines, one longer than the other; subepandrial sclerite distinct with two edges in lateral sides (Fig. 73B); Genital capsule in lateral view: both surstyli widened at the base, curved in basal two thirds, narrow and straight in apical third (Fig. 73D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 73C).

**FEMALE:** Unknown.

**Etymology:** From the Latin parvus, little, in reference to the tiny surstyli.

**Examined material: HOLOTYPE:** AUSTRALIA: New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575122 (1♂, QM).

**Distribution:** Australia (New South Wales) (Fig. 114).

### *Tomosvaryella patula* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:9F645DC0-660C-4972-92BE-FBA870D01E99

Figs 74A–E, 134, 149D, 155D

**Diagnosis:** This species can be recognized by the hind trochanter having a keel covered by short dark spines on the edge (Fig. 149D); hind metatarsus distinctly flattened; elongated surstyli, left surstylus with a lobe on inner margin in dorsal view (Fig. 74A); both gonopods with a triangular projection on inner margin; phallic guide with 3–5 dorsolateral spines (Fig. 74B, D–E).

**Description: MALE:** Body length: 2.9–3.1 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles short, dark, somewhat longer along frontal edge, numerous pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, ventrally paler, last segment brown. Hind trochanter with shiny edge (keel) at 45 degrees to the long axis of trochanter, with short dark spines on the edge (Fig. 149D); weak ventrobasal spines (2) present on fore and missing on mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 8–10 equally spaced bristles on distal

half posteroventrally on a widened femur in the middle (almost like a small keel), longest up to 1.5 times the width of hind tibia at distal end (sometimes adpressed to femur). Subapical (distal) spines on first four tibiae present (short). Hind metatarsus distinctly flattened, as long as 2–5 combined and with strong bristles dorsally, scrub-like bristles ventrally (tarsomeres 1–2 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2–2.5 times as long as third costal section (Fig. 158E). Cross-vein r-m at middle of discal cell (sometimes slightly distal to middle). 2–3 short brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 short dark bristles up to as long as 2/3 of hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.5–0.7 times as long as ST8. Genitalia without dissection: ST8 large, rounded in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous area with round part extended dorsally and narrow part approaching epandrium, mostly directed posteriorly; epandrium brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium slightly as long as wide (MLE:MWE = 1.08). Surstyli elongate, left surstylus with a distinct lobe on inner margin in middle and longer than right one, right surstylus with a small denticle on inner margin after basal fourth, both surstyli strongly bent to each other at apex (Fig. 74A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, both gonopods with a triangular projection on inner margin; phallic guide with 3–6 dorso-dorsolateral spines, one is longer, distinct subepandrial sclerite (Fig. 74B); Genital capsule in lateral view: both surstyli broadened at base, rather straight, right surstylus moderately narrowed to apex, left surstylus bent towards sternite before apex (Fig. 74D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 74C).

**FEMALE:** Body length: 2.4 mm (without head). As male except for the following characters. Frons, eyes: NO HEAD. Pulvilli and claws about 2.5–3 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Straight in ventral view, straight and robust in lateral view (yellow piercer, brown base), reaching middle of 3rd segment; base silvery pollinose with dispersed bristles. LP:LB = 3.0. LDP:LPP = 5.0. (Fig. 155D).

**Etymology:** From the Latin patulus, spread out, broad, in reference to the distinctly flattened hind metatarsus.

**Examined material: HOLOTYPE**: AUSTRALIA: New South Wales: Warrumbungle National Park, 31°14'S, 149°1'E, 19.X–3.XI.1997, J. Skevington, & S. Winterton, Malaise trap, JSS8439 (1♂, QM); **PARATYPES**: AUSTRALIA: New South Wales: Colo Heights, Putty Road, 33°23'S, 150°45'E, 6.II.1968, D.H. Colless, JSS8667 (1♂, ANIC); Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7'S, 146°56'E, *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, CNC576617 (1♂, QM); Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin & R. Olsen, B. Shieban, Malaise trap, 19322, CNC575139 (1♂, QM); Bundjalung National Park; near Evans Head, 29°2'S, 153°26'E, 8.I.1997, C.L. Lambkin, Malaise trap, JSS6068 (1♀, QM); Queensland: Carnarvon National Park, Mount Moffatt Section, The Tombs, 25°5'S, 147°52'E, 10.X.2002, J. Skevington, hand collected, JSS12635 (1♂, CNC); Carnarvon National Park, Mount Moffatt Summit, 25°4'S, 148°3'E, 1097m, hilltop, 2.XII.1997, J. Skevington & C. Lambkin, hand collected, JSS1821 (1♂, QM); Carnarvon National Park, Mount Moffatt Summit, 25°4'S, 148°3'E, 1097m, hilltop, 13.X.2002, J. Skevington, JSM 466, CNC484088 (1♀, CNC); Isla Gorge National Park, 25°11'S, 149°58'E, 320m, hilltop near lookout, 13.XI.1999, J.&A. Skevington, hand collected, JSS7256 (1♂, QM); Western Australia: West of Norseman, 32°11'S, 121°38'E, *Eucalyptus* woodland, 1–17.XI.2003, C. Lambkin & J. Recsei, Malaise trap, JSS16212 (1♂, ANIC).

**Distribution:** Australia (New South Wales, Queensland, Western Australia) (Fig. 134).

**Notes:** Intraspecific genetic distance ranges from 0.3% to 1.5%. This species is genetically most similar to *T. unda* **sp. nov.** (1.6–8.3% pairwise divergence) (Supplementary file 3). This is a forest species that is apparently widespread but rare. It has been found hilltopping.

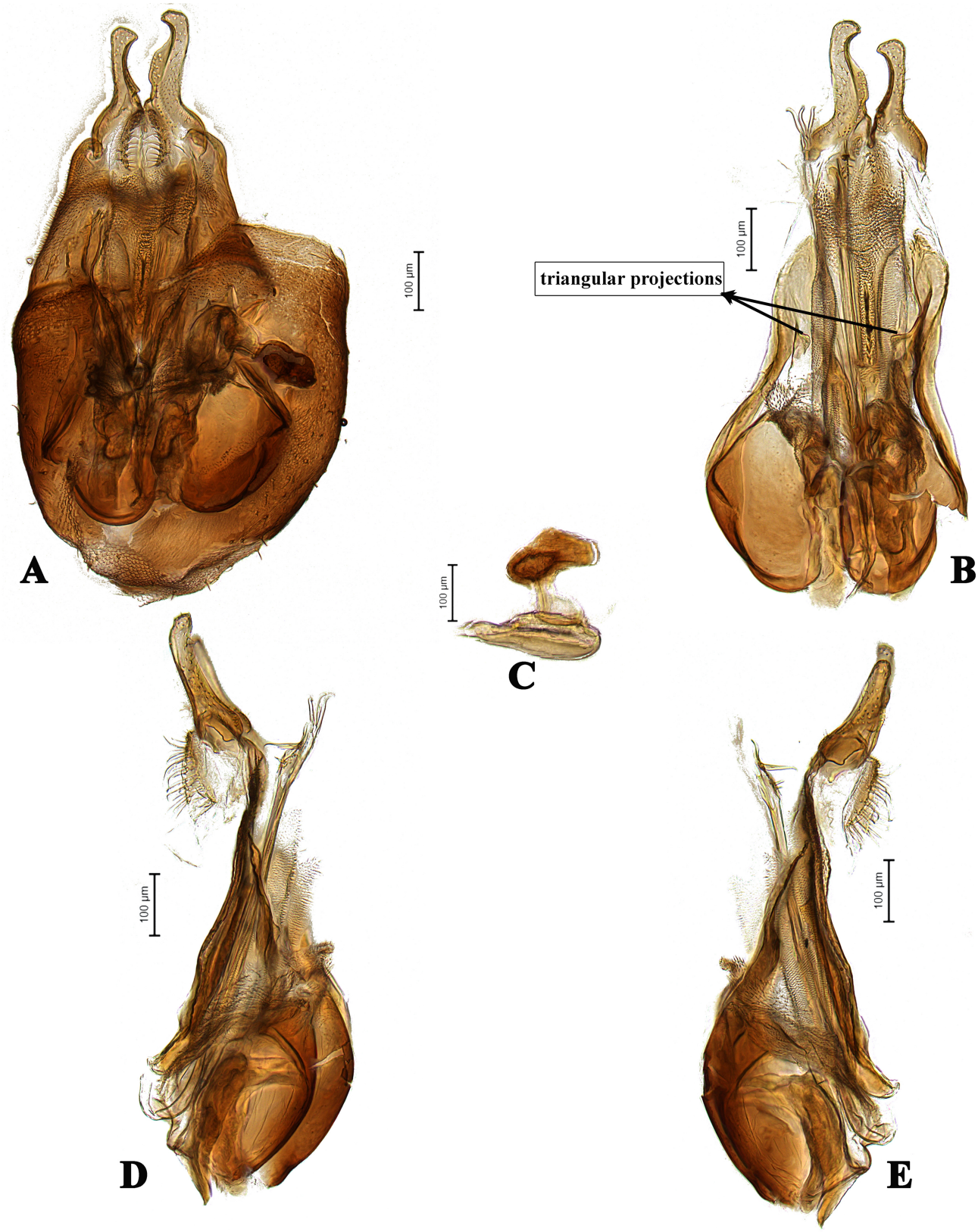



**FIGURE 74**. Male genitalia of *Tomosvaryella patula* **sp. nov.** (JSS1821, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella paxilla* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:E5EA9BA7-45D7-49EE-9BB7-A40A6718E626
Figs 75A–E, 132, 147B, 154A

**Diagnosis:** This species can be recognized by the blunt peg-like projection ventrobasally on the hind trochanter (Fig. 147B); surstyli elongated, moderately tapering towards apex in dorsal view (Fig. 75A); gonopods with a small projection towards surstyli in ventral view (Fig. 75B); phallus with three short ejaculatory ducts, one with some small spines in lateral view (Fig. 75E).

**Description**: **MALE**: Body length: 2.5–2.6 mm. ***Head***. Flagellum long acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, without distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose; slightly grayish also from the side. Scutellum brownish pollinose and with 4–6 well developed, short bristles along the distal edge. Dorsocentral bristles well developed, short spine-like, dark, uniform in length throughout, numerous dark bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with three short, pale bristles (one longer than the other). Trochanters yellow-brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/4 and distal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, last segment brown dorsally. Ventroapical row of spines on fore femur missing; 5–7 short, black spines on mid femur; no spines on hind femur, only 10–12 pale bristles equally spaced posteriorly, somewhat longer on distal half (longest up to as long as 0.3–0.5 times the width of hind tibia at the distal end). Subapical spines on first four tibiae present, distal and short. Hind trochanter without a keel, but with a distinct, blunt peg ventrally at the distal end, 5–7 weak bristles anterior to the peg in a row (Fig. 147B); ventrobasal spines absent on fore and mid femora. Hind metatarsus not flattened, slightly longer than 2–4 combined and with scrub-like bristles ventrally; last tarsomere long almost as long as tarsomeres 3–4 combined. Pulvilli as long as the last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long black bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m distinctly distal to the middle of discal cell. 1–3 distinct dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 (very small spots) and 5 (4–5 times larger spots). Dispersed strong dark bristles on all tergites present, the longest on tergite 5 and up to as long as width of hind tibia at base. Lateral bristles on first tergite present, 3–4 short brown bristles in a row up to 0.4–0.6 times as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 2–2.5 times as long as ST8. Genitalia without dissection: ST8 small, globular, silvery pollinose, with occasional small bristles; membranous area small, round, directed posteriorly; epandrium and surstyli covered with debris on the one undissected specimen. ***Genitalia***. Genital capsule in dorsal view: epandrium small, wider than long (MLE:MWE=0.7). surstyli symmetrical, elongated, broadened at base, gradually tapering and pointing towards each other at apex. Left surstylus slightly longer than right one (Fig. 75A). Genital capsule in ventral view: gonopods equal, elongated with a small projection towards sternite; lobes of hypandrium sclerotized; subepandrial sclerite extended; hypandrium with slender hypandrial apodeme (Fig. 75B); Genital capsule in lateral view: both surstyli gently curved toward sternite (Fig. 75D–E); phallic guide straight, apically with pointed apex; phallus with three short ejaculatory ducts, one with 4–5 short spines. Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 75C).

**FEMALE:** Body length: 2.5 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.5 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, gradually changing from pollinose to shiny black in the transition zone; frons depressed at the point where it is widest. Enlarged ommatidia silvery shining. Pulvilli and claws about 2–2.5 times as long as last tarsal segment, 1.5 times on metatarsi. Female abdomen with silver spots on sides of tergites 3–6. ***Ovipositor***. Straight in ventral view, straight in lateral view, reaching distal edge of 3rd segment, somewhat down curved. LP:LB = 2.2. LDP:LPP = 3.0. (Fig. 154A).

**Etymology**: The name is from the Latin word paxillus for peg or small stake, in reference to the blunt peg-like projection on the hind trochanter.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Queensland: Mica Creek, Mount Isa, 20°49’S, 139°27’E, 360m, 7.iii.2002, C.J. Burwell, JSS13932 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Isla Gorge National Park, 25°11’S, 149°58’E, 320m, hilltop near lookout, 13.XI.1999, J. & A. Skevington, hand collected,

JSS7257 (1♂, QM); 2 km along Ridgepole Waterhole Road, 10 km ESE Musselbrook Resource Centre, Lawn Hill National Park, 18°38'S, 138°12'E, 220m, 7.v.1995, G. Daniels & M.A. Schneider, JSS8294 (1♂, QM); Western Australia: Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16127 (1♀, ANIC).

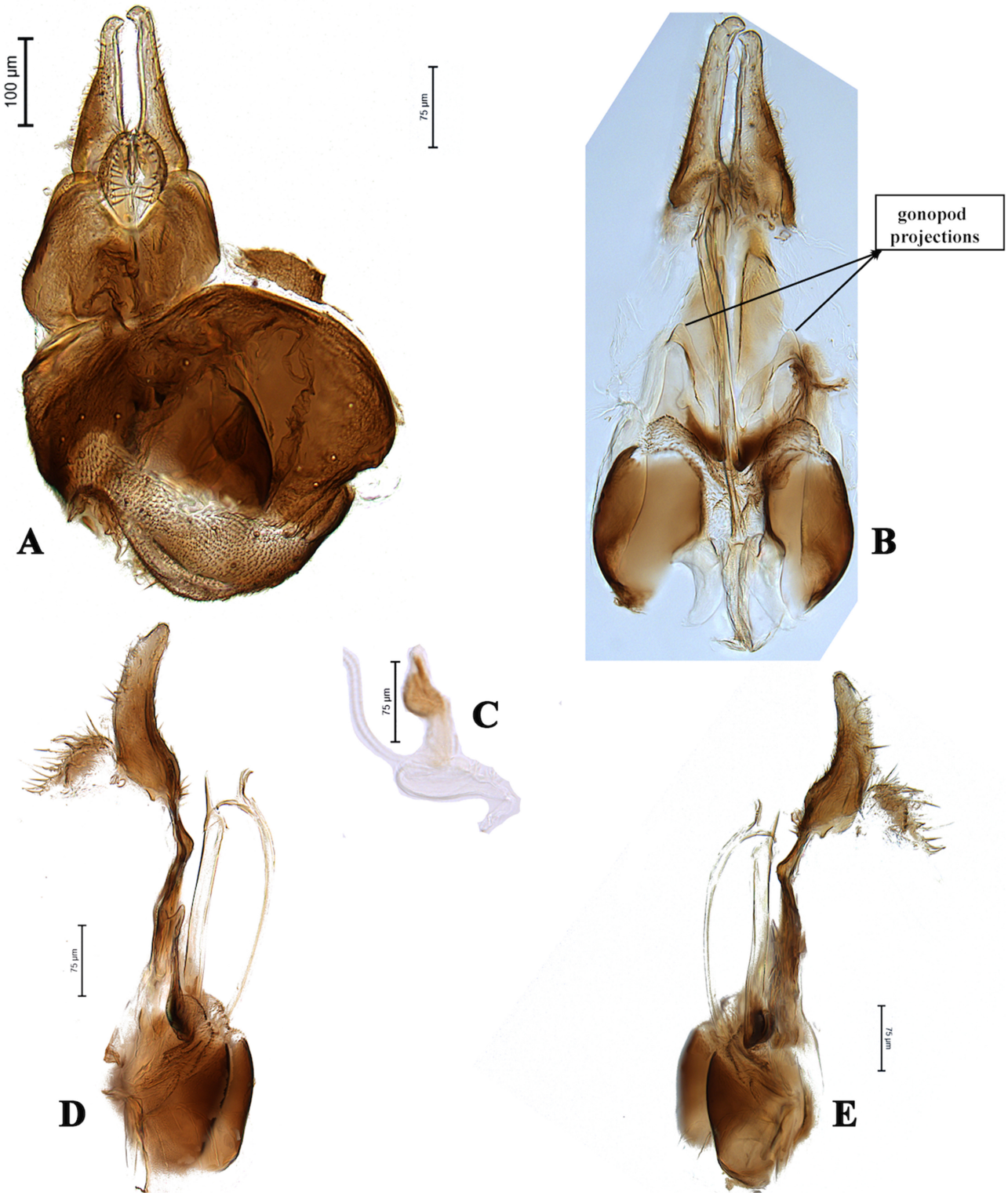



**FIGURE 75**. Male genitalia of *Tomosvaryella paxilla* **sp. nov.** (JSS13932, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Distribution:** Australia (Queensland, Western Australia) (Fig. 132).

**Notes:** This rarely encountered species is found mostly in the northern outback and should be expected in the Northern Territory. One specimen was collected hilltopping. Intraspecific genetic distance ranges from 0.3% to 1.6%. The species is genetically closest to *T. trispina* **sp. nov.** (12.1% pairwise divergence) (Supplementary file 3).

***Tomosvaryella peronensis*** **Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:708F029D-A018-485F-B404-80A42CC38D28

Figs 76A–E, 132

**Diagnosis:** This species can be recognized by the two stronger dark bristles and some soft short bristles on the hind trochanter; elongated surstyli with a protruding along inner margin in dorsal view (Fig. 76A); unequal gonopods, left is longer than right one, right with an inward triangle-shaped projection on inner margin (Fig. 76B); phallic guide with 6–7 dorsolateral spines; subepandrial sclerite distinct with dense spine-like bristles in ventral view (Fig. 76B).

**Description: MALE:** Body length: 2.6–2.8 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more gray, grayish also from the side. Scutellum silvery brown pollinose and with 3–4 bristles along distal edge. Dorsocentral bristles indistinct, dark, more visible in frontal half, a few pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 1–2 long dark bristles (1 very long). Trochanters and femora brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments brown dorsally, yellow ventrally, last segment darker. Hind trochanter with slight keel, 2 stronger dark bristles, sometimes with soft short bristles as well; ventrobasal spines absent on fore and mid femur. Ventroapical row of spines on fore femur missing; 6–8 distinct, black spines on mid femur; hind femur without ventroapical spines, with 12–14 equally spaced bristles posteroventrally, longer and more frequent on distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae absent. Hind tarsomeres slightly flattened, hind metatarsus as long as 2–5 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5–2.6 mm. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/4 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 2–2.3 times as long as ST8. Genitalia without dissection: ST8 small, short, rounded in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous rounded, mostly directed posterodorsally; epandrium brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.3). Surstyli elongated, symmetrical, left surstylus longer than right one, both surstyli with a narrow edge along inner margin, pointed at apex (Fig. 76A). Genital capsule in ventral view: both gonopods extended towards surstyli, left is longer than right one, right one with an inward projection on inner margin; phallic guide with 6–7 dorso- dorsolateral spines, one spine longer than others; subepandrial sclerite distinct with condensed spine-like hairs (Fig. 76B); Genital capsule in lateral view: left surstylus straight in basal two thirds, curved towards sternite apically, right surstylus slightly curved towards sternite (Fig. 76D–E). Ejaculatory apodeme tube-like, bent in the middle (Fig. 76C).

**FEMALE:** Unknown.

**Etymology:** This species is named after François Péron National Park in the hope that it will increase the profile of the terrestrial biodiversity of this park. The park is famous for Shark Bay and Monkey Mia, where tourists go to feed and interact with dolphins. The terrestrial habitats are largely ignored though as it is a harsh desert with apparently low diversity at first glance. JHS and Angela Skevington walked a short trail that provided an overlook of Shark Bay and the surrounding habitat and were stunned to find an abundance of insects hilltopping around a bench and canopy at the top of the small rise. Ten species of *Tomosvaryella* were collected in less than two hours at this location, all of them undescribed. Many have been found nowhere else. See more information about the habitat under *T. minychoma*.

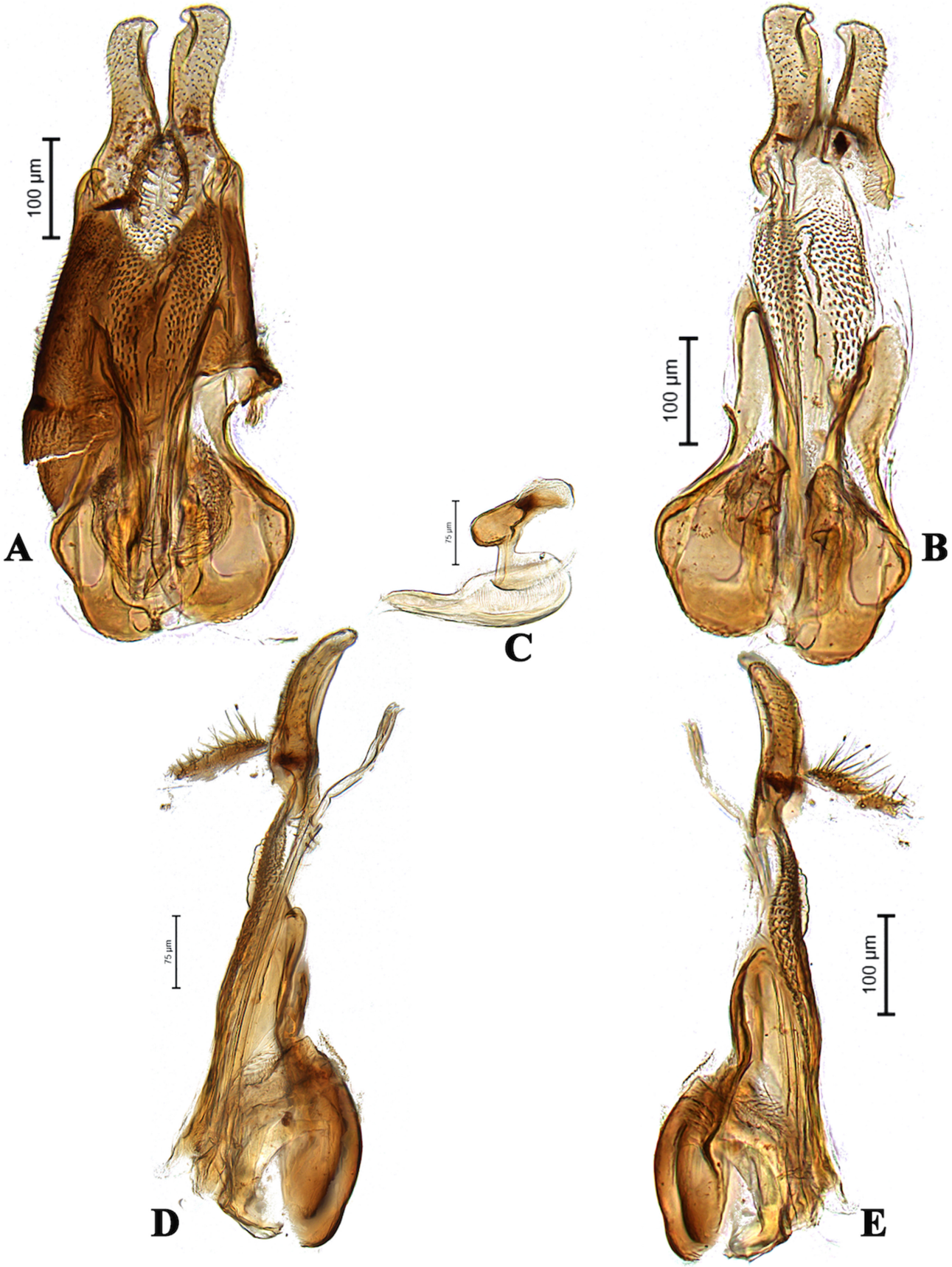



**FIGURE 76**. Male genitalia of *Tomosvaryella peronensi* **sp. nov.** (JSS7369, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: ~3 km N[orth] of Denham, 25°55'S, 113°32'E, hilltop, 12.XII.1999, J. Skevington, JSS7369 (1♂, WAM); **PARATYPES**: AUSTRALIA: same data as holotype, JSS7320, JSS7324, JSS7338–9, JSS7376, JSS7386, JSS7397–8, JSS7402, JSS7406 (1♂, CNC 9♂, QM).

**Distribution:** Australia (Western Australia) (Fig. 132).

**Note.** Intraspecific genetic distance ranges from 0.2% to 0.5%. This species is genetically similar to *T. patula* **sp. nov.** (7.6–8.5% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella petala* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:B1384E74-377B-4431-B7B3-467AB873FCF6

Figs 77A–E, 115, 150B

**Diagnosis:** This species can be recognized by the hind trochanter having a slight keel covered by some short dark bristles; distal half of hind tibia distinctly flattened ( Fig. 150B); syntergosternite 8 covered by distinct bristles; elongated surstyli in dorsal view (Fig. 77A); left gonopod longer than right one, both gonopods extended towards surstyli with a distinct projection on inner margin; phallic guide with 5–6 dorso- dorsolateral spines, one is downward and longer than others; subepandrial sclerite with a small fine-shaped edge in its center in ventral view (Fig. 77B).

**Description: MALE:** Body length: 2.4–2.5 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 distinct pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 4–6 bristles along distal edge. Dorsocentral bristles distinct, dark, mostly in frontal half, a few pale bristles around postpronotum present. Halter knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibia yellow (tibia otherwise brown), tarsal segments yellow, last segment darker. Hind trochanter with slight keel, and 7–10 short dark bristles, equally spaced; ventrobasal spines absent on fore and mid femur. Hind femur without ventroapical spines, except 10–12 short equally spaced bristles posteroventrally, longer on distal half, longest up to 1/3 the width of hind tibia at distal end. Subapical (distal) spines on fore tibia well developed. Distal half of hind tibia distinctly flattened. Hind tarsomeres distinctly flattened (especially tarsomeres 1–3), hind metatarsus as long as 2–4 combined; posterior corners with distinct bristles on all tarsomeres. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from anterior tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on ST8 posterior end, in length up to 1.5 times the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as 3/4 hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.5–1.7 times as long as ST8. Genitalia without dissection: ST8 medium sized, rounded in dorsal view, brown and with the longest bristles of the abdomen; membranous area is rounded dorsally, narrow ventrally, mostly directed posterodorsally; epandrium brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli symmetrical, elongated, left surstylus straight and longer than right one (not curved to right one), right one curved to left one apically (Fig. 77A). Genital capsule in ventral view: gonopods unequal in height, left is longer than right one, both gonopods extended towards surstyli with a distinct projection on inner margin; phallic guide with 5–6 dorso- dorsolateral spines, one is downward and longer than others; subepandrial sclerite with a small fine-shaped edge in its center (Fig. 77B); Genital capsule in lateral view: both surstyli moderately slender to apex, right surstylus curved to sternite, left surstylus straight in basal two thirds, distinctly curved towards sternite in apical third (Fig. 77D–E). Ejaculatory apodeme tube-like, bent (Fig. 77C).

**FEMALE:** unknown.

**Etymology:** From the Greek petalos, broad, flat or outspread, in reference to the flattened distal half of the hind tibia.

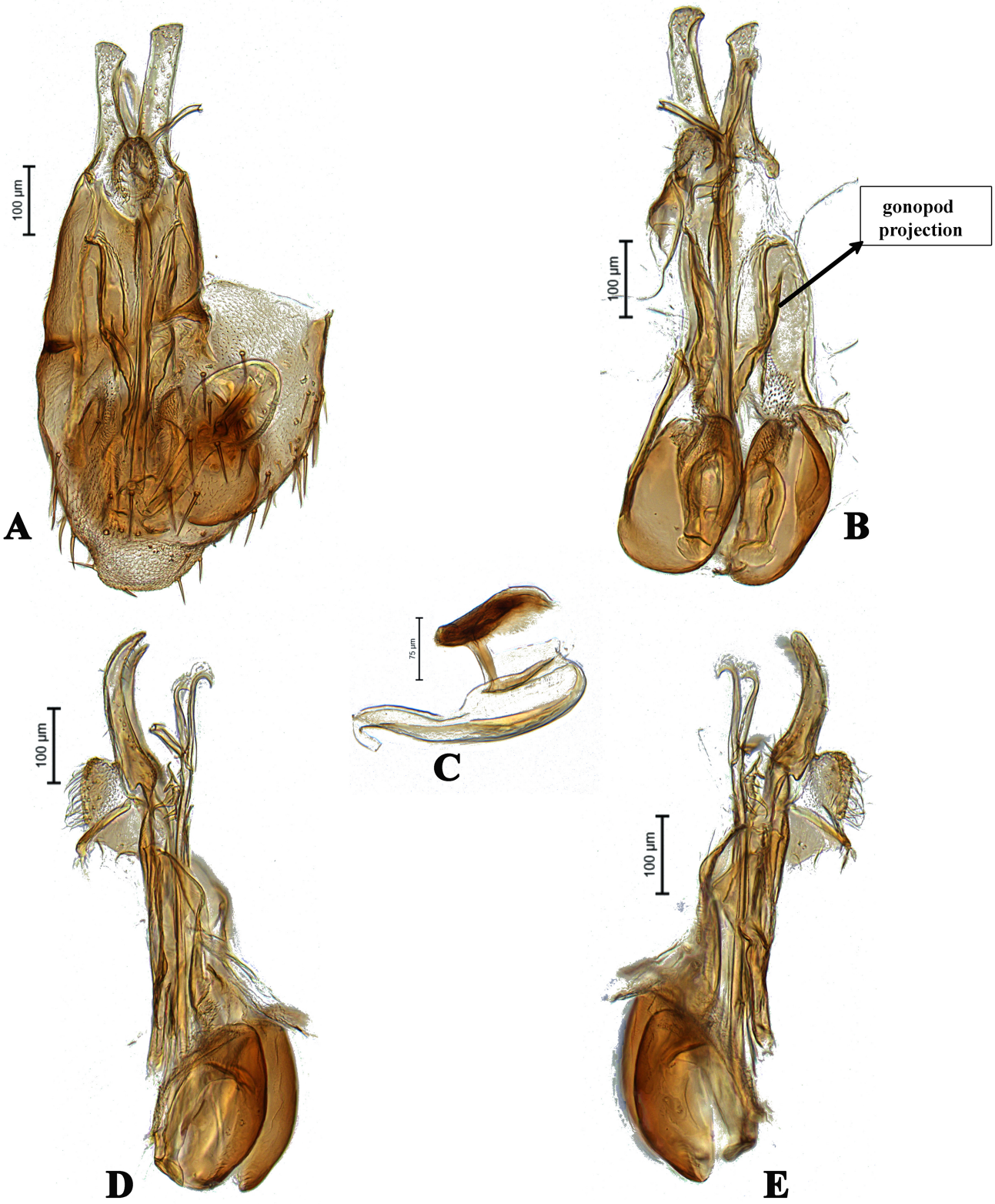



**FIGURE 77**. Male genitalia of *Tomosvaryella petala* **sp. nov.** (JSS16215, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] Park, Yarraloola Road, Fortescue River, 21°38'S, 117°7'E, rocky creek bed, drying pools, 28.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16215 (1♂, WAM); **PARATYPES**: AUSTRALIA: Australian Capital Territory: Black Mountain, 35°16'S, 149°6'E, 15–17.II.1980; 27.II.1980, D.H. Colless, Malaise trap, JSS8505, JSS8692 (1♂, ANIC; 1♂, CNC); New South Wales: 20 km E of Forbes, 33°23'S, 148°1'E, in *Callitris* forest, 9.IV.1977, Z. Liepa, JSS9178 (1♂, ANIC); Queensland: Prince of Wales Island, Torres Strait, 10°41'S, 142°11'E, 27–30.V.1969, Neboiss, JSS8795 (1♂, MVMA); Sunnybank, 27°34'S, 153°3'E, 9.III.1957, Haseler, JSS8279 (1♂, QM); 30 km north of Wrothan Park, 17°0'S, 144°19'E, 23.IV.1983, J.F. Donaldson, JSS8959 (1♂, QDPC); Western Australia: Heinsman Rock, Mount Ragged Track, 30°7'S, 123°28'E, 145m, woodland near drying pools, 30.X–18.XI.2003, C. Lambkin & J. Recsei, Malaise trap, ANIC Bulk Sample 2179, JSS16240 (1♂, ANIC); Karijini National Park, Banjima Road, 22°24'S, 118°16'E, 696m, in muddy creek, burnt *Eucalyptus* grassland, 15–18.V.2003, C. Lambkin, J. Recsei & N. Starick, Malaise trap, JSS15970 (1♂, ANIC); Millstream-Chichester National Park, Black Hill Pool, 21°20'S, 117°15'E, 176m, over wide dry rocky creek bed, *Eucalyptus*, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, JSS16316 (1♂, ANIC).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Queensland, Western Australia) (Fig. 115).

### *Tomosvaryella planca* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:73676891-FBE8-4A5A-9A17-80147F090C16
Figs 78A–E, 115, 146E, 151E

**Diagnosis**: This species can be recognized by the two patches of spines on the hind trochanter (Fig. 146E); long and condensed bristles on membranous area; surstyli elongated in dorsal view (Fig. 78A); phallic guide with some different-sized spines (Fig. 78B); one of ejaculatory ducts with some saw-like teeth (Fig. 78B); both gonopods with a finger-like projection in ventral view (Fig. 78B).

**Description**: **MALE**: Body length: 3.0–3.1 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–1.8 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper half. ***Thorax***. Postpronotum pale, with 4–5 distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose, slightly grayish also from the side. Scutellum silver pollinose and with 5–7 weak bristles along the distal edge. Dorsocentral bristles well developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale, stem black. ***Legs***. Mid coxa with 2–3 spines. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow, tibiae black, tarsal segments dark brown, only yellowish ventrally; fore metatarsus is transparent in ventral view. Hind trochanter with a few short dark spines (5–8) ventrobasally and (2–3) shorter ones ventroapically (Fig. 146E). Ventroapical row of spines on fore femur missing, 4–6 very short, black spines on mid femur; no spines on hind femur, only 6–8 pale bristles posteriorly on distal half (as long as the width of hind tibia at the distal end); ventrobasal spines (2) present on fore and weaker on mid femur; hind tibia slightly bent at middle in posterior view. Subapical (distal) spines on first four tibiae present, very short. Hind metatarsus extremely flattened, spoon-like (extending posterior edge, widest at basal 1/3) (Fig. 151E), second tarsomere slightly longer than 3–5. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one dark and long bristles. Fourth costal section 1.5–2 times as long as third costal section, fourth section appears to be unusually short. Cross-vein r-m slightly distal to middle of discal cell. 4–5 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with larger spots). Dispersed long dark bristles on tergites present, the longest on ST8 and up to 3.5–4 times as long as width of hind tibia at base. Lateral bristles on first tergite present, 6–8 brown bristles in a patch up to as long as 1–1.2 times the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.5 times as long as syntergosternite 8 (ST8). Genitalia without dissection: ST8 large, black, hairy with longest bristles on posterior part; membranous area round, posteriorly directed, the longest bristles originate from membranous area; tip of epandrium brown; surstyli pale, appear elongated and uniformly broad. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE: MWE = 0.8). Surstyli asymmetrical, elongated, left longer than right one (Fig. 78A). Genital capsule in ventral view: subepandrial sclerite covered with some transverse streaks in middle; both gonopods with a finger-like projection

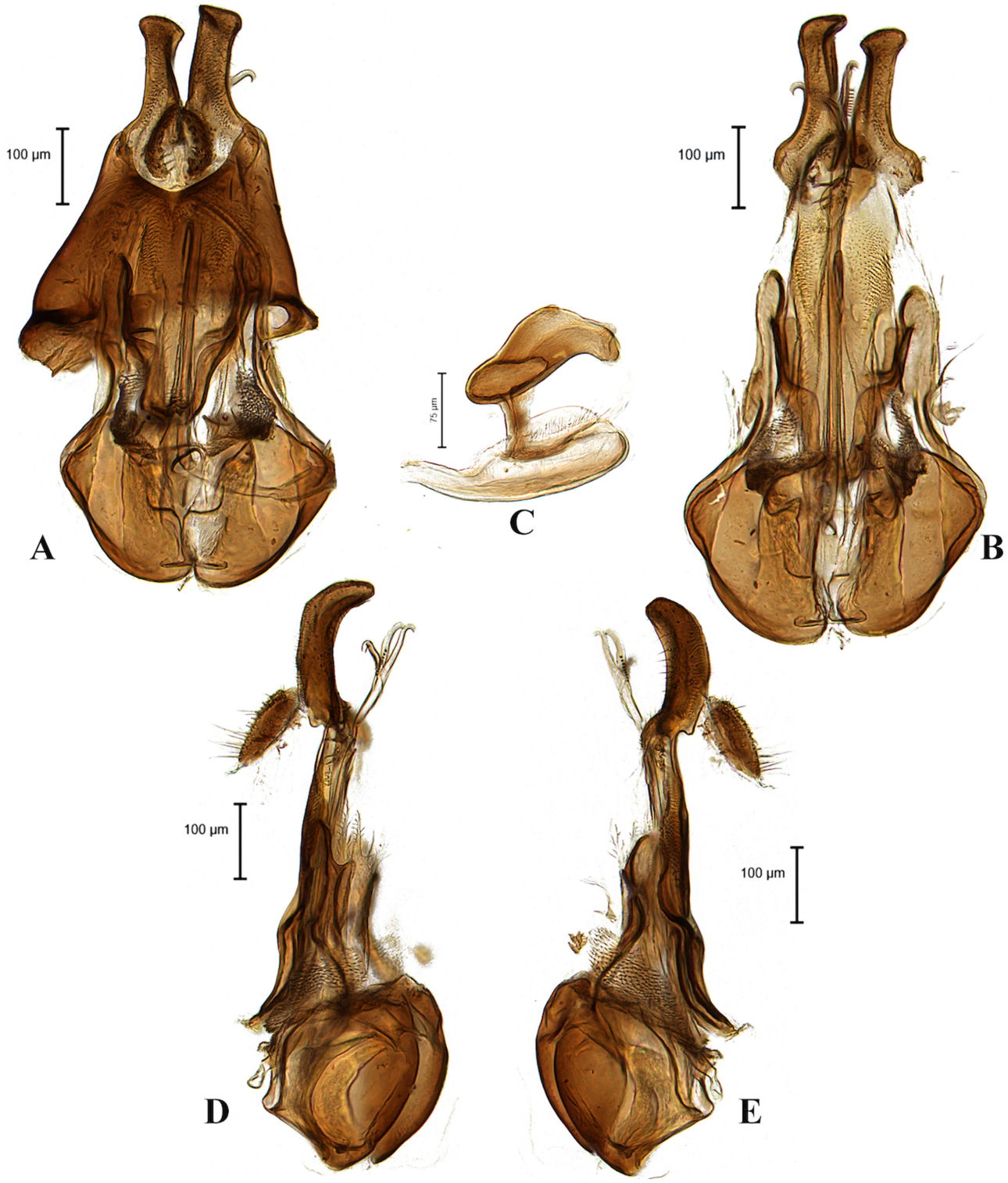



**FIGURE 78**. Male genitalia of *Tomosvaryella planca* **sp. nov.** (JSS8577, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

extended towards surstyli, left rather longer than right one (Fig. 78B), phallic guide with 5–6 different-sized spines dorsolaterally (longer ones extended towards left surstylus); phallus with three ejaculatory ducts, one bears 10–11 saw-like teeth along its side. Genital capsule in lateral view: left surstylus straight in basal two thirds, bent towards sternite in apical one third; right surstylus curved towards sternite (Fig. 78D–E); ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 78C).

**FEMALE**: Unknown.

**Etymology**: The name planca is derived from the Latin plancus, flat-footed, in reference to the flattened hind metatarsus.

**Examined material**: **HOLOTYPE**: AUSTRALIA: Queensland: 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 3.v.1981, D.H. Colless, Malaise trap, JSS8576 (1♂, ANIC); **PARATYPES**: AUSTRALIA: Queensland: 20 km E Mareeba, 17°0'S, 145°26'E, 16.iv.1980, G.F. Hevel & J.A. Fortin, JSS10535 (1♂, USNM); 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 3.v.1981, D.H. Colless, Malaise trap, JSS8577, JSS8585 (1♂, ANIC; 1♂, QM); Edgbaston National Reserve (EBM1), 22°44'S, 145°26'E, *Melaleuca* floodplain, 29.X–15.XII.2010, C. Lambkin *et al.*, Malaise trap, 18528, CNC596962 (1♂, CNC); Western Australia: Martin's Well, West Kimberley, -16.56604, 122.85010, 28.IV.1977, D.H. Colless, Malaise trap, JSS9223 (1♂, ANIC).

**Distribution***:* Australia (Queensland, Western Australia) (Fig. 115).

**Notes:** This species is mostly restricted to NE Queensland, but a disjunct record is from the West Kimberley region.

***Tomosvaryella powerae*** **Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:863EDC65-39B1-4BEE-8193-1411D4076D4F

Figs 79A–E, 134, 148E, 154F

**Diagnosis:** This species can be recognized by the hind trochanter having a square keel and being covered with short bristles along the edge (Fig. 148E); elongated surstyli in dorsal view (Fig. 79A); gonopods elongated towards surstyli in ventral view (Fig. 79B); long subepandrial sclerite with a long protrusion (Fig. 79B); phallic guide with 6–7 dorsolateral spines (Fig. 79E).

**Description: MALE:** Body length: 2.5 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance 2 x length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 1–2 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 5–7 bristles along the distal edge. Dorsocentral bristles weakly developed, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with two long, dark bristles. Trochanters pale brown and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, last segment darker. Hind trochanter with a distinct, square keel (like a "top hat") and with short bristles along the edge, longest basally (Fig. 148E); one ventrobasal spine present on fore and absent on mid femur. Ventroapical row of spines on fore femur absent; 6–8 small, black spines on mid femur; hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally on distal half, longest up to ½ the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present. Hind tibia bent in posterior view. Hind tarsomeres flattened (especially metatarsus), metatarsus almost as long as 2–3 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m slightly at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Dissected. Tergite 1 silvery grey, Lateral bristles on first tergite present, 4–5 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli elongated, right surstylus smaller than left one, right one with a small protrusion at inner margin before apex (Fig. 79A). Genital capsule in ventral view: gonopods unequal in height, left slightly longer than right one, elongated towards surstyli, subepandrial sclerite long, rectangular-shaped, with a long protrusion, extended from its base to middle (Fig. 79B). Genital capsule in lateral view: right surstylus rather straight, left surstylus curved towards sternite, phallic guide with 6–7 dorso-dorsolateral spines (one is longer) (Fig. 79C–E).

**FEMALE:** Body length: 2.5 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.8–2 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, gradual change in transition zone; frons depressed along upper 2/3 with a groove in the median line. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–1.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 2–6. ***Ovipositor.*** Straight in ventral view,

straight and extra-long in lateral view, reaching distal base of 1st segment; base brownish pollinose with occasional bristles. LP:LB = 3.3. LDP:LPP = 2.5. (Fig. 154F).

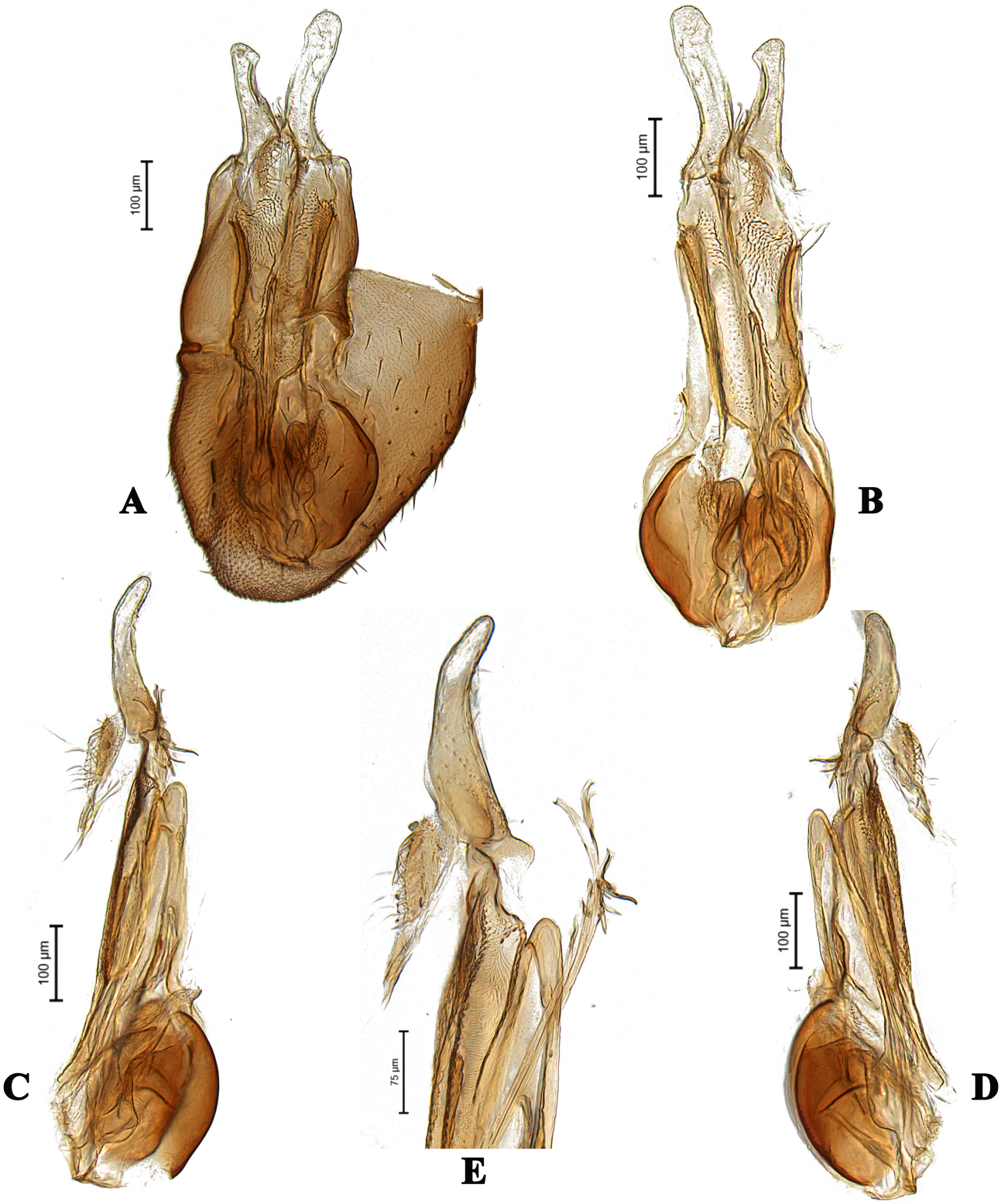



**FIGURE 79**. Male genitalia of *Tomosvaryella powerae* **sp. nov.** (JSS8428, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view, **E**) right surstylus and phallus in lateral view.

**Etymology**: This species in named after Narelle Power. Narelle and her team collected the holotype and in her survey work on Bribie Island and Mount Glorious she collected a significant number of pipunculids that we have used in numerous revisions. She has collected 10 of the *Tomosvaryella* species used in this project (Supplementary file 2).

**Examined material**: **HOLOTYPE:** AUSTRALIA: Queensland: Bribie Island, QDPI Fisheries Site, 27°3'S, 153°11'E, 5–12.IX.1997, Heathland-*Acacia* regrowth, S. Winterton, N. Power & D. White, Malaise trap, JSS8428 (1♂, QM); **PARATYPES:** AUSTRALIA: Northern Territory: Namatijira Drive, 20 km W Hugh River Crossing, 23°49'S, 133°11'E, 14–15.III.2002, 760m, C.J. Burwell, JSS13934 (1♀, QM); 30 km NW by W of Alice Springs, 23°42'S, 133°53'E, 7.X.1978, D.H. Colless, JSS9240, JSS9246 (2♂, ANIC); 32 km WNW of Alice Springs, 23°42'S, 133°53'E, 8.X.1978, D.H. Colless, Malaise trap, JSS9243–5 (3♂, ANIC); 53 km E by N of Alice Springs, 23°42'S, 133°53'E, 6.X.1978, D.H. Colless, Malaise trap, JSS9252 (1♂, ANIC); Roe Creek, 12 km SW by W Alice Springs, 23°42'S, 133°53'E, 10.X.1978, D.H. Colless, Malaise trap, JSS9229 (1♂, CNC); Queensland: Charleville, 26°24'S, 146°14'E, 15.II.1970, A.L. Dyce, car net, ex. spirit via ethyl acetate, JSS8620 (1♂, ANIC); Australian Capital Territory: Paddy's River, 35°27'S, 148°59'E, 18.III.1966, R. Pilfrey, JSS9707 (1♂, ANIC).

**Distribution:** Australia (Australian Capital Territory, Northern Territory, Queensland) (Fig. 134).

**Notes:** The Australian Capital Territory specimen is disjunct, so it was checked again. It has the same morphological and terminalia characters as the holotype other than right surstylus in lateral view, which is narrower in the middle. This is typical variation found in other *Tomosvaryella* species, so it has been included in the type series. Intraspecific genetic distance is 0.3%. This species is genetically similar to *T. mathiesoni* **sp. nov.** (2.3–2.9% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella prolata* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:F99AFE16-6998-476A-9475-6405D9E5DEDA

Figs 80A–E, 135

**Diagnosis:** This species can be recognized by the elongated surstyli, moderately narrowed towards the apex in dorsal view (Fig. 80A); equal gonopods in height, extended towards surstyli; phallic guide with 2–4 different-sized spines dorsolaterally, subepandrial sclerite long, rounded in middle in ventral view (Fig. 80B).

**Description: MALE:** Body length: 2.0 mm (without abdomen). ***Head***. Scape and pedicel dark brown. Pedicel with 2–4 upper bristles; flagellum brown and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput grey pollinose, covered by short brown bristles. ***Thorax***. Mesonotum (viewed obliquely from front) silvery-brown pollinose; scutum with scattered bristles on anterior supra-alar area. Postalar callus dark brown with 2–3 short bristles in the middle. Scutellum silvery pollinose and with a few indistinct bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal ¼ of tibiae yellow (tibiae otherwise dark brown), tarsomeres light brown. Hind trochanter silvery pollinose, with some short bristles in a row; ventrobasal spines absent on fore and mid femur. Hind femur with two rows of ventroapical spines. Hind tibia with two rows of short black bristles on anterior and posterior side. Hind tarsomeres moderately flattened, 5th hind tarsomere as long as 3–4 combined; pulvilli shorter than 5th tarsal segment. ***Wing***. Length: 2.5 mm. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. ***Abdomen***. Tergites 1 silvery pollinose with 10–12 dark bristles. Abdomen dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.4). Surstyli widened at the base, elongated, moderately narrowed before apex, pointed and bent to each other at the apex (Fig. 80A). Genital capsule in ventral view: both gonopods equal in height, extended towards surstyli; phallic guide with 2–4 differently sized spines dorsolaterally; subepandrial sclerite long (Fig. 80B); Genital capsule in lateral view: both surstyli widened at base, moderately curved towards sternite (Fig. 80D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 80C). **FEMALE:** unknown.

**Etymology:** The specific name is derived from the Latin word 'prolate', meaning elongated, referring to the long surstyli.

**Examined material: HOLOTYPE**: AUSTRALIA: South Australia: Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, 9.X.1997, J.&A. Skevington & C. Lambkin, JSS8392 (1♂, QM); PARATYPES: AUSTRALIA: Queensland: Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M),

28°57’S, 146°52’E, *Callitris*, 19.III–20.V.2010, C. Kelly & A. Coward, Malaise trap, 19280, CNC575034 (1♂, QM); Mount Moffatt summit, 25°4’S, 148°3’E, 18.XI.2014, J.H., A.M. & A.W. Skevington, CNC374933 (1♂, CNC); Brisbane, Mount Coot-tha, 27°29’S, 152°57’E, , 250m, hilltop, 21.VIII.2004, J. Skevington, hand collected, JSM811–3; JSS15388–90 (3♂, CNC).

**Distribution:** Australia (Queensland, South Australia) (Fig. 135).

**Notes:** All but one of the specimens was captured hilltopping.

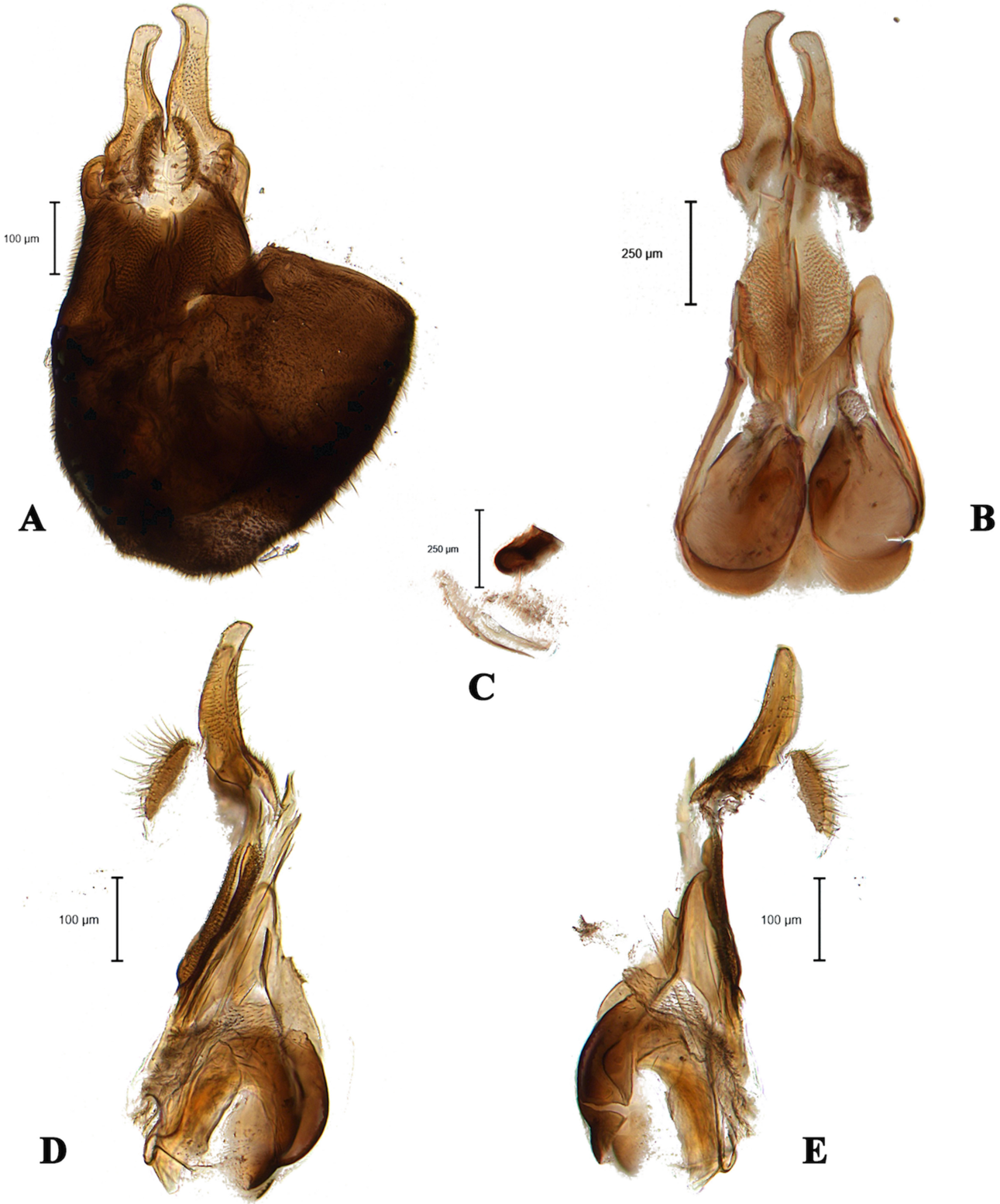



**FIGURE 80**. Male genitalia of *Tomosvaryella prolata* **sp. nov.** (CNC374933, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella prolixa* Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:3C3DC7C7-A707-4D4F-A7FE-C0D347E80985
Figs 81A–E, 134

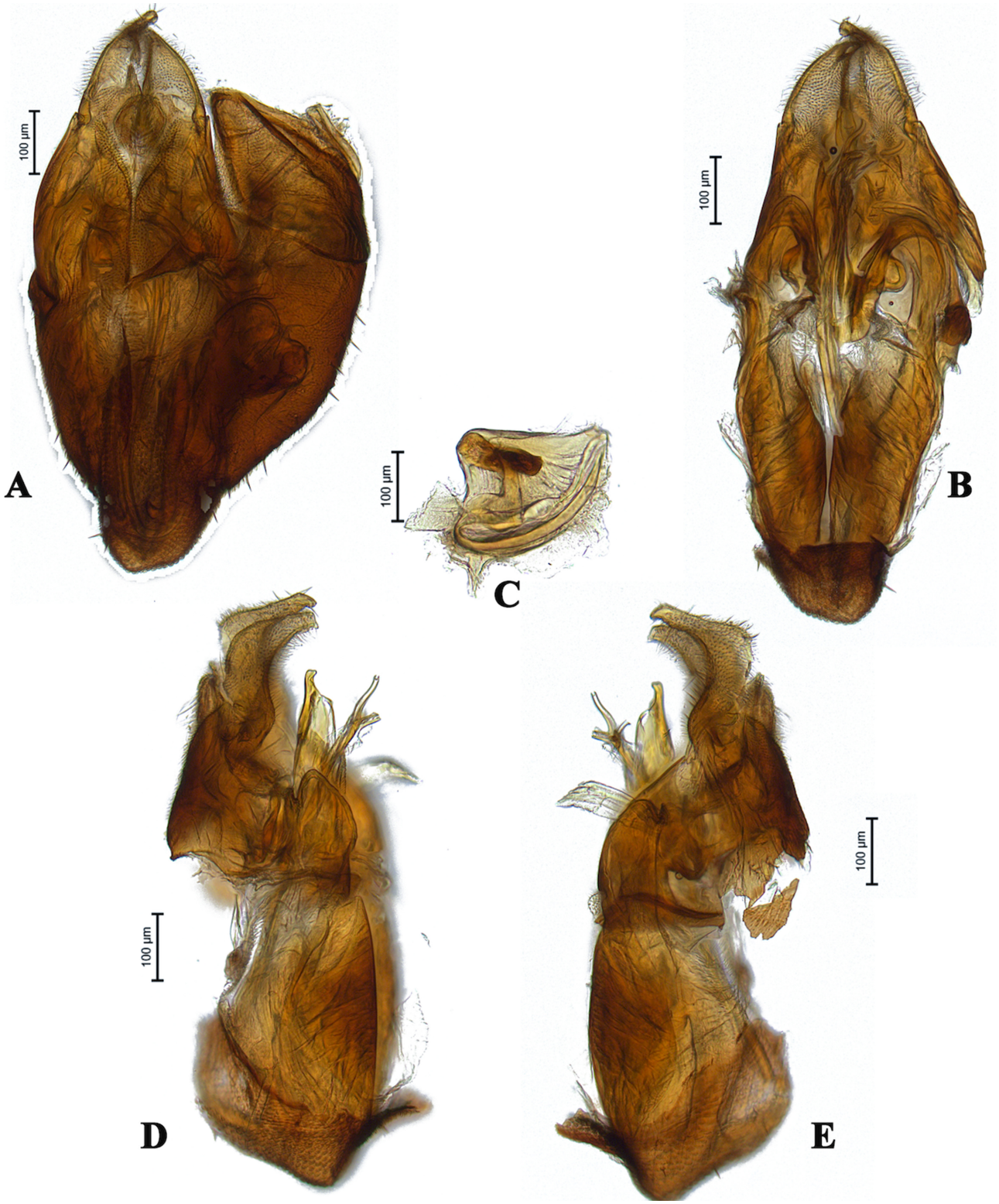



**FIGURE 81**. Male genitalia of *Tomosvaryella prolixa* **sp. nov.** (CNC576520, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Diagnosis:** This species can be recognized by the shape of the surstyli, widened in the basal half and narrowed and bent towards the sternites in the middle in dorsal view (Fig. 81A); extremely elongated hypandrium; gonopods extended towards surstyli, rounded at apex in ventral view (Fig. 81B).

**Description: MALE:** Body length: 2.5 mm. ***Head***. Flagellum tapering; yellow-brown pollinose, scape and pedicel brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.1 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3, covered by scattered short dark bristles. ***Thorax***. Postpronotum pale, with 2 long dark bristles. Mesonotum (viewed obliquely from front) brown, silvery pollinose with some long supra-alar bristles behind postpronotum lobes and two rows dorsocentral bristles. Scutellum brown, silvery pollinose with 4–6 long erect bristles (longer than dorsocentral bristles) along distal edge. Halter, knob, stem pale, base brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow. Fore and mid trochanters with three and two erect bristles, respectively. Hind trochanter gray pollinose without distinct projection; two distinct ventrobasal bristles present on fore and mid femora. Hind femur without ventroapical spines, except 5–8 equally spaced brown bristles posteroventrally, longest up to 2/3 the width of hind tibia at distal end. Short distal spines present on first four tibiae. Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 grey-brown pollinose. Dispersed short bristles on all tergites present. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: ST8 longer than wide, epandrium longer than wide (MLE:MWE = 1.2). Surstyli widened in basal half, strongly narrowed in apical half, right one narrower and longer in apical half, both surstyli bent towards sternite by 90° in apical half (Fig. 81A). Genital capsule in ventral view: both gonopods extended towards surstyli, rounded at apex, hypandrium extremely elongated; phallic guide strong and rather wide, with one small dorsal spine before apex (Fig. 81B); Genital capsule in lateral view: both surstyli straight and wide in basal half, then narrowed and bent towards sternite in the middle (Fig. 81D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 81C).

**FEMALE:** Unknown.

**Etymology:** From the Latin prolixus, stretched out long, in reference to the elongate hypandrium of this species.

**Examined material: Holotype:** AUSTRALIA: New South Wales: Ledknapper National Reserve, 7.3km ENE Beulah Headquarters (LDN2M), 29°21'S, 146°13'E, *E. melanopholia*, *Spinifex*, 10.XII.2009–18.III.2010, S. O'Sullivan & K. Taylor, Malaise trap, CNC576520 (1♂, QM).

**Distribution:** Australia (New South Wales) (Fig. 134).

### *Tomosvaryella pseudophanes* (Perkins, 1905)

Figs 82A–E, 135, 156D

*Pipunculus pseudophanes* Perkins, 1905

**Diagnosis:** This species can be recognized by the mid and hind femora bearing 8–15 short but distinct bristles posteriorly; surstyli triangle-shaped; narrowed in apical one third (Fig. 82A); subepandrial sclerite short; gonopods wide, rounded at apex; ejaculatory ducts sinuous without any teeth in ventral view (Fig. 82B); surstyli curved towards sternite in lateral view with same width from base to apex; phallic guide short, broadened at base with a hook-like projection in lateral view (Fig. 82D–E); phallus with three ejaculatory ducts.

**Redescription: MALE**. Body length: 3.0–3.5 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly golden pollinose; eyes touching for distance equal to 2–2.5 x length of ocellar triangle. Occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale brown, with 2–3 whitish bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part indistinctly brown pollinose; slightly brownish also from the side. Scutellum with dorsocentral bristles weakly developed, dark, somewhat longer on frontal part. Halter, knob pale, stem dark brown. ***Legs***. Mid coxa with 2–3

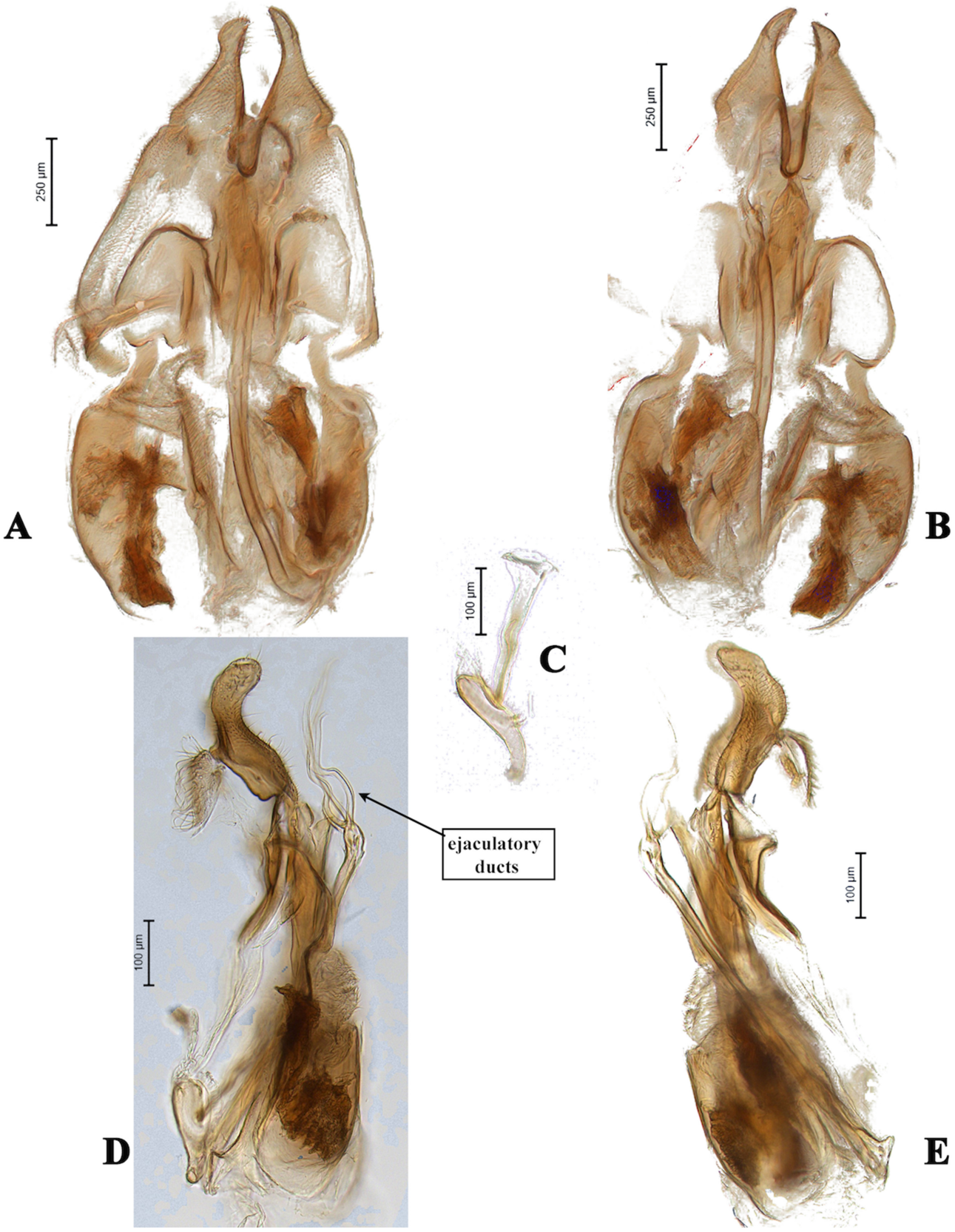



**FIGURE 82**. Male genitalia of *Tomosvaryella pseudophanes* (JSS8479, BPBM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

dark bristles. Trochanters and base of femora brown, femora dark brown, shining ventrally, femora silvery pollinose posteriorly except shiny hind femur; knees, basal 1/3 of tibiae yellow, tarsal segments pale brown, last segment dorsally darker. Ventroapical row of spines on fore femur tiny, 4–6, 8–10 short, black spines on mid femur; 6–8 spines on hind femur, mid and hind femora with 8–15 short but distinct bristles posteriorly. Subapical (distal) spines on first four tibiae absent. Hind trochanter without bristles on smoothly curved ventral side, ventrobasal spines absent on fore and mid femora. Hind tarsi slightly flattened, first tarsomere slightly shorter than 2–5 combined; ventral bristles scrub-like. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.8–3.1 mm. Upper margin of basal costal cell with one short bristle. Fourth costal section 2–3 times as long as third costal section. Cross-vein r-m distinctly distal to middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites golden-brownish pollinose, tergite 1 silvery grey pollinose with 6–8 short lateral bristles (up to 0.15 mm), sides faintly silvery on tergites 4 and 5 (the latter with larger spot, but weakly colored). Dispersed short dark bristles on tergites absent. Postabdomen in dorsal view: T6, S7 invisible; T5 twice as long as ST8. Genitalia without dissection: ST8 small, mainly shiny brown; membranous area lanceolate, shaped like a sunflower seed, vertical; surstyli relatively small, brown; hairy cerci visible without dissection in lateral view. ***Genitalia***. Surstyli hairy, wide at base in ventral view, narrowing at 2/3 of the length and broadening at tip, both uniformly wide in lateral view and pointed at tip; epandrium short and wide; cerci symmetrically placed, small; ST8 with a narrowing membranous area towards epandrium. Genital capsule in dorsal view: epandrium and surstyli dark brown. Epandrium wider than long (MLE:MWE = 0.6). Both surstyli broadened at base, triangle-shaped, narrowed in apical one third (Fig. 82A). Genital capsule in ventral view: subepandrial sclerite short and narrow; gonopods symmetrical broad and rounded at apex; phallus trifid, ejaculatory ducts sinuous, without any teeth (Fig. 82B). Genital capsule in lateral view: both surstyli gently curved to sternite, not narrowed at apex (Figs 82D–E); phallic guide broadened with final thin hook-like projection, visible; ejaculatory apodeme flat; sperm pump elongated, linear (Fig. 82C).

**FEMALE.** Body length: 3.0–3.3 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.5 times the width at antennae; completely silver-grey pollinose until up to ¾ of the frons, shiny black in front of ocellar triangle. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–1.2 times as long as last tarsal segment. Female abdomen with silver spots on sides of tergites 3–6. Ovipositor (Fig. 156D). Base dark brown with pale apical margin, piercer straight in ventral view, slightly up curved in lateral view.

**Examined material: LECTOTYPE [HERE DESIGNATED]**: AUSTRALIA: Queensland: Cairns, [16°55’S, 145°46’E], 21.VIII.1904, JSS8479 (1♂, BPBM); **PARALECTOTYPE:** AUSTRALIA: same location as lectotype, VII.1904, BMNH(E)964035, JSS8480 (1♀, BMNH; 1♀, BPBM).

**Distribution:** Australia (Queensland) (Fig. 135).

**Notes:** Based on the shape of the surstyli, this species is related to *Tomosvaryella infundibula* **sp. nov**. It differs by the shape of the ejaculatory ducts and surstyli in lateral view, with three long and sinuous ejaculatory ducts, without any teeth (Fig. 48D–E); dorsomedial margin of surstyli bent towards sternites (Fig. 48D–E); hind femur with bristles posteriorly. Perkins reared this species from a deltocephaline leafhopper, *Hecalus* sp. (Perkins 1905). Specimen JSS8479 is hereby nominated as the lectotype to fix and ensure consistent interpretation of the name. Intraspecific genetic distance ranges from 0.0% to 0.3%. *Tomosvaryella pseudophanes* is genetically most similar to *T. latistyla* **sp. nov.** (5.6–8.8% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella pterygia* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:6ABB3BF2-0EBE-48D6-AB4C-6D9F60FD7342

Figs 83A–E, 136, 152F, 156E

**Diagnosis**: This species can be recognized by the hind trochanter bearing 6–7 bristles ventrally; surstyli rectangular-shaped, pointing towards each other with distinct bristles on lateral distal corners directed laterally in dorsal view (Fig. 83A), phallic guide with 3–4 dorsolateral spines, subepandrial sclerite long with fine transverse streaks (Fig. 83B).

**Description**: **MALE:** Body length: 2.2–2.4 mm. ***Head***. Flagellum acuminate, yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part silvery pollinose; eyes touching for distance equal to 1.5–2 times ocellar triangle. Occiput silvery pollinose, slightly less so on upper half. ***Thorax***. Postpronotum pale brown, with 2–3 whitish bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silvery pollinose,

also silvery from the side. Scutellum grey pollinose, without bristles. Dorsocentral bristles weakly developed, pale, somewhat longer on frontal part. Halter, knob pale, stem dark black. ***Legs***. Trochanters and base of femora brown, femora dark brown, shining ventrally (hind femur also posteriorly), knees, basal 1/6 of tibiae, tarsal segments yellow, last segment dorsally brown. Mid coxa with three strong bristles at inner apical corner. Ventroapical row of spines on fore femur missing, 4–6 very short, black spines on mid femur; no spines on hind femur, only 3–4 flattened thick bristles on keel. Subapical (distal) spines on first four tibiae absent. Hind trochanter with 6–7 short dark bristles on ventral side, basal spines absent (short pale basal bristles on fore and mid femur may be present). Hind tarsomeres slightly flattened, hind metatarsus slightly longer than 2–4 combined. Pulvilli slightly shorter than last tarsal segment. ***Wing***. Length: 2.4–2.5 mm. Upper side of basal costal cell with one long distinct bristle (Fig. 152F). Fourth costal section 2.5–3 times as long as third costal section. Cross-vein r-m at middle of discal cell. Setulae on tegula absent. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, hind margin silvery grey on tergite 1, sides completely silvery on tergites 4 and 5. Dispersed short dark bristles absent. Lateral bristles on first tergite: 2–3, pale brown, as long as width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 as long as ST8. Genitalia without dissection: ST8 appears large, mainly dark brown and forming a right-angle corner (90 degrees) in lateral view at the lower end of membranous area; membranous area slit-like, vertical, distal part of epandrium paler and surstylus tips whitish, surstyli relatively small. ***Genitalia***. Genital capsule in dorsal view: surstyli rectangular-shaped with acute tips on apical inner corners, epandrium wider than long (Fig. 83A), 0.5 times as long as ST8; cerci symmetrically placed, small; ST8 with slit-like membranous area. Genital capsule in ventral view: Subepandrial sclerite covered with horizontal transverse streaks; gonopods symmetrical; phallic guide with a membranous projection to the side; phallus trifid, branches short; phallic guide with 3–4 dorsolateral spines, ejaculatory apodeme flat; sperm pump elongated, linear (Fig. 83B). Genital capsule in lateral view: both surstyli straight, bent before apex (Fig. 83D–E).

**FEMALE:** Body length: 2.2–2.6 mm. As male except for the following characters. Frons, eyes separated, as wide as 2 times the width at antennae; completely silver-grey pollinose until 1/6–1/4 from the antennae and along median line up to 2/3 of the frons, less so along the edges, smooth transition from grey pollinose to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–1.5 times as long as last tarsal segment on metatarsi. ***Ovipositor.*** Base of ovipositor dark brown with some scattered short dark bristles, piercer slightly down curved. LP: LB = 1.7. LDP:LPP = 3.0. (Fig. 156E).

**Etymology**: Named after the Greek word pterygion for fin, in reference to the fin-shaped keel on the hind femur of males.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Yathong Nature Reserve near 8 mile tank, 32°31’S, 145°37’E, 218m, across wide wash: field of flowers: open woodland, 4–25.x.2003, C. Lambkin & N. Starick, Malaise trap, CNCD3560 (1♂, QM); **PARATYPES**: AUSTRALIA: New South Wales: Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7’S, 146°56’E, *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, 19325, CNC576619, CNC576624, CNC576626, CNC576629 (4♂, QM); Culgoa National Park, 4.5km WNW Cawwell Homestead, Claypan (CGN3M), 29°3’S, 147°1’E, 192m, Gidgee, 30.I–18.V.2010, B. Schiebaan, Malaise trap, 17220, CNC576533–35 (3♂, QM); Culgoa National Park, 8km WNW Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3’S, 146°60’E, Coolibah, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan & N. Starick, Malaise trap, DB 9 (2nd bottle), 19302, CNC593683–84 (2♂, QM); Culgoa National Park, 8km West–Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3’S, 146°60’E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, 19322, CNC575125 (1♂, QM); Ledknapper National Reserve, 5km N Beulah Homestead (LDN1M), 28°19’S, 147°10’E, Allocasuarina, 18.III–15.V.2010, S. O’Sullivan & C. Lambkin, Malaise trap, 12 DB, 19361, CNC576716 (1♂, QM); Warrumbungles National Park, Woolshed at Wombelong Creek, 31°16’S, 148°57’E, 420m, rocky valley, cedar forest, 12–16.XII.1995, M.E. Irwin, Malaise trap, JSS14028 (1♂, INHS); Culgoa National Park, 8km WNW Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3’S, 146°60’E, Coolibah, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan & N. Starick, Malaise trap, CNC593677 (1♂, CNC); Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M), 29°7’S, 146°56’E, *Callitrus*, 21.XII.2009–30.I.2010, B. Schiebaan, Malaise trap, CNC576570, CNC576578, CNC576580, CNC576588 (4♂, QM); Blackbox, 22.XI–21.XII.2009, C. Lambkin, B. Shiebaan, N. Starick, Malaise trap, 11 DB, 19300, CNC576655, CNC576658, CNC576664 (3♂, QM); *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, 19325, CNC576606, CNC576610, CNC576639, CNC576641 (4♂, QM); Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3’S, 146°60’E, Coolibah, 30.I–18.V.2010, C.

Lambkin, R. Olsen, B. Shieban, Malaise trap, 19322, CNC575128, CNC575132, CNC575136 (3♂, QM); Billabong Creek, Conargo, 35°19'S, 145°9'E, 23–30.iv.1978, Z. Liepa, JSS9170 (1♂, ANIC); Culgoa National Park, 1km North-Northwest Cawwell Homestead, Claypan (CGN4M), 29°4'S, 147°3'E, 136m, Gidgee, 30.i.2010, B. Schiebaan, Malaise trap, CNC575350 (1♂, QM); Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.i–18.v.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575142, CNC575144, CNC575147, CNC575151–4 (7♂, QM); Culgoa National Park, 8km West–Northwest of Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°1'E, 136m, Coolibah, 21.xii.2009–30.i.2010, B. Schiebaan, Malaise trap, CNC574755–6 (2♂, QM); Fowlers Gap Research Station, 31°5'S, 141°42'E, 29.xi–2.xii.1981, I.D. Naumann & J.C. Cardale, ex. ethanol via cellosolve-xylene, JSS9234–6 (3♂, ANIC); Jerilderie, 35°22'S, 145°43'E, 28.xi.1978, J. McGechan, JSS8739 (1♂, ASCU); Mulwaree Ponds, Inveralochy Bridge, near Yass, 34°44'S 149°45'E, 27.ii.1966, Z. Liepa, JSS9238 (1♂, ANIC); Warrumbungle National Park, 31°14'S, 149°1'E, 19.x–3.xi.1997, J. Skevington & S. Winterton, Malaise trap, JSS8436 (1♀, QM); Yathong Nature Reserve near Triangle Tank, 32°38'S, 145°33'E, 200m, in sandy wash in low closed mallee, 3–25.x.2003, C. Lambkin & N. Starick, Malaise trap, JSS16038 (1♂, ANIC); Yathong Nature Reserve near 8 Mile Tank, 32°38'S, 145°41'E, ~205m, field of flowers: open woodland, 3–25.x.2003, C. Lambkin & N. Starick, Malaise trap; CNCD3618, CNCD3634 (2♂, QM); Yathong Nature Reserve near 8 mile tank, 32°31'S, 145°37'E, ~218m, across wide wash: field of flowers: open woodland, 4–25.x.2003, C. Lambkin & N. Starick, Malaise trap, CNCD3559, CNCD3563 (2♂, QM); Queensland: 2.5km West–Northwest of Plevna Downs Homestead (PD3 P2), 26°40'S, 142°35'E, 133m, Gidgee, 25.XI–17.XII.2008, R. Mackenzie, pitfall trap, 17309, CNC575273 (1♂, QM); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 20.I–18.III.2010, C. Kelly & A. Coward, Malaise trap, 19271, CNC576676, CNC576678 (2♂, QM); Elizabeth Creek, Boodjamulla NP, 18°14'S, 138°5'E, 170m, Bloodwood open , 18–22.IV.2005, M. Mathieson & G. Smith, Malaise trap, 12398, JSS50564 (1♂, CNC); Kurumba, 17°29'S, 140°53'E, 18.IV.1983, J.F. Donaldson, JSS8957 (1♂, QDPC); Plevna Downs, 2.3km SSW Arima (PD2 M), 26°32'S, 142°31'E, 134m, Gidgee, 25.XI–17.XII.2008, R. Mackenzie, Malaise trap, 17292, CNC595264 (1♂, QM); Plevna Downs, 2.5km WNW Homestead (PD3), 26°40'S, 142°35'E, 133m, Gidgee, 16.IX–2.X.2008, Starick, Lambkin & Mackenzie, Malaise trap, 16272, CNC591861 (1♂, QM); 12.7km South-Southeast of Plevna Downs Homestead (PD8 M), 26°47'S, 142°39'E, 145m, sandy creek bank, 25.XI–18.XII.2008, R. Mackenzie, Malaise trap, 17341, CNC593802 (1♂, QM); Culgoa Floodplain National Park Headquarters, 11.8km N, 28°55'S, 147°8'E, 150m, Brigalow, 9.XII.2007–16.I.2008, N. Starick, C. Lambkin & R. Raven, Malaise trap, 15683, CNC591849 (1♂, QM); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 20.I–18.III.2010, C. Kelly, A. Coward, Malaise trap, 19271, CNC576687–90, CNC576700 (5♂, QM); 18.XI–17.XII.2009, C. Lambkin, A. Coward, C. Kelly & N. Starick, Malaise trap, CNC576510, CNC576512 (2♂, QM); Culgoa Floodplain National Park, 11.8km North of Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow Black box, 17.XII.2009–20.I.2010, C. Kelly & A. Coward, Malaise trap, CNC574522 (1♂, QM); Currawinya National Park, 10 mile bore, 0.5km Northwest, 28°52'S, 144°28'E, 130m, *Eucalyptus*, 13.X–15.XII.2007, C. Lambkin & N. Starick, Malaise trap, CNC575118 (1♂, QM); Currawinya National Park, 15.1km Southwest of Headquarters (CW9M), 28°55'S, 144°26'E, 131m, *Eremophila*, 12–26.IX.2008, Lambkin, Starick, Townsend, Malaise trap, 17241, CNC574663 (1♂, QM); Plevna Downs, Tompilly Hill base (PD6 M), 26°44'S, 142°39'E, 187m, Gidgee, 24.IV–24.VII.2008, G. Turner & R. Mackenzie, Malaise trap, CNC595284 (1♂, QM); 2.5km West-Northwest of Plevna Downs Homestead (PD3 P2), 26°40'S, 142°35'E, 133m, Gidgee, 25.xi–17.xii.2008, R. Mackenzie, pitfall trap, CNC575271–2 (2♂, QM); 200 km west Windorah, 25°25'S, 142°39'E, ~Malaise in dry creek bed, 4.ix.1997, S. Winterton, J&A. Skevington, JSS8326–9 (3♂, 1♀, QM); 204 km west Windorah, 25°42'S, 140°53'E, Malaise in dry creek bed, 4.ix.1997, S. Winterton, J. & A. Skevington, JSS8338 (1♂, QM); 91.2 km west Windorah, 25°22'S, 141°47'E, Malaise in dry creek bed, 31.viii–5.ix.1997, S. Winterton, J. & A. Skevington, JSS8342 (1♂, QM); Charleville, 26°24'S, 146°14'E, 15.ii.1970, A.L. Dyce, car net, ex. spirit via ethyl acetate, JSS8619, JSS8623 (2♂, ANIC); Kroombit Tops National Park, hilltop, 24°27'N, 150°56'E, 22.xii.2014, J.H., A.M. & A.W. Skevington, CNC384505–8 (4♂, CNC); Mount Moffatt summit, 25°4'S, 148°3'E, 1097m, 18.xi.2014, J.H., A.M. & A.W. Skevington, CNC374868, CNC374963, CNC375031, CNC375036 (4♂, CNC); Plevna Downs, Tompilly Hill base (PD6M), 26°44'S, 142°39'E, 187m, Gidgee, 24.vii–17.ix.2008, N. Starick, C. Lambkin & R. Mackenzie, Malaise trap, CNC574713 (1♂, QM); Ridgepole Waterhole, 24 km ESE of Musselbrook Resource Centre, Lawn Hill National Park, 18°40'S, 138°22'E, 7.v.1995, G. Daniels & M.A. Schneider, JSS8300 (1♀, QM); South Australia: 6 km South Maynard's Bore, Everard Pk. Station, 34°57'S, 138°34'E, by beating

*Grevillea*, 6.XI.1970, G. Gross, JSS8708 (1♂, SAM); Leigh Creek, 30°29'S, 138°25'E, 15.IX.1972, Z. Liepa, JSS9206 (1♂, ANIC); Near Victory Well, Everard Park Station, 27°3'S, 132°30'E, 2–4.XI.1970, G. Gross, Malaise trap, JSS8710 (1♂, SAM); Gammon Ranges National Park, south end of Weetootla Gorge, 30°29'S, 139°16'E, 537m, hilltop, 11.X.1997, J. Skevington & C. Lambkin, [hand collected, thorax and 2 legs remaining, rest used for sequencing], JSS1259 (1♂, QM); JSM10829, JSS1261 (1♂, QM); Flinder's Ranges National Park, Brachina Gorge, Heysen Hilltop, 31°20'S, 138°33'E, 9.x.1997, J.&A. Skevington & C. Lambkin, JSS8379–81, JSS8389–90, JSS8393 (6♂, QM); Gammon Ranges National Park, Weetootla Gorge, 30°28'S, 139°13'E, 537m, 13.x.1997, J. Skevington & C. Lambkin, JSS8370, JSS8372–4 (4♂, QM); Gammon Ranges National Park, south end of Weetootla Gorge, 30°29'S, 139°16'E, 537m, hilltop, 11.x.1997, J. Skevington & C. Lambkin, hand collected, JSS4425 (1♂, QM), hilltop, 11.x.1997, J. Skevington & C. Lambkin, JSS8345, JSS8347–8, JSS8352–3, JSS8356–7, JSS8361, JSS8363–4, JSS8366–7 (12♂, QM); Koonamore, inside KVR, 32°3'S 139°23'E, salt bush sweep, 18.ii.1974, P. Greenslade, [genitalia missing; head damaged], JSS8818 (1♂, SAM); Near Victory Well, Everard Park Station, 27°3'S, 132°30'E, 2–4.xi.1970, G. Gross, Malaise trap, JSS8713 (1♂, SAM); 2.xi.1970, G.F. Gross, Malaise trap, JSS8711–2 (2♂, SAM); Swan Reach Conservation Park, 34°35'S, 139°29'E, [in mallee], 29.ix–4.x.1997, S. Winterton, J.&A. Skevington & C. Lambkin, Malaise trap, JSS8420 (1♂, QM); Western Australia: 70km S of Newman; Great Northern Highway, 23°54'S, 119°45'E, 626m, near trees in small wash, 6–18.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, CNCD6902 (1♂, CNC); 48 km NW Carnarvon; Blowholes Road; sandy trail, 24°35'S, 113°31'E, dry vegetated coastal dunes, 27.iv–11.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15827 (1♂, CNC); 11 km E Marble Bar at Brockman Creek, 21°9'S, 119°52'E, ~187m, damp, sandy creek bed, 2–14.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15683, JSS15685 (2♂, CNC); 137 km S Newman, 30 km W Kumarina Road House, 24°28'S, 119°40'E, 21–23.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, 19.iv.–23.v.2003, JSS16417–9 (1♂, 2♀, CNC); 15 km N Auski Road House, 22°16'S, 118°46'E, 402m, water hole in *Acacia* woodlands, 3–16.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15846 (1♀, CNC); 158 km S Newman, 9 km N Kumarina Road House, 24°38'S, 117°37'E,~638m, in wide sandy wash, 18–21.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS16406, JSS16408, JSS16410–4 (4♂, 2♀, CNC; 1♀, ANIC); wide sandy wash, 24.iv–7.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15652, JSS15705, JSS15707–8, JSS15710–4 (8♂, 1♀, CNC); ~638m, wide sandy wash, 7–18.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15719, JSS15721, JSS15724–5, JSS15727–31 (8♂,1♀, CNC); 171 km east of Marble Bar, 21°17'S, 121°14'E, 300m, dry wash with flowers, 2–15.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15873 (1♀, CNC); 30 km ESE Three Rivers Station, dry bed of Gascoyne River, 25°14'S, 118°57'E, 504m, dry river bed, 24.iv–7.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15651 (1♀, CNC); 47 km S Pardoo Road House on Shay Gap Road, 20°23'S 120°1'E, 170m, dry wash near *Spinifex*, 1–14.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15701 (1♂, CNC); 70 km S Newman on Great Northern Highway, 23°54'S, 119°45'E, 626m, small wash with *Eucalyptus*, 24.iv–6.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15882 (1♀, CNC); Karijini National Park, Banjima Drive, 10 km W visitors center, 22°29'S, 118°22'E, 743m, 4–16.v.2003, M.E. Irwin & F.D. Parker, JSS15823 (1♂, CNC); Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16119–20, JSS16122 (3♂, ANIC); Karijini National Park, Juna Downs Road, 22°40'S, 118°26'E; 22°42'S, 118°25'E, ~797m, 789m, in open mulga with flowering *Ptilotus*; between drying pools in rocky Turee Creek, 19–25.iv.2003, C. Lambkin & T. Weir, Malaise trap, JSS16171, JSS16255, JSS16286, JSS16288, JSS16290–1, JSS16293–4, JSS16297, JSS16299 (6♂, 4♀, ANIC); 22°40'S, 118°26'E, 22°44'S, 118°25'E, 797m, 798m, in open mulga with flowering *Ptilotus*, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS15993, JSS15997, JSS16001, JSS16004, JSS16088, JSS16095, JSS16307, JSS16309–11 (6♂,4♀, ANIC); Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 814m, open *Eucalyptus* grassland, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS15585 (1♀, ANIC); Karijini National Park, Weano Gorge Road, 22°22'S, 118°15'E, 22°24'S, 118°15'E, 775m, 718m, on hilltop, in open *Eucalyptus*, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, JSS16145, JSS16218, JSS16232–4, JSS16237–9 (5♂, 3♀, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.iv–14.v.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3822 (1♂, CNC); Kimberley, Lennard River Crossing, Gibb River Road, 17°23'S, 124°44'E, ~in riverine thicket, 14–28.vii.1988, T.F. Houston, Malaise trap, JSS8734–5 (1♂, 1♀, WAM); Lane Poole Reserve, 32°49'S, 116°6'E, 315m, *Banksia grandis*/ Jarrah woodland on bauxite ridge, 7–13.xi.2003, C. Lambkin & J. Recsei, Malaise trap, JSS16064 (1♂, ANIC); Mount Augustus National Park, south slope on Saddle Trail, 24°18'S, 116°48'E, 400m, small dry wooded wash,

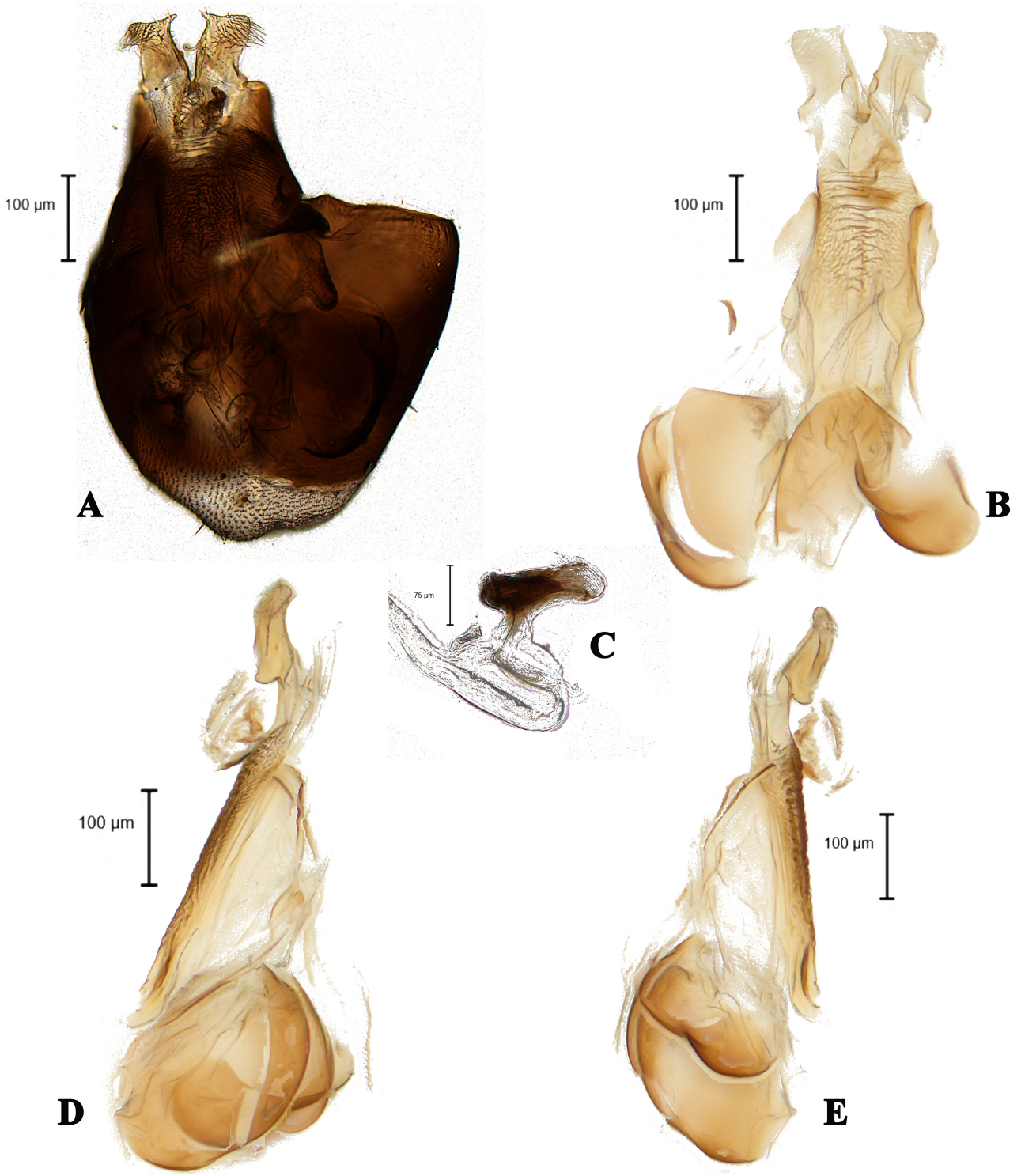



**FIGURE 83**. Male genitalia of *Tomosvaryella pterygia* **sp. nov.** (JSS7319, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

25.iv–7.v.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15886 (1♀, CNC); Millstream-Chichester National Park, Black Hill Pool, 21°20'S, 117°15'E, 176m, over wide dry rocky creek bed, *Eucalyptus*, 7–12.v.2003, C. Lambkin & D. Yeates, Malaise trap, JSS16313 (1♂, ANIC); Millstream, 21°35'S, 117°4'E, 10.iv.1971, D.H. Colless, JSS9198–9 (2♂, ANIC); 12.iv.1971, D.H. Colless, JSS9192–3, JSS9200 (3♂, ANIC); ~3 km north of Denham, 25°55'S, 113°32'E, hilltop, 12.xii.1999, J. Skevington, JSS7319, JSS7343, JSS7360, JSS7365, JSS7380, JSS7387, JSS7396, JSS7407 (8♂, QM); 23km E. Marble Bar, 21°11'S, 119°57'E, 222m, Sandy wash, 15.v.2003, F.D. Parker, M.E.

Irwin, pan trap, CSIRO–SCHLINGER PILBARA EXPEDITION 19.iv.–23.v.2003, CNCD6951, CNCD6953–4, CNCD6956, CNCD6958–9 (2♂, 4♀, ANIC); Lochada, 1.2km East-Southeast of Bolada Camp, 29°12'S, 116°32'E, 282m, open York Gum woodland, Hakea, 15–18.IX.2009, Lambkin, Monteith, Malaise trap, CNC595382–3 (2♂, CNC); Australia: Rhodes grass, 19.I.1966, accession#D.P.; R2367; DC.HC.NY.D.L., JSS8971 (1♂, QDPC).

**Distribution**: Australia (New South Wales, Queensland, South Australia, Western Australia) (Fig. 136).

**Notes:** This is one of the most common species of *Tomosvaryella* in Australia and is widespread, mostly in the outback. Based on the shape of the genitalia, this species is close to *T. latipoda* **sp. nov.**. It differs by having rectangular-shaped surstyli, its apex is wider and covered with dense long bristles in dorsal view (Fig. 83A), but the surstyli of *T. latipoda* **sp. nov.** is narrowed at the apex with long bristles before the apex (Fig. 53A). Intraspecific genetic distance ranges from 0.0% to 2.5%. This species is genetically most similar to *T. kooncheraensis* **sp. nov.** (1.1 % pairwise divergence) (Supplementary file 3).

### *Tomosvaryella quadrata* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:3A8752EB-801B-4A63-83CF-8C35C18ACD89

Figs 84A–E, 137, 147D

**Diagnosis:** This species can be recognized by the hind trochanter having a distinct, square keel with tiny bristles along its edge (Fig. 147D); elongate surstyli in dorsal view (Fig. 84A); gonopods with an extended finger-like projection towards surstyli (Fig. 84B); phallic guide with four spines.

**Description**: **MALE**: Body length: 3.1 mm. ***Head***. Flagellum acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose with a golden tinge; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper half. ***Thorax***. Postpronotum pale, with 4–5 extra-long, pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 12–14 bristles along the distal edge. Dorsocentral bristles well developed, somewhat longer along frontal edge, numerous long pale bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees yellow, tibiae black, tarsomeres yellow-brown ventrally and brown dorsally, last segment same, brown. Hind trochanter with a distinct, square keel (like a "top hat") and with tiny bristles along the edge, somewhat longer at the distal corner (Fig. 147D); ventrobasal spines (1 small, 1 large) present on fore and mid femora. Ventroapical row of spines on fore femur absent; 5–6 tiny, black spines on mid femur; no spines on hind femur, only 14–16 long pale bristles equally spaced, longest at 2/3 from base (up to as long as 1–1.2 times the width of hind tibia at the distal end), somewhat pressed against the surface of the femur. Subapical (distal) spines on first four tibiae absent. Hind tarsi slightly flattened (1–3), hind metatarsus as long as 2–4 combined. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2.5 times as long as third costal section. Cross-vein r-m distal to middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Dissected. tergite 1 silvery grey. Lateral bristles on first tergite present, 6–8 short pale bristles in a row up to 1–1.2 times as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli brown. Epandrium wider than long (MLE:MWE = 0.6). Surstyli symmetrical, broadened at base, elongated, slender, pointing at apex, left is wider in middle and longer than right one (Fig. 84A). Genital capsule in ventral view: gonopods equal in height with a finger-like projection towards surstyli; hypandrium broad, subepandrial sclerite widened and covered with transverse streaks (Fig. 84B); phallus with three short ejaculatory ducts; phallic guide with four spines dorso-dorsolaterally (the longest one twice as length as others). Genital capsule in lateral view: both surstyli gently curved towards sternite (Figs 84D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 84C).

**FEMALE:** Unknown.

**Etymology**: From the Latin quadratus, four-cornered or square, in reference to the square keel on the hind trochanter.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Siding Springs Observatory summit, 31°16'S, 149°4'E, 17.x.1997, J. Skevington & C. Lambkin, JSS8395 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: Mount Moffatt summit, 25°4'S, 148°3'E, 1097m, 18.XI.2014, J.H., A.M. & A.W. Skevington, CNC374994 (1♂, CNC).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 137).

**Notes:** Both specimens of this rare species were caught hilltopping. This species is genetically similar to *T. novaezealandiae* (1.7% pairwise divergence) (Supplementary file 3).

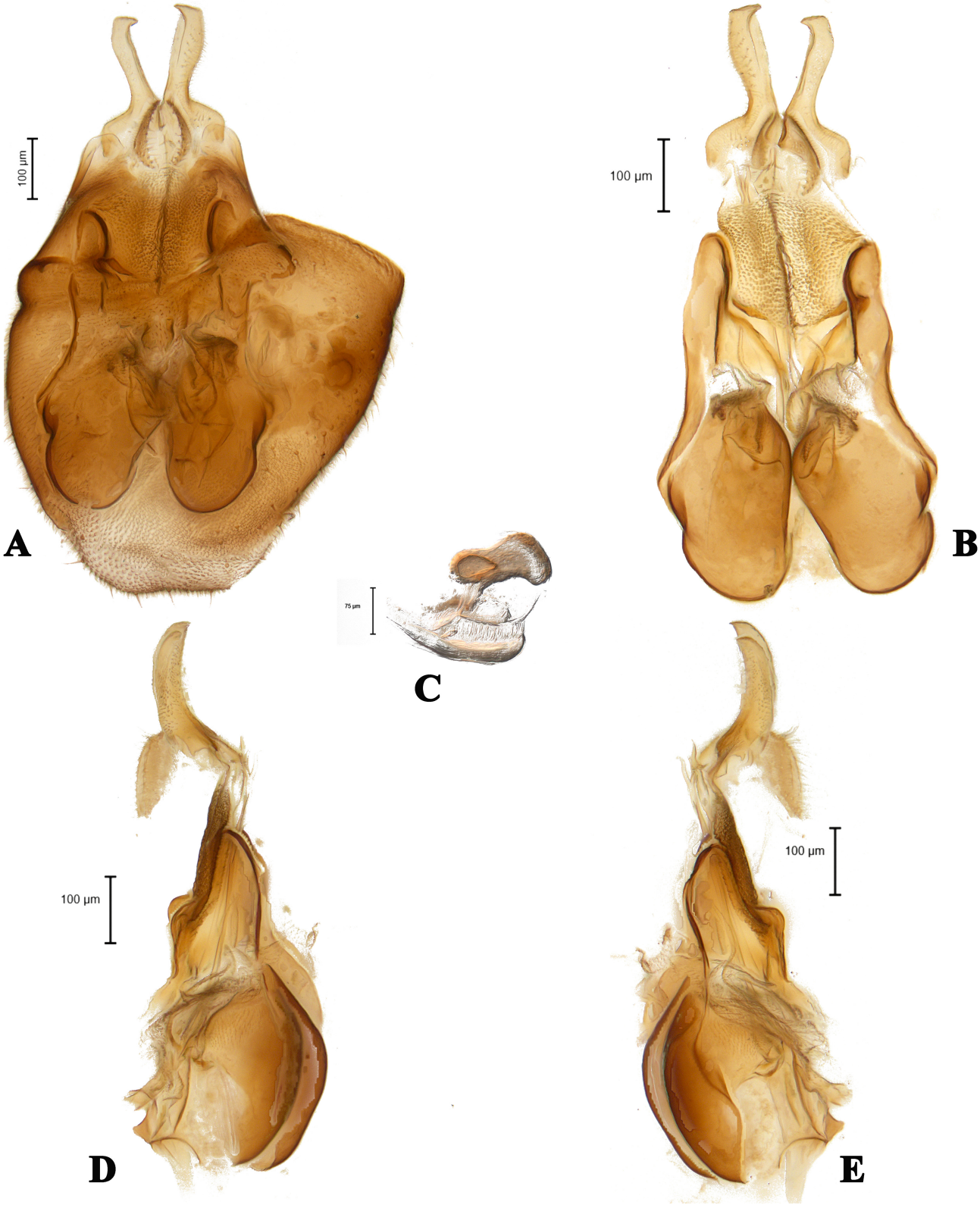



**FIGURE 84**. Male genitalia of *Tomosvaryella quadrata* **sp. nov.** (JSS8395, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella reburra*** **Motamedinia, Skevington & Földvari sp. nov.**
urn:lsid:zoobank.org:act:0BABCC13-0A67-4DED-ADD3-52FB8EEC3494
Figs 85A–E, 138

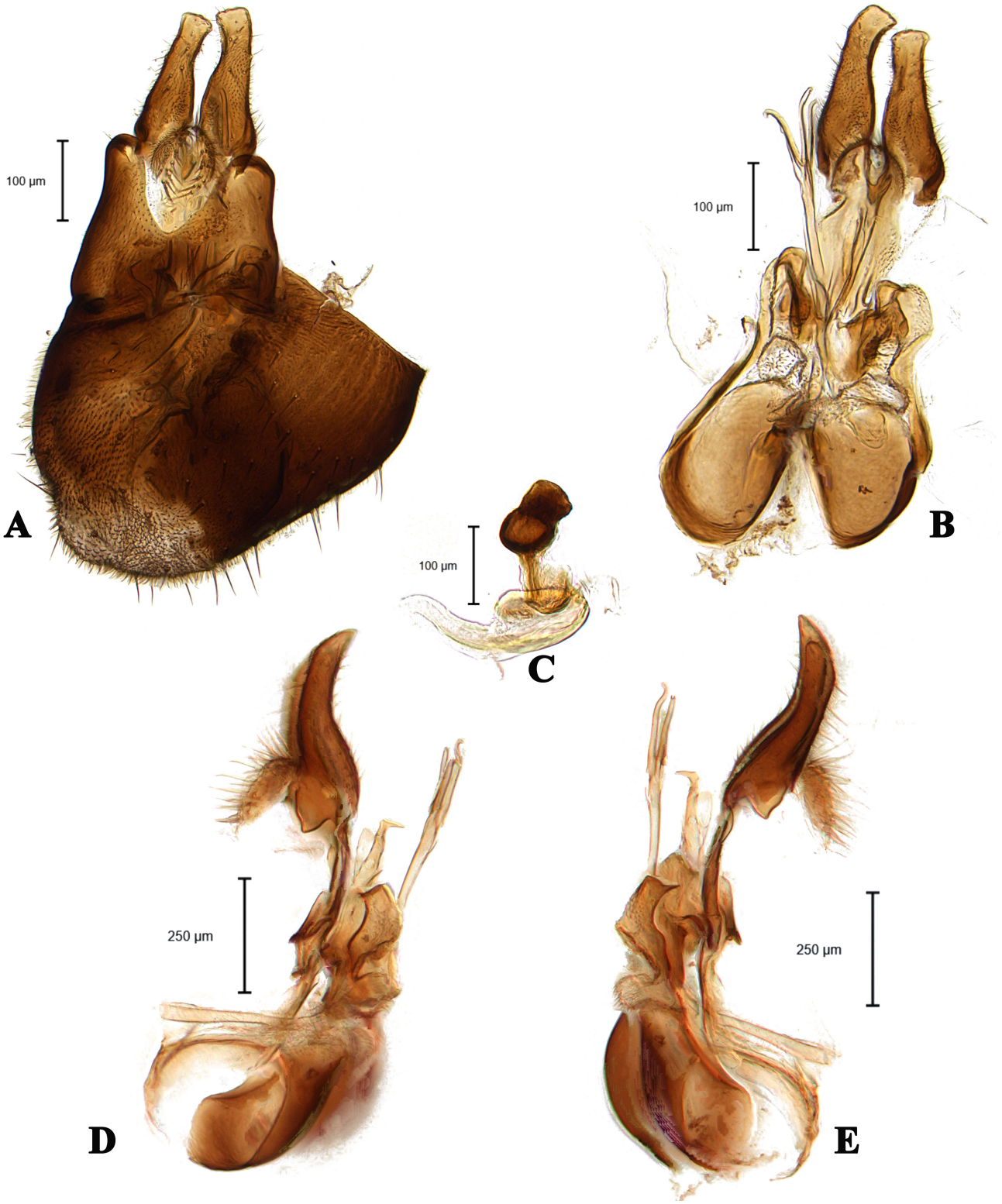



**FIGURE 85**. Male genitalia of *Tomosvaryella reburra* **sp. nov.** (JSS8304, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Diagnosis:** This species can be recognized by the shape of surstyli, broadened in the basal two thirds, and narrowed to the apex in dorsal view (Fig. 85A); gonopods asymmetrical, both extended towards surstyli, right one flattened at apex, left one pointed at apex and triangle-shaped; phallic guide pointed towards right side at apex in ventral view (Fig. 85B); abdomen covered by dense bristles.

**Description: MALE:** Body length: 3.4 mm. ***Head***. Scape dark, pedicel and flagellum brown, Flagellum tapering; yellow-brown pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to the length of ocellar triangle. Occiput silvery pollinose with scattered short dark and pale bristles. ***Thorax***. Postpronotum brown, with 3–4 long pale bristles. Mesonotum (viewed obliquely from front) subshining black, silvery pollinose, with long bristles at supra-alar area in a row, extended to posterior and uniseriate rows of long intra-alar bristles. Scutellum black with 4–6 lateral bristles along distal edge. Halter, knob pale, tip brownish, stem and base dark. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Coxae grey pollinose with some longer pale bristles ventroapically, Mid trochanter with two or three dark bristles posteroventrally Hind trochanter without any feature, grey pollinose with scattered short bristles ventroapically, 1–2 ventrobasal spines present on fore and mid femora. Hind femur with 6–8 ventroapical spines, with two rows of postero- and anteroventral bristles and two rows postero- and anterodorsal bristles, longest up to 2/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Hyaline brown. Length: 3.5 mm. Upper side of basal costal cell with one long dark, one shorter dark and three pale bristles. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. Three short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining brown, tergite 1 grey pollinose with 10–12 long dark lateral bristles up to as long as of hind femur's width at base. All tergites covered by strong dark bristles. ***Genitalia***. Genital capsule in dorsal view: epandrium as long as wide (MLE:MWE = 1.0). Surstyli rather symmetrical, broadened in basal two thirds, then narrowed to apex (Fig. 85A). Genital capsule in ventral view: gonopods asymmetrical, both extended towards surstyli, right one flattened at apex, rather quadratic- shape, left one pointed at apex and triangle-shaped; phallic guide pointed towards right side at apex; subepandrial sclerite distinct (Fig. 85B); Genital capsule in lateral view: both surstyli widened at the base, moderately narrowed at the middle, then curved to sternite (Fig. 85D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 85C).

**FEMALE:** Unknown.

**Etymology:** From the Latin reburrus, one with bristling hair, in reference to the densely bristled abdomen.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: St. Lucia, 27°30'S, 153°0'E, 1.iii.1954 [date recorded as 1-3-54], S. Sekiton, JSS8304 (1♂, QM); **PARATYPE**: AUSTRALIA: Queensland: Brisbane, 27°28'S, 153°1'E, 26.VI.1964, G.B. Monteith, JSS9704 (1♂, QM).

**Distribution:** Australia (Queensland) (Fig. 138).

**Notes:** Based on the terminalia characters this species is close to *T. seticosta* **sp. nov.** but the shape of surstyli in lateral view and the shape of the gonopods are different.

### *Tomosvaryella scapania* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:CA464E5A-7CAE-441A-968F-D14EE4FB53A1
Figs 86A–E, 139, 147E, 158A

**Diagnosis**: This species can be recognized by the hind trochanter having velvet-like bristles and some erect bristles ventrally (Fig. 147E); elongate surstyli in dorsal view, left surstylus pointed towards outer margin (Fig. 86A); phallus with three ejaculatory ducts, one covered by dense teeth at base (Fig. 86D–E); gonopods widened in ventral view (Fig. 86B); ejaculatory apodeme spade-shaped (Fig. 86C).

**Description**: **MALE**: Body length: 2.9–3.1 mm. ***Head***. Flagellum short acuminate; yellow. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose with a golden tinge; eyes touching for distance equal to 1.8–2.2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 extra short, pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 7–8 weak

bristles along the distal edge. Dorsocentral bristles indistinct, very short and pale, somewhat longer along frontal edge, a few very short pale bristles around postpronotum. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with 1–5 short, dark bristles. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow, extending to basal 1/3 along posterior edge (tibia otherwise black), tarsal segments dark brown, ventrally somewhat paler, last segment same dark brown. Hind trochanter without a keel, only velvet-like bristles ventrally with some (6–7) slightly longer, erect bristles, equally spaced (Fig. 147E). Ventroapical row of 4–5 very weak spines on fore femur present; 5–6 small, black spines on mid femur; 5–6 short, dark spines on distal half on hind femur. Subapical (distal) spines on first four tibiae absent. Ventrobasal spines absent on fore and mid femora. Hind tarsi slightly flattened, metatarsus almost as long as 2–5 combined; stronger, peg-like dark spines on metatarsus laterally along anterior edge. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.5–3.6 mm. Upper side of basal costal cell with 1–3 short dark bristle. Fourth costal section 3–3.5 times as long as third costal section (section 3 appears short). Cross-vein r-m distinctly distal to middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black with a green tinge, tergite 1 silvery grey, sides silvery pollinose on tergite 5 (very small). Dispersed strong dark bristles on all tergites absent. Lateral bristles on first tergite absent, only 3–4 indistinct, pale bristles. Postabdomen in dorsal view: T6, S7 invisible; T5 1.6–1.8 times as long as ST8. Genitalia without dissection: ST8 medium sized and rounded, brown and with the occasional indistinct bristles, otherwise velvet-like covering of ST8; membranous area drop-shaped, directed posteroventrally; epandrium brown, cerci pale, surstyli brown, elongated, uniformly broad. ***Genitalia***. Genital capsule in dorsal view: epandrium and surstyli brown. Epandrium wider than long (MLE:MWE = 0.5). Surstyli rather symmetrical, elongated, covered by dense short bristles; right surstylus wider than left one in middle, gently curved to left one; left surstylus constricted before apex, pointed towards outer margin (Fig. 86A). Genital capsule in ventral view: gonopods widened, equal in height; hypandrium broad and sclerotized, subepandrial sclerite small (Fig. 86B); phallus with three distinct long sinuous ejaculatory ducts, one of ejaculatory ducts covered by dense teeth at base. Genital capsule in lateral view: both surstyli broadened in middle and bent towards sternite; phallic guide broad, pointed at apex (Fig. 86D–E). Ejaculatory apodeme spade-shaped (Fig. 86C).

**FEMALE:** Body length: 2.8–2.9 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, gradually changing from pollinose to shiny black in the transition zone; frons depressed at the point where it is widest. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.2–1.5 times as long as last tarsal segment, also on hind tarsi. Female abdomen with silver spots on sides of tergite 6 only. ***Ovipositor.*** Base of ovipositor dark brown with some gray pollinosity. Viewed laterally (Fig. 158A), piercer straight. LP:LB = 2.1. LDP:LPP = 2.0. (Fig. 158A)

**Etymology**: The species is named *scapania* from the Greek skapane, for spade or hoe, in reference to the spade-shaped ejaculatory apodeme.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: 3.5 km SW by S Mount Baird, 15°10’S, 145°7’E, 3.v.1981, D.H. Colless, Malaise trap, JSS8583 (1♂, ANIC); **PARATYPES**: AUSTRALIA: Queensland: 10 miles South Bowen, 20°8’S, 148°15’E, 26.ix.1950, E.F. Riek, JSS8634 (1♂, ANIC); 2 km S of Horseshoe lookout, Blackdown land, 23°50’S, 149°3’E, 23–24.iv.1981, D.H. Colless, JSS8614 (1♂, ANIC); Carnarvon National Park, Mount Moffatt section, 25°4’S, 148°1’E, 26.xi.1997, J. Skevington & C. Lambkin, Malaise trap, JSS2300 (1♂, QM); Double Island Point, 25°56’S, 150°11’E, 110m, 28.ix.2002, S.A. Marshall, debu210268 (1♂, DEBU); Proserpine, Thompson Creek; XY15, 20°31’S, 148°34’E, 30m, 3–10.v.2007, J. Stanisic, 15028, CNCD159594–5 (1♂, 1♀, CNC); Proserpine, Deadman Creek, XY17, 20°30’S, 148°34’E, 21m, 3.x–10.v.2007, J. Stanisic, 15030, CNCD159288–93 (4♂, 2♀, QM); Tibrogargan, 26°56’S, 152°57’E, 1961, P.R. Webb, JSS8262 (1♂, QM); Mareeba, 17°0’S, 145°26’E, 8.II.1997, [Howden], flight interception trap, JSS14388 (1♂, DEBU); Tinaroo Falls Dam, North Queensland, 17°11’S, 145°34’E, open savannah, 27.IV.1967, D.H. Colless, JSS138 (1♂, ANIC); Northern Territory: Arnhem Land, Maningrida, 12°3’S, 134°13’E, 5m, 18.III.1961; 19.III.1961, J.L.&M. Gressitt, Malaise trap, CNCD5565–66 (2♂, BPBM).

**Distribution:** Australia (Northern Territory, Queensland) (Fig. 139).

**Notes:** This is a forest species that occurs mostly along the coast from Brisbane to Darwin. Intraspecific genetic distance ranges from 0.0% to 1.1%. It is genetically closest to *T. pseudophanes* and *T. quadrata* **sp. nov.** (11.3% pairwise divergence) (Supplementary file 3).

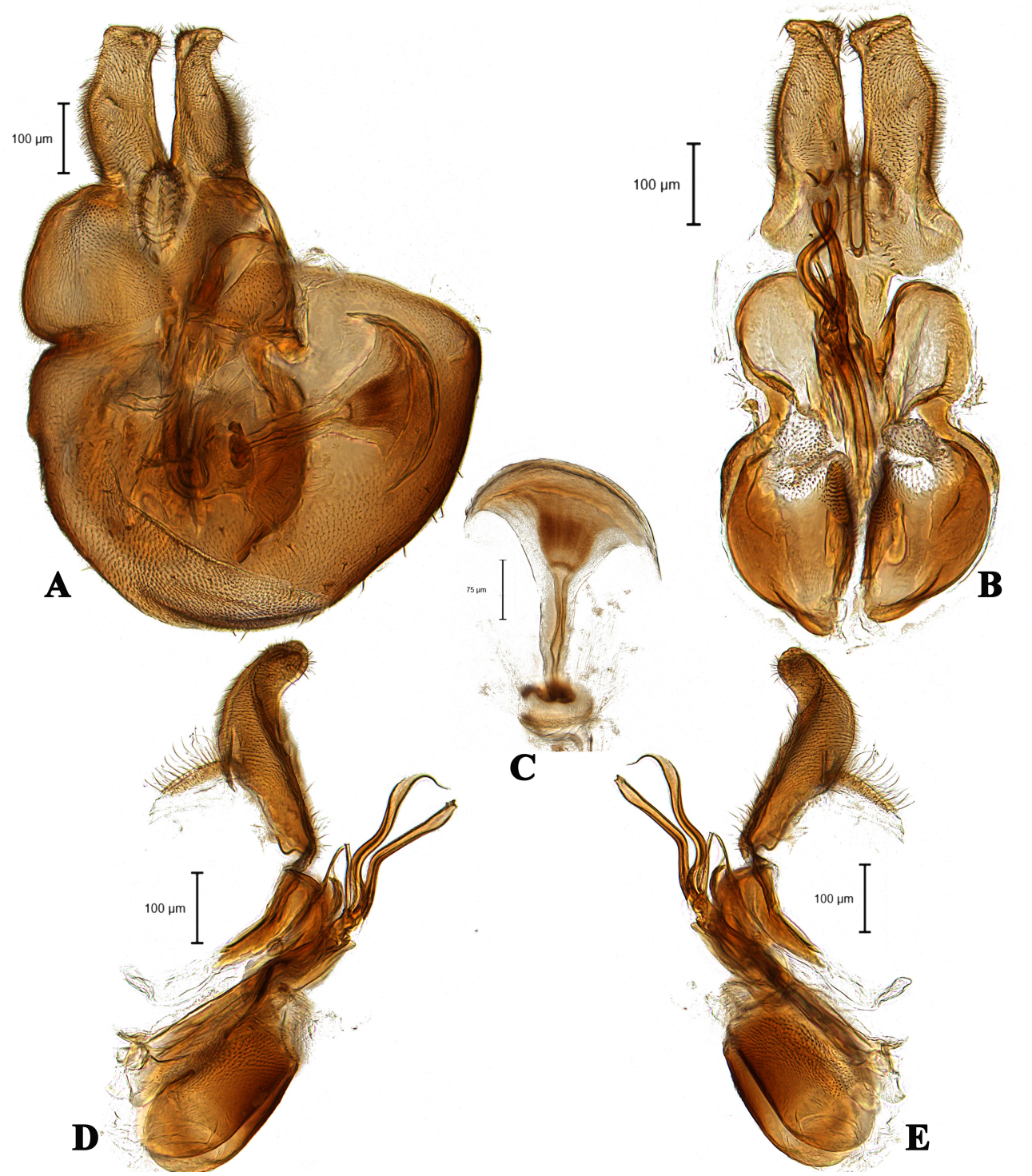



**FIGURE 86**. Male genitalia of *Tomosvaryella scapania* **sp. nov.** (JSS8583, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella setapteron*** **Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:30BA4161-E02C-4408-971D-DA0AAE0915CF
Figs 87A–E, 138

**Diagnosis:** This species can be recognized by symmetrical and elongated surstyli in dorsal view (Fig. 87A); gonopods extended towards surstyli, pointed at apex, right gonopod with a distinct projection on inner margin;

phallic guide with 3–6 dorso- dorsolateral spines; large subepandrial sclerite with a small wrinkled edge in its center in ventral view (Fig. 87B).




**FIGURE 87**. Male genitalia of *Tomosvaryella setapteron* **sp. nov.** (JSS15574, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Description: MALE:** Body length: 2.0 mm (without abdomen). ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, without bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 4–6 bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 5–6 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown dorsally, yellow ventrally. Hind trochanter covered with scattered short bristles. Hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally, longer on distal half, longest up to 2/3 the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae absent. Hind trochanter without keel, and 4–5 short spines, mostly proximally; ventrobasal spines absent on fore and mid femur. Hind tarsomeres slightly flattened, hind metatarsus as long as 2–4 combined, all tarsomeres with erect dark bristles dorsally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with two long dark brown bristles. Fourth costal section 2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Dissected. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.6). Surstyli symmetrical and elongated, curved to each other at apex, left surstylus longer than right one (Fig. 87A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, pointed at apex, right gonopod with a distinct projection on inner margin; phallic guide with 3–6 dorsolateral spines, one is longer than others; subepandrial sclerite large, with a small wrinkled edge in its center, hypandrial apodeme distinct (Fig. 87B); Genital capsule in lateral view: both surstyli moderately narrowed to apex and curved towards sternite (Fig. 87D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 87C).

**FEMALE:** Unknown.

**Etymology:** From the Latin seta, bristle and the Greek pteron, wing, in reference to the bristles on basal costal cell of the wing.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 7–12.V.2003, C. Lambkin & D. Yeates, Malaise trap, JSS15574 (1♂, ANIC).

**Distribution:** Australia (Western Australia) (Fig. 138).

**Note:** This species is genetically closest to *T. cona* **sp. nov.** (3.6–9.5% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella setaria* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:387B86A2-A40F-43DE-83AE-2F8ADFC87C3A

Figs 88A–E, 135, 158C

**Diagnosis:** This species can be recognized by distinct spines along the posterior margin of sternites 2–4; hind trochanter with a small keel and some short bristles ventromedially; both gonopods with a long finger-like projection emerged from their bottom (Fig. 88A); phallic guide long, pointed at apex, widened at the middle with two longer spines in its middle and some short, scattered spines mostly basally (Fig. 88D–E).

**Description: MALE:** Body length: 3.5–3.6 mm. ***Head***. Scape and pedicel dark brown. Pedicel with three upper bristles; flagellum light brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5–2 times the length of ocellar triangle. Occiput covered by short dark bristles. ***Thorax***. Postpronotum light yellow, with 2–4 distinct light brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part grey; scutum with scattered bristles on anterior supra-alar area. Postalar callus light brown with 3–4 brown bristles on upper margin. Scutellum black, silvery pollinose with 10–15 short bristles along distal edge. Halter, knob pale, stem light brown. ***Legs***. Mid coxa with 4–6 dark bristles, two longer than others. Coxae, trochanters, femora dark brown, hind femur shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow ventrally and light brown dorsally, last segment darker. Fore trochanter with two distinct bristles ventroapically. Hind trochanter silvery pollinose, with a small keel and 3–6 short bristles ventromedially; ventrobasal spines absent on fore and mid femur,

two rows of ventroapical spines present. Hind femur with two rows ventroapical spines. Tibiae with two rows of short black bristle on anterior and three rows on posterior side. Hind tarsomeres distinctly flattened (especially tarsomeres 1–3), hind metatarsus as long as 2–4 combined; posterior corners with distinct bristles on all tarsomeres. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5 mm. Upper side of basal costal cell with one dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 5–8 short dark setulae on tegula. ***Abdomen***. Tergites 1, 5 silvery pollinose; tergite 4 with two grey spots laterally, otherwise brown pollinose. Lateral bristles on first tergite present, 6–10 long brown bristles up to as long as hind femur's width at base; sternite 2 with 3–6 small dark spines in the middle of posterior margin; sternite 3–4 with two distinct dark spines along posterior margin. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8). Surstyli symmetrical, rather straight and rectangular-shaped, left surstylus slightly wider than right one, right surstylus curved to left one at apex (Fig. 88A). Genital capsule in ventral view: gonopods rather unequal in height, left gonopod longer, right one wider than left one, both gonopods with long finger-like projection emerged from the base, left one extended towards surstyli, right one bent along inner margin of right gonopod; phallic guide long with two different-sized spines laterally, left spine longer and lower than right one; subepandrial sclerite wide and distinct (Fig. 88B); Genital capsule in lateral view: both surstyli widened, left surstylus gently curved towards sternite; right surstylus straight in apical two thirds with a small projection in its basal towards hypandrium; phallic guide long, pointed at apex, widened at the middle with two longer spines centrally and some short scattered spines mostly at its base (Fig. 88D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 88C).

**FEMALE:** Body length: 3.2 mm. As male except for the following characters. Frons, eyes separated, as wide as the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black only around directly ocellar triangle, smooth change in transition zone (just before ocellar triangle) to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.2–1.5 times as long as last tarsal segment. Tergites 3–6 and somewhat tergite 2 brown pollinose in its middle; ***Ovipositor.*** Straight in ventral view, straight, in lateral view (yellow piercer, dark brown base), reaching sternite 2; base silvery brown pollinose. LP:LB = 2.3. LDP:LPP = 2.0. (Fig. 158C).

**Etymology:** From the Latin seta, bristle, in reference to the distinct spines along the posterior margin of sternites 2–4.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°43'S, 118°25'E, 799m, near rock outcrop, *Eucalyptus Eremophila* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16047 (1♂, WAM); **PARATYPES**: AUSTRALIA: Queensland: 2 km along Ridgepole Waterhole Road, 10 km ESE Musselbrook Resource Centre, Lawn Hill National Park, 18°38'S, 138°12'E, 220m, 10.V.1995, G. Daniels & M.A. Schneider, JSS8295 (1♀, QM); Western Australia: 35 km N Marble Bar, 20°55'S, 119°59'E, 160m, 14.V.2003, F.D. Parker & M.E. Irwin, hand netted in burned area from *Eucalyptus* and *Abutilon dioicum* (Malvaceae) flowers; CSIRO-SCHLINGER PILBARA EXPEDITION, April 19 – May 23, 2003, JSS15751 (1♂, CNC); Karijini National Park, Hamersley-Mount Bruce Road, 22°37'S, 118°19'E, 762m, open mallee with *Spinifex*, 14–19.V.2003, C. Lambkin & J. Recsei, Malaise trap, JSS15973 (1♂, ANIC); 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16123 (1♀, ANIC); Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16102 (1♀, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3867 (1♀, CNC).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 135).

**Notes:** This is a desert species found from NW Queensland to West Central Western Australia. Intraspecific genetic distance ranges from 0.0% to 3.1%. Based on the genetic divergence this may be a species complex and needs more investigation. It is genetically closest to *T. millstreamensis* **sp. nov.** (4.8–6.0% pairwise divergence) (Supplementary file 3).

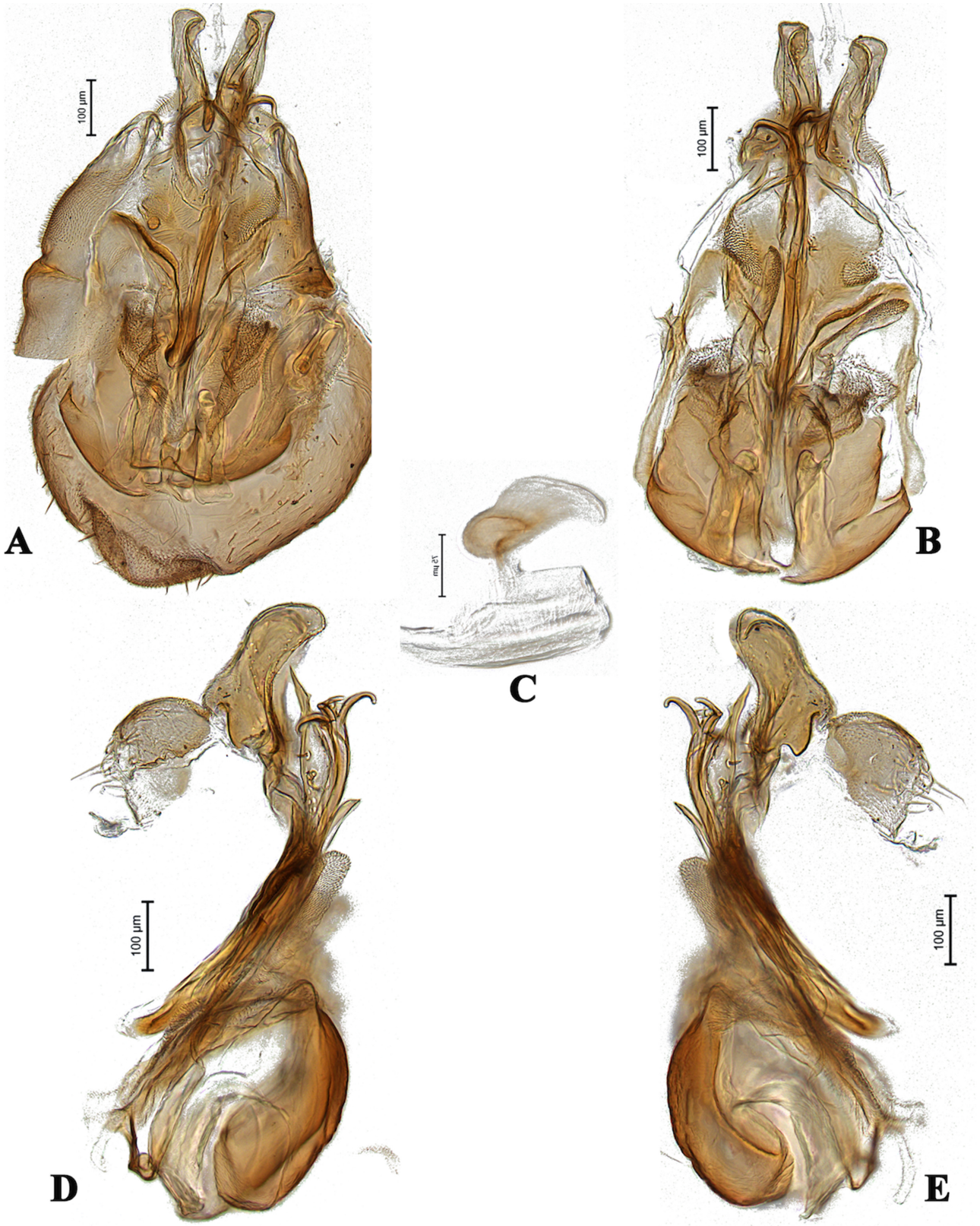



**FIGURE 88**. Male genitalia of *Tomosvaryella setaria* **sp. nov.** (JSS16047, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella seticosta* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:45103086-5720-4F92-A13F-0471C6A4967E
Figs 89A–E, 139, 155B

**Diagnosis:** This species can be recognized by the upper side of the basal costal cell having two long, brown bristles and 3–4 short, light brown bristles; symmetrical surstyli, broadened basally, moderately narrowed to apex in dorsal view (Fig. 89A); gonopods with two different different-sized finger-like projections towards surstyli (Fig. 89B); hypandrial apodeme distinct; subepandrial sclerite with a long protrusion along its middle in ventral view (Fig. 89B).

**Description: MALE:** Body length: 2.8–3.2 mm. ***Head***. Flagellum short acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3, but it is silver all along the edge of the eyes. ***Thorax***. Postpronotum pale, with 8–10 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side and the posterior edge (2 small patches). Scutellum silvery pollinose and with 6–8 weak bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with 4–5 long brown bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter with a half circle, no distinct bristles, half circle with flat part dorsally; two ventrobasal spines present on fore femur but absent on mid femur. Ventroapical row of spines on fore femur 5–7; 8–10 small, black spines on mid femur; hind femur without ventroapical spines, except 18–20 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/2 the width of hind tibia at distal end, outer edge (lateral side) with 10–12 stronger dark spines in the middle line. Subapical (distal) spines on first four tibiae absent. Hind metatarsus moderately flattened and almost as long as 2–5 combined, with scrub-like bristles ventrally, strong spine-like bristles dorsally on all tarsi. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.5–3.6 mm. Upper side of basal costal cell with two long brown bristles and 3–4 short light brown bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, silvery pollinose lateral spots on tergite 5. Dispersed strong dark bristles on all tergites absent. Lateral spines on first tergite present, 5–7 short dark bristles up to 0.6 times as long as width of hind femur at base. Postabdomen in dorsal view: T6, S7 invisible; T5 3 times as long as ST8. Genitalia without dissection: ST8 small, rounded in dorsal view, brown and without distinct bristles, but with velvet-like coverage; membranous area round, mostly directed posteroventrally; epandrium brown, surstyli yellow and brown. ***Genitalia***. Genital capsule in dorsal view: epandrium slightly longer than wide (MLE:MWE = 1.07). Surstyli rather symmetrical, broadened in basal two thirds, then narrowed to apex (Fig. 89A). Genital capsule in ventral view: gonopods small with two finger-like projections towards surstyli, right is longer than left one, subepandrial sclerite with a protrusion along its middle; hypandrial apodeme prolapsed phallic guide strong (Fig. 89B); Genital capsule in lateral view: both surstyli widened, curved towards sternite (Fig. 89D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 89C).

**FEMALE:** Body length: 3.1–3.2 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.2–1.4 times the width at antennae; completely silver-grey pollinose, only shiny black directly in front of ocellar triangle, ca. 1/6 of the frons, very short transition zone; frons with a short ridge in front of the ocelli in the median line. Enlarged ommatidia silvery shining. Pulvilli and claws about 2–2.5 times as long as last tarsal segment, smaller on hind tarsomeres. Female abdomen with silver spots on sides of tergite 6. ***Ovipositor.*** Straight in ventral view, robust, curved towards sternite apically in lateral view (yellow piercer, brown base), reaching distal end of 3rd segment; base brownish pollinose with occasional bristles. LP:LB = 3.5. LDP:LPP = 2.5. (Fig. 155B).

**Etymology:** The name refers to the bristles found on the basal costal cell and comes from the Latin seta, bristle.

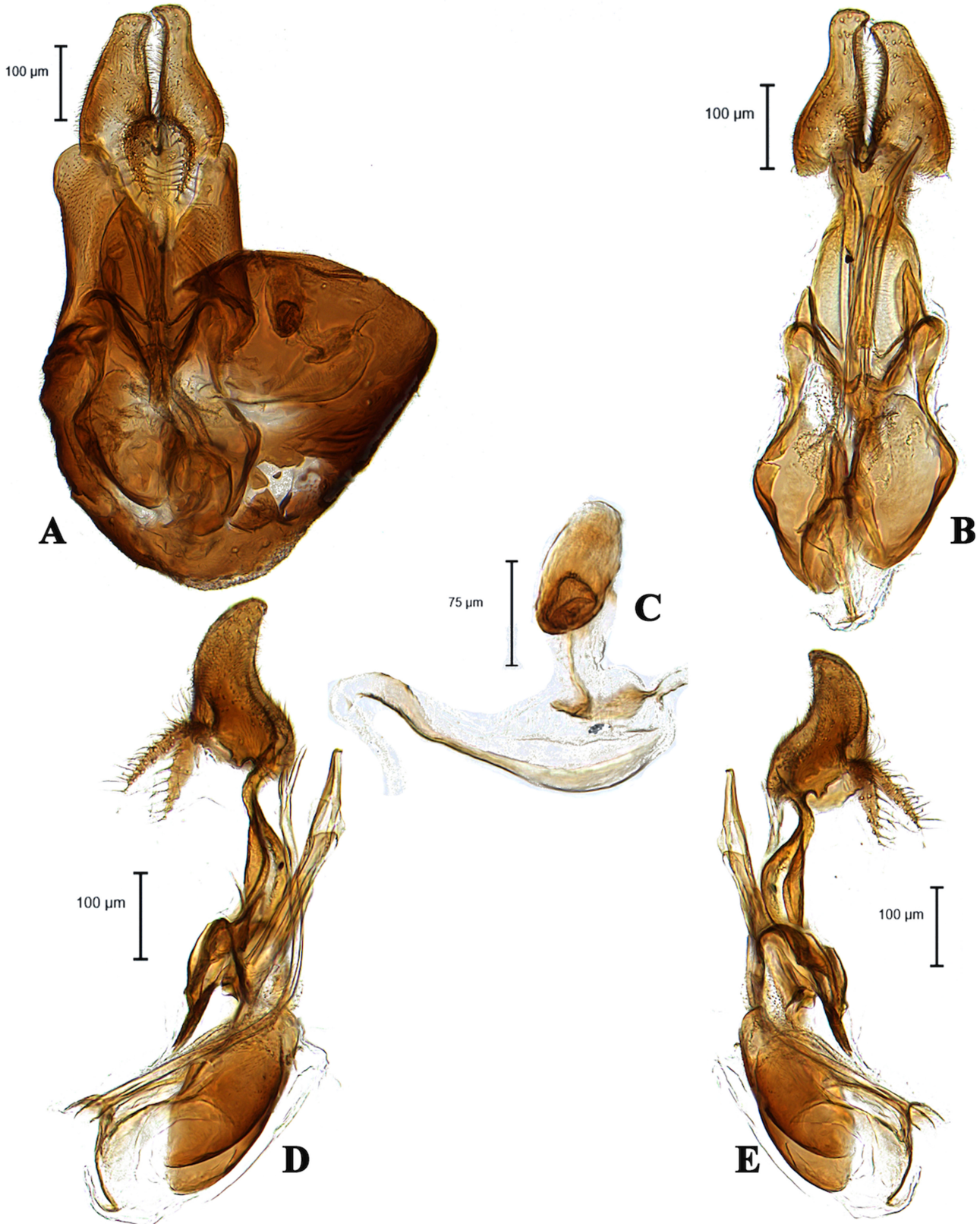



**FIGURE 89**. Male genitalia of *Tomosvaryella seticosta* **sp. nov.** (JSS8283, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Ridgepole Waterhole, 24 km ESE of Musselbrook Resource Centre, Lawn Hill Nat[ional] P[ar]k, 18°40'S, 138°22'E, 180m, 13.V.1995, G. Daniels, M.A. Schneider, JSS8283 (1♂, QM); **PARATYPES**: AUSTRALIA: Queensland: Bulburin State Forest, 24°32'S, 151°34'E, 27–29.V.1960, F.A. Perkins, JSS8257 (1♂, QM); 200 km west Windorah, 25°25'S, 142°39'E, Malaise trap in dry creek bed, 4.IX.1997, S. Winterton, J.&A. Skevington, JSS8325 (1♀, QM); Ridgepole Waterhole, 24 km ESE of Musselbrook Resource Centre, Lawn Hill National Park, 18°40'S, 138°22'E, 180m, 5.V.1995, G. Daniels & M.A. Schneider, JSS8299 (1♀, QM); Carnarvon Station near Homestead, 24°48'S, 147°45'E, 750m, *Eucalyptus* woodland, 12.X.2014, Lambkin, Wright, J. & K. Wilson, hand net, CNC576417 (1♂, CNC); Western Australia: Karijini National Park, Juna Downs Road, 22°40'S, 118°26'E, 797m, in open mulga with flowering *Ptilotus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15991 (1♂, ANIC); New South Wales: Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen & B. Shieban, Malaise trap, CNC575120 (1♂, CNC); Northern Territory: Darwin, 12°27'S, 130°50'E, 6–9.XII.1963; 8–9.XII.1963, J. Sedlacek, CNCD5571, CNCD5575 (2♂, BPBM).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland, Western Australia) (Fig. 139).

**Notes:** This species is widespread but rarely collected.

### *Tomosvaryella sicula* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:7A568395-505B-4E39-BA2E-B1C11F6A3B79

Figs 90A–E, 140, 157F

**Diagnosis:** This species can be recognized by 15–20 dark bristles on the hind trochanter ventrally; fore and mid trochanters with 2–3 short dark bristles; hind femur with extra-long bristles; phallic guide with a distinct sheath; phallus with a dagger-like projection at the base of ejaculatory ducts in ventral view (Fig. 90B); small and triangle-shaped surstyli in dorsal view (Fig. 90A); both gonopods widened in ventral view (Fig. 90B).

**Description: MALE:** Body length: 2.6–2.8 mm. ***Head***. Scape, pedicel and arista dark brown. Pedicel with 2–3 short upper bristles; flagellum brown, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.2 times the length of ocellar triangle. Occiput grey pollinose. ***Thorax***. Postpronotum light yellow, with 1–2 light brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part grey; scutum with scattered dark bristles on anterior supra-alar area, extended to posterior. Postalar callus dark brown with 3–4 short light brown bristles in the middle. Scutellum silvery pollinose and with a few (3–6) short dark bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Fore coxa with a short dark bristle; mid coxa with 3–4 dark bristles, 1–2 bristles longer than others. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/3 of tibiae yellow (tibiae otherwise dark brown), tarsomeres light brown (last tarsomere rather brown dorsally). Fore and mid trochanter with 2–3 short dark bristles; hind trochanter silvery pollinose covered by 15–20 dark bristles ventrally; two ventrobasal spines present on fore and absent on mid femur. Hind femur with two rows long bristles ventrally and extra long bristles posteroventrally. Hind tibia with two rows of short black bristles on anterior and posterior side. Hind tarsomeres not flattened, covered by short brown bristles dorsally and brown bristles ventrally, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.6 mm. Upper side of basal costal cell with one dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 7–10 long brown lateral bristles; tergites 2–5 covered by scattered dark bristles. Syntergosternite 8 enlarged, dark brown and grey-brown pollinose. Membranous area long and broad in middle. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8). Surstyli small (somewhat rectangular-shaped), widened at base, flattened at apex; left surstylus slightly longer (Fig. 90A). Genital capsule in ventral view: both gonopods widened, right wider than left one (Fig. 90B); phallic guide broad, pointed at apex; subepandrial sclerite small and rounded in the middle (Fig. 90B); phallus with a dagger-like projection at the base of ejaculatory ducts (Fig. 90B); Genital capsule in lateral view: both surstyli widened, dorsal margin straight, ventral margin curved, right surstylus with a small triangle-shaped projection in ventrobasally, phallic guide with a distinct sheath as long as phallic guide (Fig. 90D–E); ejaculatory apodeme tube-like, bent, with a long bulb in its middle (Fig. 90C).

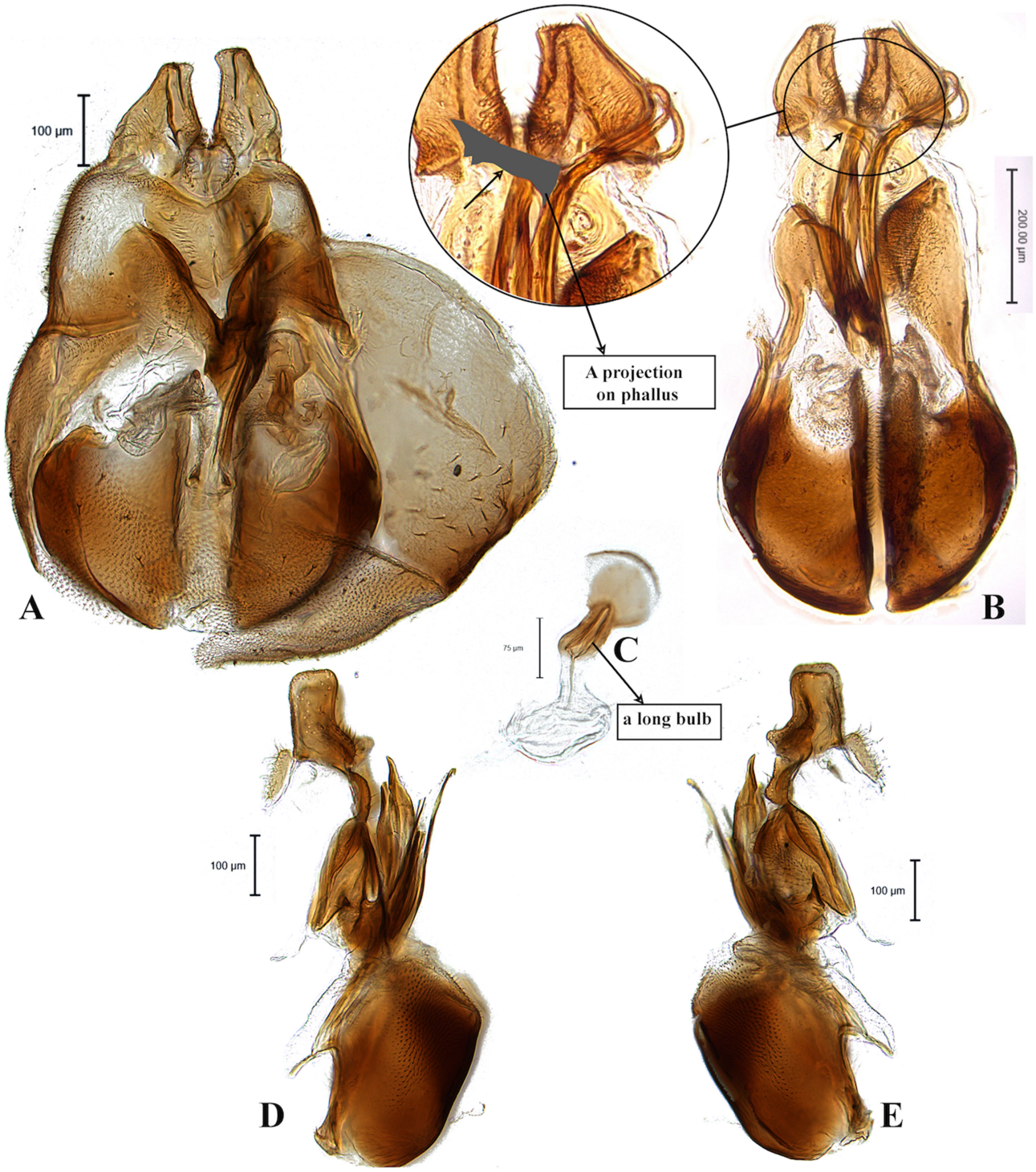



**FIGURE 90**. Male genitalia of *Tomosvaryella sicula* **sp. nov.** (JSS16169, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE:** Body length: 2.6 mm. As male except for the following characters. Frons, eyes separated; completely silver-grey pollinose on lower 1/3, shiny black only around ocellar triangle, deep depression just before ocellar triangle. Enlarged ommatidia silvery shining; pulvilli and claws longer than last tarsal segment. Tergite 1 with 11 lateral bristles. ***Ovipositor.*** Straight in ventral view, long and straight in lateral view (piercer brown), reaching sternite 1; basal two thirds silvery brown pollinose. LP:LB = 3.5. LDP:LPP = 5.0. (Fig. 157F).

**Etymology:** The specific name is derived from the Latin word 'sicula', meaning dagger, referring to the dagger-like projection on the phallus.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E, 789m, between drying pools in rocky Turee Creek, 19–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16256 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E, 789m, between drying pools in rocky Turee Creek, 19–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16165, JSS16169, JSS16173, JSS16259 (2♂, 2♀, ANIC); Karijini National Park, Weano Gorge Road, 22°23'S, 118°15'E, 711m, beside drying pool bank in grassland, 25.IV–15.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15978 (1♂, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3826, CNCD3829, CNCD3851 (1♂, 2♀, QM); Queensland: Carnarvon National Park, Mount Moffatt section, near Kennifs Lookout (MM1M), 24°55'S, 148°0'E, 859m, open *Eucalyptus* woodland, 13.XI–13.XII.2010, Reeves, Sternberg, Spinaze, Malaise trap, CNC592058 (1♂, CNC); 1 km E Mt. Molloy, 16°41'S, 145°20'E, 15.IV.1980, G.F. Hevel & J.A. Fortin, JSS10526 (1♂, USNM); 3.5 km SW by S Mount Baird, 15°10'S, 145°7'E, 5.V.1981, D.H. Colless, Malaise trap, JSS8573, JSS8575 (2♂, ANIC); Carnarvon, National Park, Marlong Plain, 24°57'S, 147°58'E, grassland, 13.X.2002, S. Boucher, sweep net, LEM_0016171 (1♂, LEM).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 140).

**Notes:** Despite the disjunct populations, we could not find any variation in external morphological and terminalia characters, so we consider it to be one widespread species. We could not successfully DNA barcode the Queensland specimens so future work should focus on testing the species concept by barcoding material from the eastern part of the range. Intraspecific genetic distance ranges from 0.0% to 0.3%. This species is genetically closest to *T. bulbosa* **sp. nov.** (8.3–12.1% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella spinifex* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:94E882AB-C082-4B86-BF9E-990DA9F7B556

Figs 91A–E, 141, 150A

**Diagnosis:** This species can be recognized by the hind trochanter with a keel and 6–7 dark spines (Fig. 150A); slender and elongated surstyli in dorsal view (Fig. 91A); widened gonopods, pointed at apex, with a distinct projection on inner margin, their projections with an upwards small finger-like process in the middle (Fig. 91B); phallic guide with 3–4 short dorso- dorsolateral spines; subepandrial sclerite widened, with a fin-shaped projection in its center (Fig. 91B).

**Description: MALE:** Body length: 3.1–3.1 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, greyish also from the side. Scutellum silvery brown pollinose and with 4–6 bristles along distal edge. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Halter knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow. Hind trochanter with 45-degree keel, and 6–7 dark spines, longest proximally (Fig. 150A); one ventrobasal spine present on fore femur, absent on mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally, longer on distal half, longest up to 2/3 the width of hind tibia at distal end. Short, subapical (distal) spines on fore- and mid tibiae present. Hind tarsomeres distinctly flattened (t1–3), hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on tergite 5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/3 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–5 dark bristles up to as long as ¾ of hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 0.6–0.7 times as long as ST8. Genitalia without dissection: ST8 large, round, globular in dorsal view, brown and with distinct bristles, otherwise with velvet-like coverage; membranous area is slit-like, rounded, mostly directed posteriorly; epandrium brown, surstyli brown. ***Genitalia***. Genital capsule in dorsal view: epandrium longer

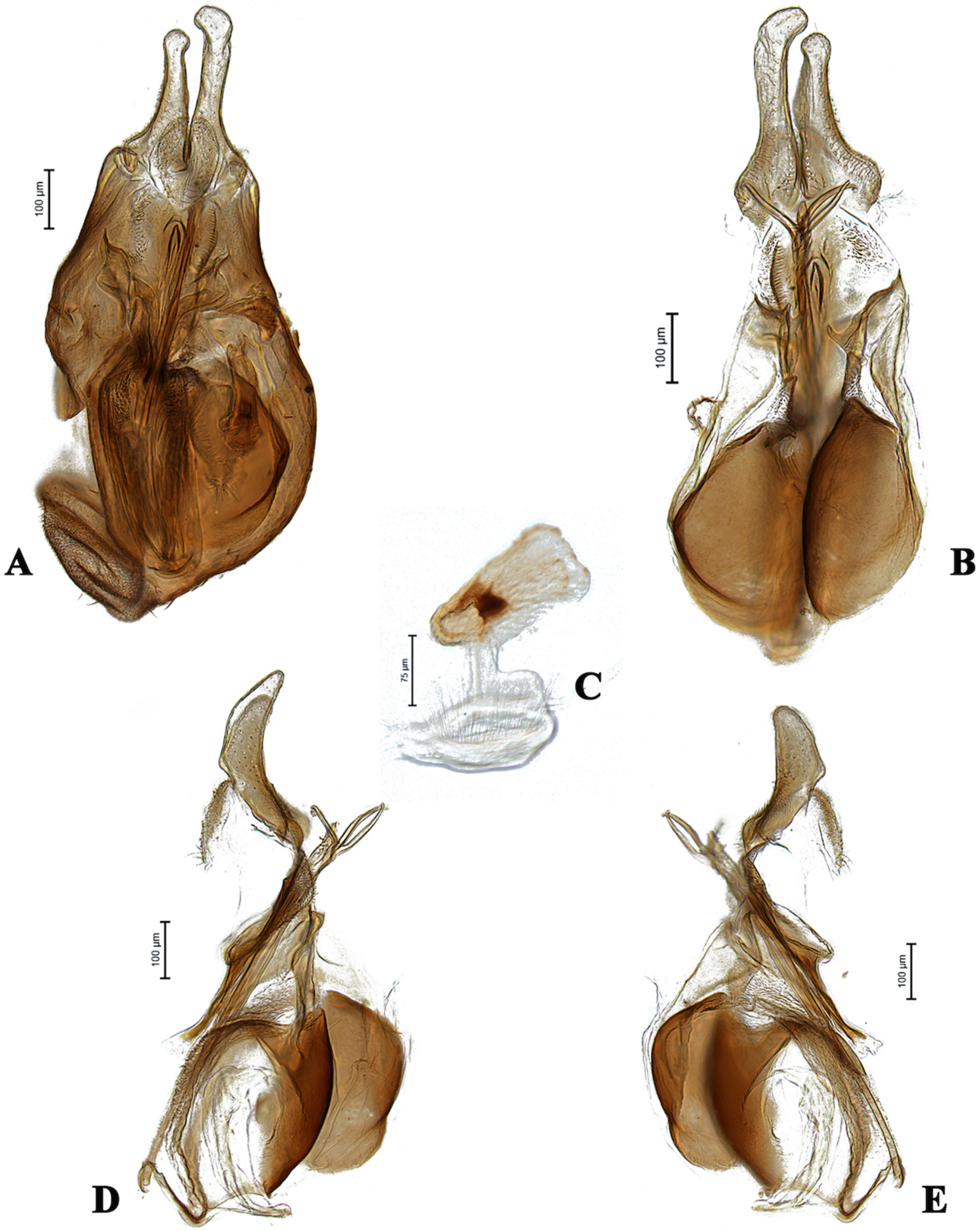



**FIGURE 91**. Male genitalia of *Tomosvaryella spinifex* **sp. nov.** (JSS16200, WAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

than wide (MLE:MWE = 1.2). Surstyli slender and elongated, curved towards midline at apex, left surstylus is longer and its apex is wider than right one (Fig. 91A). Genital capsule in ventral view: both gonopods widened at base, extended towards surstyli, pointed at apex, gonopods with a distinct projection on inner margin, their projections with a small finger-like process in the middle; phallic guide with 3–4 short dorsolateral spines; subepandrial sclerite widened, with a fin-shaped projection in its center, its left margin covered with condensed short hairs (Fig. 91B); Genital capsule in lateral view: both surstyli curved towards sternite, left one more widened, with hump-like edge dorsomedially (Fig. 91D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 91C).

**FEMALE:** Unknown.

**Etymology:** This species is named after one of the dominant arid Australian grasses and is associated with *Spinifex* dominated grassland.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Millstream-Chichester Nat[ional] P[ark], Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 27.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16200 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: 48 km NW Carnarvon; Blowholes Road; sandy trail, 24°35'S, 113°31'E, 7m, dry vegetated coastal dunes, 27.IV–11.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15826, JSS15829 (1♂, CNC; 1♂, QM); Badgingarra National Park, 40 km east of Cervantes, 30°24'S, 115°25'E, 30.X.1987, M.E. Irwin & E.I. Schlinger, JSS8459 (1♂, CAS).

**Distribution:** Australia (Western Australia) (Fig. 141).

**Note:** Based on the DNA sequencing, this species is genetically similar to *T. latistyla* **sp. nov.** (4.0–5.4% pairwise divergence). Intraspecific genetic distance ranges from 0.0% to 1.3% (Supplementary file 3).

### *Tomosvaryella spinivaria* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:17815FDC-56A7-4BF4-BAC0-DE344FBA7C66

Figs 92A–E, 140, 146C

**Diagnosis:** This species can be recognized by the hind trochanter having a patch of short dark bristles at the base and a small group of shorter bristles at distal end (Fig. 146C); hind femur with 22–24 pale long bristles posteriorly on distal half (Fig. 146C); subepandrial sclerite covered with transverse streaks and a row of finlike projection in its middle in ventral view (Fig. 92B); phallic guide with six different-sized spines dorsolaterally.

**Description**: **MALE**: Body length: 3.3–3.4 mm. ***Head***. Flagellum acuminate, yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2.5–3 times the length of ocellar triangle. Occiput silvery pollinose, more brownish on upper half. ***Thorax***. Postpronotum brownish pale, with 3–4 distinct pale bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish also from the side. Scutellum silvery pollinose and with 12 short pale bristles along the distal edge. Dorsocentral bristles developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with two bristles. Trochanters and base of femora black, femora black, shining ventrally, silvery pollinose except hind femur; knees, tibiae brown with basal 1/6 yellow, tarsal segments yellow ventrally, yellow-brown dorsally, last segment darker dorsally. Hind trochanter without keel, short dark bristles (7–9, longest at base, shortening distally) at the base emerging in a group ("echidna"-like) and distal end with a small group of shorter bristles (Fig. 146C); two ventrobasal bristles on fore femur (one is longer). Ventroapical row of spines on fore femur missing, 4–6 very short, black spines on mid femur; no spines on hind femur, only 22–24 pale bristles posteriorly equally distributed, and longer on distal half (as long as 1.5–2 times the width of hind tibia at the distal end) (Fig. 146C); hind tibia bent at middle in posterior view. Subapical (distal) spines on fore- and mid-tibiae present. Hind metatarsus not flattened, first tarsomere slightly longer than 2–4 combined; ventral bristles scrub-like, yellow. Pulvilli as long as or slightly longer than last tarsal segment. ***Wing***. Length: 3.1–3.2 mm. Upper side of basal costal cell with 1–3 long distinct bristles. Fourth costal section 2.5–3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 5–6 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with larger spots), slightly silver pollinose on tergites 2 and 3. Dispersed short dark bristles on tergites present, the longest on tergite 5 and up to 1.5 times as long as width of hind tibia at base. Lateral bristles on first tergite present, 5–6 brown bristles up to as long as width of hind femur at distal tip. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.5 times as long as ST8. Genitalia without dissection: ST8 medium sized, subshining; membranous area elongated, widening at top; epandrium paler; yellow surstyli appear

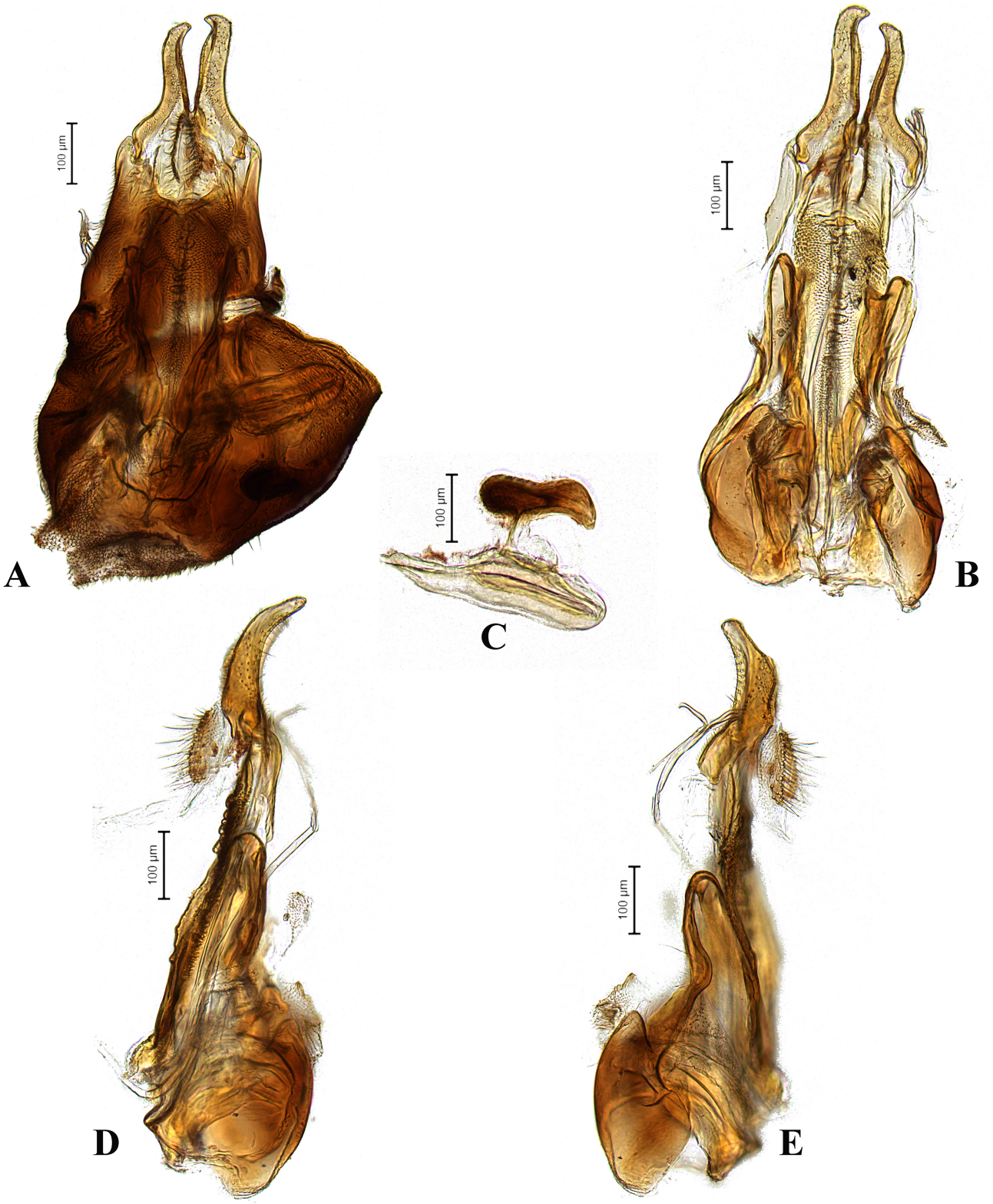



**FIGURE 92**. Male genitalia of *Tomosvaryella spinivaria* **sp. nov.** (JSS7400, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, E) lateral view.

long and flat. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.2). Surstyli light brown, rather symmetrical with broad base and finger-like apex, left slightly broader and longer than right one; both tips bent inward apically (Fig. 92A). Genital capsule in ventral view: subepandrial sclerite covered with transverse streaks, in its middle with a row of small fin-like projection embedded (like spinal column); gonopods elongated close to apex of subepandrial sclerite, with two small projections (Fig. 92B), phallic guide with six different-sized spines dorsolaterally (two longer ones closer to apex). Genital capsule in lateral view: both surstyli curved towards sternite, gradually narrowed to apex (Fig. 92D–E); phallus with three ejaculatory ducts; ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 92C).

**FEMALE**: Unknown.

**Etymology:** From the Latin word spina for thorn and various for different in reference to the variously sized spines on the phallic guide.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: ~3 km N[orth] of Denham, 25°55'S, 113°32'E, hilltop, 12.xii.1999, J. Skevington, JSS7374 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: ~3 km north of Denham, 25°55'S, 113°32'E, hilltop, 12.xii.1999, J. Skevington, JSS7325, JSS7362, JSS7390, JSS7400 (1♂, CNC; 3♂, QM).

**Distribution:** Australia (Western Australia) (Fig. 140).

**Notes:** Most of the specimens of this species were collected on the small hilltop north of Denham, Western Australia. See the note under *T. minychoma* **sp. nov.** for more information on this amazing locality. Intraspecific genetic distance ranges from 0.2% to 1.0%. This species is genetically most similar to *T. velutina* **sp. nov.** (5.7–8.2% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella staricki* Motamedinia, Skevington & Földvari sp. nov.

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Figs 93A–E, 140

**Diagnosis:** This species can be recognized by the elongated surstyli, the left surstylus with a small edge along ventromedial margin (Fig. 93A); both gonopods with a finger-like projection towards surstyli; subepandrial sclerite with an elongated suture in its middle; phallic guide with 3–4 short dorso- dorsolateral spines in ventral view (Fig. 93B); left surstylus bent towards sternite in apical fourth, right one rather straight in lateral view (Fig. 93D–E)

**Description: MALE:** Body length: 2.4 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2.2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 long pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery brown pollinose and with 2–4 short bristles along distal edge. Halter, knob pale, tip brownish, stem brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters light brown, femora dark brown, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with 2–4 short bristles anteroventrally. Hind femur without ventroapical spines. Subapical (distal) spines on fore tibiae present (short). Hind tarsomeres not flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.4 mm. Upper side of basal costal cell with one long brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–5 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown, tergite 1 silvery grey. Lateral bristles on first tergite present, 2–4 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli elongate, curved to each other at apex, left surstylus is longer, with a small edge along ventromedial margin (Fig. 93A). Genital capsule in ventral view: both gonopods with a finger-like projection towards surstyli; subepandrial sclerite with an elongated suture in its middle like spinal cord; phallic guide with 3–4 short dorso- dorsolateral spines, one is longer (Fig. 93B); Genital capsule in lateral view: left surstylus bent towards sternite in apical fourth, right one straighter (Fig. 93D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 93C).

**FEMALE:** Unknown.

**Etymology:** This species is named in honour of Noel Starick, one of the collectors of the only known specimen.

Noel has collected or contributed to the collection of 3% of the specimens and 17% of the species used in this revision (Supplementary file 2).

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 18.XI–17.XII.2009, C. Lambkin, A. Coward, C. Kelly & N. Starick, Malaise trap, CNC576508 (1♂, CNC).

**Distribution:** Australia (Queensland) (Fig. 140).

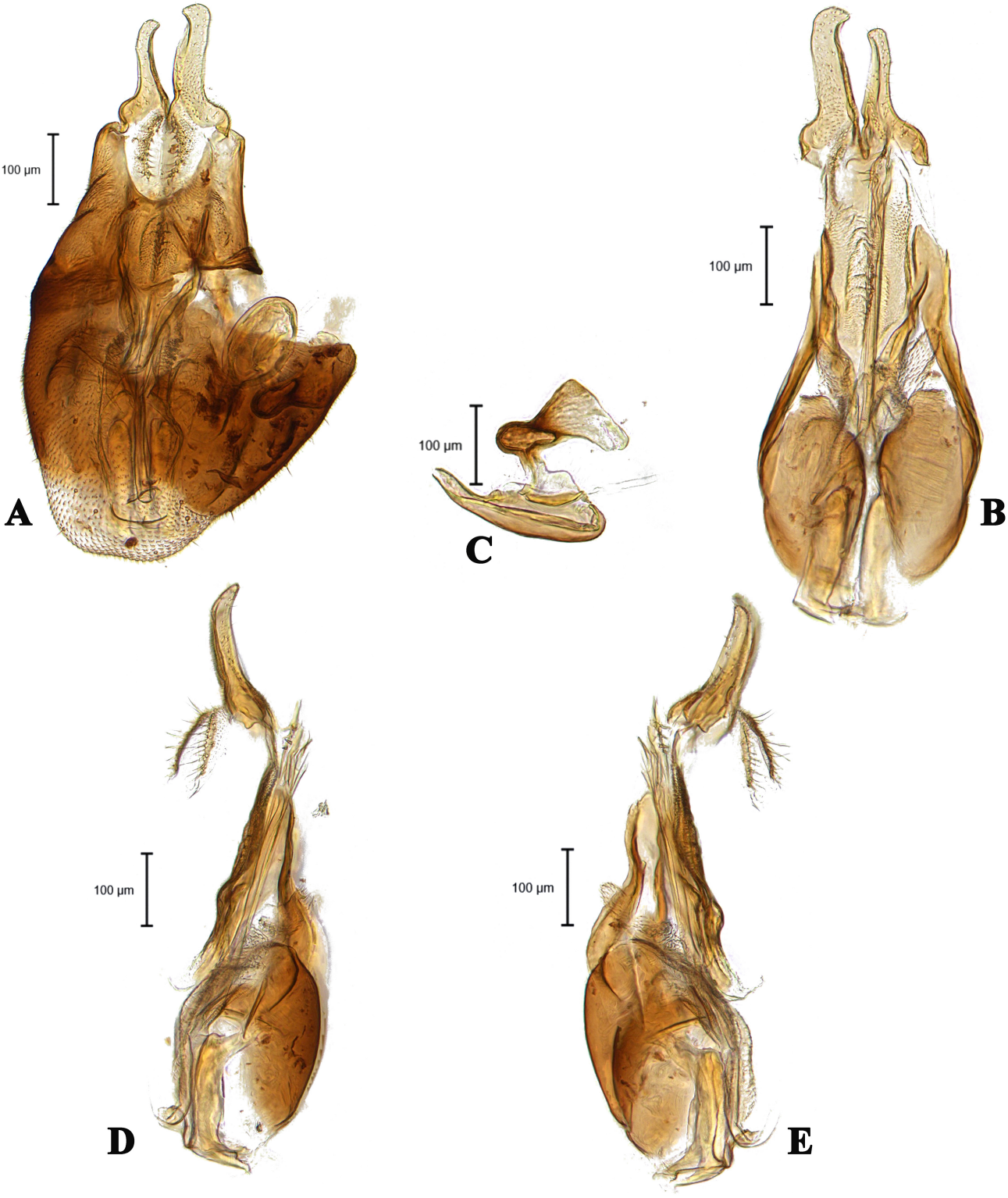



**FIGURE 93**. Male genitalia of *Tomosvaryella staricki* **sp. nov.** (CNC576508, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella synadelpha* (Perkins, 1905)**
Figs 94A–D, 142, 156F

*Pipunculus synadelphus* Perkins, 1905

**Diagnosis:** This species can be recognized by the asymmetrical surstyli, with the right surstylus widened in the basal half in dorsal view (fig. 94A), both with a distinct an upwards horn-like projection in the ventromedial margin in lateral view (Fig. 94C–D); gonopods and subepandrial sclerite small (Fig. 94B); hypandrium wide; phallus strong, one side covered by dense short forked hairs from its middle to apex in lateral view (Fig. 94C).

**Redescription: MALE:** Body length: 2.8–3.1 mm. ***Head***. Scape, pedicel and arista dark brown. Pedicel with 2–3 bristles located on upper side of pedicel; flagellum brown, lighter at apex, gray pollinose and tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal the length of ocellar triangle. Occiput grey pollinose. ***Thorax***. Postpronotum light yellow, with 1–2 long, light brown, and 2–5 short pale bristles on upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose; scutum with scattered dark bristles at anterior supra-alar area, extending to posterior and uniseriate rows of intra-alar bristles. Postalar callus dark brown with 1–3 short light brown bristles in the middle. Scutellum silvery pollinose and with 8–10 short dark bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 2–3 dark bristles. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/3 of tibiae yellow (tibiae otherwise dark brown), tarsomeres light brown ventrally, dark brown dorsally. Fore and mid trochanter with 2–3 short dark bristles; hind trochanter silvery pollinose covered by some scattered tiny dark bristles ventrally; ventrobasal spines absent on fore mid femur. Hind femur with two rows of short spines ventrally. Hind tibia with two rows of short brown bristles on anterior and posterior side. Hind tarsomeres slightly flattened on one side, covered by short light brown bristles dorsally, hind metatarsus as long as 2–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with 1–2 long, dark brown bristles and two long, light brown bristles inside basal costal cell. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Tergites 1 silvery pollinose with 5–7 different-sized lateral bristles; tergite 2–5 brown pollinose, covered by scattered short dark bristles. Syntergosternite 8 enlarged, dark brown and grey-brown pollinose. Membranous area long, approaching epandrium. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8), with a depression in its middle (Fig. 94A). Surstyli asymmetrical, widened at base, equal in height, left surstylus rectangular-shaped, right surstylus widened in basal half, then narrowed to apex (Fig. 94A). Genital capsule in ventral view: both gonopods small, widened and rounded at apex right wider than left one (Fig. 94B); phallic guide short and broad; subepandrial sclerite small and wide, right side with a distinct wrinkle, phallus strong with one ejaculatory duct, hypandrium broadened, hypandrial apodeme small but distinct (Fig. 94B); Genital capsule in lateral view: both surstyli rather straight, with a distinct horn-like projection in ventromedial margin, then narrowed to apex, base of right surstylus wider than left one; phallus strong and sinuate, one side covered by condensed furcate? hairs from its middle to apex (Fig. 94C–D).

**FEMALE:** Body length: 2.5 mm. As male except for the following characters. Frons, eyes separated; completely silver-grey pollinose on lower 1/3, wider in middle, shiny black only around ocellar triangle, deep depression just before ocellar triangle. Enlarged ommatidia silvery shining; pulvilli and claws longer than last tarsal segment. Tergites 2–5 with lateral gray spots. ***Ovipositor.*** Straight in ventral view, straight in lateral view (piercer brown), reaching sternite 2; basal two thirds silvery brown pollinose. LP:LB = 2.0. LDP:LPP = 2.8. (Fig. 156F).

**Examined material: LECTOTYPE [HERE DESIGNATED]:** AUSTRALIA: Queensland: Bundaberg, 24°52’S, 152°21’E, 20.VIII.1919, F. Muir, CNCD5542 (1♂, BPBM); **PARALECTOTYPES:** same data as lectotype, IX.1904, BMNH(E)964036–41, CNCD5537–8, CNCD5540, CNCD5543 (6♂, 4♀, BMNH; 2♂, 2♀, BPBM); Cairns, 16°55’S, 145°46’E, VII.1904, JSS8486–7 (1♂, 1♀, BPBM); Childers, 25°14’S, 152°16’E, 30.X.1904, [this specimen clearly reared by Perkins but no host data given. Two dates on label, first is “Oct. 15 04” - likely the date of pupariation. “Oct. 30 04” is likely the date of emergence], CNCD5541 (1♂, BPBM); Mid. Queensland, 23°7’S 144°8’E, JSS4180–2 (2♂,1♀, ZMAN); 20°55’S, 142°42’E, JSS4183 (1♂, ZMAN); **Other Material Examined:** AUSTRALIA: Queensland: 2km SE of Coop’s Corner, end of power line road, 26°3’S, 153°3’E, vegetation, 8.X.2002, S. Boucher, sweep net, LEM_0016183 (1♂, LEM); Carnarvon Nat. Park, Ranger Station, 25°1’S, 147°57’E, near campsite in morning, 11.X.2002, S. Boucher, sweep net, LEM_0016209 (1♂, LEM); Carnarvon National Park, The Tombs, 25°5’S, 147°52’E, vegetation, 10.X.2002, S. Boucher, sweep net,

LEM_0016195 (1♂, LEM); Carnarvon, National Park Ranger Station, 25°1'S, 147°57'E, near campsite in morning, 11.X.2002, S. Boucher, sweep net, LEM_0016208 (1♂, LEM); Emu Creek Crossing, East Petford, 17°21'S, 144°56'E, grass, 22.IV.1983, J.F. Grimshaw, sweep net, JSS8944 (1♂, QDPC); Karumba, 12°28'S, 130°47'E, 18.IV.1983, J.F. Donaldson, JSS8943 (1♂, QDPC); Mount Webb National Park, 15°4'S, 145°7'E, 30.IX.1980, D.H. Colless, Malaise trap, JSS223 (1♂, ANIC); Brampton Island, east of Mackay, 20°48'S, 149°16'E, 17.IX.1963, D.E. Havenstein, JSS8656 (1♂, ANIC); Brisbane, 27°28'S, 153°1'E, 11.IV.1962, B. Wilson, JSS8259 (1♂, QM); 23.III.1951, S. Barker, JSS8302 (1♂, QM); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 18.XI–17.XII.2009, C. Lambkin, A. Coward, C. Kelly, N. Starick, Malaise trap, 19255, CNC576509 (1, CNC); Currawinya National Park, 4km NW Headquarters (CW3), 28°49'S, 144°28'E, Mulga, 15.XII.2007–8.II.2008, Lambkin, Townsend, Starick, Malaise trap, CNC576537 (1♂, CNC); Dunwich, North Stradbroke Island, 27°35'S, 153°37'E, 22.VIII.1958, S.S. Sekhon, JSS8264 (1♂, QM); Mount Crosby, 27°33'S, 152°48'E, 15.X.1970, J. Wilson, JSS9741 (1♂, QM); McKinlay district, NW Queensland, 25°55'S, 144°36'E, 17–19.VIII.1963, T.E. Woodward, JSS8267 (1♂, QM); Normanton, 17°40'S, 141°4'E, swept near swamp, 19.V.1976, I.R. Bock, JSS8552 (1♂, ANIC); Plevna Downs, Tompilly Hill base (PD6 M), 26°44'S, 142°39'E, 187m, Gidgee, 24.IV–24.VII.2008, G. Turner, R. Mackenzie, Malaise trap, CNC595283 (1♂, CNC); Ridgepole Waterhole, 24 km ESE of Musselbrook Resource Centre, Lawn Hill National Park, 18°40'S, 138°22'E, 180m, 1.V.1995, G. Daniels, M.A. Schneider, JSS8296 (1♂, QM); Rosevale Area, SE Queensland, 27°52'S, 152°29'E, 16.III.1975, B.K. Cantrell, JSS8933 (1♂, QDPC); Toowong, 27°28'S, 152°59'E, 30.III.1952, DJT, JSS8280 (1♂, QM); Babinda, 17°20'S, 145°56'E, IV.1919, F. X. Williams, CNCD5539 (1♂, BPBM); Meringa, 17°5'S, 145°47'E, IX.1919, F. Muir, CNCD5536 (1♀, BPBM); Carnarvon Station, near Conglomerate Spring (SSS2), 24°50'S, 147°47'E, 839m, dry creek bed in gully, 8–14.X.2014, C. Lambkin, Malaise trap, CNC591900 (1♂, CNC); Carnarvon National Park, Marlong Plain, 24°57'S, 147°58'E, grassland, 13.X.2002, S. Boucher, sweeping, CNCD253910 (1♂, LEM); Carnarvon National Park, Mount Moffatt, Angelina Creek, 25°4'S, 148°3'E, 675m, creek bed, over creek, 9–10.X.2002, S.A. Marshall, Malaise trap, debu210512 (1♂, DEBU); Dauan Island, North Queensland, 9°25'S, 142°32'E, 28.III.1984, J.W. Turner, JSS8953, JSS8955–6 (3♂, QDPC); Edward Allison Park, Eatons Hill, Brisbane, 27°20'S, 152°57'E, 10.XI.1995, S.G. Evans, JSS12613 (1♂, QM); Elizabeth Creek, Boodjamulla National Park, 18°14'S, 138°5'E, 170m, Bloodwood open forest, 18–22.IV.2005, M. Mathieson, G. Smith, Malaise trap, JSS19190 (1♀, QM); Eungella Range, 52 miles W Mackay, 21°9'S, 148°24'E, 15.IX.1963, D.E. Havenstein, JSS8646–52 (7♂, ANIC); Peawaddy Gorge, Mount Moffatt National Park, 24°56'S, 148°4'E, 1100m, 26.II.1996, C.J. Burwell & S. Evans, JSS9744 (1♂, QM); Scrub Road, Brisbane Forest Park, 27°25'S, 152°50'E, 21–28.XI.1997, S. Winterton, N. Power & D. White, Malaise trap, JSS8847 (1♂, QM); Western Australia: 8 km S of Cape Bertholet, 17°15'S, 122°10'E, 18.IV.1977, D.H. Colless, JSS9256 (1♂, ANIC); Derby, 17°23'S, 123°40'E, 27.I.1967, G. Beamish, JSS8736 (1♂, WAM); Karijini National Park, Juna Downs Road, 22°40'S, 118°26'E, 797m, in open mulga with flowering *Ptilotus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, ANIC [Bulk Sample] 2046, JSS15987 (1♂, ANIC); 48 km NW Carnarvon; Blowholes Road; sandy trail, 24°35'S, 113°31'E, 7m, dry vegetated coastal dunes, 27.IV–11.V.2003, M.E. Irwin, F.D. Parker, Malaise trap, JSS15831 (1♀, CNC); Crawley, 31°59'S, 115°49'E, 2.IV.1924, K.R. Norris, JSS8644 (1♂, ANIC); Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin, T. Weir, Malaise trap, ANIC [Bulk Sample] 2056, JSS16121 (1♂, ANIC); Millstream-Chichester National Park, Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 7–12.V.2003, C. Lambkin, D. Yeates, Malaise trap, JSS15573 (1♂, ANIC); Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, 2145, JSS19186 (1♀, ANIC); Karijini National Park, Weano Gorge Road, 22°21'S, 118°15'E; 22°23'S, 118°15'E, 695m; 711m, grassy dry creek, *Eucalyptus Acacia* scrub; beside drying pool bank in grassland, 25.IV–15.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15981, JSS16080, JSS16082 (1♂, 2♀, ANIC); Mount Augustus National Park; south slope on Saddle Trail, 24°18'S, 116°48'E, 400m, small dry wooded wash, 25.IV–7.V.2003, M.E. Irwin, F.D. Parker, Malaise trap, JSS15884 (1♀, CNC); Mount Augustus National Park, 24°22'S, 116°50'E, 427m, wash on southern slope of mountain, 25.IV–7.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15877 (1♀, CNC); New South Wales: 23 km SE Tamworth, 31°13'S, 151°7'E, 26.XI.1982, D.S. Horning, Jr., JSS9151 (1♂, ANIC); 25 km NW Coonamble, 30°49'S, 148°12'E, 17.VI.1976, Z. Liepa, JSS9169 (1♂, ANIC); 27 km N Dubbo, 32°1'S, 148°37'E, 17.VI.1976, Z. Liepa, JSS9205 (1♂, ANIC); Ledknapper National Reserve, 25km NE Beulah Homestead, near old Gerara Springs (LDN6M), 29°16'S, 146°23'E, Mulga, 10.XII.2009–18.III.2010, S. O'Sullivan, K. Taylor, Malaise trap, CNC576646, CNC576649 (2♂, CNC); Culgoa National Park, 13.5km SW Cawwell Homestead (CGN1M),

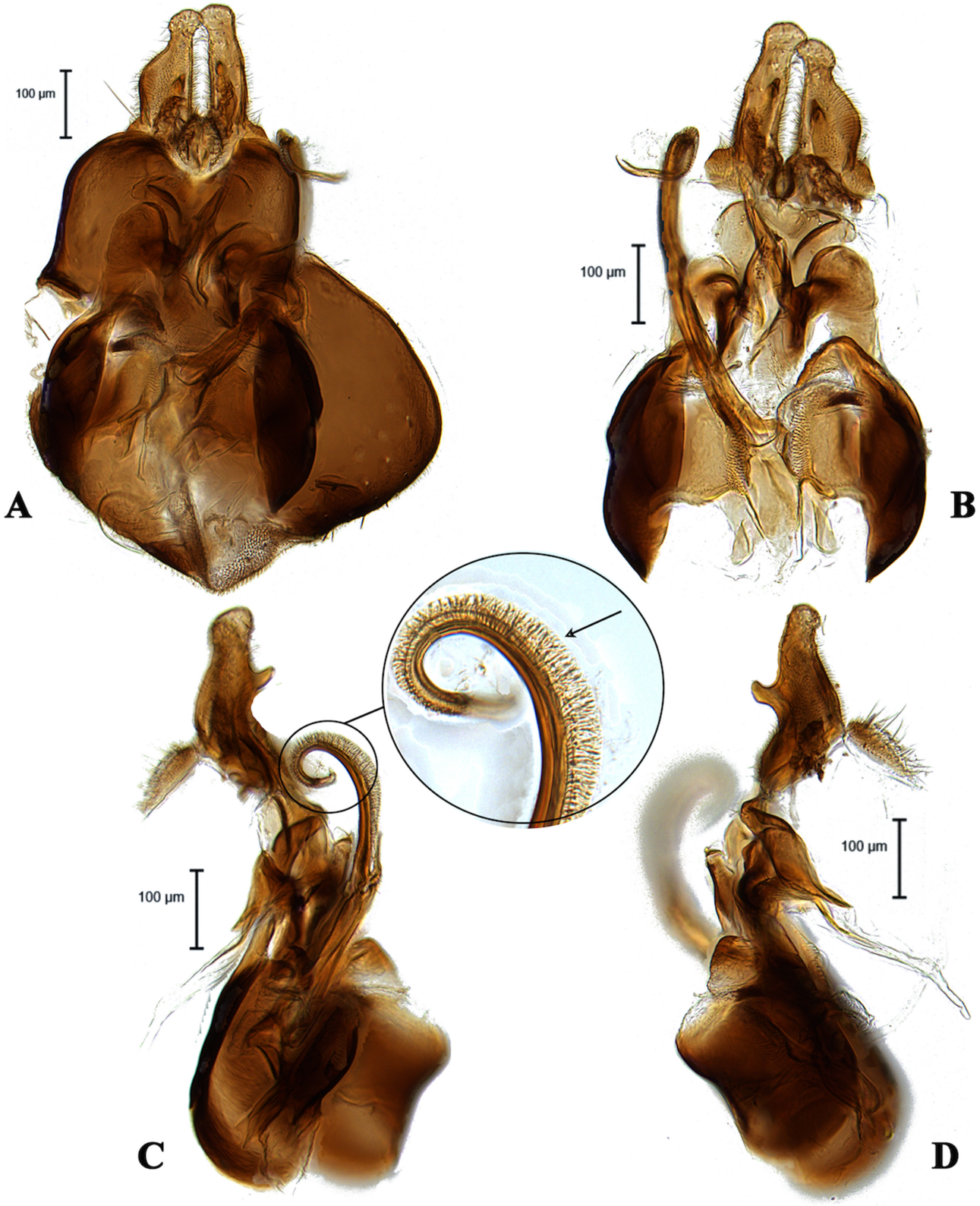



**FIGURE 94**. Male genitalia of *Tomosvaryella synadelpha* (JSS8847, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

29°7’S, 146°56’E, *Callitris*, 30.I–18.V.2010, QM Team, B. Shiebaan & R. Ohlsen, Malaise trap, CNC576620 (1♂, CNC); Northern Territory: McArthur River, 14 km S by W of Cape Crawford, 15°54’S, 136°40’E, 12.IV.1976, D.H. Colless, JSS9220 (1♂, ANIC); 25 miles SW of Auvergne homestead, 15°56’S, 129°44’E, 28.V.1968, M. Mendum, JSS8554 (1♂, ANIC); Casurina Beach, Darwin, 12°27’S, 130°50’E, 22.X.1972, D.H. Colless, JSS8527 (1♂, ANIC); Koongarra, 15 km E of Mount Cahill, 12°52’S, 132°51’E, 6–9.III.1973, D.H. Colless, JSS8547 (1♂, ANIC); Roper River, 14°44’S, 135°23’E, , N.B. Tindale, JSS8720–1 (2♂, SAM). NEW CALEDONIA: Anse Vata, 22°18’S, 166°27’E, 23.X.1958, C.R. Joyce, CNCD5613 (1♂, BPBM); Chesterfield Islands, 19°52’S, 158°19’E, IX.1957, F.Cohic, CNCD5600 (1♂, BPBM); Noumea, 22°16’S, 166°26’E, 200m, III.1973, N.L.H. Krauss, CNCD5609 (1♂, BPBM); 22–23.XI.1963, R. Straatman, CNCD5606, CNCD5608 (2♂, BPBM); PHILIPPINES: Mountain Province: Abatan, Buguias, 60 km S of Bontoc, 16°43’N, 120°49’E, 2000m, 11.V.1964; 17–19.V.1964; 21–27.V.1964; 28.IV.1964; 30.V.1964, H.M. Torrevillas, light trap; CNCD5544–9 (5♂, 1♀, BPBM); SOLOMON ISLANDS: Guadalcanal: Honiara, 9°27’S, 159°58’E, 0 to 100m, X.1970, N.L.H. Krauss, CNCD5627–30 (4♂, BPBM); Malaita: Antong Java Atoll, Peku, 10m, 17.XII.1972, N.L.H. Krauss, CNCD5620 (1♂, BPBM); NDAI Island, Bethlehem, 7°53’S, 160°37’E, 10m, XII.1972, N.L.H. Krauss, CNCD5619 (1♂, BPBM); Gizo Island, Gizo, 8°6’S, 156°50’E, 0 to 200m, XII.1975, N.L.H. Krauss, CNCD5624–5 (2♂, BPBM).

**Distribution:** Australia (New South Wales, Northern Territory, Queensland, Western Australia), New Caledonia, Philippines (Mountain Province), Solomon Islands (Guadalcanal, Malaita) (Fig. 142).

**Notes:** This species is widespread in Australia north of Dubbo in the east and Perth in the west. It extends through the Solomons, New Caledonia and New Guinea to the northern Philippines. It is predominantly a forest species and has never been found hilltopping. Perkins (1905) notes that one specimen was reared from a ‘jassid’. This is a general name for a leafhopper. Specimen CNCD5542 is hereby nominated as the lectotype to fix and ensure consistent interpretation of the name. Intraspecific genetic distance ranges from 0.4% to 2.4%. *Tomosvaryella synadelpha* is genetically closest to *T. cona* **sp. nov.** (8.9% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella tesca* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:DDFC4989-1872-4FCB-8FC6-C1DA78E034C1

Figs 95A–E, 141, 145B

**Diagnosis:** This species can be recognized by a ventroapical keel on the hind trochanter (Fig. 145B); elongated surstyli, left surstylus club-shaped, right one with a triangular lobes ventroapically in dorsal view (Fig. 95A); gonopods elongated, left little longer and wider than right one with a distinct projection on inner margin (Fig. 95B); phallic guide with 3–4 short dorsolateral spines in ventral view.

**Description: MALE:** Body length: 2.5 mm. ***Head***. Flagellum acuminate; yellow-brown, scape and pedicel dark brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 dark bristles. Mesonotum (viewed obliquely from front) silvery brown pollinose. Dorsocentral bristles short, numerous dark bristles around postpronotum present. Scutellum silvery brown pollinose and with 4–6 scattered bristles. Halter, stem and knob pale, tip brownish, base brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments bright yellow completely. Hind trochanter with a keel ventroapically; 1–2 ventrobasal short bristles present on fore mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced short bristles posteroventrally, longer on distal half, longest up to 1/3 the width of hind tibia at distal end. Short subapical spines on fore- and mid tibiae present. Hind tarsomeres distinctly flattened, hind metatarsus almost as long as 2–4 combined, all tarsomeres with erect bristles dorsally. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.5 mm. Upper side of basal costal cell with one short dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown, tergite 1 silvery brown grey pollinose. Dispersed short dark bristles on all tergites present. Lateral bristles on first tergite present, 6–8 dark bristles up to as long as hind femur’s width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli elongate, left surstylus broadened on apical half, apex club-shaped; right one with a triangular lobes ventroapically, left surstylus is longer than right one (Fig. 95A).

Genital capsule in ventral view: gonopods unequal, left is little longer and wider than right one, elongated towards surstyli, both gonopods with a distinct projection on inner margin; phallic guide with 3–4 short dorso- dorsolateral spines; subepandrial sclerite long (Fig. 95B); Genital capsule in lateral view: both surstyli curved towards sternite, rather widened at basal half, narrowed at apical half (Fig. 95D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 95C).

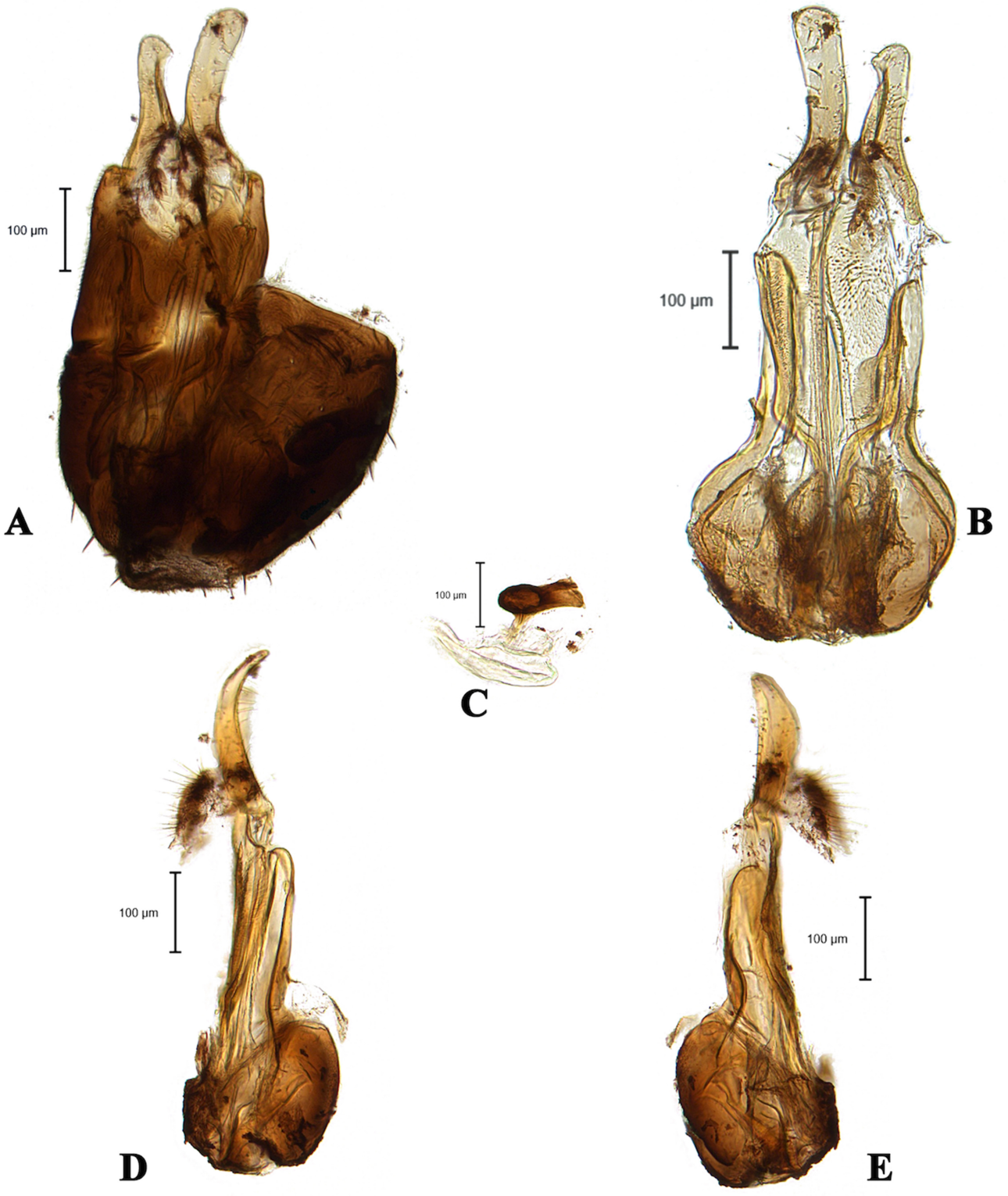



**FIGURE 95.** Male genitalia of *Tomosvaryella tesca* **sp. nov.** (CNCD11620, CNC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE:** Unknown.

**Etymology:** From the Latin tescum, a desert, in reference to the desert habitat of this species.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, CNC575371 (1♂, QM); **PARATYPE**: AUSTRALIA: Western Australia: 171km E Marble Bar, 21°17'S, 121°14'E, 2–15.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, CNCD11620 (1♂, CNC).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 141).

***Tomosvaryella tetraloba* Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:DFE89990-54D5-4166-8C7F-DF8DBDB644D7

Figs 96A–E, 139, 146F

**Diagnosis:** This species can be recognized by the hind trochanter having a keel with tiny dark spines ventrobasally (Fig. 146F); some long posterior bristles in apical half of hind femur; elongate surstyli in dorsal view (Fig. 96A); gonopods with four projections in ventral view (Fig. 96B); hypandrium with two small projections towards gonopod (Fig. 96B); phallic guide with six dorsolateral spines (Fig. 96B).

**Description**: **MALE**. Body length: 2.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.3 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 6–7 distinct pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part silver pollinose, slightly grayish also from the side. Scutellum silver pollinose and with 6–8 weak bristles along the distal edge. Dorsocentral bristles well developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale, stem brown. ***Legs***. Mid coxa with two spines. Trochanters and femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, last segment darker dorsally. Hind trochanter with a keel provided with tiny dark spines (3–8) in a group ventrobasally (Fig. 146F). Ventroapical row of spines on fore femur absent, 4–6 very short, black spines on mid femur; no spines on hind femur, hind femur with 14–16 pale, long bristles equally spaced posteriorly, longer on distal half (longest up to as long as 1.2–1.4 times the width of hind tibia at the distal end). Subapical (distal) spines on fore and mid tibiae present (very short). Hind metatarsus slightly flattened in middle, extended along the posterior edge, with dorsal bristles, missing in the middle, arranged in rows along the edges; hind metatarsus and second tarsomere with scrub-like? bristles ventrally. Pulvilli as long as last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one dark and long bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 8–9 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 and anterior half of tergite 2 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with only slightly larger spots). Dispersed long dark bristles on tergites present, the longest on tergite 5 and up to 0.5–0.8 times as long as width of hind tibia at base. Lateral bristles on first tergite present, 6–8 brown bristles in a row up to as long as the width of hind femur at distal tip in lateral view. Postabdomen in dorsal view: T6, S7 invisible; T5 1–1.2 times as long as ST8. Genitalia without dissection: ST8 medium sized, brown-black, with occasional small bristles; membranous area elongated, widening on upper part, which is directed dorsally; epandrium brown-black; surstyli yellow, appear to be elongated and slim. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.6). Surstyli elongate, slender and symmetrical. Left surstylus slightly longer than right surstylus. Both surstyli with broad base and tips curving inward (Fig. 96A). Genital capsule in ventral view: subepandrial sclerite wider in middle, gonopods rounded at the apex with two long finger-like projections towards surstyli and two projections extended towards phallus (Fig. 96B); lobes of hypandrium sclerotized and broadened in middle with two small projections towards gonopod (Fig. 96B). Phallus strong and straight, with three short ejaculatory ducts; phallic guide with six spines dorsolaterally (three left spines longer than others) (Fig. 96B). Genital capsule in lateral view: left surstylus straight in basal half and curved towards sternite in apical half; right surstylus slightly curved towards sternite in apical half (Fig. 96D–E). Ejaculatory apodeme tube-like with a bulb in its middle (Fig. 96C).

**FEMALE**: Unknown.

**Etymology**: The name is derived from the Greek tetra, four and the Latin lobus, an elongated projection or protuberance, in reference to the four projections on the male gonopods.

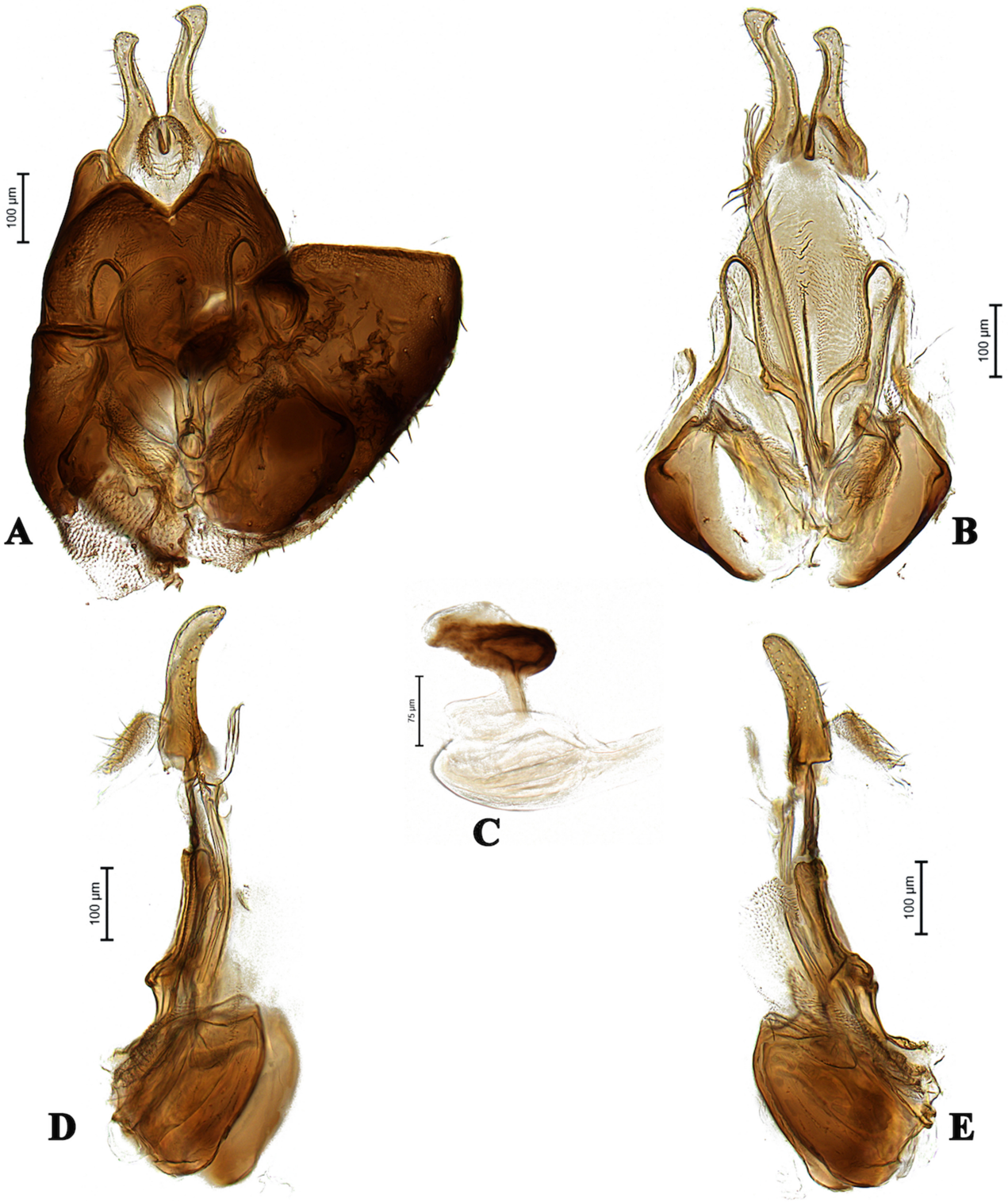



**FIGURE 96**. Male genitalia of *Tomosvaryella tetraloba* **sp. nov.** (JSS16036, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Yathong Nature Res[erve] n[ea]r Triangle Tank, 32°38'S, 145°32'E, 200m, in sandy wash in low closed mallee, 3–25.x.2003, C. Lambkin & N. Starick, Malaise trap, JSS16037 (1♂, ANIC); **PARATYPE**: AUSTRALIA: same data as holotype, JSS16036 (1♂, ANIC).

**Distribution:** Australia (New South Wales) (Fig. 139).

**Notes:** The shape of the surstyli is similar to *T. biflocca* **sp. nov.**, elongated and slender in dorsal view. It differs by the hind trochanter having a keel ventrobasally; gonopods rounded at the apex and the subepandrial sclerite without a vertical protrusion in middle in ventral view (Fig. 96B), without membranous sheath (Fig. 96B). Intraspecific genetic distance is 0.3%. *Tomosvaryella tetraloba* **sp. nov.** is genetically closest to *T. quadrata* **sp. nov.** (4.4% pairwise divergence) (Supplementary file 3).

***Tomosvaryella tribula*** **Motamedinia, Skevington & Földvari sp. nov.**

urn:lsid:zoobank.org:act:922282F3-F9CC-4D0B-A832-D16D933C73F1

Figs 97A–E, 143, 145D, 152E, 157D

**Diagnosis:** This species can be recognized by the hind trochanter having a keel and a patch of short bristles (Fig. 145D); sternite 2–4 with two distinct dark spines in the middle of posterior margin (Fig.152E); small surstyli in dorsal view (Fig. 97A); widened gonopods (Fig. 97B); hypandrium with two hairy finger-like membranous sheaths on posterior margin; phallic guide with 3–6 different-sized spines dorso- dorsolaterally (Fig. 97D); subepandrial sclerite and hypandrial apodeme wide and distinct in ventral view (Fig. 97B).

**Description: MALE:** Body length: 3.7–3.8 mm. ***Thorax***. Postpronotum light yellow, with 5–7 brown bristles in upper margin. Mesonotum (viewed obliquely from front) silvery-brown pollinose, anterior part greyer; scutum with scattered bristles at anterior supra-alar area. Postalar callus dark brown with three dark bristles in the middle. Scutellum silvery pollinose and with a few indistinct pale bristles along the distal edge. Halter, knob pale, stem light brown, base dark. ***Legs***. Mid coxa with 2–5 dark bristles, 1–2 bristles longer than others. Coxae, trochanters, femora dark, hind femur shining ventrally, knees and basal 1/4 of tibiae yellow (tibiae otherwise dark brown), tarsomeres light brown ventrally and dark dorsally. Mid trochanter with 1–2 short bristles ventroapically. Hind trochanter silvery pollinose, with a keel and batch (3–6) of short bristles ventroapically (Fig. 145D); ventrobasal spines absent on fore and mid femur. Hind femur with two rows of ventroapical spines. Hind tibia with two rows of short black bristles on both anterior and posterior side. Hind tarsomeres distinctly flattened, covered by dark bristles dorsally and brown bristles ventrally, last hind tarsomere not rounded as long as 3–4 combined; pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one dark brown bristle. Fourth costal section 1.5–2 times as long as third costal section. Cross-vein r-m at middle of discal cell. 4–6 short dark setulae on tegula. ***Abdomen***. Tergite 1 silvery pollinose with 6–8 dark bristles; tergites 2–5 covered by scattered brown bristles. Sternite 2–3 with two small dark spines in the middle of posterior margin; sternite 4 with two triangle-shaped spines along posterior margin (Fig.152E). Syntergosternite 8 enlarged, dark brown and grey-brown pollinose. Membranous area long and broad in middle. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.8). Surstyli small, rather triangle-shaped, slightly narrowed at apex; left surstylus somewhat longer, slightly bent towards the right side at apex (Fig. 97A). Genital capsule in ventral view: both gonopods widened, equal in height; hypandrium widened with two hairy finger-like membranous sheaths in upper margin; phallic guide with 3–6 different-sized spines dorsolaterally, one is longer than others; subepandrial sclerite wide and distinct; hypandrial apodeme wide and distinct, located between hypandrium (Fig. 97B); Genital capsule in lateral view: both surstyli widened at base, triangle-shaped with a small downward projection at the base (Fig. 97D–E); ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 97C).

**FEMALE:** Body length: 3.0–3.1 mm. As male except for the following characters. Frons, eyes separated, as wide as the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black only around ocellar triangle, smooth depression just before ocellar triangle. Enlarged ommatidia silvery shining; pulvilli and claws about 1.2–1.5 times as long as last tarsal segment. Tergites 4–6 with two grey lateral spots. Abdominal sternites without spines. ***Ovipositor.*** Straight in ventral view, rather straight, in lateral view (yellow piercer, dark brown base), reaching sternite 1; base silvery brown pollinose. LP:LB = 2.5. LDP:LPP = 2.0. (Fig. 157D).

**Etymology:** The specific name is derived from the Latin word ‘tribulus’, meaning thorny, referring to spines on the abdominal sternites.

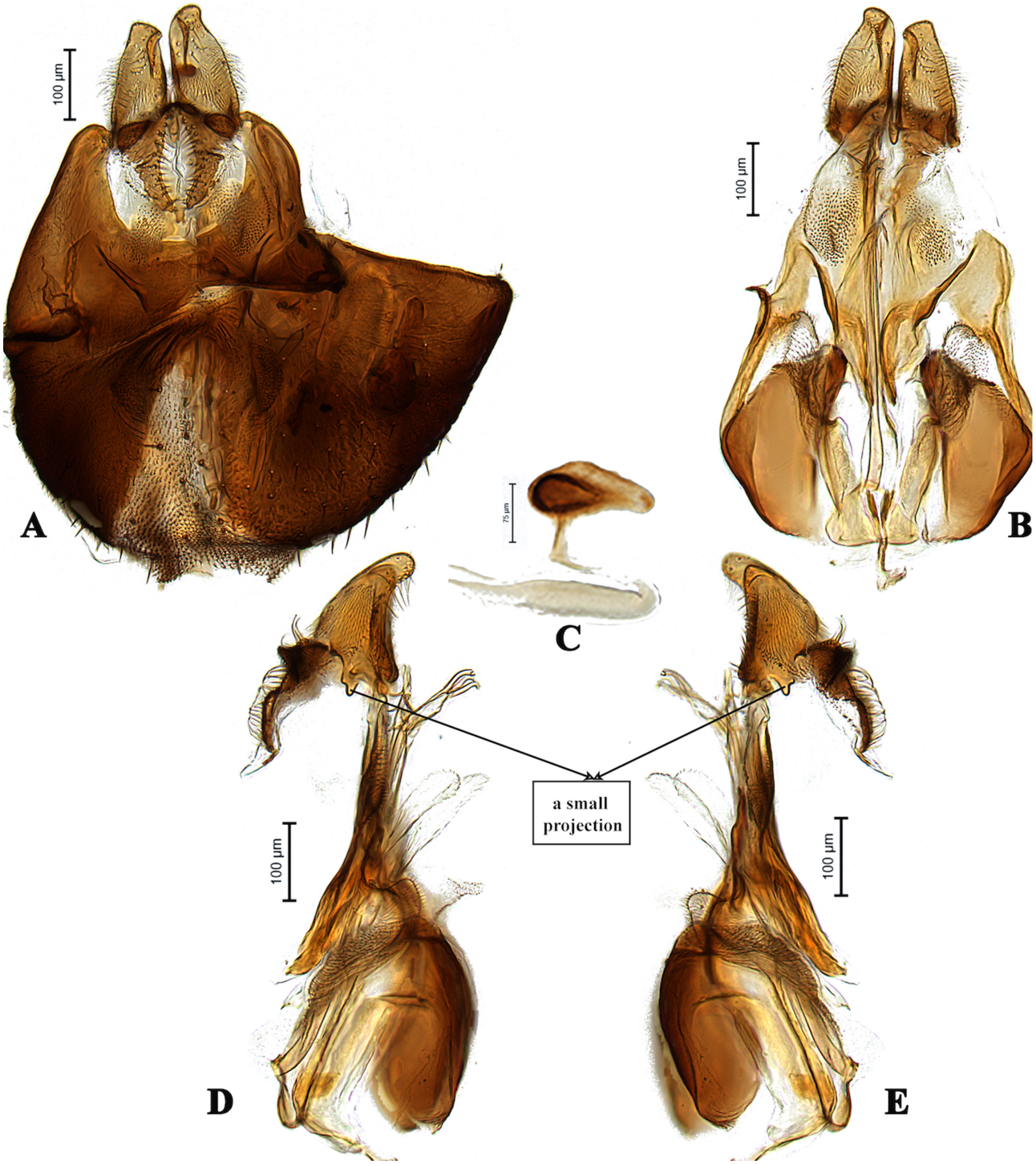



**FIGURE 97**. Male genitalia of *Tomosvaryella tribula* **sp. nov.** (JSS15579, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: 82 km S j[un]ct[ion] Karijini Dr[ive] on Great Northern H[igh]w[a]y, 23°7'S, 119°6'E, 694m, wash with pools, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15675 (1♂, WAM); **PARATYPES**: AUSTRALIA: Western Australia: 67 km SW Pardoo Road House on Shay Gap Road, 20°28'S, 120°10'E, 177m, dry sandy ravine with flowers, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15667 (1♂, CNC); 82 km S junction Karijini Drive on Great Northern Highway, 23°7'S, 119°6'E, 694m, wash with pools, 23.IV–6.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15672 (1♂, QM); Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus*

grassland, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16125 (1♀, ANIC); Karijini National Park, Karijini Drive, 22°34'S, 118°18'E, 815m; 814m, across dry gully, *Acacia* scrub; open *Eucalyptus* grassland, 19–25.IV.2003; 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15579–80, JSS15586, JSS16158 (2♂, 2♀, ANIC); Karijini National Park, Weano Gorge Road, 22°24'S, 118°15'E, 718m, in open *Eucalyptus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16220, JSS16236 (2♀, ANIC); Millstream-Chichester National Park, Roebourne Road, 21°26'S, 117°9'E, 337m, sandy creek, *Eucalyptus Spinifex* grassland, 27.IV–3.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16076–8 (3♀, ANIC).

**Distribution:** Australia (Western Australia) (Fig. 143).

**Notes:** This apparent West Australian endemic is restricted to the west central region of the state. Intraspecific genetic distance ranges from 0.3% to 2.4%. It is genetically most similar to *T. millstreamensis* **sp. nov.** (0.3–1.0% pairwise divergence) (Supplementary file 3). These two species show very low genetic distance, so it is possible that these are a single species with polymorphic external characters. More likely, they are young species and the mtDNA has simply not yet diverged. Future genetic and ecological work are required to test their taxonomic status.

### *Tomosvaryella trispina* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:5EDC2955-8597-4154-A351-F72437A6CCF7

Figs 98A–E, 141, 146B

**Diagnosis:** This species can be recognized by the hind trochanter having some dense short bristles ventrally (Fig. 146B); elongated surstyli in dorsal view (Fig. 98A); distinct hypandrial apodeme in lateral view (Fig. 98D–E); three spines on phallic guide and two short spines on one of ejaculatory ducts in lateral view.

**Description: MALE**: Body length: 2.6–3.0 mm. ***Head***. Flagellum acuminate, brown. Face silvery pollinose. Frons, upper part shining black, lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, more brownish on upper half. ***Thorax***. Postpronotum pale, with 4–5 distinct pale bristles. Mesonotum (viewed obliquely from front) subshining black, anterior part silver pollinose, slightly grayish from the side. Scutellum silvery pollinose with 12 distinct brown bristles along the distal edge. Dorsocentral bristles developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter; knob pale with a brownish tinge distally, stem dark brown. ***Legs***. Mid coxa with 2–3 bristles. Trochanters and base of femora black, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees, basal 1/5 of tibiae yellow (otherwise brown), tarsal segments yellow ventrally, yellow-brown dorsally, last segment dorsally darker. Hind trochanter gray pollinose, without keel, some short dark spines (7–9) at the base, otherwise covered with dense short bristles ventrally (Fig. 146B). Ventroapical row of spines on fore femur missing, one ventrobasal spine present on fore and absent on mid femur; 4–6 very short, black spines on mid femur; no spines on hind femur, 20–22 pale bristles posteriorly, equally distributed, and longer on distal 1/3 (as long as 2/3 the width of hind tibia at the distal end). Subapical spines on first four tibiae present, distal and medium-sized. Hind metatarsus not flattened, first tarsomere slightly longer than 2–4 combined, with short and dense bristles ventrally, yellow, dorsal bristles on all tarsi semi-erect and dark. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.7–2.8 mm. Upper side of basal costal cell with one long distinct bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m slightly proximal to middle of discal cell. 6–8 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 silvery grey, sides silvery pollinose on tergites 4 and 5 (the latter with larger spots). Dispersed short dark bristles on tergites present, the longest on tergite 5 and up to half as long as width of hind tibia at base. Lateral bristles on first tergite present, 3–4 brown bristles up to as long as width of hind femur. Postabdomen in dorsal view; T6, S7 invisible; T5 1.5 times as long as ST8. Genitalia without dissection: ST8 medium sized, subshiny black as tergite 5; membranous area roundish, cone-shaped; epandrium paler, narrow; yellow surstyli long and flat. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.07). Surstyli light brown, rather symmetrical, elongated, left surstylus longer than right one, its tip curved toward right one in apical third (Fig. 98A). Genital capsule in ventral view: subepandrial sclerite wide, extended beneath gonopods, covered with transverse streaks; gonopods elongated, with a small upward projection (Fig. 98B), phallic guide with 3–4 different-sized spines dorsally (longer one closer to apex). Genital capsule in lateral view: left surstylus smoothly curved towards sternite, broader than right one; right surstylus smoothly curved towards sternite (Fig. 98D–E); phallus with three ejaculatory ducts, one with two small spines; hypandrial apodeme distinct and long (Fig. 98D–E); ejaculatory apodeme flat, sperm pump elongated, linear (Fig. 98C).

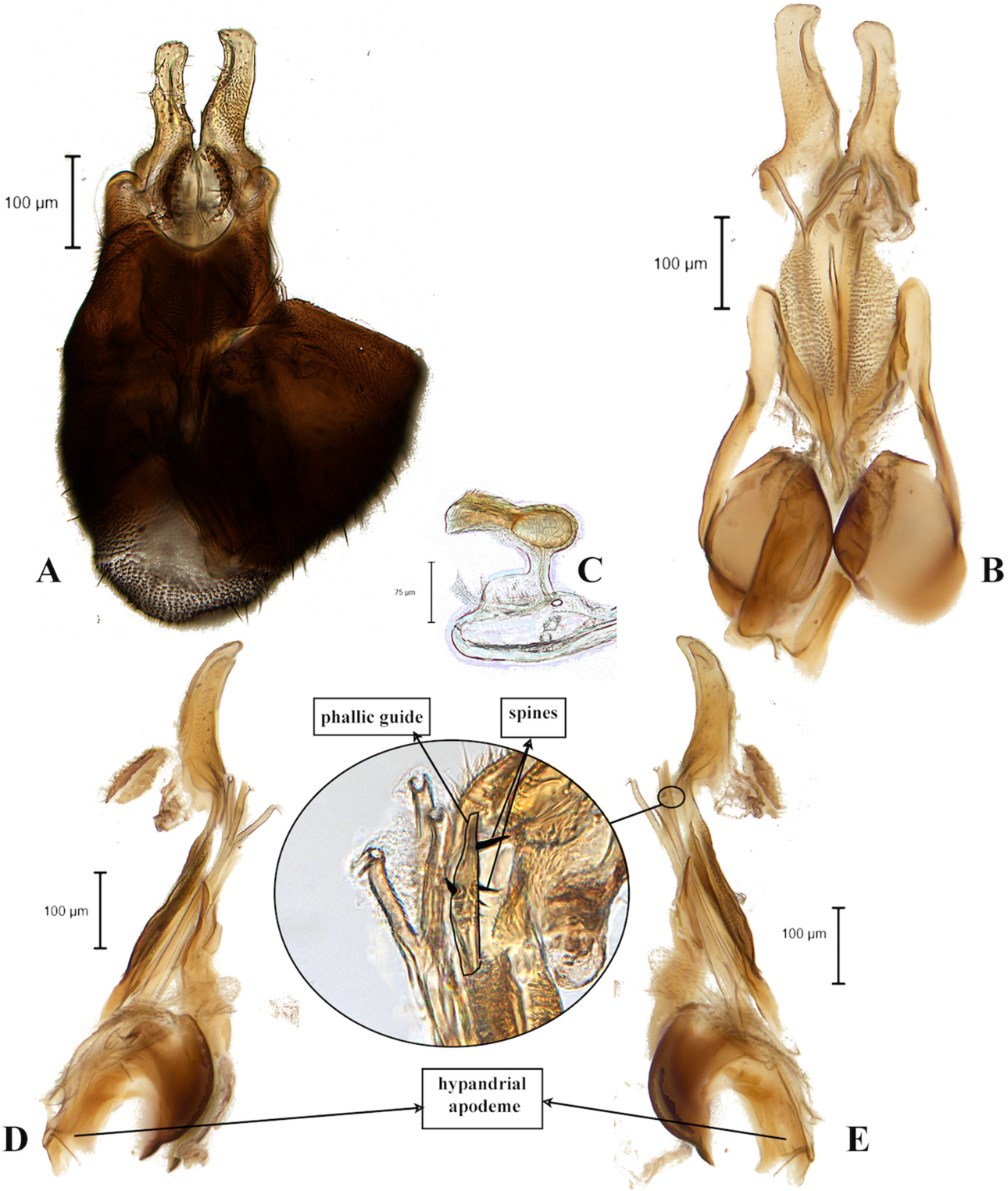



**FIGURE 98**. Male genitalia of *Tomosvaryella trispina* **sp. nov.** (JSS1608, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**FEMALE**: Unknown.

**Etymology:** From the Latin tres, three and spina, spine, in reference to the three spines found on the phallic guide.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Brisbane, Mt. Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 7.xii.1997, J.&A. Skevington, hand collected, JSS2352 (1♂, QM); **PARATYPES**: AUSTRALIA:

Queensland: 14.6 km east of Lakeland Downs, 15°46'S, 144°57'E, 270m, hilltop in open, dry savanna (rangeland for cattle), 8.vi.1997, J.&A. Skevington, JSS8853–4 (2♂, QM); Barakula State Forest No. 302, Summit Round Mountain, 26°22'S, 150°58'E, 8.i.2000, J.&A. Skevington & M. Mathieson, JSS7556 (1♂, QM); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 16.ix.1997, J. Skevington, hand collected, JSS3800 (1♂, CNC); ~170m, hilltop, 25.ix.1997, J.&A. Skevington, hand collected, JSS3793–4 (2♂, QM); 26.x.1997, J. Skevington, hand collected, JSS3795, JSS3797 (2♂, QM); 27.i.1998, J.&A. Skevington, hand collected, JSS3083 (1♂, QM); Brisbane, Mt. Coot-tha, 27°29'S, 152°57'E, ~170m, hilltop, 7.xii.1997, J.&A. Skevington, hand collected, JSS2333, JSS2335–6, JSS2339–40, JSS2351 (1♂, ANIC, 5♂, QM); 8.xi.1997, J.&A. Skevington, hand collected, 9:45 am – 10:15 am, 10:15 am – 10:45 am, 9:15 am – 9:45 am, JSS978, JSS987, JSS990, JSS997–8 (5♂, QM); 250m, hilltop, 21.VIII.2004, J. Skevington, hand collected, JSM780, JSM809, JSS15358, JSS15386 (2♂, CNC); Carnarvon National Park, Mount Moffatt Summit, 25°4'S, 148°3'E, 1097m, hilltop, 29.xi.1997, J. Skevington & C. Lambkin, hand collected, JSS1608 (1♂, QM); Scrub Road, Brisbane Forest Park, 27°25'S, 152°50'E, 3–10.x.1997, S. Winterton, N. Power & D. White, Malaise trap, JSS8855 (1♂, QM); New South Wales: Honeysuckle Creek, 35°35'S, 149°0'E, 11–22.IV.1985, I. Naumann & J. Cardale, Malaise trap, JSS9237 (1♂, ANIC); Western Australia: Karijini National Park, Weano Gorge Road, 22°24'S, 118°15'E, ANIC Bulk Sample 2042, 718m, in open *Eucalyptus*, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, ANIC Bulk Sample 2042, JSS16229 (1♂, ANIC).

**Distribution:** Australia (New South Wales, Queensland, Western Australia).

**Notes:** This species can be differentiated from *T. atraspina* **sp. nov.** by having bristles (not spines) on the hind trochanter; having one ventrobasal bristle on the fore femur (two bristles on *T. atraspina* **sp. nov.**); and a different shape of the left surstylus – in *T. atraspina* **sp. nov.** the left surstylus is bent towards the sternite in the apical third (Fig. 9C). All but three of the known specimens of this species have been collected on hilltops. Intraspecific genetic distance ranges from 0.0% to 4.2%. *Tomosvaryella trispina* **sp. nov.** is genetically closest to *T. quadrata* **sp. nov.** (6.5% pairwise divergence) (Supplementary file 3). The large intraspecific variation suggests that this may be a species complex and more investigation is required.

### *Tomosvaryella tuber* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:EF2C7D9C-FFF1-480A-B7D4-CD2EFB1BFEE2

Figs 99A–E, 136

**Diagnosis:** This species can be recognized by the hind trochanter having a large, fin-shaped keel ventroapically and a small tuber-shaped protrusion ventrobasally involving two small spines at its apex; hind tibia broadened distinctly in apical half; long surstyli, widened in apical fourth in dorsal view (Fig. 99A); gonopods unequal, hypandrium long in ventral view (Fig. 99B).

**Description: MALE:** Body length: 2.5–2.6 mm. ***Head***. Scape, pedicel, flagellum and arista dark, flagellum tapering, mostly gray pollinose. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.3 times the length of ocellar triangle. Occiput silvery-brown pollinose. ***Thorax***. Postpronotum pale, with 4 long pale bristles. Mesonotum (viewed obliquely from front) silvery-brown pollinose with some long supra-alar bristles behind postpronotum lobes. Scutellum silvery-brown pollinose with 8–12 short dark bristles along distal edge. Halter, knob yellow, stem and base brown. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; tibiae brown except knees and basal 1/6 of tibiae yellow, tarsal segments light brown. Hind trochanter with large fin-shaped keel ventroapically and a small protrusion ventrobasally involving two small spines at its apex. Two ventrobasal spines present on fore- and 3–5 shorter ones on mid femur. Hind femur with a small triangle-shaped keel ventrobasally, without ventroapical spines except 8–10 equally spaced bristles in two rows posteroventrally. Subapical (distal) spines on first four tibiae present (short). Hind tibia broadened distinctly in apical half covered by yellow erected bristles ventrobasally. Hind metatarsus slightly flattened, almost as long as 2–4 combined; all tarsomeres with erect bristles dorsally. Pulvilli covered by short yellow bristles. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brown-black, tergite 1 silvery grey. Dispersed short brown bristles on all tergites present. Lateral bristles on first tergite present, 8–10 dark bristles up to as long as ¾ of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium obviously longer than wide (MLE:MWE = 1.5). Membranous area rounded. Surstyli

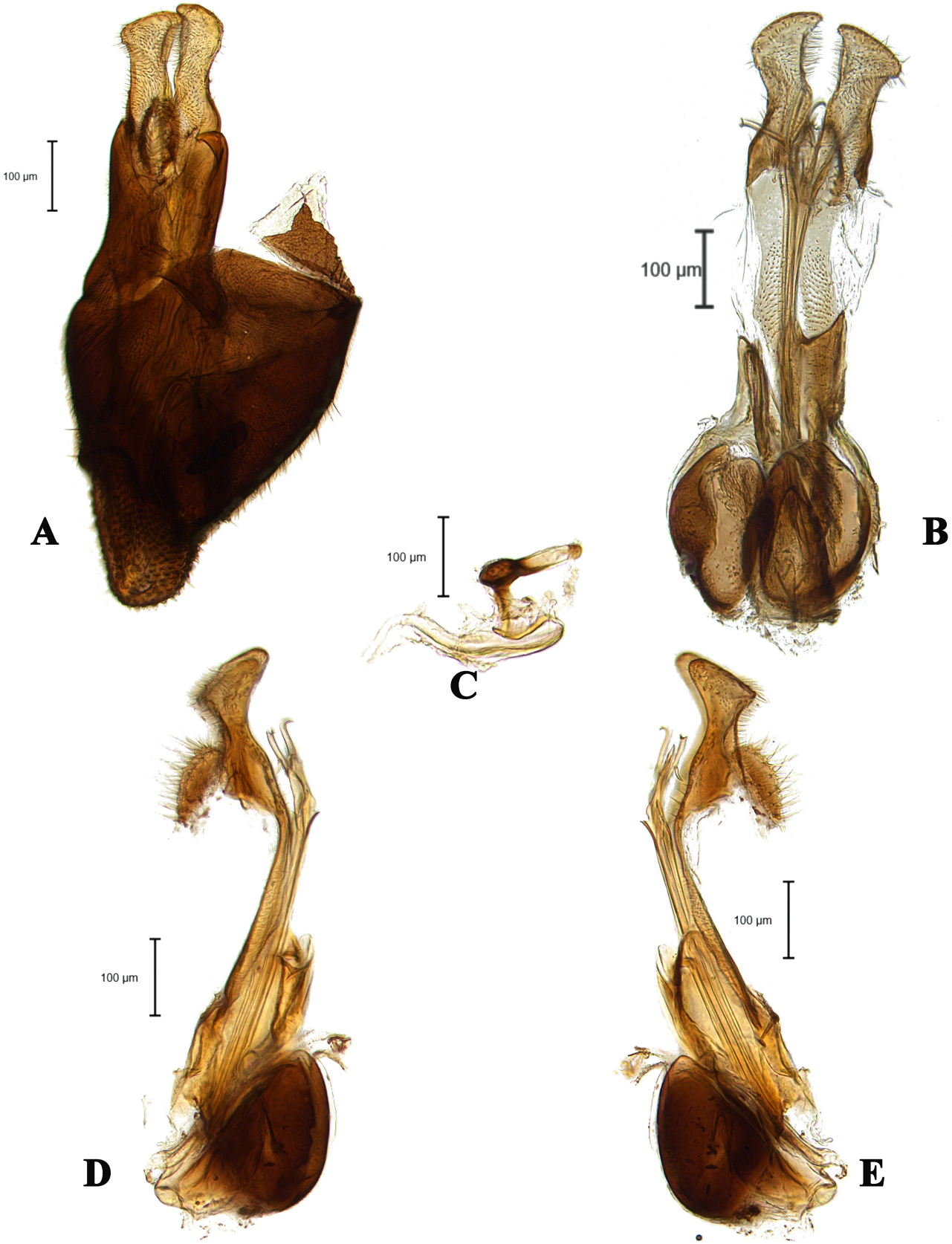



**FIGURE 99**. Male genitalia of *Tomosvaryella tuber* **sp. nov.** (JSS8528, ANIC) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

elongated, as long as epandrium width, both surstyli slightly broadened in apical fourth and curved to each other at apex (Fig. 99A). Genital capsule in ventral view: gonopods unequal in height, extended towards surstyli, hypandrium long; phallic guide long; subepandrial sclerite distinct (Fig. 99B); Genital capsule in lateral view: both surstyli straight in basal three fourths, bent 90 ° towards sternite (Fig. 99D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 99C).

**FEMALE:** Unknown.

**Etymology:** The name tuber is Latin for a swelling or bulb and refers to the bulbous protrusion on the hind trochanter.

**Examined material: HOLOTYPE**: AUSTRALIA: Queensland: Tinaroo Falls Dam, North Queensland, 17°11'S, 145°34'E, open savannah, 27.IV.1967, D.H. Colless, JSS8528 (1♂, ANIC); **PARATYPES**: AUSTRALIA: New South Wales: Shoalhaven Bdg. near Braidwood, 35°26'S, 149°48'E, 9.I.1968, D.H. Colless, JSS8526 (1♂, ANIC); Queensland: Southport, 27°59'S, 153°24'E, 29.V.1968, J.W. Boyes, JSS9702 (1♂, CNC).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 136).

### *Tomosvaryella uncinata* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:0BDE2B63-D736-4B5D-AEE9-37F11387ABFA
Figs 100A–E, 137, 156B

**Diagnosis:** This species can be recognized by the hind trochanter having a small keel covered by some short bristles; slender surstyli in dorsal view (Fig. 100A); elongated gonopods, right gonopod with a distinct projection on inner margin; phallic guide with 5–6 dorso- dorsolateral spines; subepandrial sclerite with a central, small, fin-shaped ridge in ventral view (Fig. 100B); phallic guide with a hook-like projection ventrally in lateral view (Fig. 100D).

**Description: MALE:** Body length: 2.6–2.8 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for 2 x length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 2–3 distinct pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, greyish also from the side. Scutellum silvery brown pollinose and without bristles along distal edge. Dorsocentral bristles long, dark, mostly in frontal half, as long as ¾ width of hind femur at base, pale bristles around postpronotum absent. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–3 long dark bristles. Trochanters brown, femora black, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibia yellow (tibia otherwise brown), tarsal segments yellow-brown dorsally, yellow ventrally, last segment darker. Hind trochanter with small keel, and 6–7 short dark bristles, equally spaced; ventrobasal spines absent on fore and mid femur. Hind femur without ventroapical spines, without long bristles posteroventrally. Subapical (distal) spines on first four tibiae well developed (longer than usual). Hind tarsomeres slightly flattened (especially hind metatarsus on distal end), and as long as 2–5 combined; posterior corners with distinct bristles on all hind tarsomeres. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.6–2.7 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny brown-black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5, larger on tergite 5. Dispersed strong dark bristles on all tergites present, longest on tergite 5; length up to 1/2 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view; T6, S7 invisible, T5 0.6–0.8 times as long as ST8. Genitalia without dissection: ST8 large, rounded in dorsal view, brown and with distinct bristles, otherwise with velvet-like coverage; membranous area is rounded dorsally, narrow ventrally, mostly directed posteriorly; epandrium brown, surstyli yellow. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.6). Surstyli symmetrical, slender and elongated, curved to each other at apex, left surstylus longer than right one (Fig. 100A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, pointed at apex, right gonopod with a distinct projection on inner margin; phallic guide with 5–6 dorso- dorsolateral spines, three are longer than others; subepandrial sclerite large, with a small, central, fin-shaped ridge, hypandrial apodeme distinct (Fig. 100B); Genital capsule in lateral view: both surstyli straight in basal three fourths and bent towards sternite apically, phallic guide with a hook-like projection ventrally before apex (Fig. 100D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 100C).

**FEMALE:** Body length: 2.2 mm. As male except for the following characters. Frons, eyes separated, as wide as 2 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black only around ocellar triangle, smooth change in transition zone (just before ocellar triangle) to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1.5–2.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Straight in ventral view; straight, dagger-like in lateral view (yellow piercer, brown base), reaching base of abdomen; base silvery brown pollinose with numerous short dark bristles. LP:LB = 3.0. LDP:LPP = 4.0. (Fig. 156B).

**Etymology:** From the Latin uncus, hook, barb or angle, in reference to the hook-like phallic guide projection.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3863 (1♂, WAM); **PARATYPES**: AUSTRALIA: New South Wales: 12 miles NW Milton, 35°18'S, 150°26'E, 488m, 5.XI.1968, D.H. Colless, JSS8671 (1♂, ANIC); Culgoa National Park, 8km West-Northwest Cawwell Homestead, Diemunga Lagoon (CGN2M), 29°3'S, 146°60'E, Coolibah, 30.I–18.V.2010, C. Lambkin, R. Olsen, B. Shieban, Malaise trap, CNC575140 (1♂, QM); Porters Dam Road 16 km NW of Milton, 35°19'S, 150°26'E, 9.II.1974, Z. Liepa, JSS9157 (1♂, ANIC); Rotary Lookout 23 km NW of Milton, 35°19'S, 150°26'E, 9.II.1974, Z. Liepa, JSS9162 (1♂, ANIC); Sawpit Creek, Kosciusko National Park, 36°30'S, 148°16'E, 11.III.1978, Z. Liepa, JSS9171 (1♂, ANIC); Ledknapper National Reserve, 25.1km Northeast of Beulah Homestead, near old Gerara Springs (LDN6M), 29°16'S, 146°23'E, Mulga, 10.XII.2009–18.III.2010, S. O'Sullivan & K. Taylor, Malaise trap, CNC574628 (1♂, QM); Queensland: Culgoa Floodplain National Park, 7km NNW Toulby Gate (CG4AM), 28°56'S, 146°55'E, 160m, Gidgee, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, CNC576381, CNC576391 (2♂, QM); 17.XII.2009–20.I.2010, Kelly & Coward, Malaise trap, CNC591829–30, CNC591832, CNC591835 (4♂, QM); Culgoa Floodplain National Park, 7km North-Northwest of Toulby Gate (CG4AM), 28°56'S, 146°55'E, 160m, Gidgee, 19.III–20.V.2010, C. Kelly & A. Coward, Malaise trap, CNC575358 (1♂, QM); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, CNC575364 (1♂, QM); Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M), 28°57'S, 146°52'E, 138m, *Callitris*, 19.III–20.V.2010, C. Kelly & A. Coward, Malaise trap, CNC575019 (1♂, QM); Australian Capital Territory: Nass Road, S of Tharwa, 35°31'S, 149°4'E, 28.XI.1965, Z. Liepa, JSS9219 (1♂, ANIC); Queensland: 14 km W by N Hope Vale Mission, 15°16'S, 144°59'E, 10.X.1980, D.H. Colless, Malaise trap, JSS8564 (1♂, ANIC); 2 km S of Horseshoe lookout, Blackdown land, 23°50'S, 149°3'E, 23–24.IV.1981, D.H. Colless, JSS8615 (1♂, ANIC); Culgoa Floodplain National Park, 11.8km N Headquarters (CG2AM), 28°54'S, 147°8'E, 151m, Brigalow, 20.I–18.III.2010, C. Kelly & A. Coward, Malaise trap, CNC576673 (1♂, QM); Culgoa Floodplain National Park, 7km NW Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, Coolibah, reedy swamp, 17.XII.2009–20.I.2010, C. Kelly & A. Coward, Malaise trap, CNC575106, CNC575108–9 (3♂, QM); Culgoa Floodplain National Park, 7km North-Northwest of Toulby Gate (CG4AM), 28°56'S, 146°55'E, 160m, Gidgee, 17.XII.2009–20.I.2010, Kelly & Coward, Malaise trap, CNC575354–6 (3♂, QM); Culgoa Floodplain National Park, 7km Northwest of Toulby Gate (TOLB7M), 28°57'S, 146°53'E, 138m, reedy swamp, 20.I–19.III.2010, C. Kelly & A. Coward, Malaise trap, CNC575368 (1♂, QM); Culgoa Floodplain National Park, 7km WNW Toulby Gate (TOLB6M), 28°57'S, 146°52'E, 138m, *Callitris*, 19.III–20.V.2010, C. Kelly & A. Coward, Malaise trap, CNC575027 (1♂, QM); Tasmania: 10 km NW by N St. Helens, 41°15'S, 148°10'E, 14.I.1983, I.D. Naumann, J.C.Cardale, yellow pan trap, JSS9255, JSS9265 (2♂, ANIC); Victoria: 12 km SE Merrijig, Howqua River, 37°12'S, 146°22'E, 30.XI.1971, Neboiss, JSS8817 (1♂, MVMA); 17 km SE of Merrijig, 8 mile Creek off Howqua River, 37°13'S, 146°24'E, 1.XII.1971, Neboiss, JSS8814 (1♂, MVMA); Dartmouth Survey, Eight Mile Creek, Locality JA, 37°13'S, 146°26'E, 12.IV.1973, JSS8767 (1♂, MVMA); Western Australia: 80 km S Pardoo Road House on Shay Gap Road, 20°31'S, 120°8'E, 120m, near spring with bog, 1–14.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15680 (1♀, CNC); Cape Range National Park; Milyering Ranger House, 22°2'S, 113°56'E, 22m, below cliff near *Ficus*, 28.IV–11.V.2003, M.E. Irwin & F.D. Parker, Malaise trap, JSS15657 (1♂, CNC); Karijini National Park, Juna Downs Road, 22°42'S, 118°25'E; 22°43'S, 118°25'E, 789m; 799m, between drying pools in rocky Turee Creek; near rock outcrop, *Eucalyptus Eremophila* scrub, 14–19.V.2003; 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16027, JSS16061 (1♂, 1♀, ANIC); Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3817, CNCD3819, CNCD3837, CNCD3868–9 (1♂, CNC; 4♂, QM); Millstream-Chichester National Park, Snappy Gum Drive, 21°34'S, 117°4'E, 329m, across head of deep rocky gully, 27.IV–2.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16023 (1♂,

ANIC); Millstream-Chichester National Park, Snappy Gum Drive, 21°34'S, 117°4'E, 329m, over deep rocky gully, 2–11.V.2003, C. Lambkin, D. Yeates & J. Recsei, Malaise trap, JSS16181 (1♂, ANIC); Newmanns Rocks, 50 km W of Balladonia Motel, 32°6'S, 123°10'E, 31.XII.1986, G. and A. Daniels, JSS8914 (1♂, QM).

**Distribution:** Australia (Australian Capital Territory, New South Wales, Queensland, Tasmania, Western Australia) (Fig. 137).

**Notes:** *Tomosvaryella uncinata* **sp. nov.** is widespread in forested parts of Australia and has not been found hilltopping. Intraspecific genetic distance ranges from 0.0%. It is genetically most similar to *T. cona* **sp. nov.** (2.6–4.8% pairwise divergence) (Supplementary file 3).

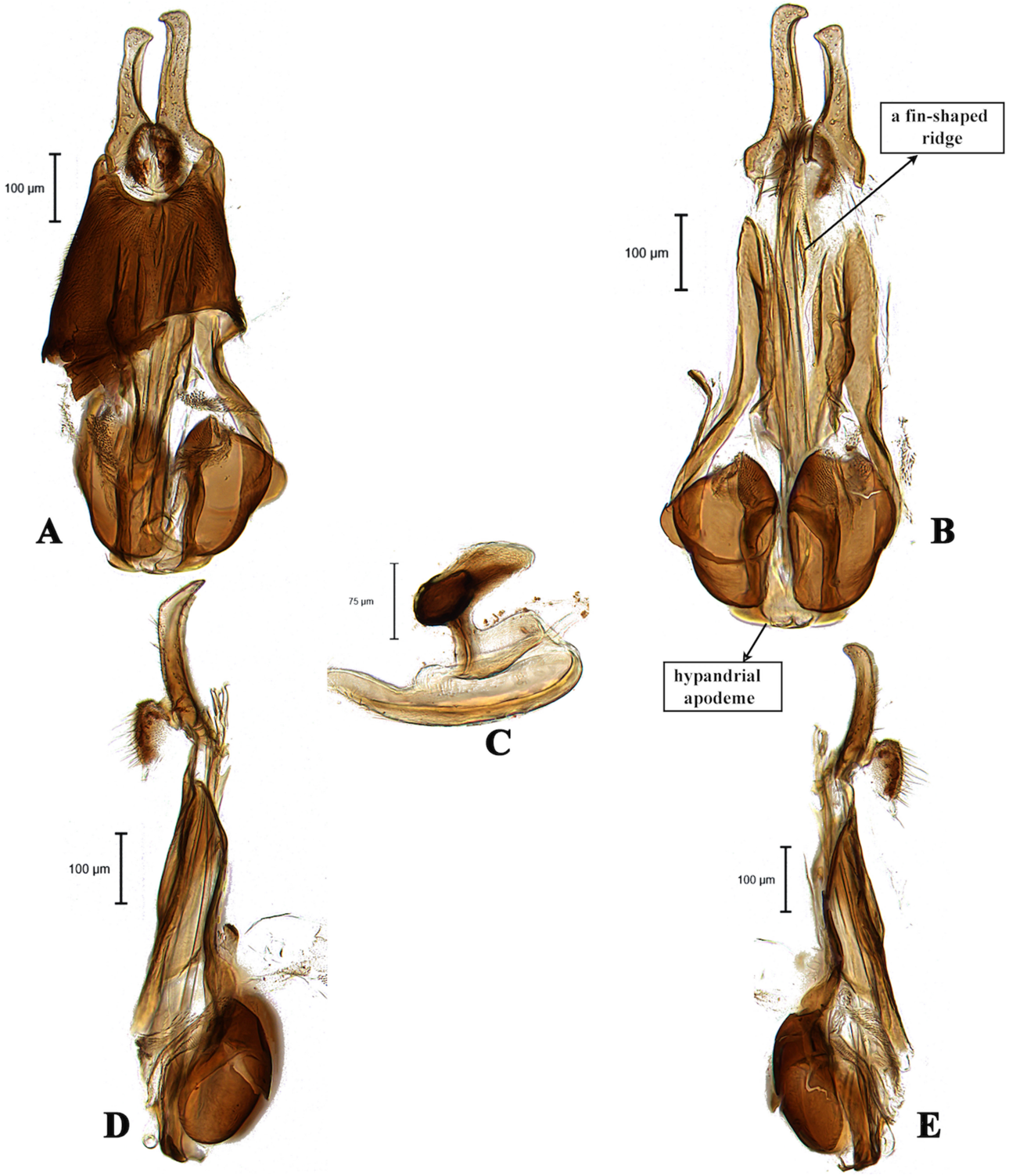



**FIGURE 100**. Male genitalia of *Tomosvaryella uncinata* **sp. nov.** (CNCD3819, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

***Tomosvaryella unda* Földvari, Skevington & Motamedinia sp. nov.**
urn:lsid:zoobank.org:act:68BDF8D8-92FC-46C9-A661-CA80DF39D71B
Figs 101A–D, 128, 153F

**Diagnosis:** This species can be recognized by the hind trochanter having dense short bristles; elongated surstyli, strongly bent at apex (Fig. 101A); phallic guide with 3–6 dorsolateral spines, one is sinuous and longer (Fig. 101B–D); elongated gonopods towards surstyli in ventral view (Fig. 101B).

**Description: MALE:** Body length: 3.0–3.1 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2–2.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum brownish pollinose and with 6–8 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous pale bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 2–4 long pale bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, ventrally paler, last segment brown. Hind trochanter with dense short bristles and no distinct bristles; ventrobasal spines (2) present on fore and weaker on mid femur. Ventroapical row of spines on fore femur absent; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 12–14 equally spaced bristles posteroventrally on a slight keel, longer on distal half, longest up to the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind metatarsus moderately flattened, almost as long as 2–3 combined, with dense short bristles ventrally (t1 only). Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long dark bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m slightly distal to middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshiny black, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (spot on t5 larger). Dispersed strong dark bristles on all tergites present, longest on tergite 5 in length up to 1/3 the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 short dark bristles up to as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.5–1.7 times as long as ST8. Genitalia without dissection: ST8 medium sized, rounded-off square in dorsal view, brown and with a few distinct bristles, otherwise with velvet-like coverage; membranous area round, mostly directed posteriorly; epandrium brown, surstyli yellowish and long. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.1). Surstyli rather symmetrical, elongated, moderately narrowed before apex, strongly bent to each other at apex, right surstylus with small depression in middle on inner margin (Fig. 101A). Genital capsule in ventral view: gonopods elongated towards surstyli, right one inclined to inner side, subepandrial sclerite widened distally; distinct hypandrial apodeme; phallic guide with 3–6 dorso-dorsolateral spines, one is sinuous and longer (Fig. 101B); Genital capsule in lateral view: both surstyli curved towards sternite, broadened at basal half, moderately narrowed to apex, phallic guide strong, pointed towards surstyli at apex (Fig. 101C–D).

**FEMALE:** Body length: 2.7–2.8 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.5–1.8 times the width at antennae; completely silver-grey pollinose on lower 1/3, shiny black in front of ocellar triangle, smooth change in transition zone to shiny black. Enlarged ommatidia silvery shining. Pulvilli and claws about 1–2 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Straight in ventral view, straight and robust in lateral view (yellow piercer, brown base), reaching proximal end of 4th segment; base brownish silvery pollinose with occasional bristles. LP:LB = 2.4. LDP:LPP = 2.5. (Fig. 153F).

**Etymology:** The Latin word unda means wave and is in reference to the long, sinuous spine on the phallic guide.

**Examined material: HOLOTYPE**: AUSTRALIA: Western Australia: Karijini National Park: Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3835 (1♂, WAM); **PARATYPES**: AUSTRALIA: Queensland: 12 km E of Heathlands homestead, 11°45'S, 142°41'E, 17.III.1992, G. Daniels & M.A. Schneider, JSS8322 (1♀, QM); 2 km along Ridgepole Waterhole Road, 10 km ESE Musselbrook Resource Centre, Lawn Hill National Park, 18°38'S, 138°12'E, 220m, 12.V.1995, G. Daniels & M.A. Schneider, JSS8293 (1♂, QM); Bamaga-Captain Billy Creek Road Junction, 16 km NE Heathlands Homestead, 11°41'S, 142°42'E, 16.III.1992, G. Daniels & M.A. Schneider, JSS8269 (1♂, QM); Bertie Creek (pump), 1 km SE Heathlands Homestead, Cape York Peninsula, 11°45'S, 142°35'E, 16.III.1992,

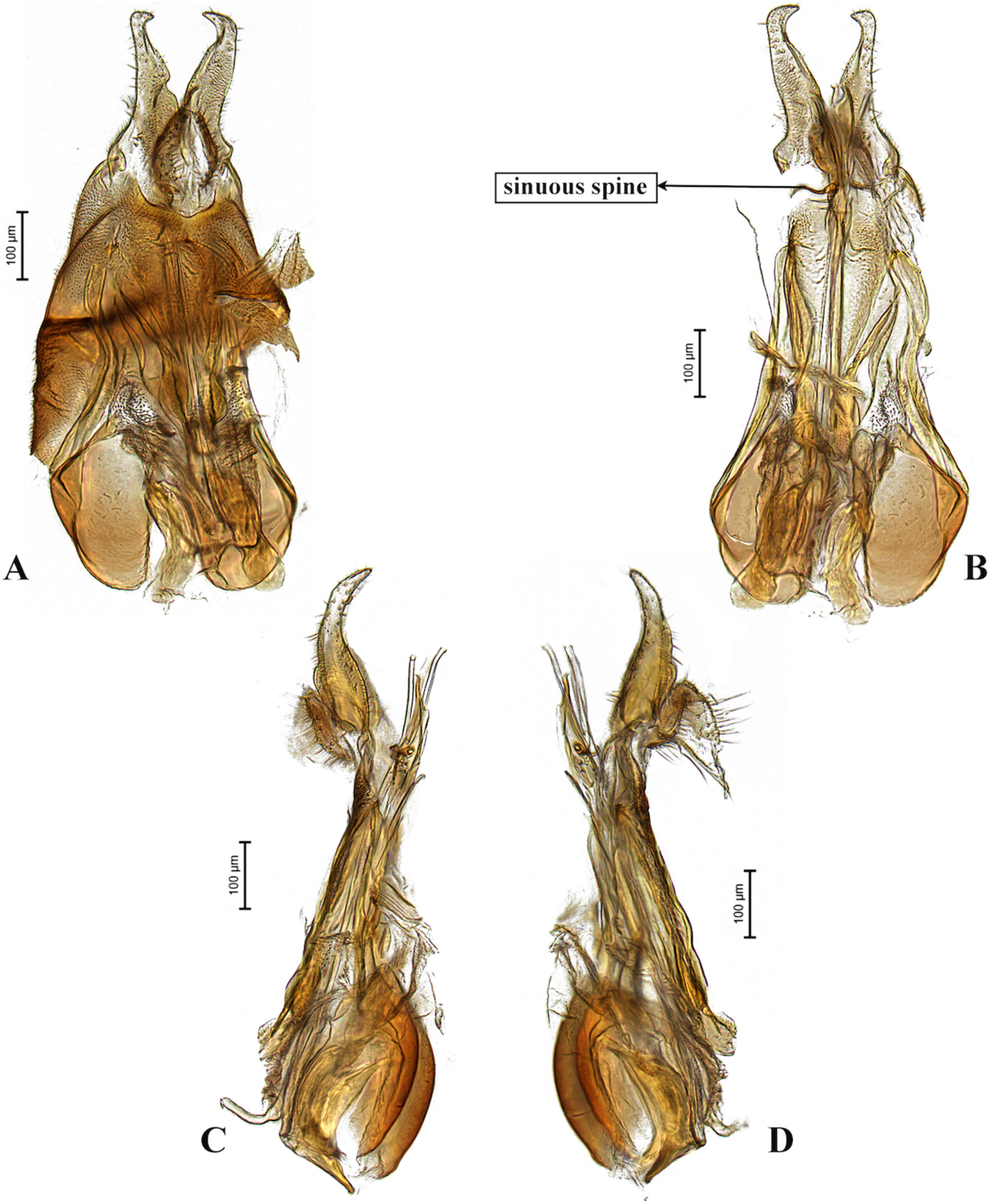



**FIGURE 101**. Male genitalia of *Tomosvaryella unda* **sp. nov.** (JSS2231, QM) **A**) dorsal view, **B**) ventral view, **C**, **D**) lateral view.

G. Daniels & M.A. Schneider, JSS8272 (1♂, QM); Brisbane, Mount Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 19.IV.1998, 13.IV.1997, 16.IX.1997, 26.X.1997, J. Skevington, hand collected, 9:15–9:45 am, 9:45–10:15 am, JSS3840, JSS3887, JSS3791, JSS3796, JSS3798, JSS3801–3, JSS3891 (9♂, QM); 170m, hilltop, 16.VIII.1997, J.&A. Skevington & C. Lambkin, hand collected, JSS3947–9 (3♂, CNC); 170m, hilltop, 15.V.1999, 8.II.1998, 25.IX.1997, 27.I.1998, J.&A. Skevington, hand collected, JSS3059, JSS3072, JSS3075, JSS3077, JSS3082, JSS3084, JSS3086, JSS3089–91, JSS3093, JSS3238, JSS3243–7, JSS3249–52, JSS3792, JSS5774, JSS5776–7, JSS5780, JSS5782–4 (29♂, QM); Brisbane, Mt. Coot-tha, 27°29'S, 152°57'E, 170m, hilltop, 16.VIII.1997, J.&A. Skevington & C. Lambkin, hand collected, JSS735–6 (2♂, USNM); 170m, hilltop, 7.XII.1997, 8.XI.1997, J.&A. Skevington, hand collected, JSS957, JSS962, JSS1008, JSS1032, JSS2329, JSS2332, JSS2341, JSS2350 (8♂, QM); Carnarvon National Park, Hilltop north of Tombs, 25°5'S, 147°52'E, 26.XI.1997, J. Skevington & C. Lambkin, hand collected, JSS2212 (1♂, QM); Carnarvon National Park, Mount Moffatt Section, 25°4'S, 148°3'E, 760m, in bottom land, 25.XI.1995, S.D. Gaimari, Malaise trap, JSS8836 (1♀, INHS); Carnarvon National Park, Mount Moffatt Section, 25°2'S, 147°58'E, 27.XI–2.XII.1997, J. Skevington & C. Lambkin, Malaise trap, JSS8414 (1♂, QM); Western Australia: Karijini National Park, Hamersley-Mount Bruce Road, 22°34'S, 118°18'E, 757m, dry rocky creek bed, *Eucalyptus* grassland, 25.IV–14.V.2003, C. Lambkin, T. Weir, Malaise trap, JSS15967, JSS16115, JSS16126 (2♂, 1♀, ANIC); Karijini National Park, Juna Downs Road, 22°44'S, 118°25'E, 798m, dry Turee Creek, grassy open *Eucalyptus* scrub, 14–19.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS16112 (1♀, ANIC); Karijini National Park, Weano Gorge Road, 22°21'S, 118°15'E, 695m, grassy dry creek, *Eucalyptus Acacia* scrub, 20–25.IV.2003, C. Lambkin & T. Weir, Malaise trap, JSS16035 (1♂, ANIC); Karijini National Park, off Karijini Drive, 22°35'S, 118°17'E, 724m, dry wash: closed *Acacia* scrub, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, JSS15590 (1♂, ANIC); Karijini National Park, Juna Downs Road (between drying pools in rocky Turee Creek), 22°42'S, 118°25'E, 789m, 25.IV–14.V.2003, C. Lambkin & T. Weir, Malaise trap, CNCD3845 (1♀, CNC); Junee State Forest; 9 NW of Marlborough Z55; 705229, 7476480, 22°48'S, 149°0'E, 4.X.2002, M. Mathieson, JSM 504, CNC484120 (1♂, CNC).

**Distribution:** Australia (Queensland, Western Australia) (Fig. 128).

**Notes:** This species is commonly found hilltopping in *Eucalyptus* forest and is particularly common at Mount Coot-tha in Brisbane. Intraspecific genetic distance ranges from 0.0% to 0.8%. It is genetically most similar to *T. patula* **sp. nov.** and *T. dolicholoba* **sp. nov.** (4.0–4.4% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella vasta* Motamedinia, Skevington & Földvari sp. nov.

urn:lsid:zoobank.org:act:3342A670-D2C9-4371-992A-23728E4A465E

Figs 102A–E, 137

**Diagnosis:** This species can be recognized by the hind femur having 10–15 equally spaced bristles posteroventrally; hind trochanter with a keel; surstyli straight in dorsal and lateral views (Fig. 102A, D–E); gonopods triangle-shaped; hypandrium large, with two small protrusions towards gonopods ventroapically (Fig. 102B), phallus with three spines emerging before ejaculatory ducts; phallic guide with 3–6 dorsolateral spines of different size.

**Description: MALE:** Body length: 3.1 mm. ***Head***. Scape and arista dark, pedicel brown, flagellum light brown and tapering, tips lighter. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/3. ***Thorax***. Postpronotum pale, with 3–4 short pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part greyer. Dorsocentral bristles short, dark, longer in frontal half, numerous pale bristles around postpronotum present. Scutellum silvery brown pollinose and with 4–8 short dark bristles along distal edge. Halter, knob pale, stem brown with 3–4 short bristles, base dark. ***Legs***. Mid coxa with 4–5 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments light brown. Hind trochanter with a keel; hind femur without ventroapical spines, except 10–15 equally spaced bristles posteroventrally, longer on distal half, longest up to the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres flattened (t1–3), hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.2 mm. Upper side of basal costal cell with one long dark brown bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 1–2 tiny setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites black, tergite 1 silvery grey, Lateral bristles on

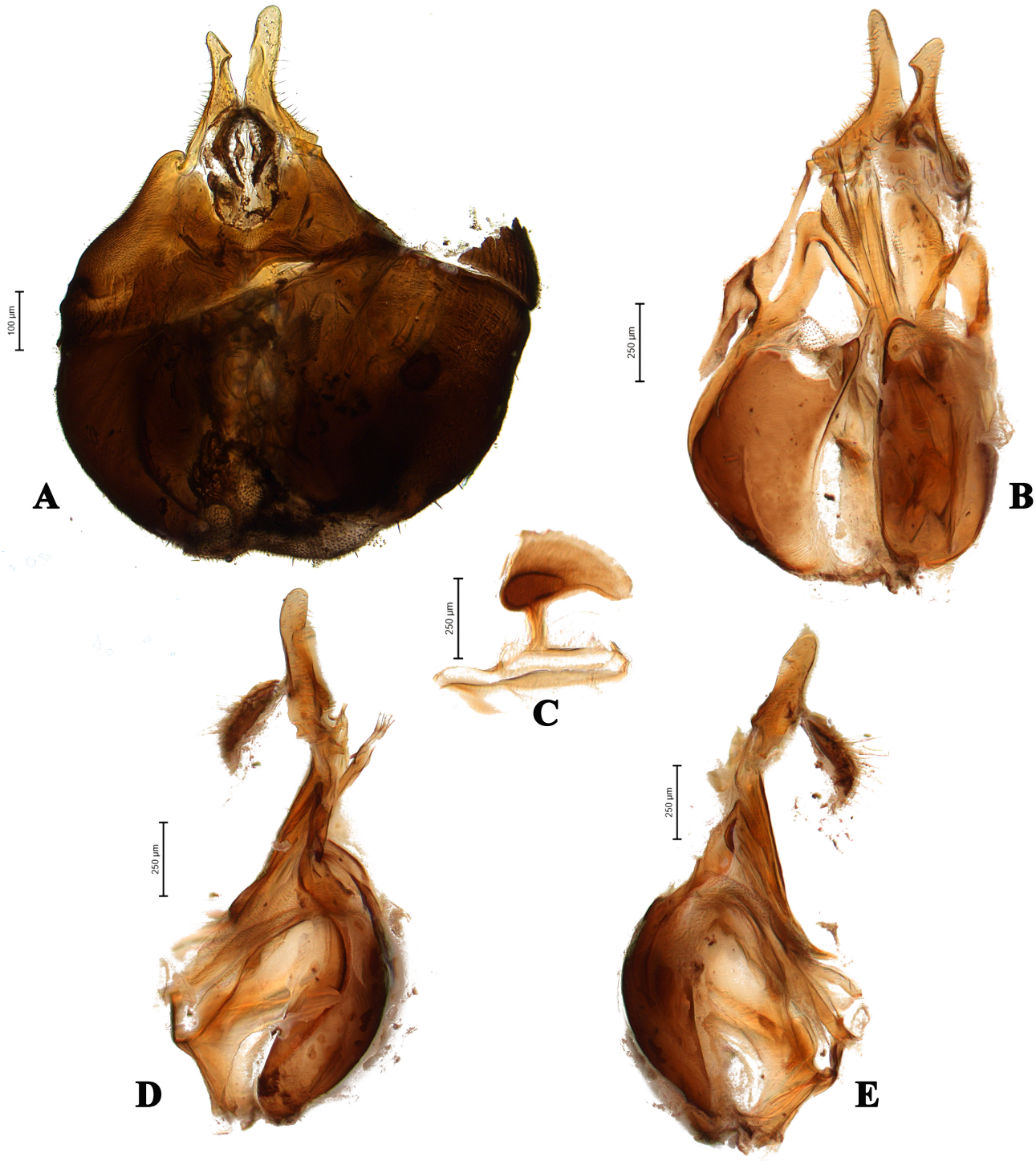



**FIGURE 102**. Male genitalia of *Tomosvaryella vasta* **sp. nov.** (JSS8723, SAM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

first tergite present, 2–4 dark bristles up to as long as half of hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7), more widened at its base. Both surstyli straight, left surstylus longer, right one with pointed projection before apex on inner margin (Fig. 102A). Genital capsule in ventral view: both gonopods widened at base, extended towards surstyli, triangle-shaped; hypandrium large, the height is twice the gonopods height with two small protrusions towards gonopods ventroapically, phallus trifid with three spines emerging before ejaculatory ducts; phallic guide with 3–6 different-sized dorsolateral spines, one is

longer and bent downwards at its tip; subepandrial sclerite small (Fig. 102B); Genital capsule in lateral view: both surstyli straight (Fig. 102D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 102C).

**FEMALE:** Unknown.

**Etymology:** From the Latin vastus, desert, in reference to the species being found in the vast desert of central Australia.

**Examined material: HOLOTYPE**: AUSTRALIA: South Australia: N[ea]r Victory Well, Everard P[ar]k St[atio]n, 27°3'S, 132°30'E, 5.XI.1970, G.F. Gross, Malaise trap, JSS8723 (1♂, SAM).

**Distribution:** Australia (South Australia) (Fig. 137).

### *Tomosvaryella velutina* Földvari, Skevington & Motamedinia sp. nov.

urn:lsid:zoobank.org:act:D1B972CD-38EA-4124-8980-644DCD37F943

Figs 103A–F, 143, 154D

**Diagnosis:** This species can be recognized by the hind trochanter having a few tiny dark pegs and velvet-like pile; elongated surstyli in dorsal view (Fig. 103A); gonopods elongated towards surstyli in ventral view (Fig. 103B); one of the ejaculatory ducts with 4–6 small spines in lateral view (Fig. 103D–F); phallic guide with 6–8 dorsolateral spines in lateral view (Fig. 103F).

**Description: MALE:** Body length: 2.6–2.7 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 1.5 times the length of ocellar triangle. Occiput silvery pollinose, less so on upper 1/5. ***Thorax***. Postpronotum pale, with 3–4 pale bristles. Mesonotum (viewed obliquely from front) brownish pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and with 8–10 bristles along the distal edge. Dorsocentral bristles distinct, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum present. Halter, knob pale, stem brown. ***Legs***. Mid coxa with 1–2 long dark bristles. Trochanters and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow-brown, ventrally paler, last segment darker. Hind trochanter with few dark tiny pegs (5–8, not always visible) in a line at the base ventrally, velvet-like coverage; ventrobasal spines (1) present on fore and mid femora. Ventroapical row of spines on fore femur 2–3; 4–5 small, black spines on mid femur; hind femur without ventroapical spines, except 8–10 equally spaced bristles posteroventrally on distal half, longest up to 1.5 times the width of hind tibia at distal end. Subapical (distal) spines on first four tibiae absent. Hind metatarsus slightly flattened and, almost as long as 2–3 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0–3.1 mm. Upper side of basal costal cell with one long brown bristle. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 distinct brown setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites brownish pollinose, tergite 1 silvery grey, silvery pollinose spots on tergites 4 and 5 (larger on t5). Dispersed strong dark bristles on all tergites present, longest on tergite 5 up to the width of hind tibia at distal end. Lateral bristles on first tergite present, 4–6 dark bristles up to 1.2–1.4 times as long as hind femur's width at base. Postabdomen in dorsal view: T6, S7 invisible; T5 1.2–1.4 times as long as ST8. Genitalia without dissection: ST8 medium sized, square in dorsal view, brown and with distinct bristles, otherwise covered with dense short bristles; membranous area cone-shaped; epandrium brown, surstyli yellow, long. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.0). Surstyli symmetrical, elongate, right surstylus smaller than left one, left inclined to right one at apex (Fig. 103A). Genital capsule in ventral view: gonopods unequal in height, left longer than right one, elongated towards surstyli, subepandrial sclerite wide, covered with scattered short hair (Fig. 103B). Genital capsule in lateral view: both surstyli curved towards sternite, phallus with three short ejaculatory ducts, one with 4–6 small spines, phallic guide with 6–8 dorso-dorsolateral spines (one is longer) (Fig. 103D–F). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 103C).

**FEMALE:** Body length: 2.2–2.3 mm. As male except for the following characters. Frons, eyes separated, as wide as 1.6–1.8 times the width at antennae; completely silver-grey pollinose until up to 1/3 of the lower frons, shiny black in front of ocellar triangle, no transition zone; frons depressed along upper 2/3 with a groove in the median line. Enlarged ommatidia silvery shining. Pulvilli and claws about 2–2.5 times as long as last tarsal segment, smaller on metatarsi. Female abdomen with silver spots on sides of tergites 4–6. ***Ovipositor.*** Piercer straight in ventral view; long, curved upwards in lateral view, thin and reaching distal end of 2nd segment; base brownish pollinose without bristles. LP:LB = 4.0. LDP:LPP = 3.0 (Fig. 154D).

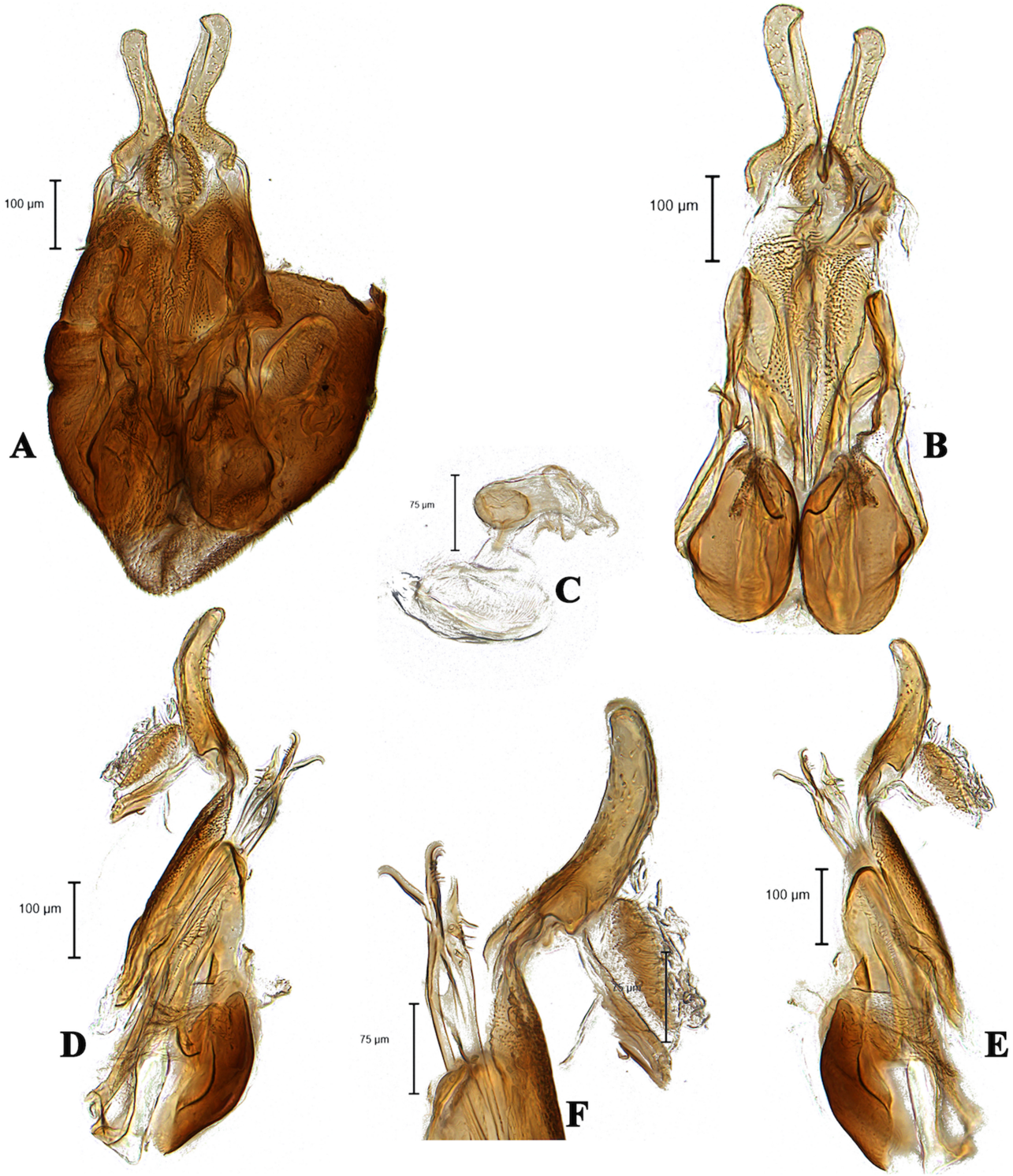



**FIGURE 103**. Male genitalia of *Tomosvaryella velutina* **sp. nov.** (JSS8394, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view, **F**) right surstylus, ejaculatory ducts and phallic guide in lateral view.

**Etymology**: This species is named after the velvet-like covering of the hind trochanter (from the Latin velutinus, velvety).

**Examined material: HOLOTYPE:** AUSTRALIA: South Australia: Flinders Ranges National Park, 4 km s[outh] Wilpeena Pound, 31°33'S, 138°39'E hilltop, 8.X.1997, J.&A. Skevington, JSS8394 (1♂, QM); **PARATYPES:** AUSTRALIA: Queensland: Brisbane Forest Park, 27°26'S, 152°51'E 200m, 9–14.XI.1995, M.E. Irwin, CNCD136754, (1♂, CNC); Carnarvon National Park, Mount Moffatt Summit, 25°4'S, 148°3'E, hilltop,

2.XII.1997, J. Skevington & C. Lambkin, JSS1822, (1♂, QM); Mount Moffatt National Park, 25°10'S, 147°50'E, ~900m, 10–13.II.2004, S. & J. Wright, Malaise trap, JSS19187, JSS19189 (2♀, QM); Aldinga Sellicks Beach Resort, 25.III–3.IV.1987, J.A. Forrest, E.G. Matthews, Malaise trap, JSS8822 (1♂, SAM); Gammon Ranges National Park, 30°25'S, 139°14'E, 12.X.1997, J. Skevington, S. Winterton & C. Lambkin, Malaise trap, JSS8323 (1♂, QM); Sandy Creek Conservation Park, 8km northeast Gawler, 34°36'S, 138°, 3.X.1997, S. Winterton, J.&A. Skevington & C. Lambkin, Malaise trap, JSS8401 (1♂, QM); Western Australia: 8 km E Salmon Gums, 32°58'S, 121°42'E, 6.I.1987, G. & A. Daniels, JSS8916 (1♂, QM); Fitzgerald River National Park, Old Ongerup Road near Hammersley River, 33°45'S, 119°40'E, 2–16.XI.2003, J. Recsei & C. Lambkin, Malaise trap, ANIC Bulk Sample 2189, JSS16211 (1♂, ANIC); Mount Magnet, Mount Waramboo, 28°2'S, 117°49'E, hilltop, 14.XII.1999, J. Skevington, JSS7463 (1♂, QM); Pine Hill, Cape Arid National Park, Balladonia Road, 33°18'S, 123°22'E, 31.X–18.XI.2003, C. Lambkin & J. Recsei, Malaise trap, ANIC Bulk Sample 2182, JSS15592 (1♂, ANIC); South Australia: Wyperfeld NP, East Lookout, 35°36'S, 142°7'E, 22.X.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, JSM6043; CCDB-27867, CNC384991 (1♂, CNC); Victoria: Hattah-Kulkyne NP, Warepil Lookout, 34°43'S, 142°18'E, 18.X.2014, A.D. Young, A. Wyatt, & S. Namek, J.H., A.W., & A.M. Skevington, JSM6109; CCDB-27176, CNC385057 (1♂, CNC).

**Distribution:** Australia (Queensland, South Australia, Victoria, Western Australia) (Fig. 143).

**Notes:** This is a widespread but uncommon forest species that is sometimes found hilltopping. Intraspecific genetic distance ranges from 0.0% to 5.6%. It is genetically closest to *T. trispina* **sp. nov.** (5.8–8.6% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella warrumbunglensis* Motamedinia, Földvari & Skevington sp. nov.

urn:lsid:zoobank.org:act:DC1180C6-0535-462C-A8FA-785449E5DC52

Figs 104A–E, 138

**Diagnosis:** This species can be recognized by the long epandrium and elongated and somewhat rectangular-shaped surstyli in dorsal view, both bent towards each other before the apex (Fig. 104A); long and pointed gonopods in ventral view (Fig. 104B); both surstyli straight in basal two thirds and bent towards sternite in lateral view (Fig 104D–E); phallic guide with 4–6 spines dorsolaterally, one spine longer than others and bent toward gonopods at the apex (Fig. 104C).

**Description**: **MALE**. Body length: 2.1 mm. ***Head***. (holotype without head) Scape and pedicel dark. Flagellum tapering; light brown at the apex. Face silvery pollinose. Frons, upper part black, lower part distinctly silver pollinose; eyes touching for distance equal to 1–1.2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum light yellow, with 1–3 dark bristles. Mesonotum (viewed obliquely from front) grey pollinose. Scutellum silver pollinose and with 10–12 weak bristles along the distal edge. Dorsocentral and supra-alar bristles well developed, dark, longer on frontal part and numerous dark bristles around postpronotum. Halter, knob pale with two short bristles, stem and base dark. ***Legs***. Mid coxa with 2–3 spines. All parts of legs dark brown except knees and basal 1/5 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow. Hind trochanter covered by strong and short bristles. Ventroapical row of spines on fore femur missing, hind femur with 8–12 subapical spines. All tarsomeres with erect dark bristles dorsally. Pulvilli as long as last tarsal segment. ***Wing***. Length: 2.3 mm. Upper side of basal costal cell with one dark and long bristles. Fourth costal section 2–2.5 times as long as third costal section. Cross-vein r-m at middle of discal cell. 6–8 dark setulae on tegula. ***Abdomen***. Viewed obliquely from front tergites subshining black, tergite 1 and tergite 2 silvery grey. Lateral bristles on first tergite present, 6–8 brown bristles in a row up to as long as the width of hind femur at distal tip in lateral view. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.3). Surstyli elongate and symmetrical. Left surstylus slightly longer than right surstylus. Both surstyli finger-like shaped with inward tips (Fig. 104A). Genital capsule in ventral view: subepandrial sclerite long, gonopods elongated towards surstyli, pointed at the apex with two small triangular projections before apex towards phallus (Fig. 104B). Genital capsule in lateral view: phallus straight, with three short ejaculatory ducts; phallic guide with 4–6 spines dorsolaterally (one spine longer than others and bent toward gonopods at the apex) (Fig. 104C). Right and left surstylus straight in basal two thirds and bent towards sternite in apical third (Fig. 104D–E).

**FEMALE**: Unknown.

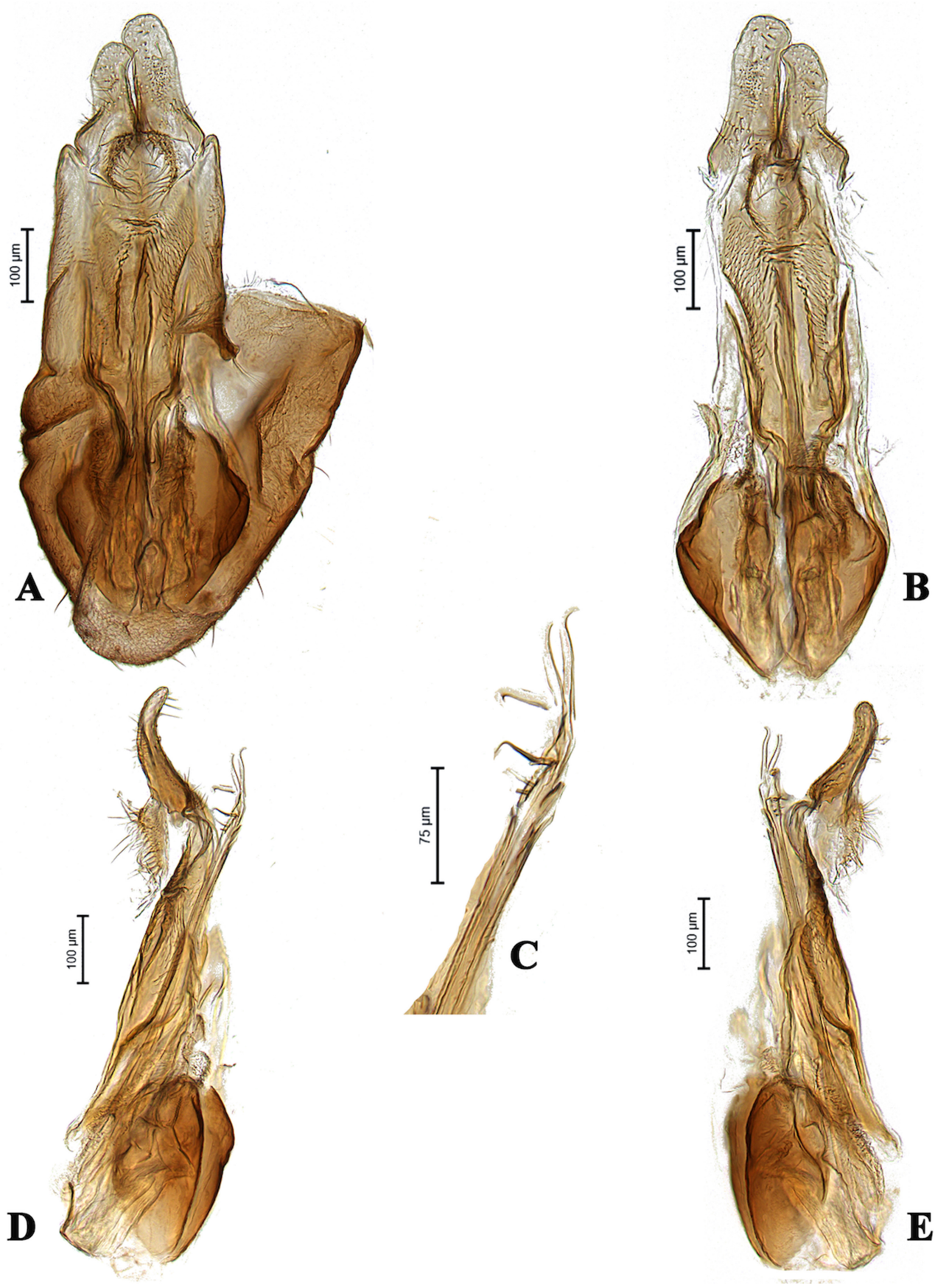



**FIGURE 104**. Male genitalia of *Tomosvaryella warrumbunglensis* **sp. nov.** (JSS8437, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory ducts and phallic guide in lateral view, **D**, **E**) lateral view.

**Etymology**. This species is named after Warrumbungle National Park, the location where the holotype was collected and an important natural area that protects a wealth of insect diversity.

**Examined material**: **HOLOTYPE**: AUSTRALIA: New South Wales: Warrumbungle National Park, 31°14'S, 149°1'E, 19.X–3.XI.1997, J. Skevington & S. Winterton, Malaise trap, JSS8437 (1♂, QM); **PARATYPES**: AUSTRALIA: New South Wales: Ledknapper National Reserve, 7.3km ENE Beulah Headquarters (LDN2M), 29°21'S, 146°13'E, *Eucalyptus melanopholia*, *Spinifex*, 10.XII.2009–18.III.2010, S. O'Sullivan & K. Taylor, Malaise trap, CNC576514, CNC576518 (2♂, CNC, QM); Queensland: Carnarvon National Park, Carnarvon Gorge, Consuelo land, 24°57'S, 148°6'E, 12.X.2002, S. Boucher, sweeping, LEM_0016167 (1♂, LEM).

**Distribution:** Australia (New South Wales, Queensland) (Fig. 138).

**Notes:** The genitalia feature of specimen LEM_0016167 are similar to other specimens but there is a distinct keel on its hind trochanter. None of the other specimens have this keel. *Tomosvareylla warrumbunglensis* **sp. nov.** appears to be a dry sclerophyll forest species. It is genetically most similar to *T. macrostyla* **sp. nov.** (2.4–3.5% pairwise divergence) (Supplementary file 3).

***Tomosvaryella wintertoni* Földvari, Skevington & Motamedinia sp. nov.**

urn:lsid:zoobank.org:act:4256ED35-C0B9-430E-9F4D-3CC3ACEFDB2F

Figs 105A–E, 143

**Diagnosis:** This species can be recognized by the hind trochanter having dense short bristles and a few pegs along a slight ridge on the ventral side; elongated surstyli in dorsal view (Fig. 105A); elongated gonopods, tapering at apex with small projection on inner margin before apex; subepandrial sclerite with some wrinkled in its middle and rounded outer margin in ventral view (Fig. 105B); phallic guide with 5–6 dorso-dorsolateral spines (Fig. 105D).

**Description: MALE:** Body length: 2.6 mm. ***Head***. Flagellum acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for 1.5 x length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale, with 0–1 pale bristles. Mesonotum (viewed obliquely from front) silvery pollinose, anterior part more grey, grayish also from the side. Scutellum silvery pollinose and without bristles along the distal edge. Dorsocentral bristles weakly developed, dark, somewhat longer along frontal edge, numerous dark bristles around postpronotum absent. Halter, knob pale with brownish tinge, stem brown. ***Legs***. Mid coxa with 3–4 strong, dark brown bristles. Trochanters pale brown (yellow band posteroventrally) and femora dark brown, shining ventrally, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/4 of tibiae yellow (tibiae otherwise brown), tarsal segments yellow, last segment darker. Hind trochanter with velvet-like bristles, posteriorly a tiny shiny spot on the inside; a few pegs along a slight edge on the ventral side; ventrobasal spine absent on fore and mid femur. Ventroapical row of weak spines on fore femur 3–4; 6–8 small, black spines on mid femur; hind femur without ventroapical spines; 14–15 equally spaced bristles posteroventrally, longer on distal half, longest up to 1/4 the width of hind tibia at distal end. Short, subapical spines on fore- and mid tibiae distally. Hind tibia slightly bent in posterior view. Metatarsi slightly flattened, first tarsomere elongated, almost as long as 2–5 combined. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 2.7 mm. Upper side of basal costal cell with one short dark bristle. Fourth costal section 2.5 times as long as third costal section. Cross-vein r-m at 3/5 of discal cell. 2–3 short brown setulae on tegula. ***Abdomen***. Dissected. tergite 1 silvery grey, lateral bristles on first tergite present, 3–4 dark bristles up to 2/3 as long as hind femur's width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium longer than wide (MLE:MWE = 1.5). Surstyli elongated, right surstylus smaller than left one and curved towards left one (Fig. 105A). Genital capsule in ventral view: gonopods elongated towards surstyli, tapering at apex with small finger-like projection located at inner margin before apex, unequal in height, left slightly longer than right one, subepandrial sclerite with some wrinkled in its middle and rounded outer margin (Fig. 105B). Genital capsule in lateral view: right surstylus rather straight, left surstylus curved towards sternite, phallic guide with 5–6 dorsolateral spines (one is longer) (Fig. 105D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 105C).

**FEMALE:** Unknown.

**Etymology**: This species is dedicated to Shaun Winterton, one of the collectors of the holotype. Shaun and JHS did their doctorates together in Brisbane and did a lot of collecting during that time. Many of Shaun's specimens have been critical to pipunculid revisions. He collected 23% of the species and 4% of the specimens used in this revision (Supplementary file 2).

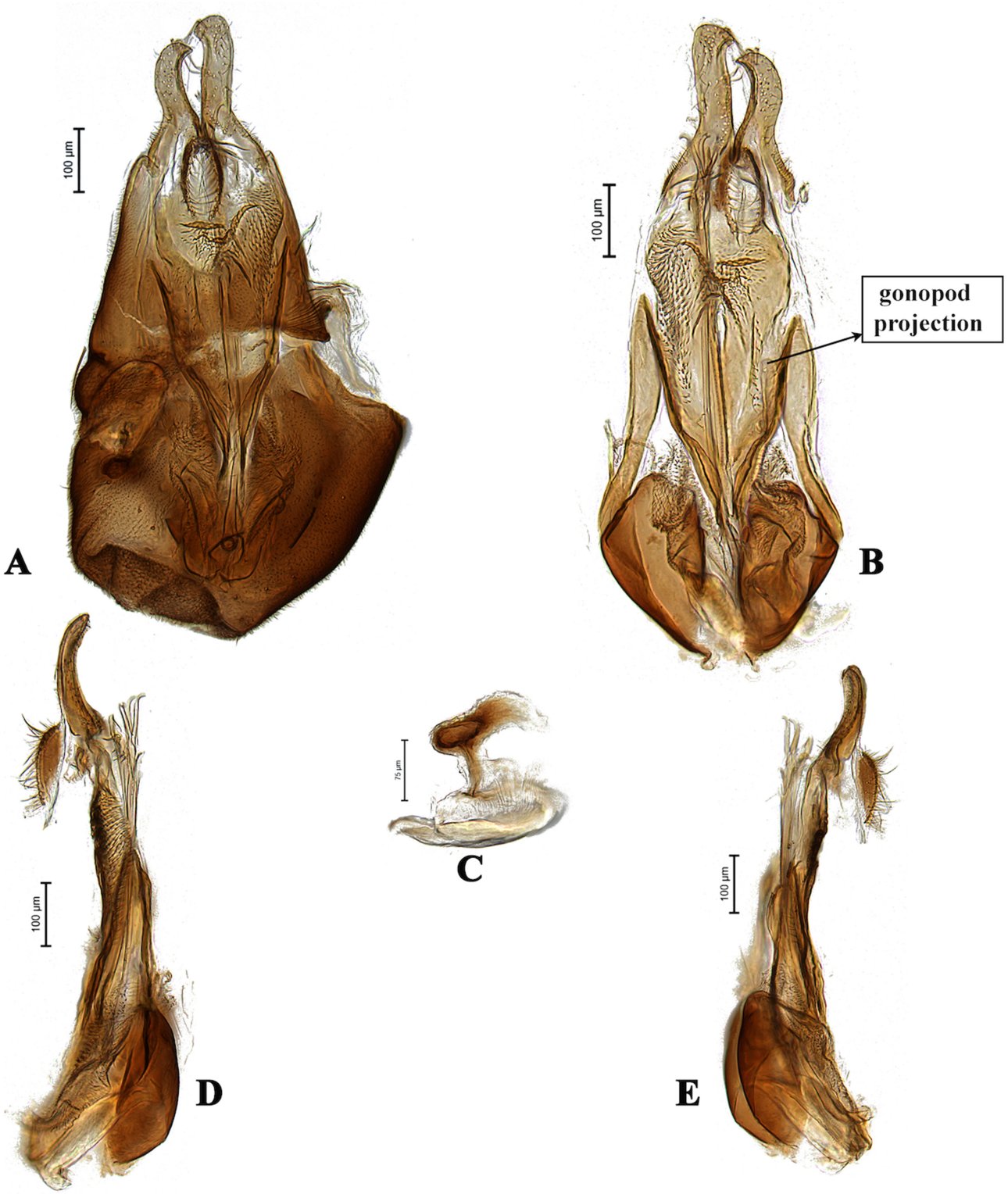



**FIGURE 105**. Male genitalia of *Tomosvaryella wintertoni* **sp. nov.** (JSS8344, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

**Examined material**: **HOLOTYPE:** AUSTRALIA: Queensland: 91.2 km west Windorah, 25°22'S, 141°47'E, Malaise trap in dry creek bed, 31.VIII–5.IX.1997, S. Winterton, J.&A. Skevington, JSS8344 (1♂, QM); **PARATYPE**: AUSTRALIA: Northern Territory: Koongarra, 15 km E of Mount Cahill, 12°52'S, 132°51'E, 6–9.III.1973, D.H. Colless, JSS8548 (1♂, ANIC).

**Distribution:** Australia (Northern Territory, Queensland) (Fig. 143).

**Notes:** The terminalia characters of the paratype specimen, JSS8548, are similar to the holotype but the hind trochanter has only with a few pegs along its edge. It is conceivable that they are different species, but more material would be needed to support this. Certainly, the habitats are different with the holotype having been captured in a desert environment and the paratype being found in monsoon forest. This species is genetically closest to *T. bulbosa* **sp. nov.** (2.3–3.8% pairwise divergence) (Supplementary file 3).

### *Tomosvaryella wyperfeldensis* Motamedinia, Skevington & Földvari sp. nov.

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Figs 106A–E, 136, 144E

**Diagnosis:** This species can be recognized by the hind trochanter having a keel covered by small teeth along its edge (Fig. 144E); hind femur with two rows bristles posteroventrally and posterodorsally (Fig. 144E); surstyli elongated, outer margin sinuous in dorsal view (Fig. 106A); gonopods equal in height, extended towards surstyli (Fig. 106B); phallic guide with 3–4 short dorsolateral spines; both surstyli boot-shaped in lateral view (Fig. 106D–E).

**Description: MALE:** Body length: 3.0 mm. ***Head***. Scape and pedicel dark; flagellum brown, grey pollinose, long tapering. Face silvery pollinose. Frons, upper part shining black; lower part distinctly silver pollinose; eyes touching for distance equal to 2 times the length of ocellar triangle. Occiput silvery pollinose. ***Thorax***. Postpronotum pale with 3–4 different-sized pale bristles. Mesonotum, postalar callus and scutellum brown pollinose, otherwise shiny, somewhat grey pollinose. Mesonotum with two rows of short, dark dorsocentral bristles, some longer bristles in upper margin behind postpronotum. Scutellum with some scattered short dark bristles. Halter, knob pale, tip brownish, stem dark. ***Legs***. Mid coxa with 3–4 long dark bristles. Trochanters brown, femora black, silvery pollinose posteriorly except shiny hind femur; knees and basal 1/6 of tibiae light brown (tibiae otherwise dark), tarsal segments light brown. Hind trochanter with a keel, covered by small teeth along its edge (Fig. 144E); two ventrobasal spines present on fore and absent on mid femur. Hind femur without ventroapical spines, except 8–10 equally spaced long bristles posteroventrally, longer on distal half, longest up to 2/3 the width of hind tibia at distal end and shorter bristles posterodorsally (Fig. 144E). Subapical (distal) spines on first four tibiae present (short). Hind tarsomeres distinctly flattened, hind metatarsus almost as long as 2–4 combined, dorsally all tarsomeres with erect bristles. Pulvilli shorter than last tarsal segment. ***Wing***. Length: 3.0 mm. Upper side of basal costal cell with one long pale bristle. Fourth costal section 3 times as long as third costal section. Cross-vein r-m at middle of discal cell. 2–3 short dark setulae on tegula. ***Abdomen***. First tergite grey pollinose with 6–8 different-sized lateral bristles up to as long as ¾ of hind femur width at base. ***Genitalia***. Genital capsule in dorsal view: epandrium wider than long (MLE:MWE = 0.7). Surstyli elongated, outer margin sinuous, rather widened at base, constricted in the middle, then broadened, as wide as the base, pointed at apex, left surstylus longer than right one (Fig. 106A). Genital capsule in ventral view: gonopods equal in height, extended towards surstyli, pointed at apex, both gonopods with a triangular projection on inner margin; phallic guide with 3–4 short dorsolateral spines; subepandrial sclerite widened in the middle (Fig. 106B); Genital capsule in lateral view: both surstyli boot shaped, straight in basal two thirds, broadened and strongly bent towards sternite in apical third (Fig. 106D–E). Ejaculatory apodeme tube-like, bent, with a bulb in its middle (Fig. 106C).

**FEMALE:** Unknown.

**Etymology:** This species is named after the type locality. Six of the species included in this revision were collected in Wyperfeld National Park. This is the third largest park in Victoria and it protects a significant portion of the Victorian mallee diversity.

**Examined material: HOLOTYPE**: AUSTRALIA: Victoria: Wyperfeld NP, East Lookout, 35°36’S, 142°7’E, 22.X.2014, J.H., A.W., & A.M. Skevington, A.D. Young, A. Wyatt, & S. Namek, CNC373426 (1♂, QM).

**Distribution:** Australia (Victoria) (Fig. 136).

**Notes:** This is another species that is only known from a single specimen found hilltopping.

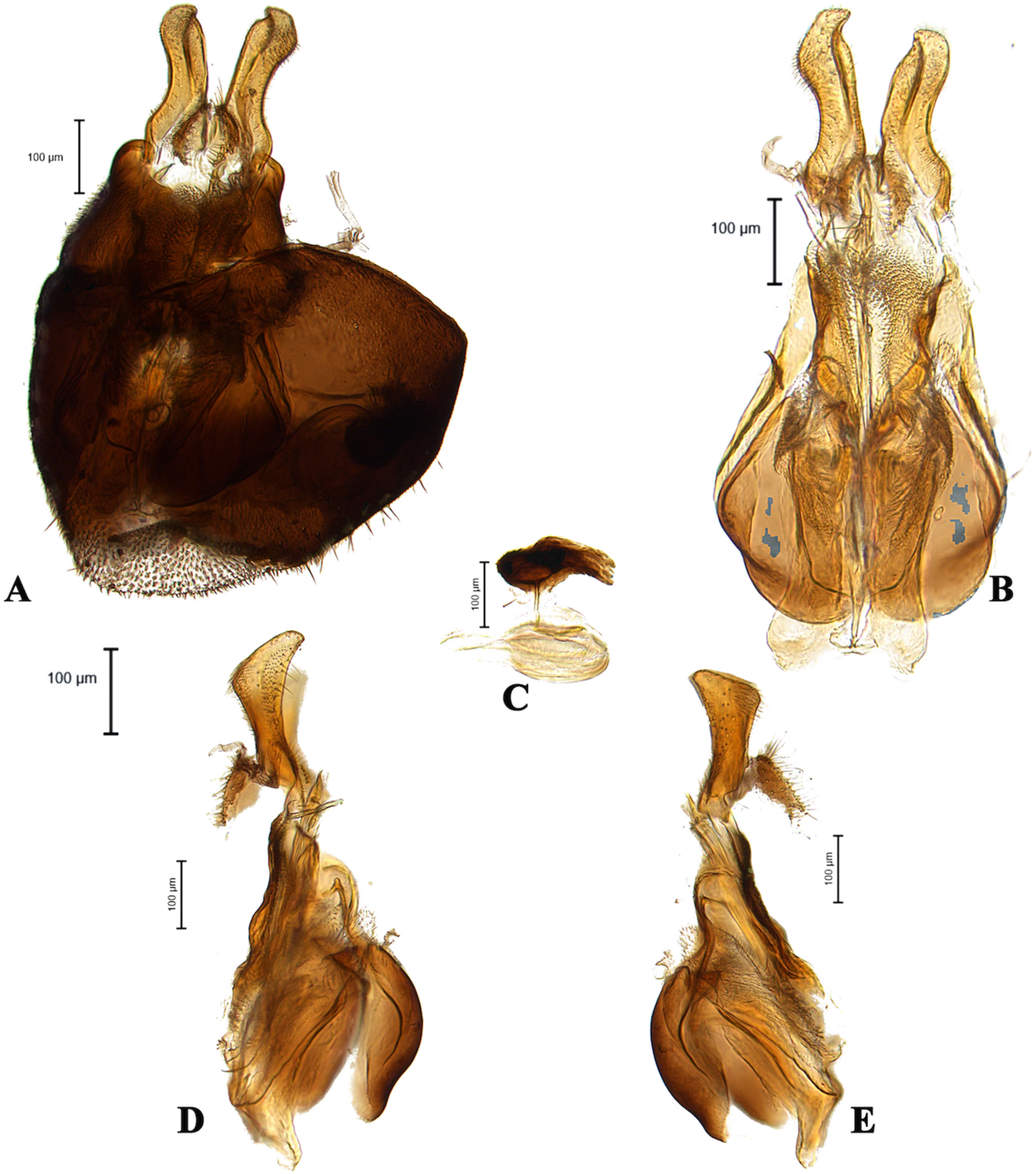



**FIGURE 106**. Male genitalia of *Tomosvaryella wyperfeldensis* **sp. nov.** (CNC373426, QM) **A**) dorsal view, **B**) ventral view, **C**) ejaculatory apodeme, **D**, **E**) lateral view.

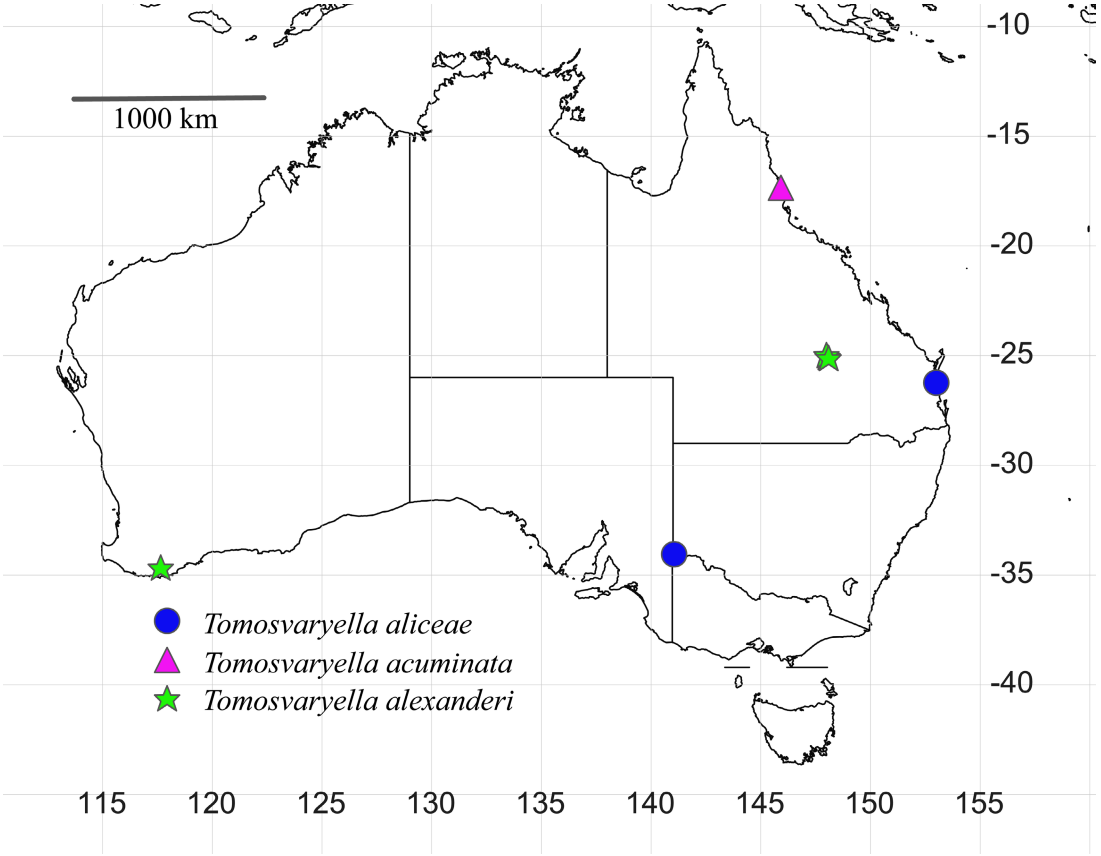



**FIGURE 107**. Distribution of *Tomosvaryella acuminata* **sp. nov.**, *T. alexanderi* **sp. nov.**, *T. aliceae* **sp. nov.** in Australia.

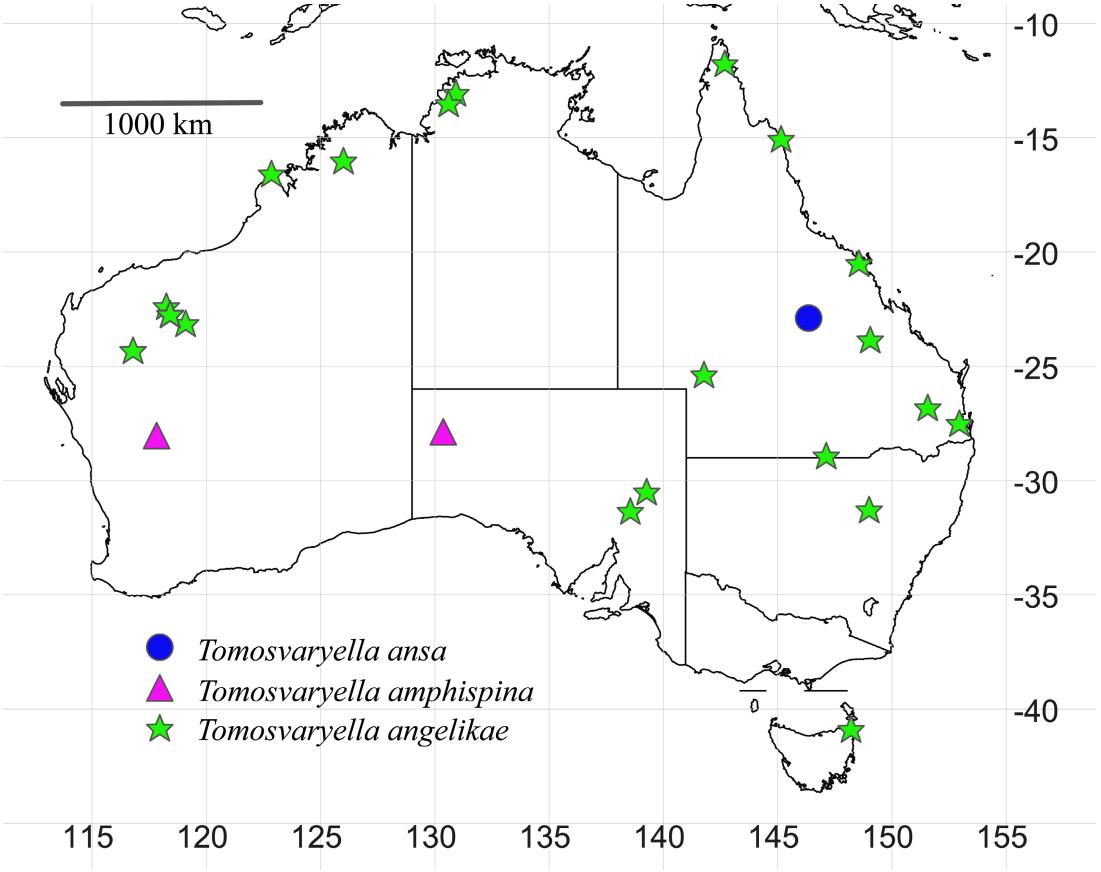



**FIGURE 108**. Distribution of *Tomosvaryella amphispina* **sp. nov.**, *T. angelikae* **sp. nov.**, *T. ansa* **sp. nov.** in Australia.

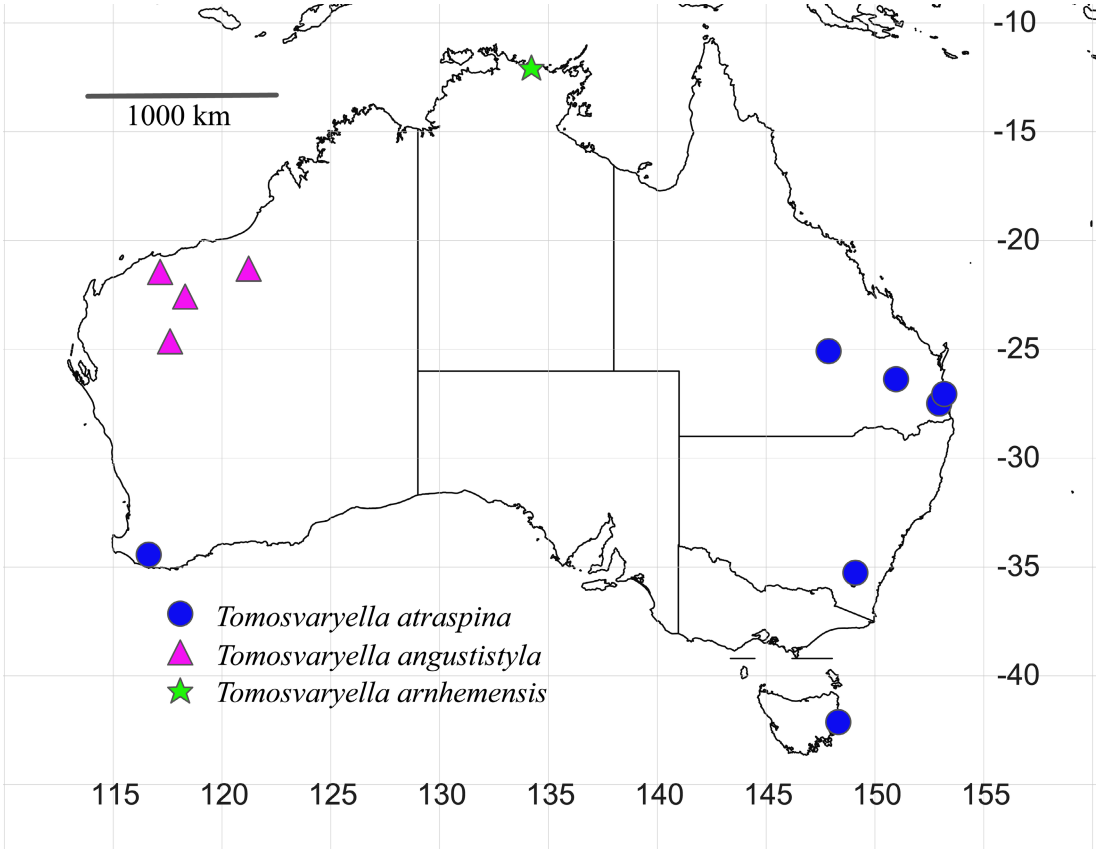



**FIGURE 109**. Distribution of *Tomosvaryella angustistyla* **sp. nov.**, *T. arnhemensis* **sp. nov.**, *T. atraspina* **sp. nov.** in Australia.

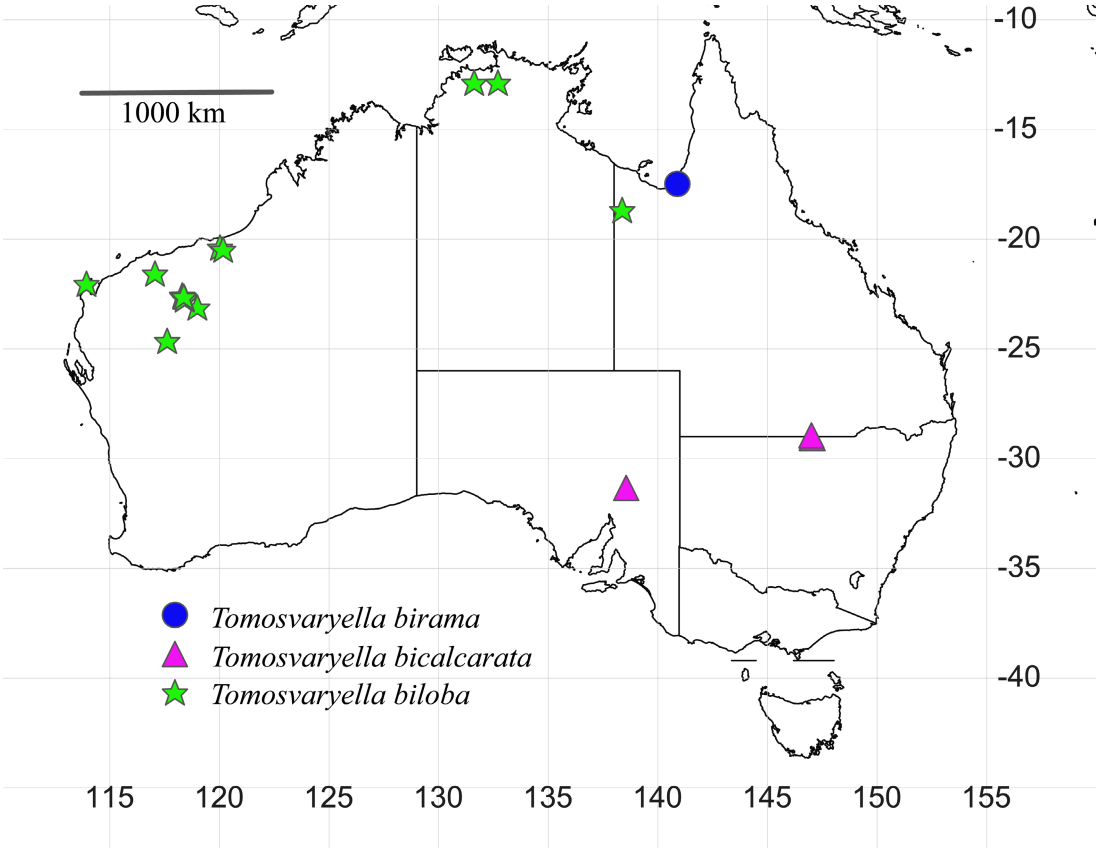



**FIGURE 110**. Distribution of *Tomosvaryella bicalcarata* **sp. nov.**, *T. biloba* **sp. nov.**, *T. birama* **sp. nov.** in Australia.

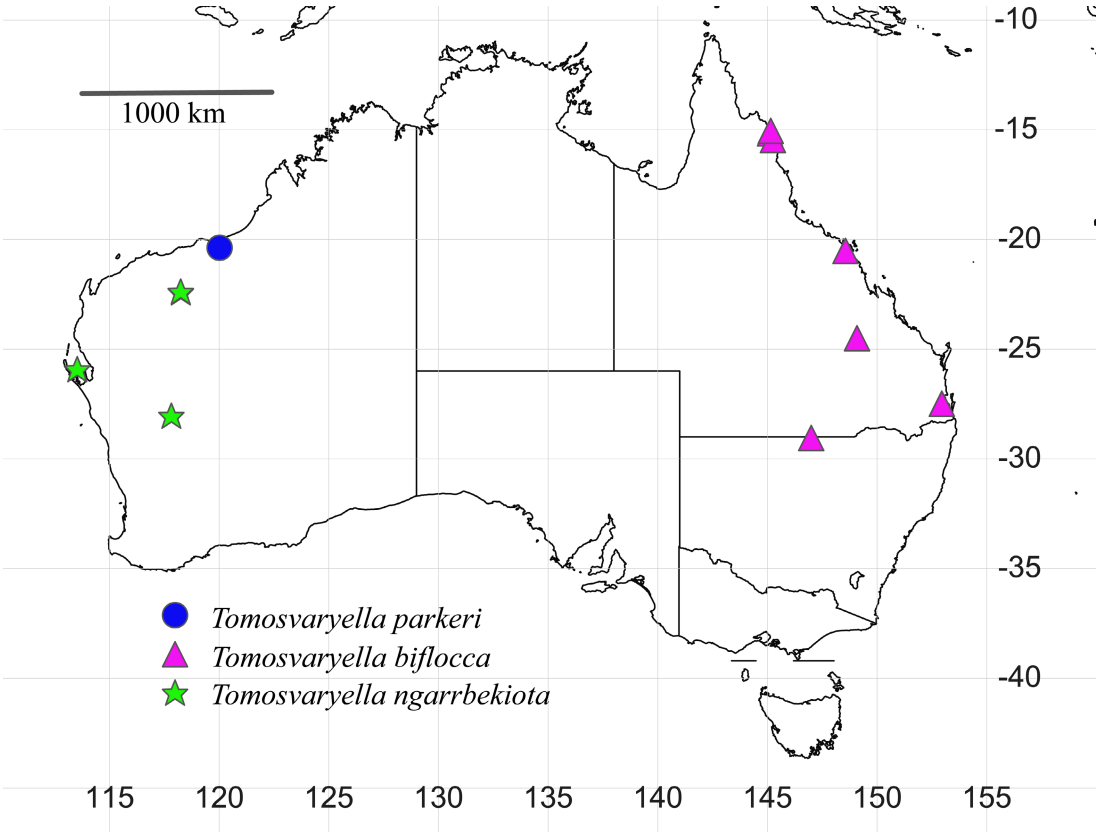



**FIGURE 111**. Distribution of *Tomosvaryella biflocca* **sp. nov.**, *T. ngarrbekiota* **sp. nov.**, *T. parkeri* **sp. nov.** in Australia.

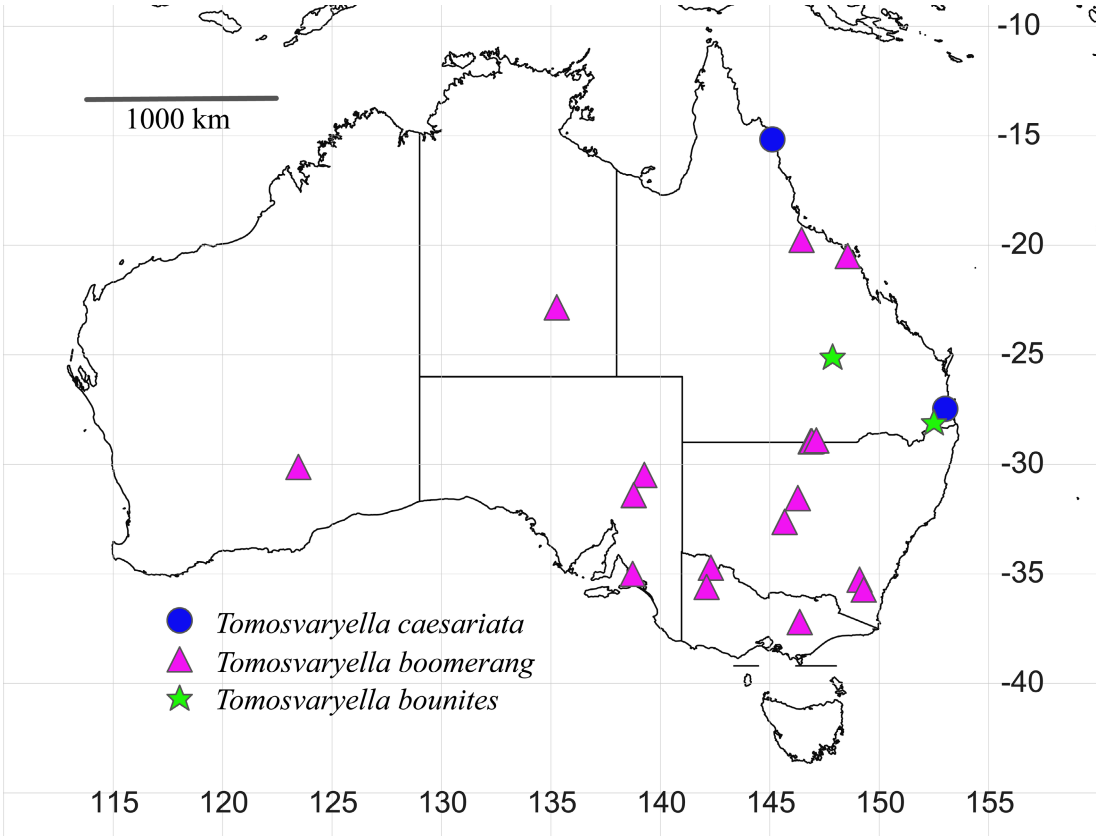



**FIGURE 112**. Distribution of *Tomosvaryella boomerang* **sp. nov.**, *T. bounites* **sp. nov.**, *T. caesar* **sp. nov.** in Australia.

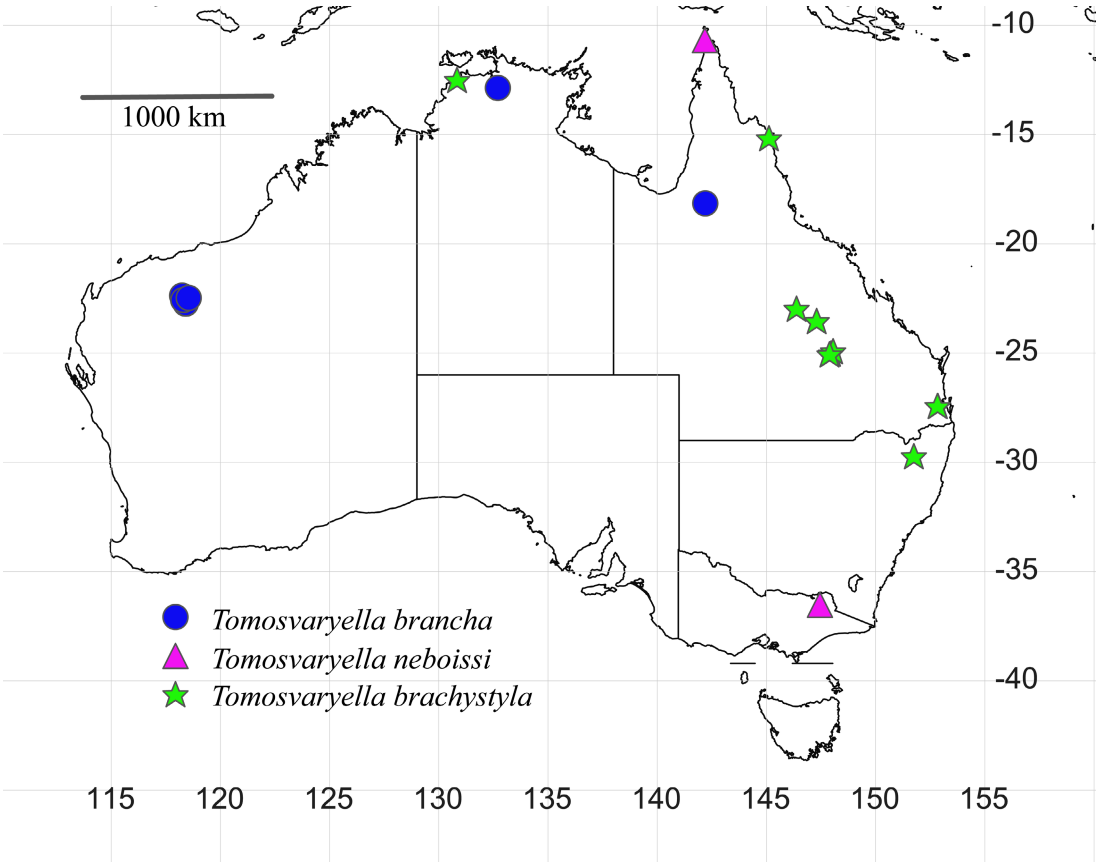



**FIGURE 113**. Distribution of *Tomosvaryella brachystyla* **sp. nov.**, *T. brancha* **sp. nov.**, *T. neboissi* **sp. nov.** in Australia.

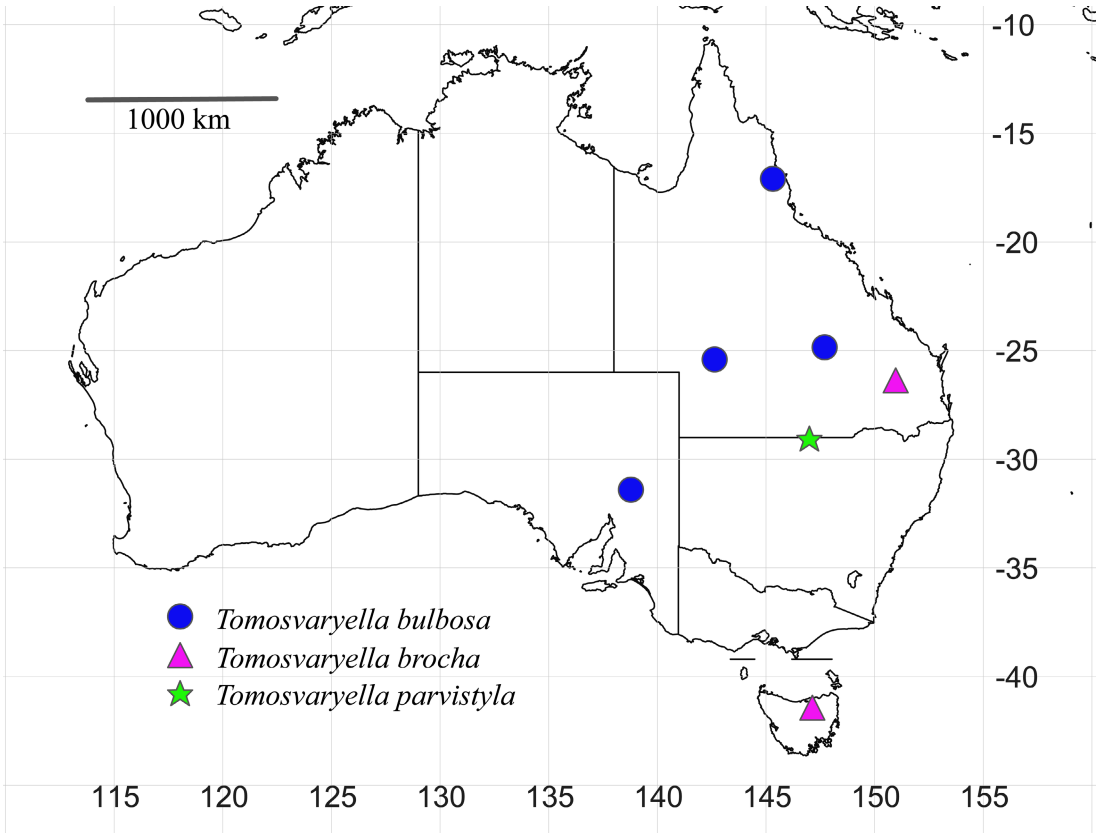



**FIGURE 114**. Distribution of *Tomosvaryella brocha* **sp. nov.**, *T. bulbosa* **sp. nov.**, *T. parvistyla* **sp. nov.** in Australia.

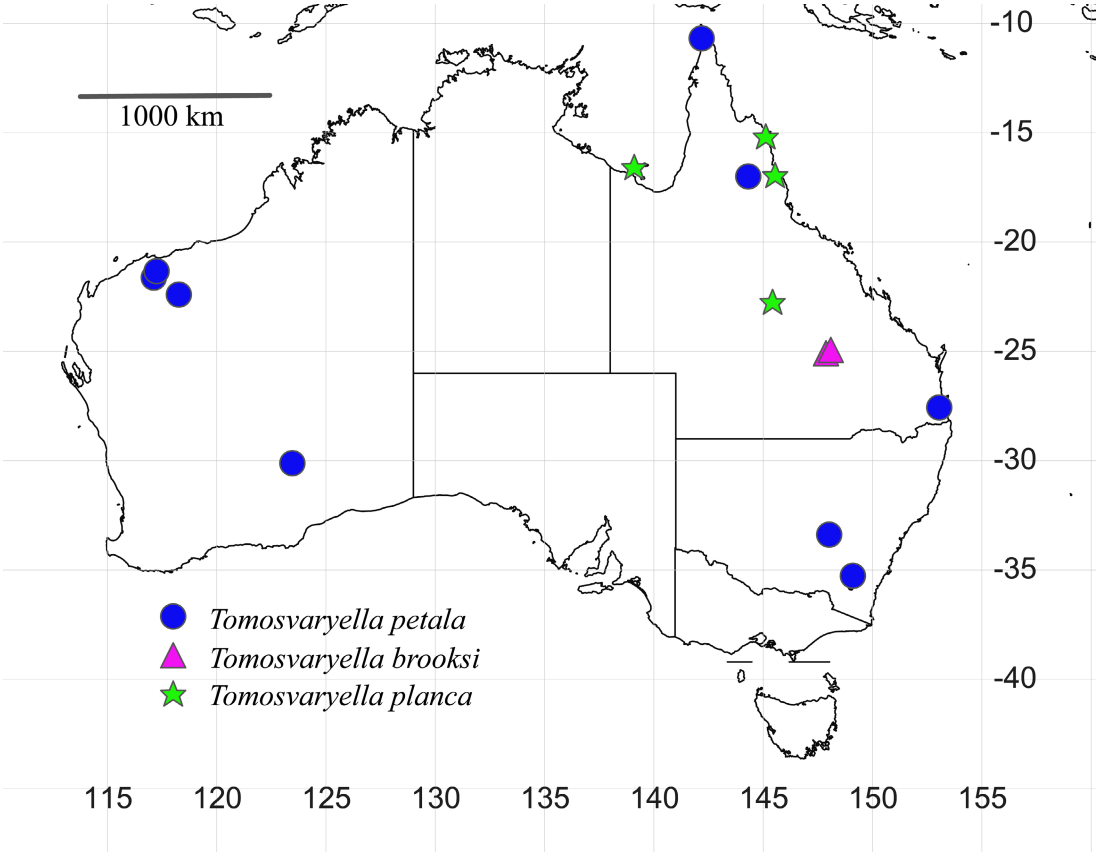



**FIGURE 115**. Distribution of *Tomosvaryella brooksi* **sp. nov.**, *T. petala* **sp. nov.**, *T. planca* **sp. nov.** in Australia.

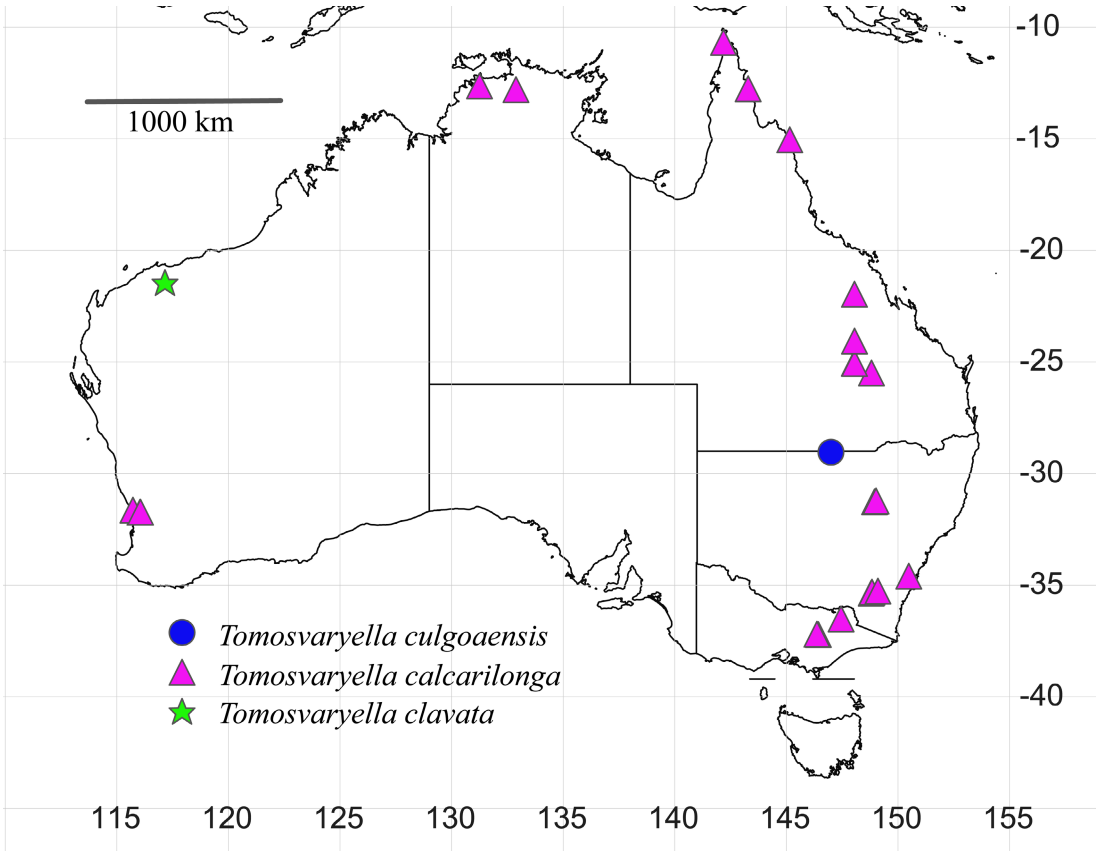



**FIGURE 116**. Distribution of *Tomosvaryella calcarilonga* **sp. nov.**, *T. clavata* **sp. nov.**, *T. culgoaensis* **sp. nov.** in Australia.

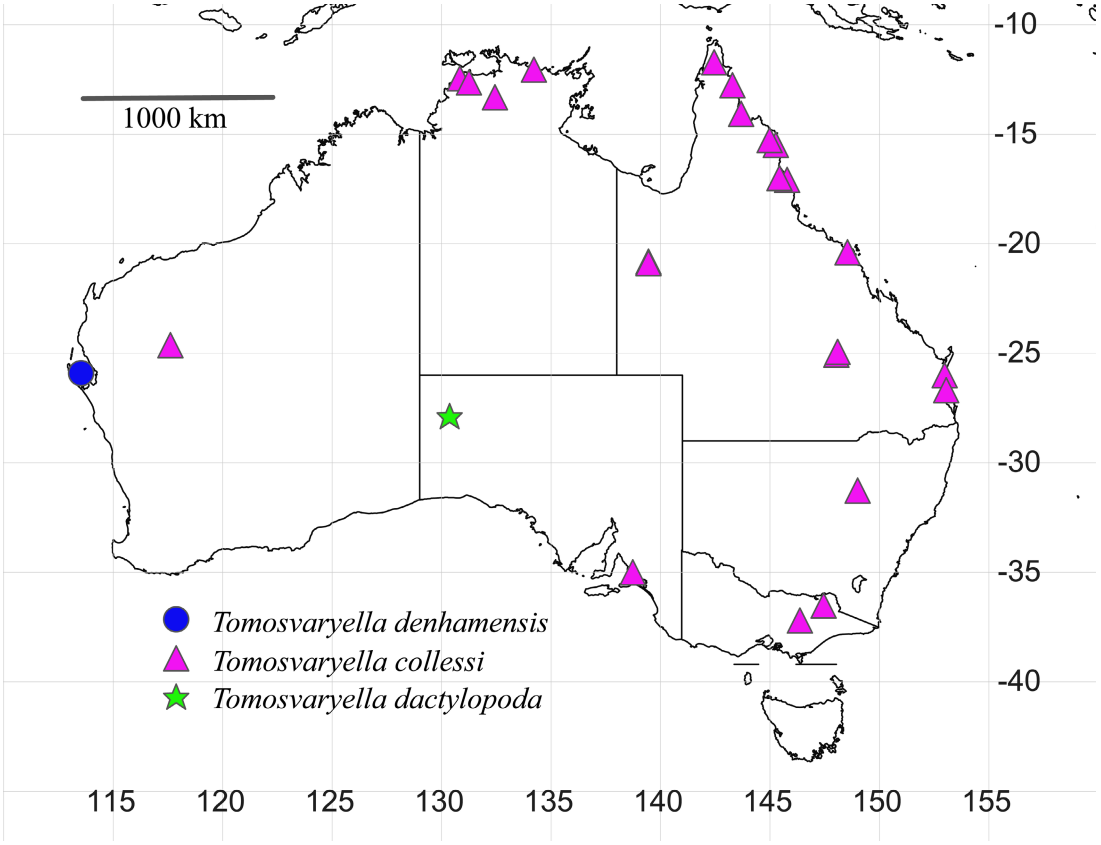



**FIGURE 117**. Distribution of *Tomosvaryella collessi* **sp. nov.**, *T. dactylopoda* **sp. nov.**, *T. denhamensis* **sp. nov.** in Australia.

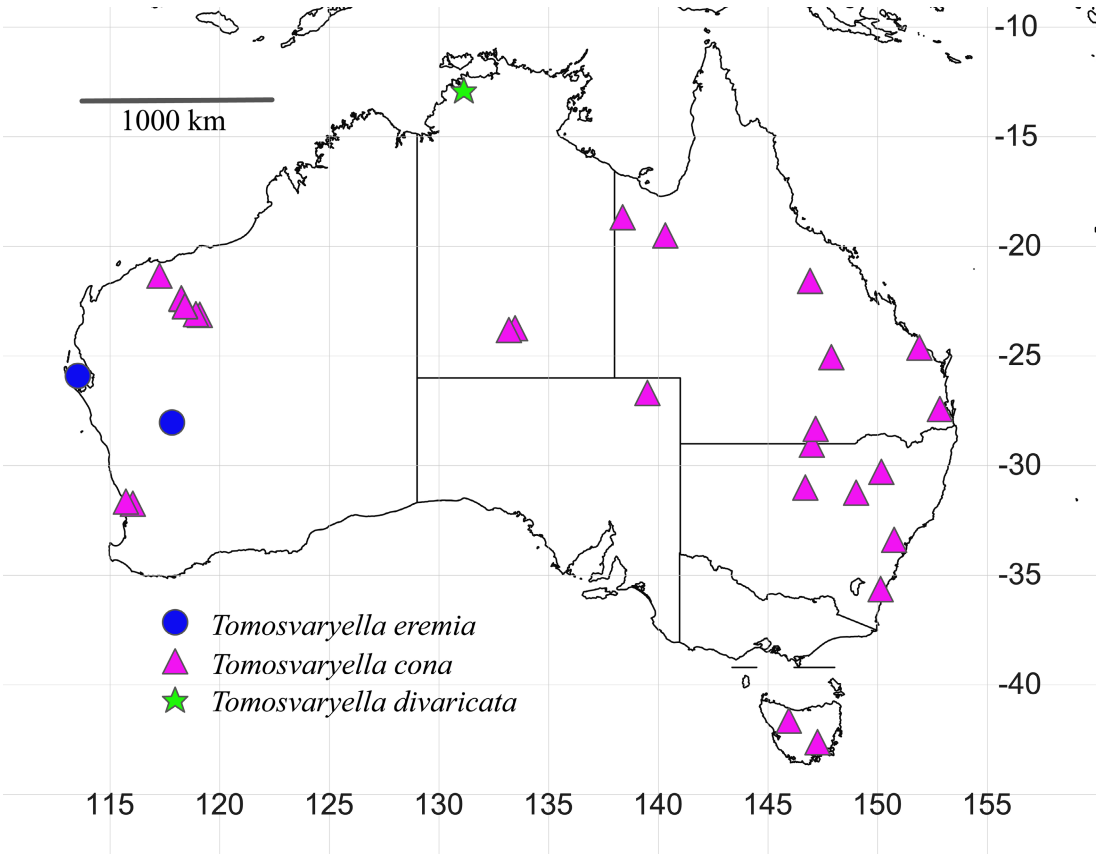



**FIGURE 118**. Distribution of *Tomosvaryella cona* **sp. nov.**, *T. divaricata* **sp. nov.**, *T. eremia* **sp. nov.** in Australia.

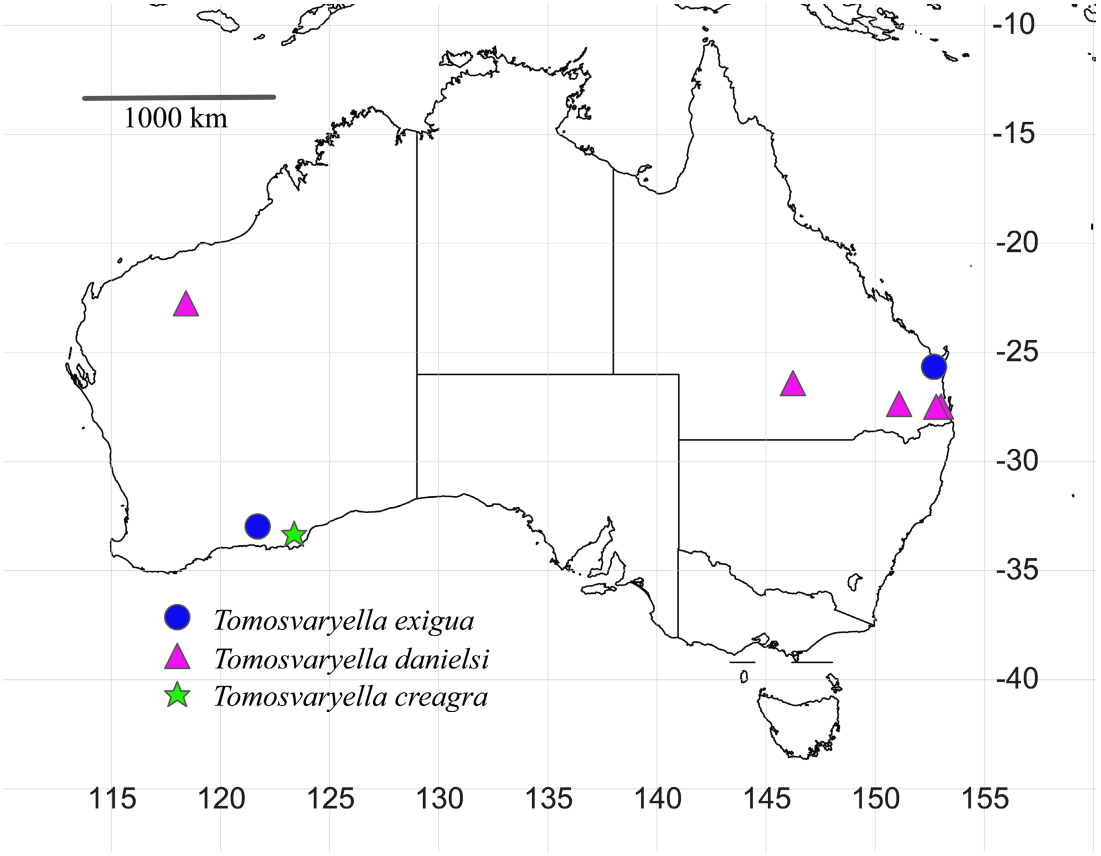



**FIGURE 119**. Distribution of *Tomosvaryella creagra* **sp. nov.**, *T. danielsi* **sp. nov.**, *T. exigua* **sp. nov.** in Australia.

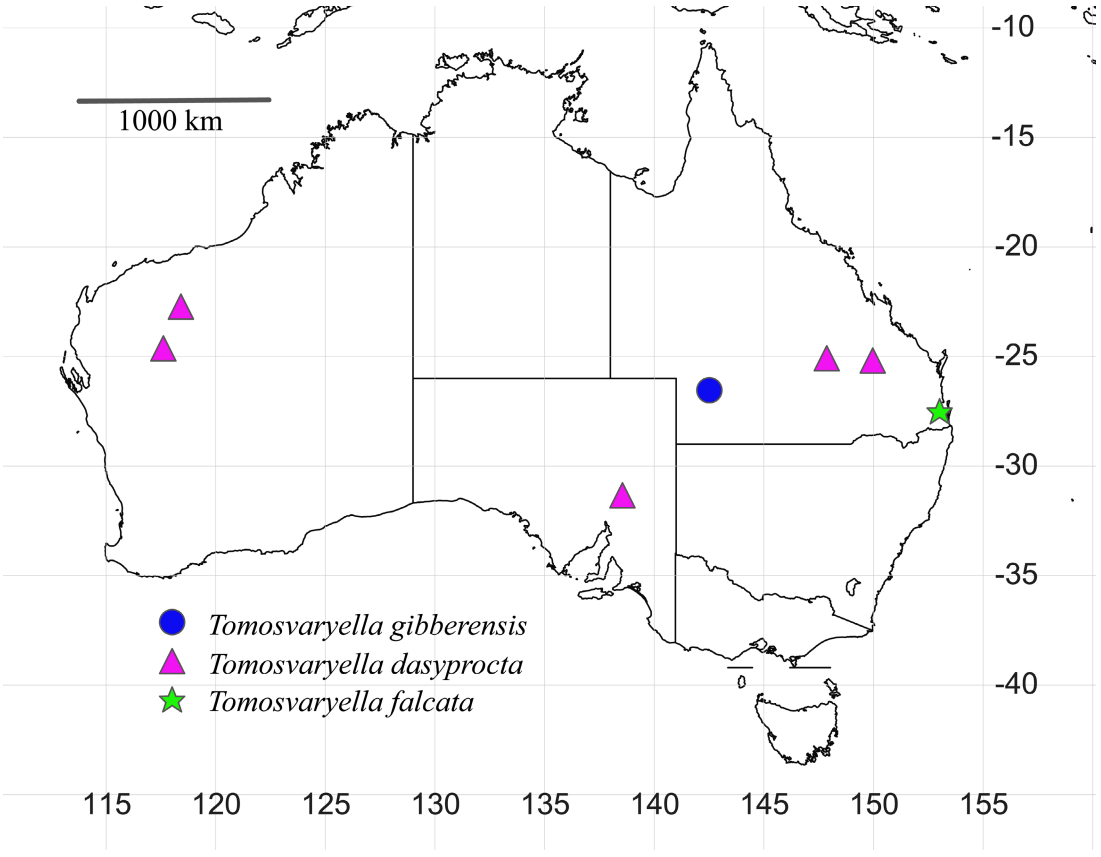



**FIGURE 120**. Distribution of *Tomosvaryella dasyprocta* **sp. nov.**, *T. falcata* **sp. nov.**, *T. gibberensis* **sp. nov.** in Australia.

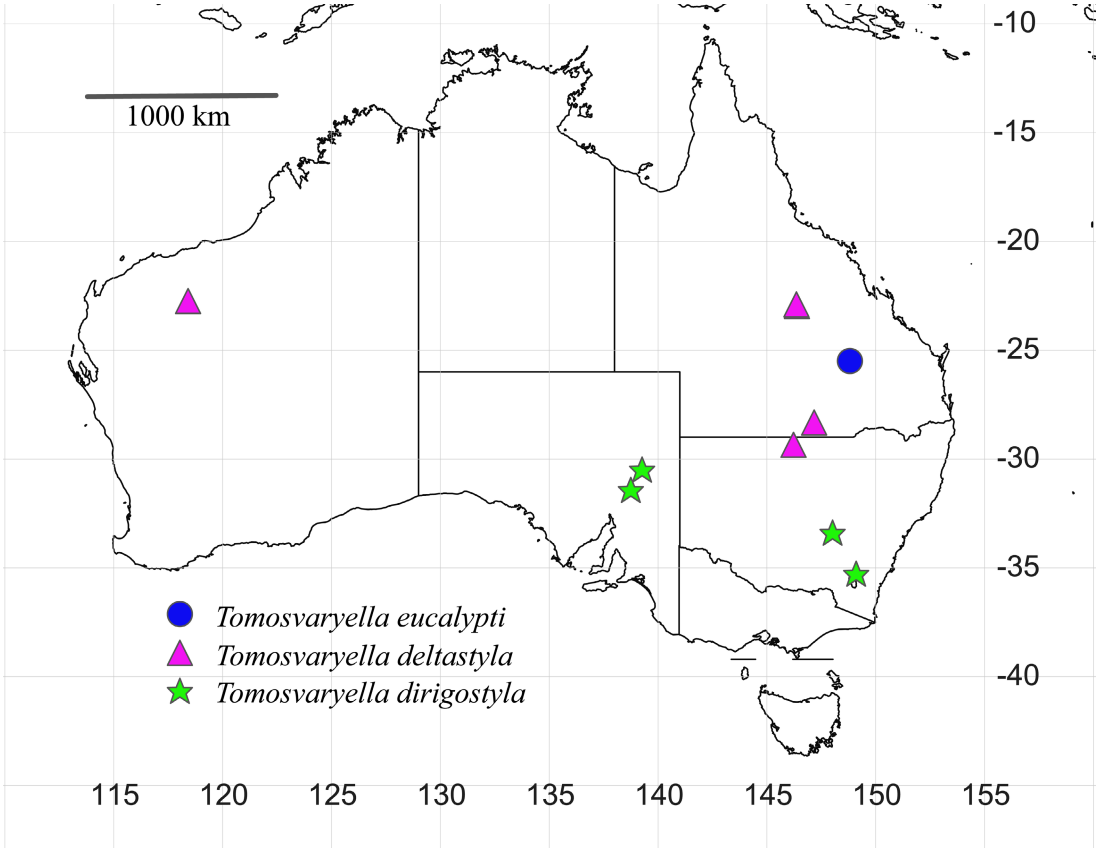



**FIGURE 121**. Distribution of *Tomosvaryella deltastyla* **sp. nov.**, *T. dirigostyla* **sp. nov.**, *T. eucalypti* **sp. nov.** in Australia.

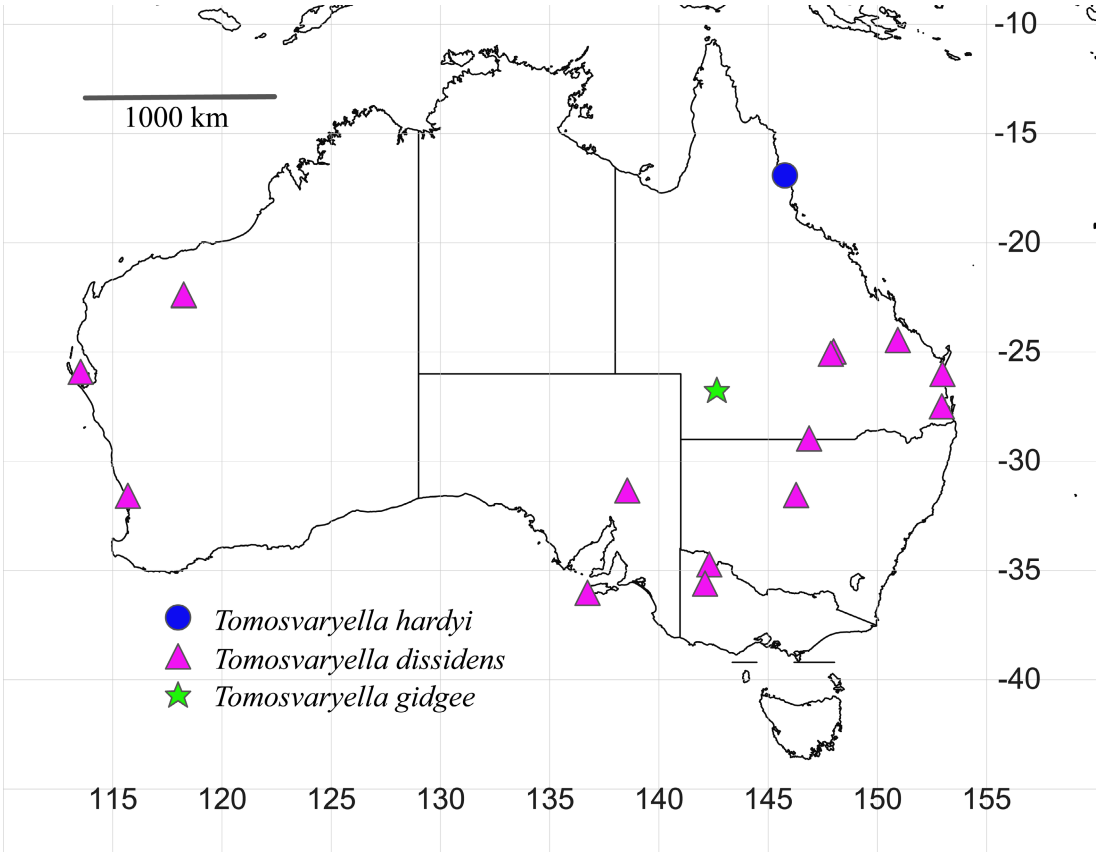



**FIGURE 122**. Distribution of *Tomosvaryella dissidens* **sp. nov.**, *T. gidgee* **sp. nov.**, *T. hardyi* **sp. nov.** in Australia.

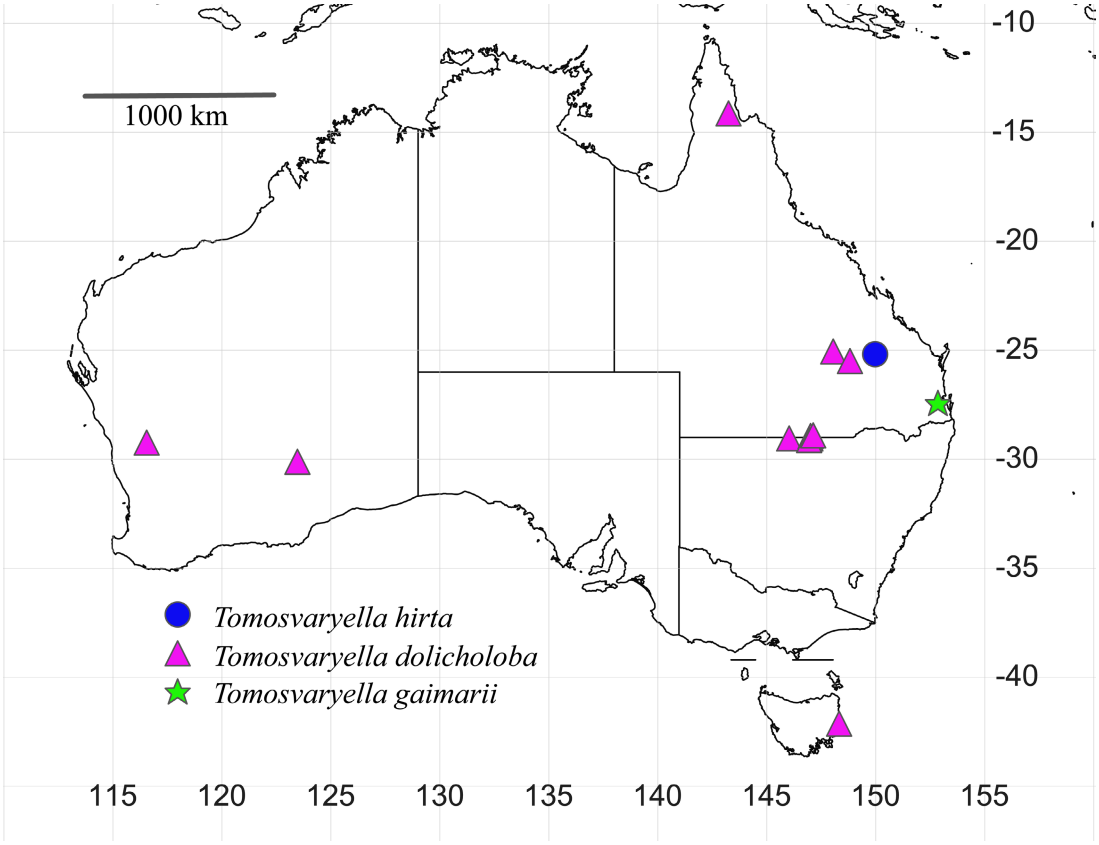



**FIGURE 123**. Distribution of *Tomosvaryella dolicholoba* **sp. nov.**, *T. gaimarii* **sp. nov.**, *T. hirta* **sp. nov.** in Australia.

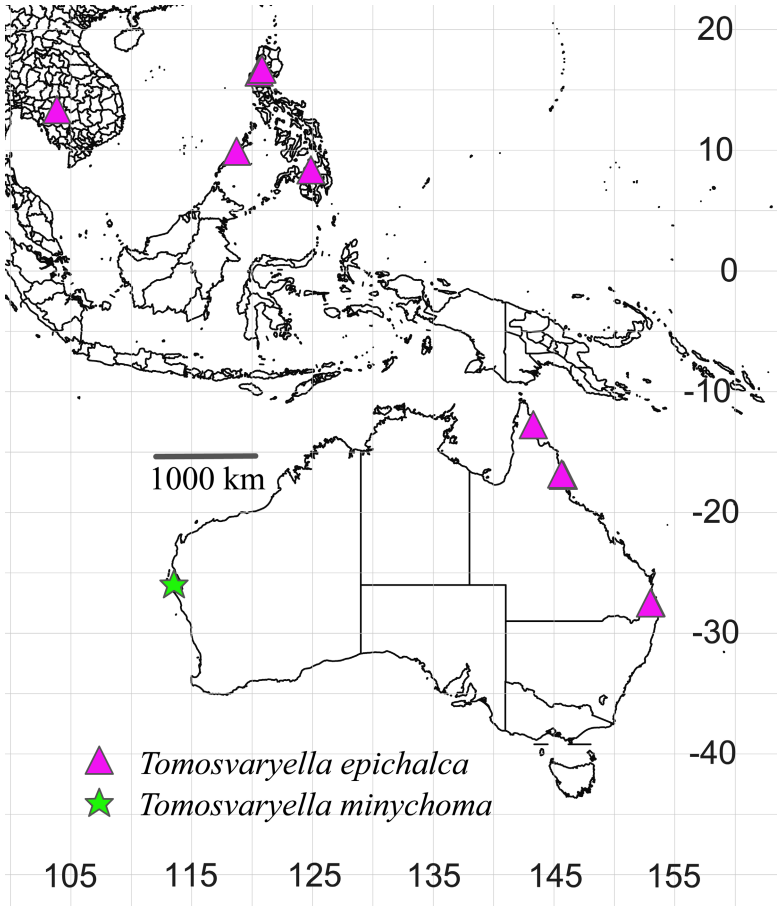



**FIGURE 124**. Distribution of *Tomosvaryella epichalca*, *T. minychoma* **sp. nov.** in Australia.

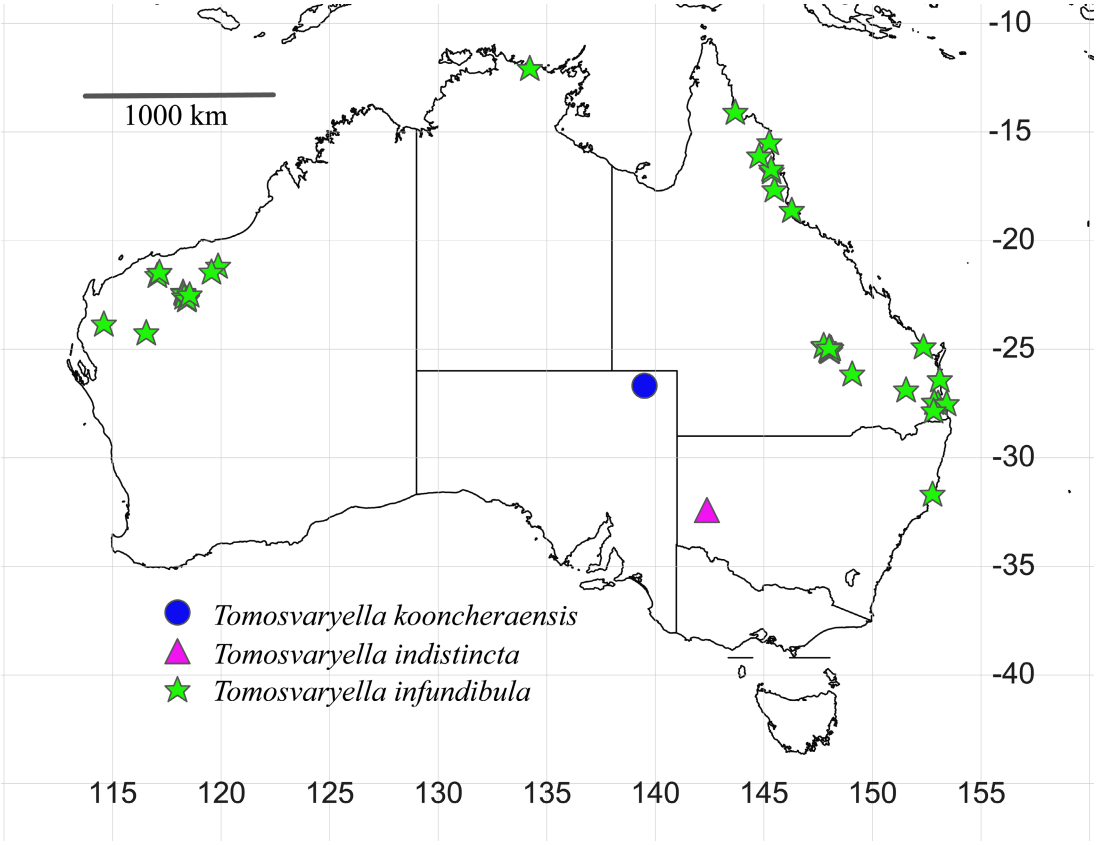



**FIGURE 125**. Distribution of *Tomosvaryella indistincta* **sp. nov.**, *T. infundibula* **sp. nov.**, *T. kooncheraensis* **sp. nov.** in Australia.

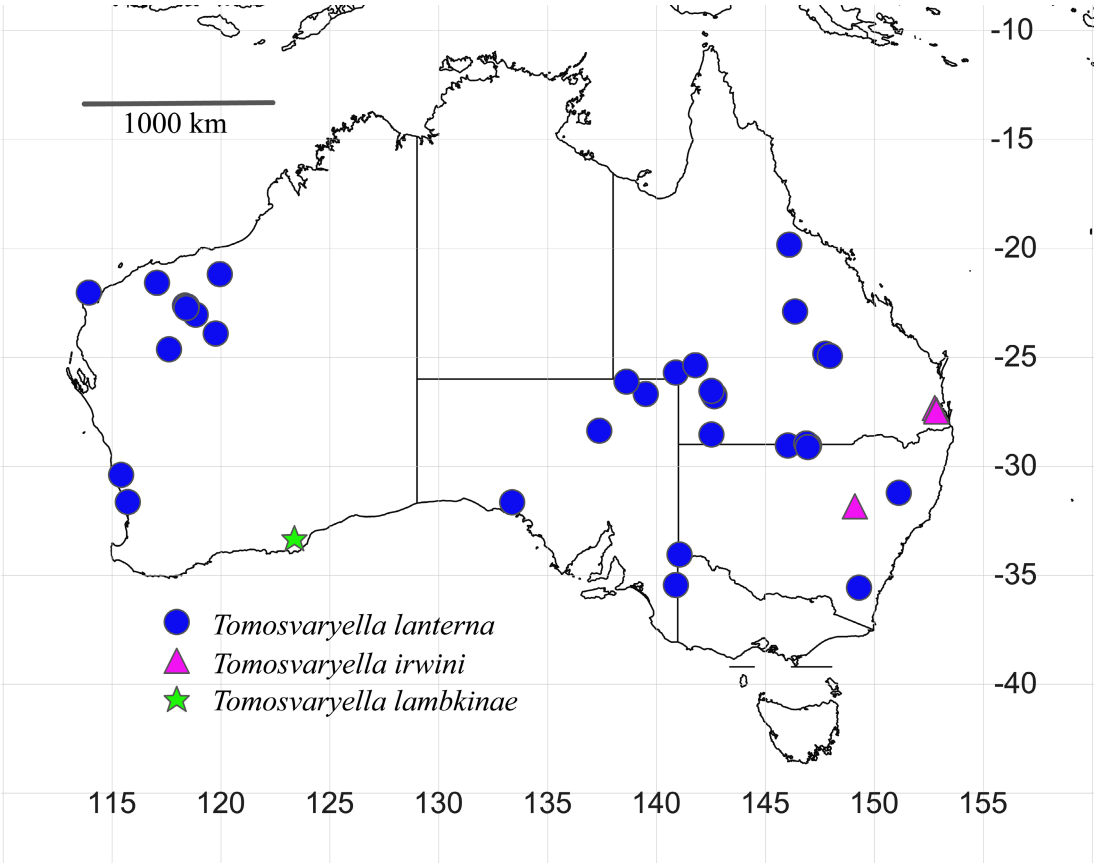



**FIGURE 126**. Distribution of *Tomosvaryella irwini* **sp. nov.**, *T. lambkinae* **sp. nov.**, *T. lanterna* **sp. nov.** in Australia.

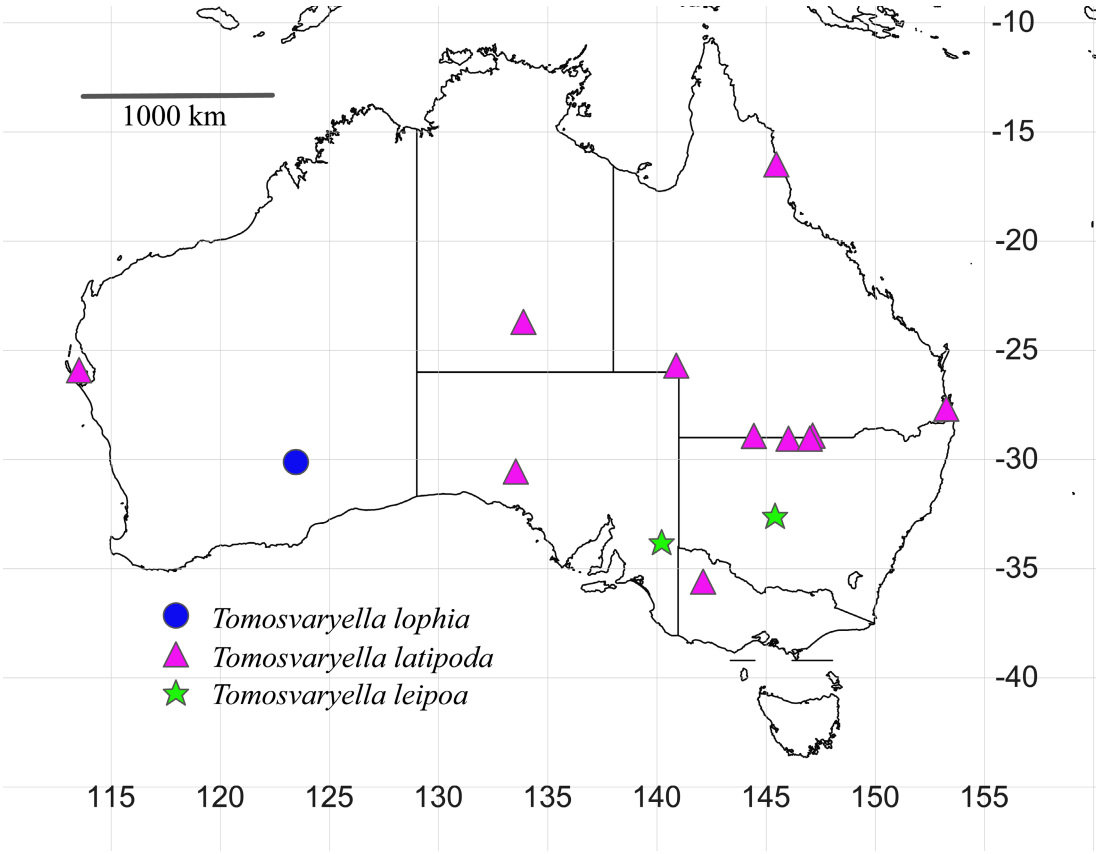



**FIGURE 127**. Distribution of *Tomosvaryella latipoda* **sp. nov.**, *T. leipoa* **sp. nov.**, *T. lophia* **sp. nov.** in Australia.

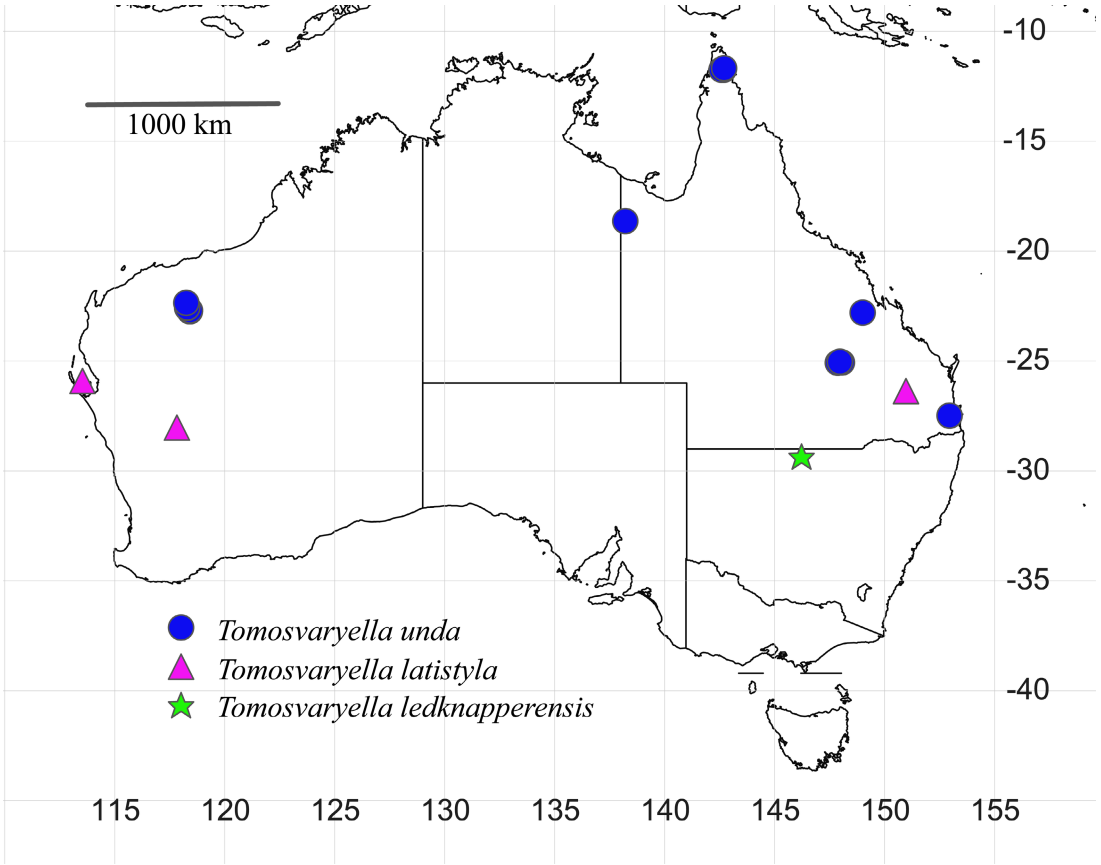



**FIGURE 128**. Distribution of *Tomosvaryella latistyla* **sp. nov.**, *T. ledknapperensis* **sp. nov.**, *T. unda* **sp. nov.** in Australia.

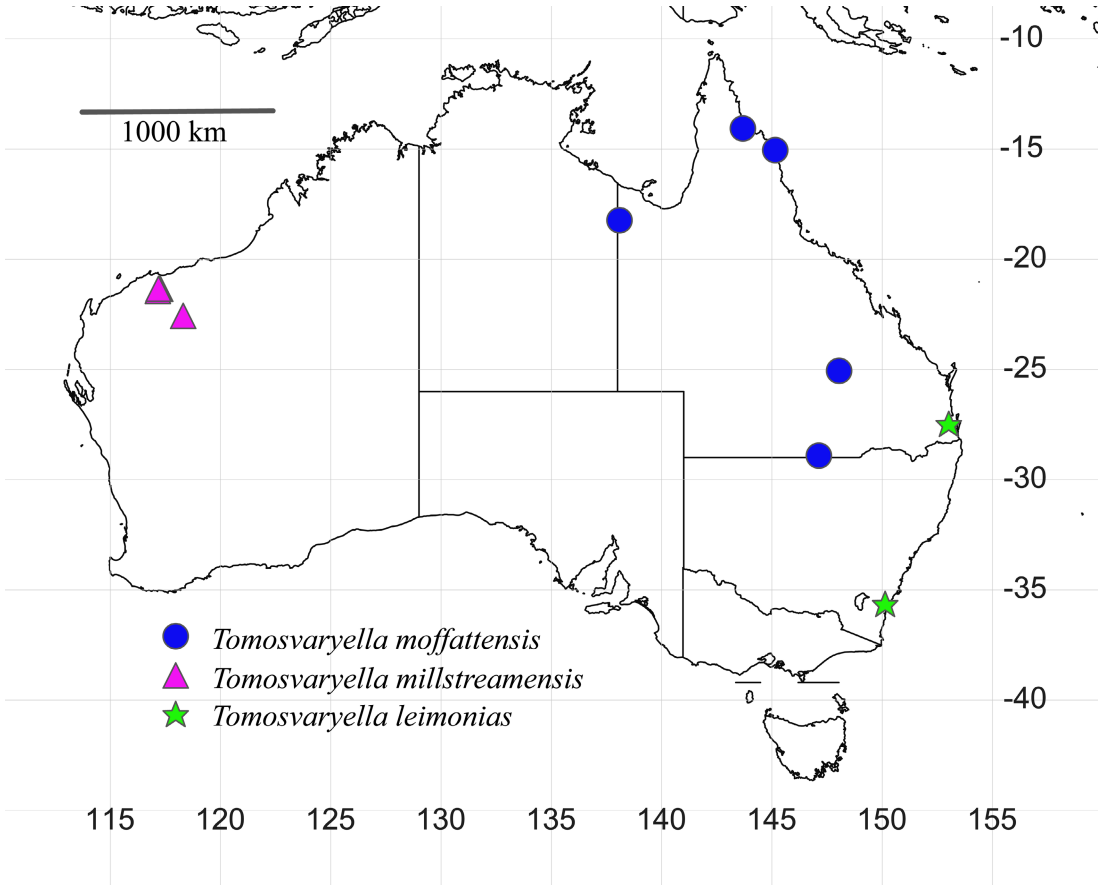



**FIGURE 129**. Distribution of *Tomosvaryella leimonias*, *T. millstreamensis* **sp. nov.**, *T. moffattensis* **sp. nov.** in Australia.

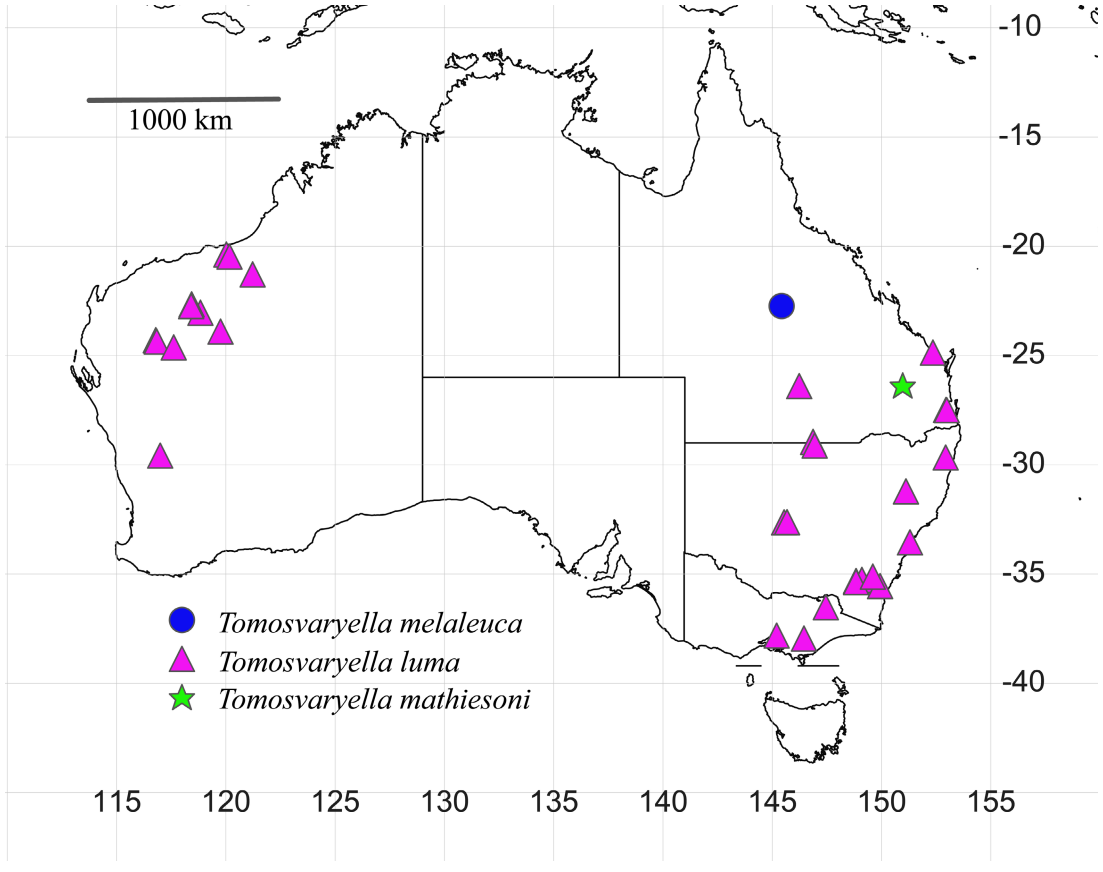



**FIGURE 130**. Distribution of *Tomosvaryella luma* **sp. nov.**, *T. mathiesoni* **sp. nov.**, *T. melaleuca* **sp. nov.** in Australia.

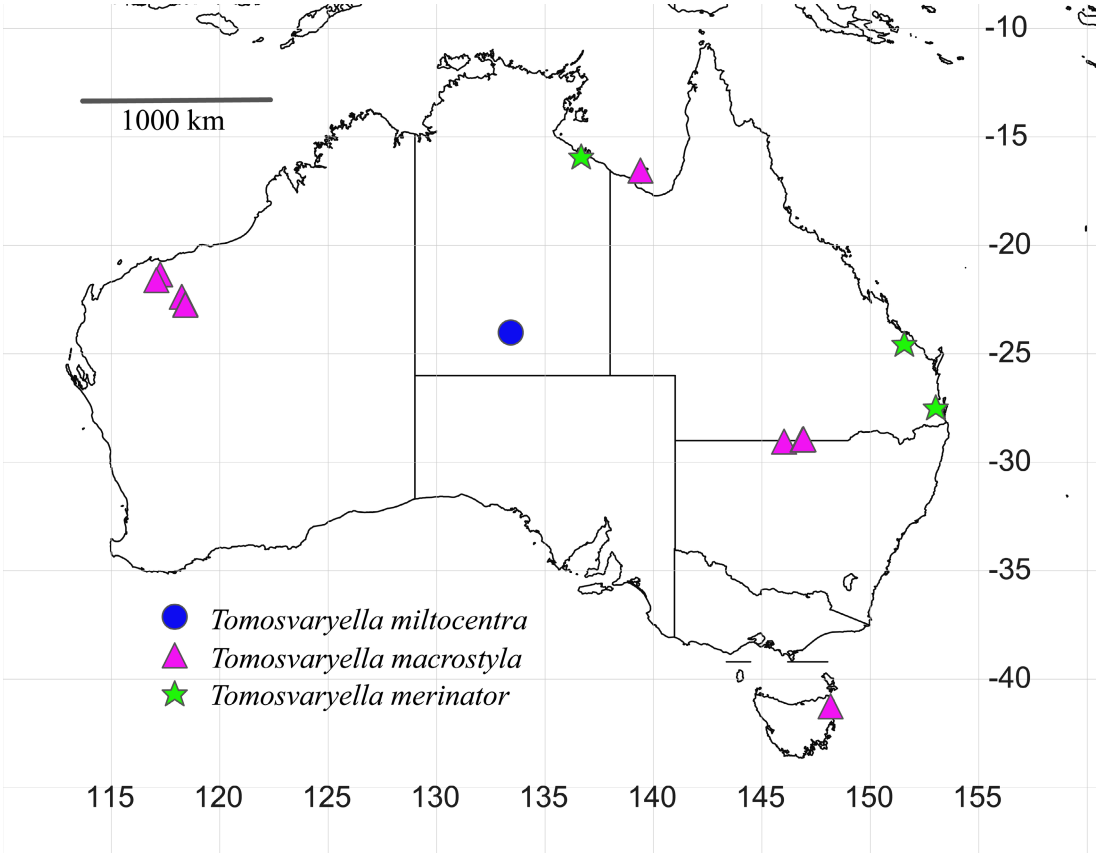



**FIGURE 131**. Distribution of *Tomosvaryella macrostyla* **sp. nov.**, *T. merinator* **sp. nov.**, *T. miltocentra* **sp. nov.** in Australia.

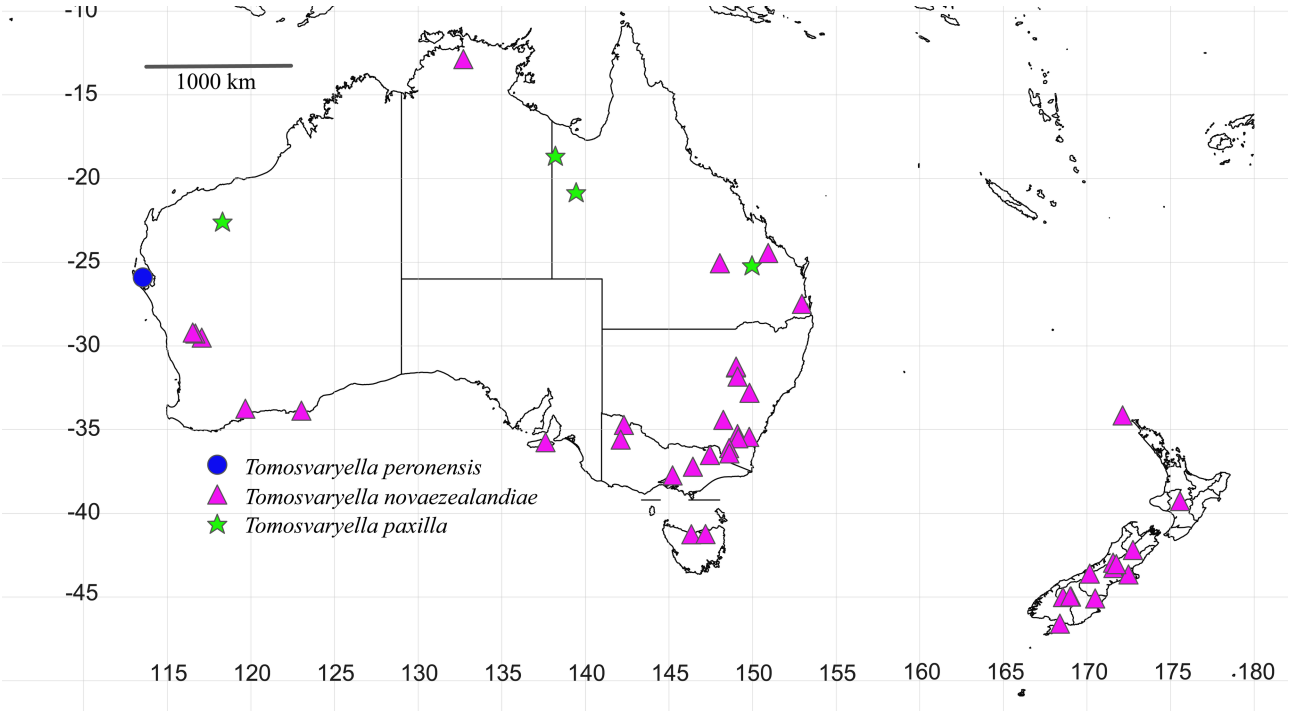



**FIGURE 132**. Distribution of *Tomosvaryella novaezealandiae*, *T. paxilla* **sp. nov.**, *T. peronensis* **sp. nov.** in Australia.

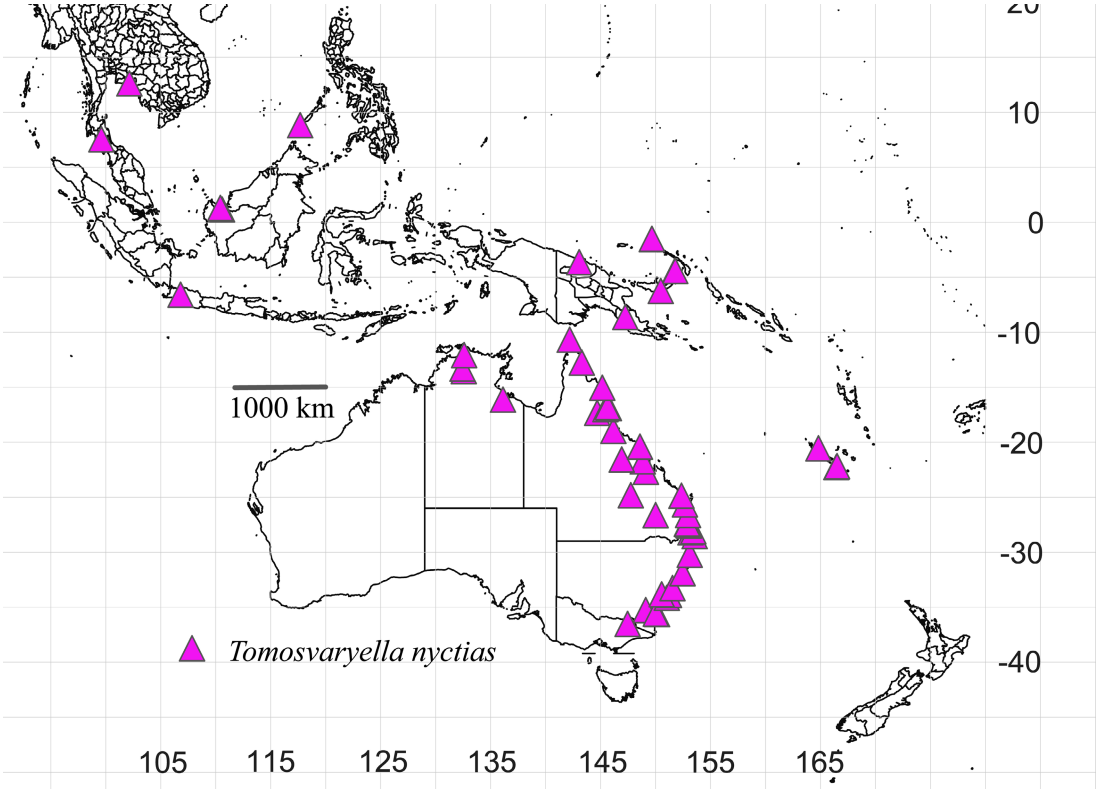



**FIGURE 133**. Distribution of *Tomosvaryella nyctias* in Australia.

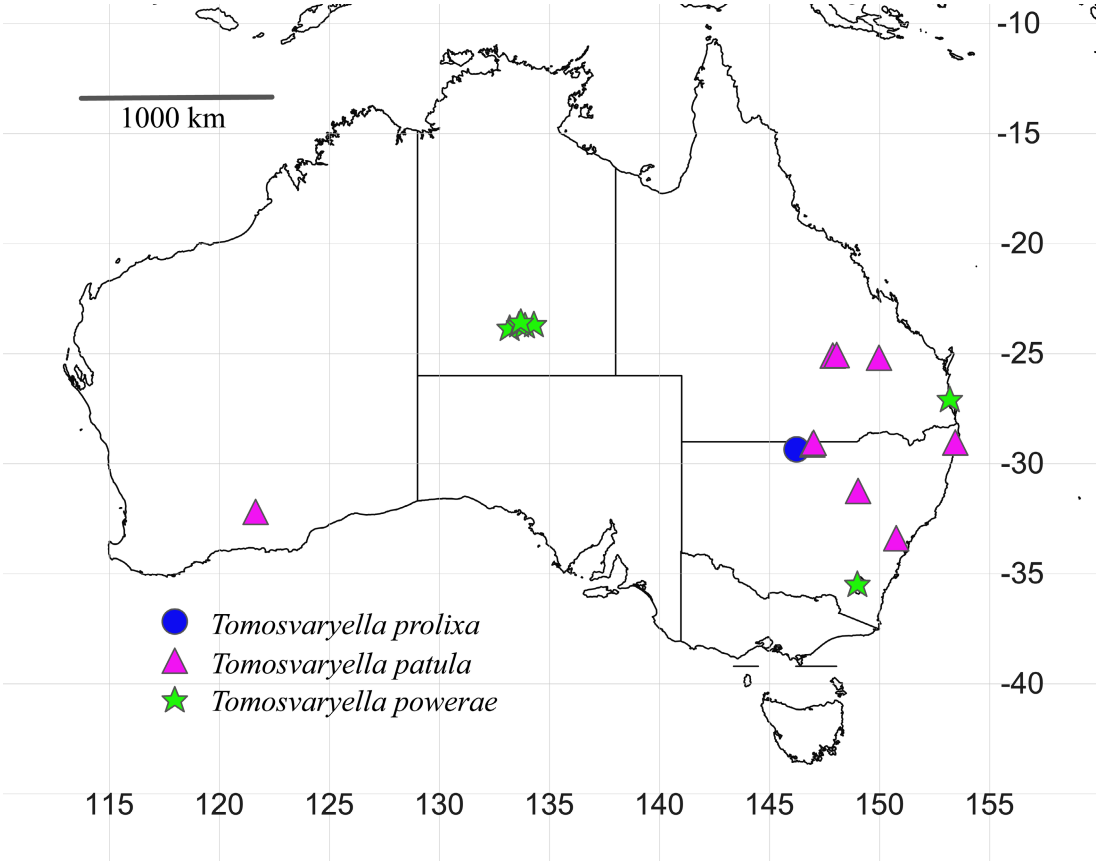



**FIGURE 134**. Distribution of *Tomosvaryella patula* **sp. nov.**, *T. powerae* **sp. nov.**, *T. prolixa* **sp. nov.** in Australia.

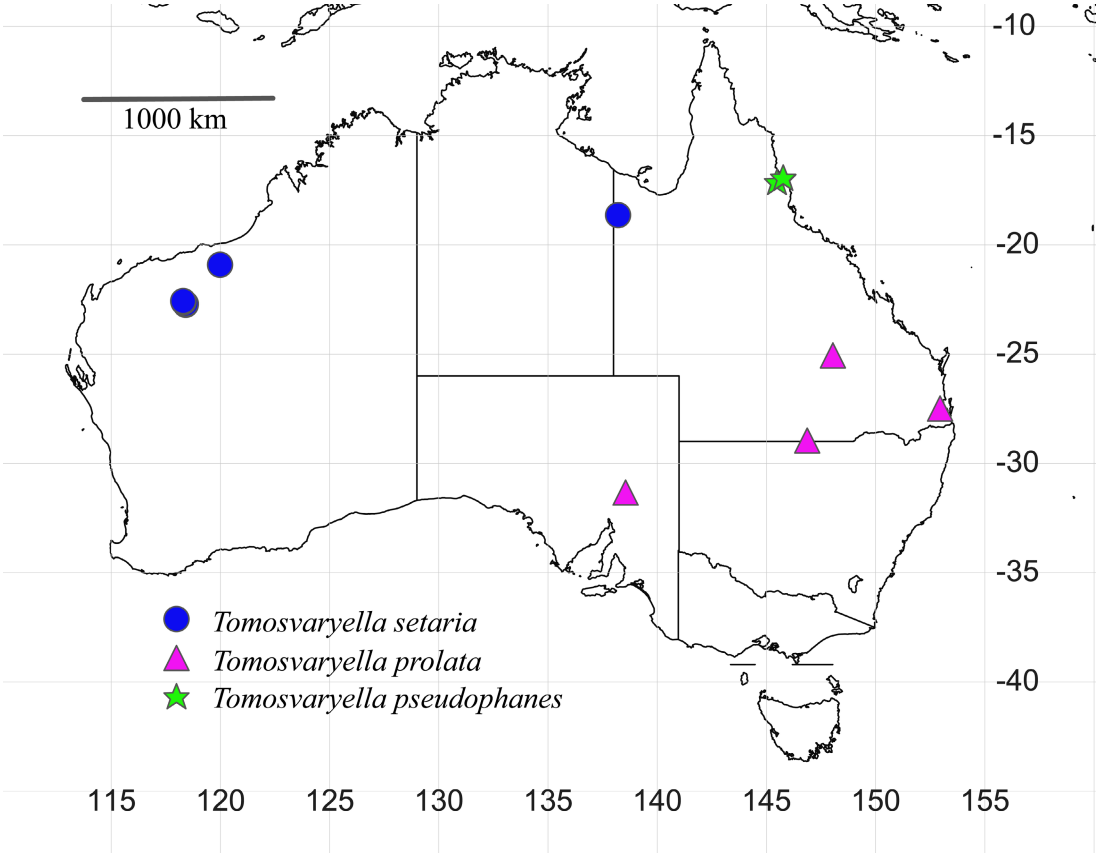



**FIGURE 135**. Distribution of *Tomosvaryella prolata* **sp. nov.**, *T. pseudophanes*, *T. setaria* **sp. nov.** in Australia.

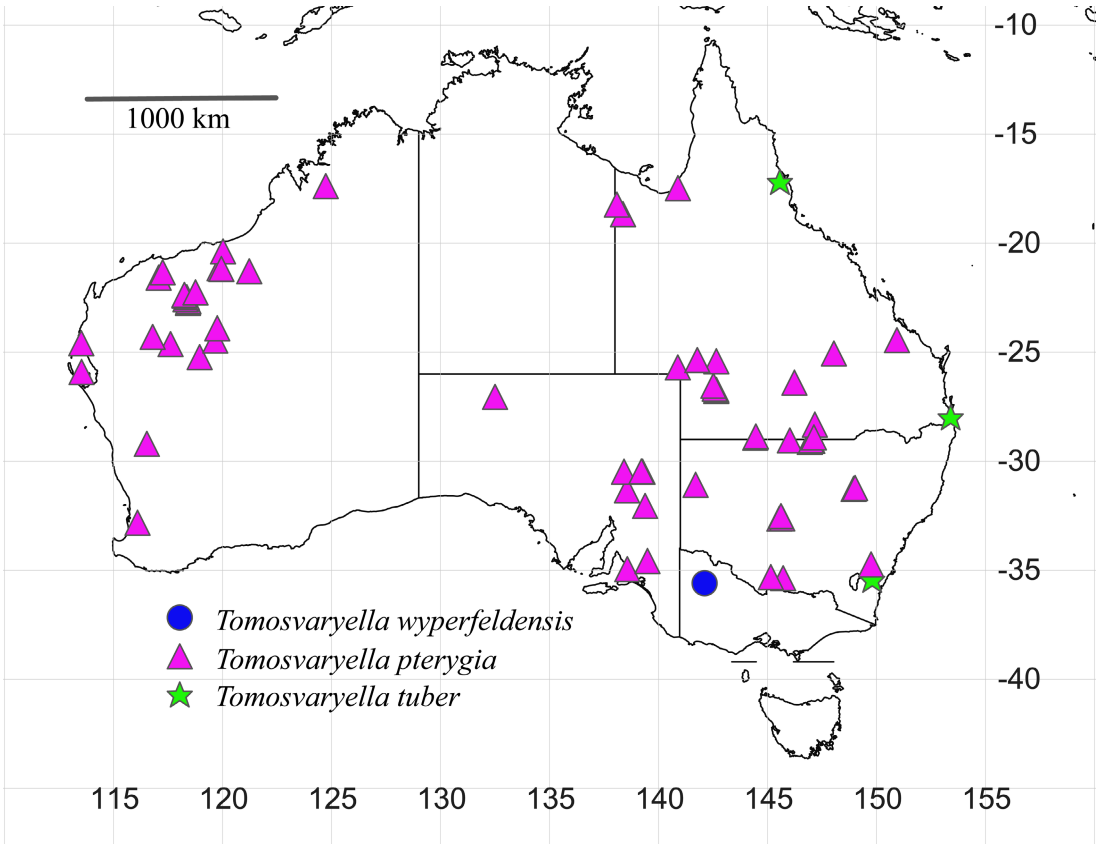



**FIGURE 136**. Distribution of *Tomosvaryella pterygia* **sp. nov.**, *T. tuber* **sp. nov.**, *T. wyperfeldensis* **sp. nov.** in Australia.

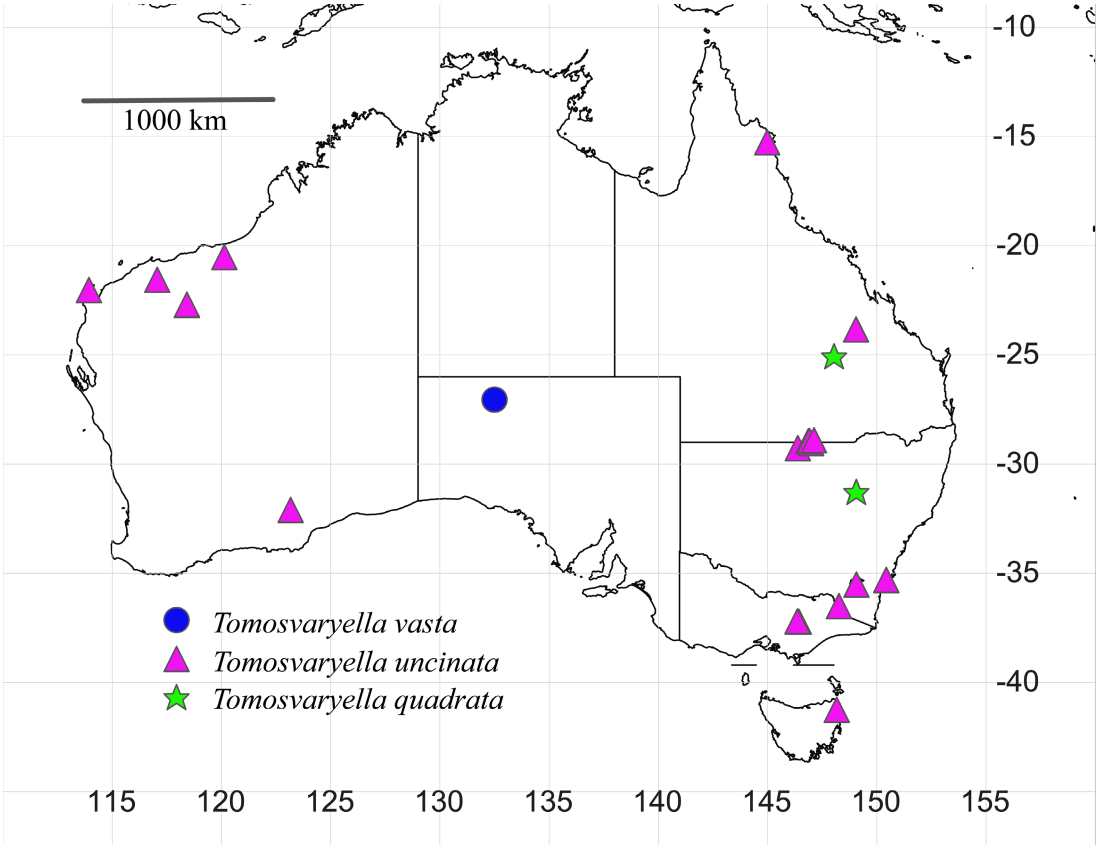



**FIGURE 137**. Distribution of *Tomosvaryella quadrata* **sp. nov.**, *T. uncinata* **sp. nov.**, *T. vasta* **sp. nov.** in Australia.

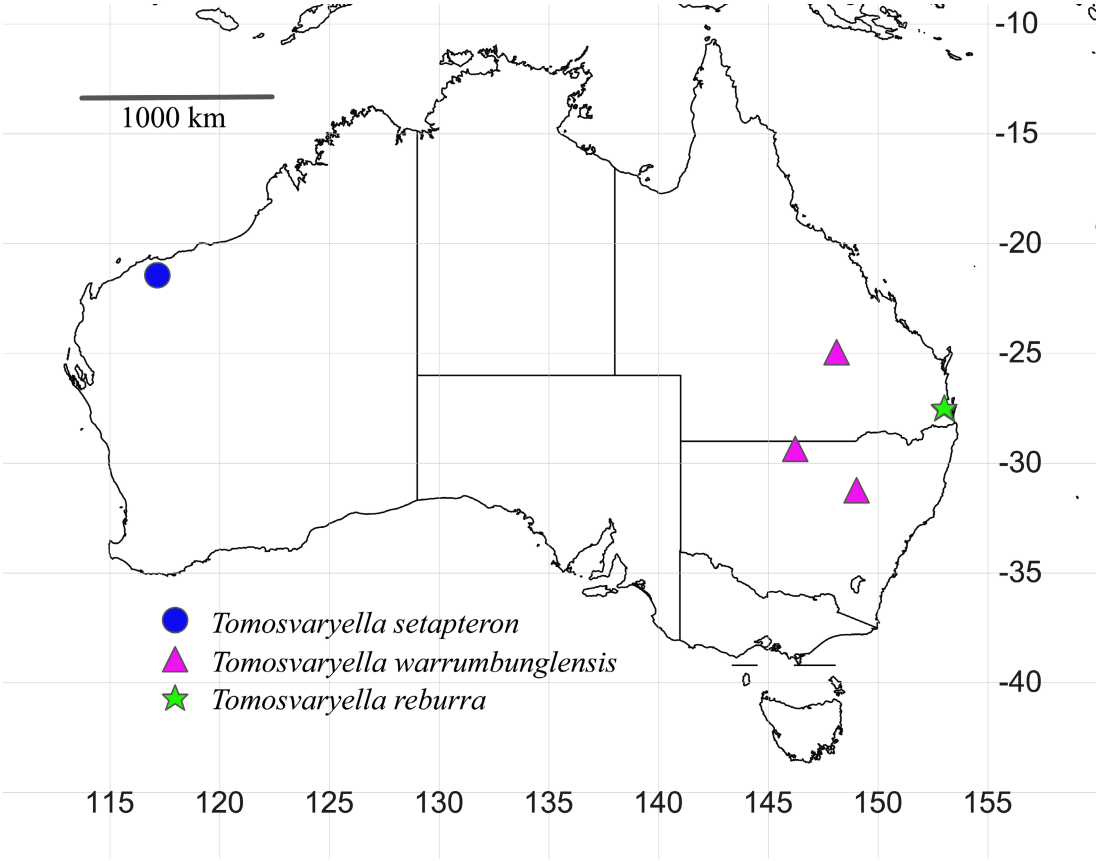



**FIGURE 138**. Distribution of *Tomosvaryella reburra* **sp. nov.**, *T. setapteron* **sp. nov.**, *T. warrumbunglensis* **sp. nov.** in Australia.

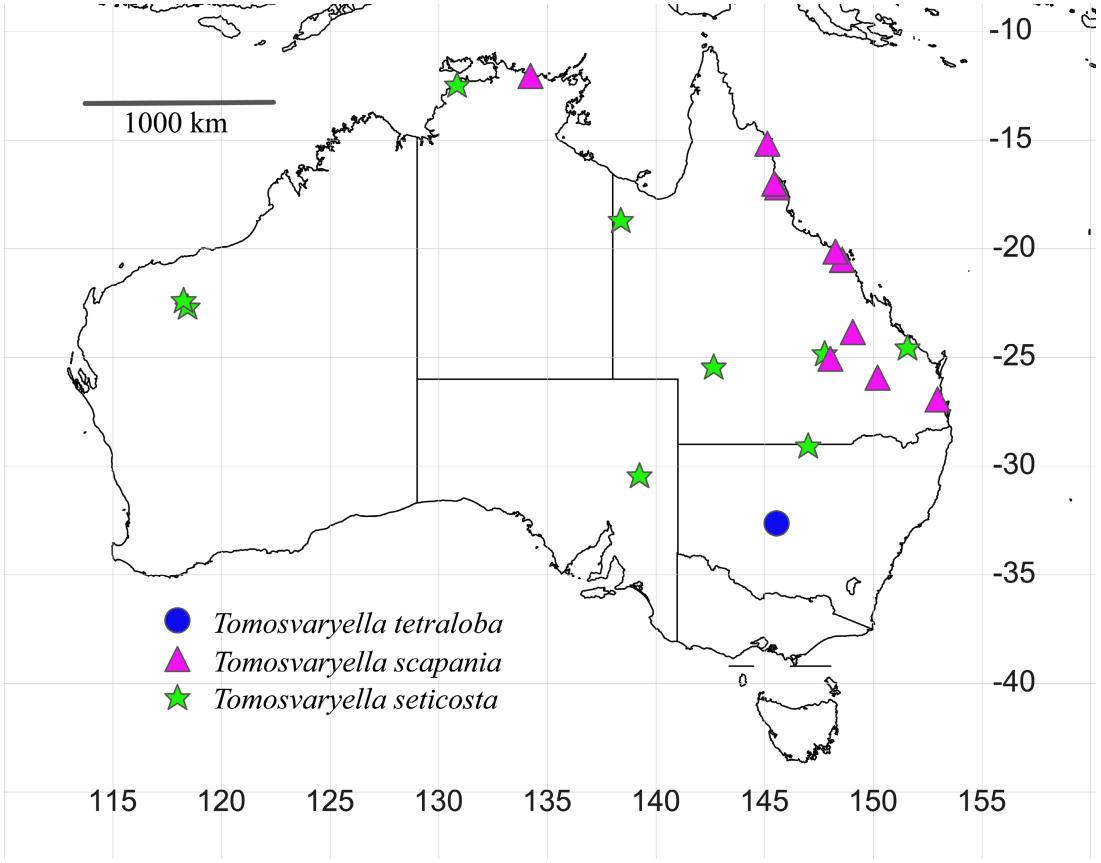



**FIGURE 139**. Distribution of *Tomosvaryella scapania* **sp. nov.**, *T. seticosta* **sp. nov.**, *T. tetraloba* **sp. nov.** in Australia.

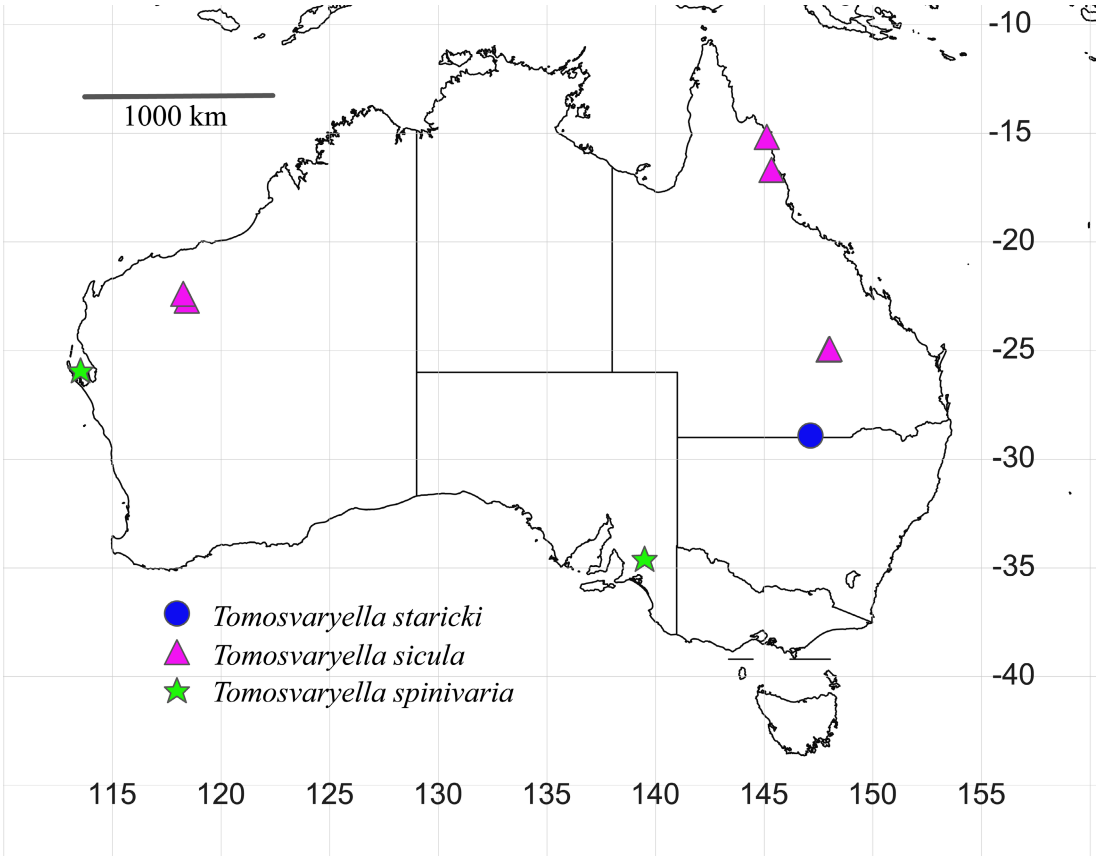



**FIGURE 140**. Distribution of *Tomosvaryella sicula* **sp. nov.**, *T. spinivaria* **sp. nov.**, *T. staricki* **sp. nov.** in Australia.

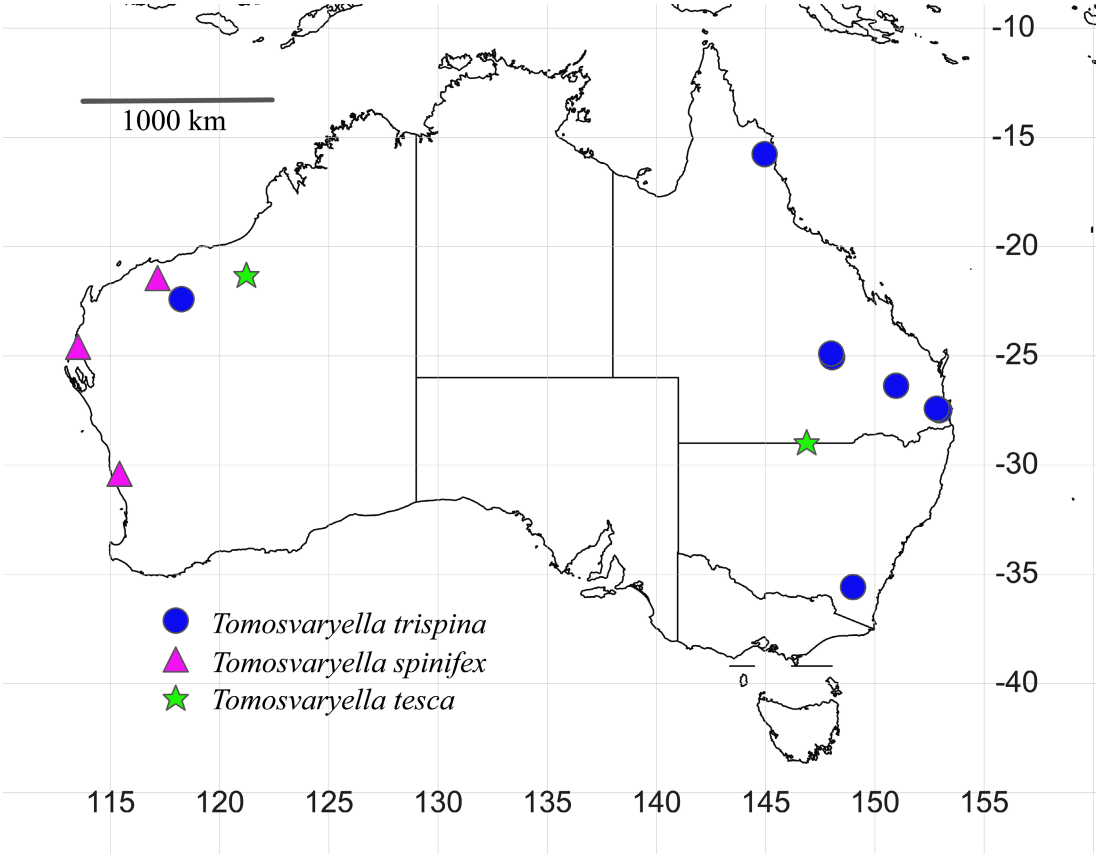



**FIGURE 141**. Distribution of *Tomosvaryella spinifex* **sp. nov.**, *T. tesca* **sp. nov.**, *T. trispina* **sp. nov.** in Australia.

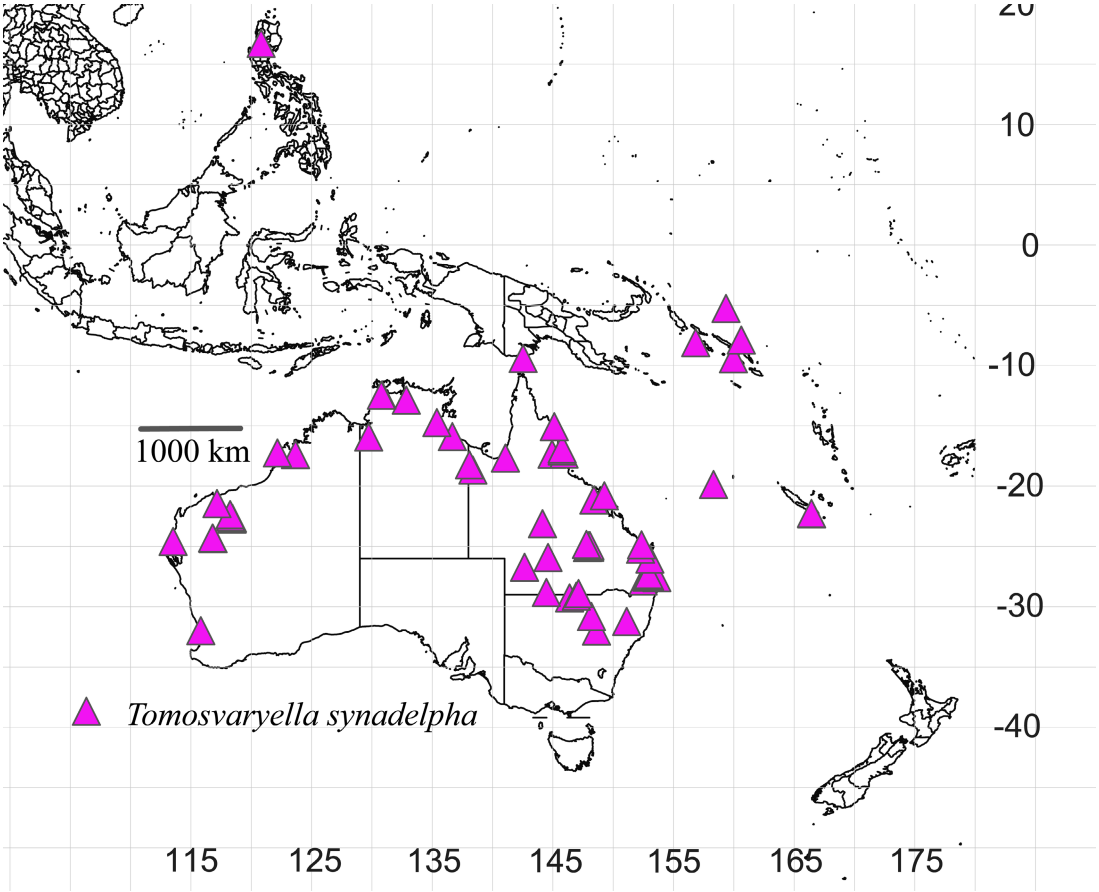



**FIGURE 142**. Distribution of *Tomosvaryella synadelpha* in Australia.

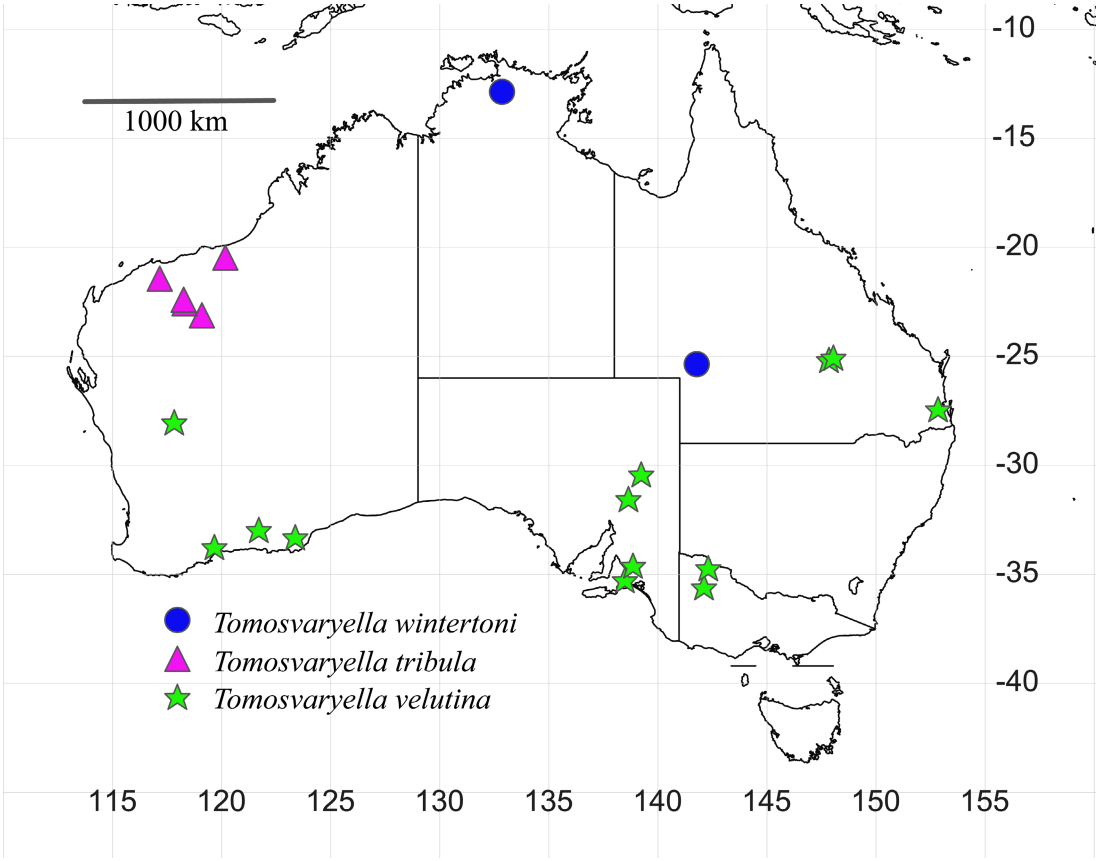



**FIGURE 143.** Distribution of *Tomosvaryella tribula* **sp. nov.**, *T. velutina* **sp. nov.**, *T. wintertoni* **sp. nov.** in Australia.

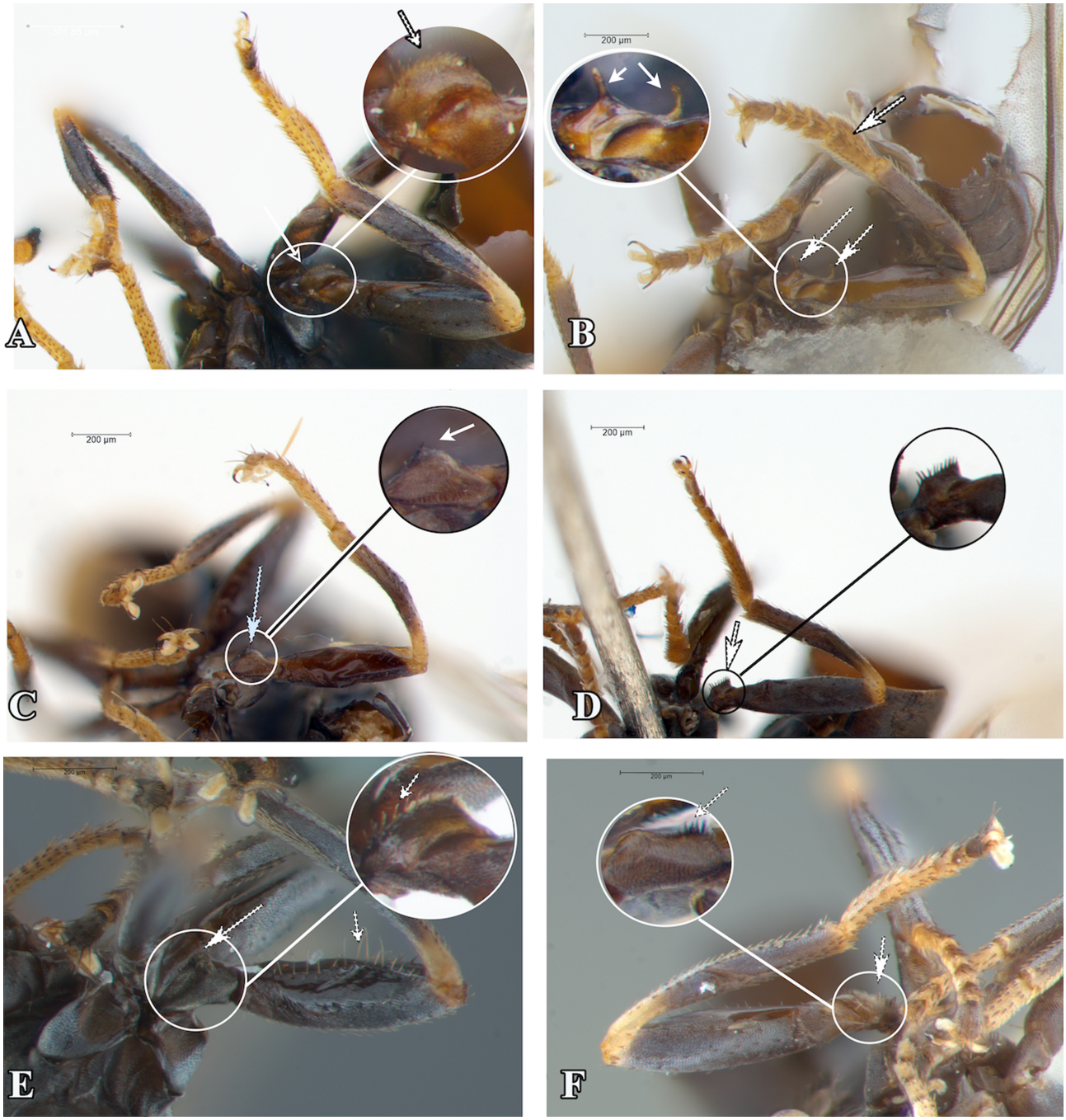



**FIGURE 144**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. danielsi* **sp. nov.**, paratype (JSS9708, QM), **B**) *T. gaimarii* **sp. nov.**, holotype (JSS16633, QM), **C**) *T. melaleuca* **sp. nov.**, holotype (CNC59696, QM), **D**) *T. miltocentra* **sp. nov.**, holotype (JSS9239, ANIC), **E**) *T. wyperfeldensis* **sp. nov.**, holotype (CNC373426, QM), **F**) *T. bounites* **sp. nov.**, paratype (JSS2217, QM).

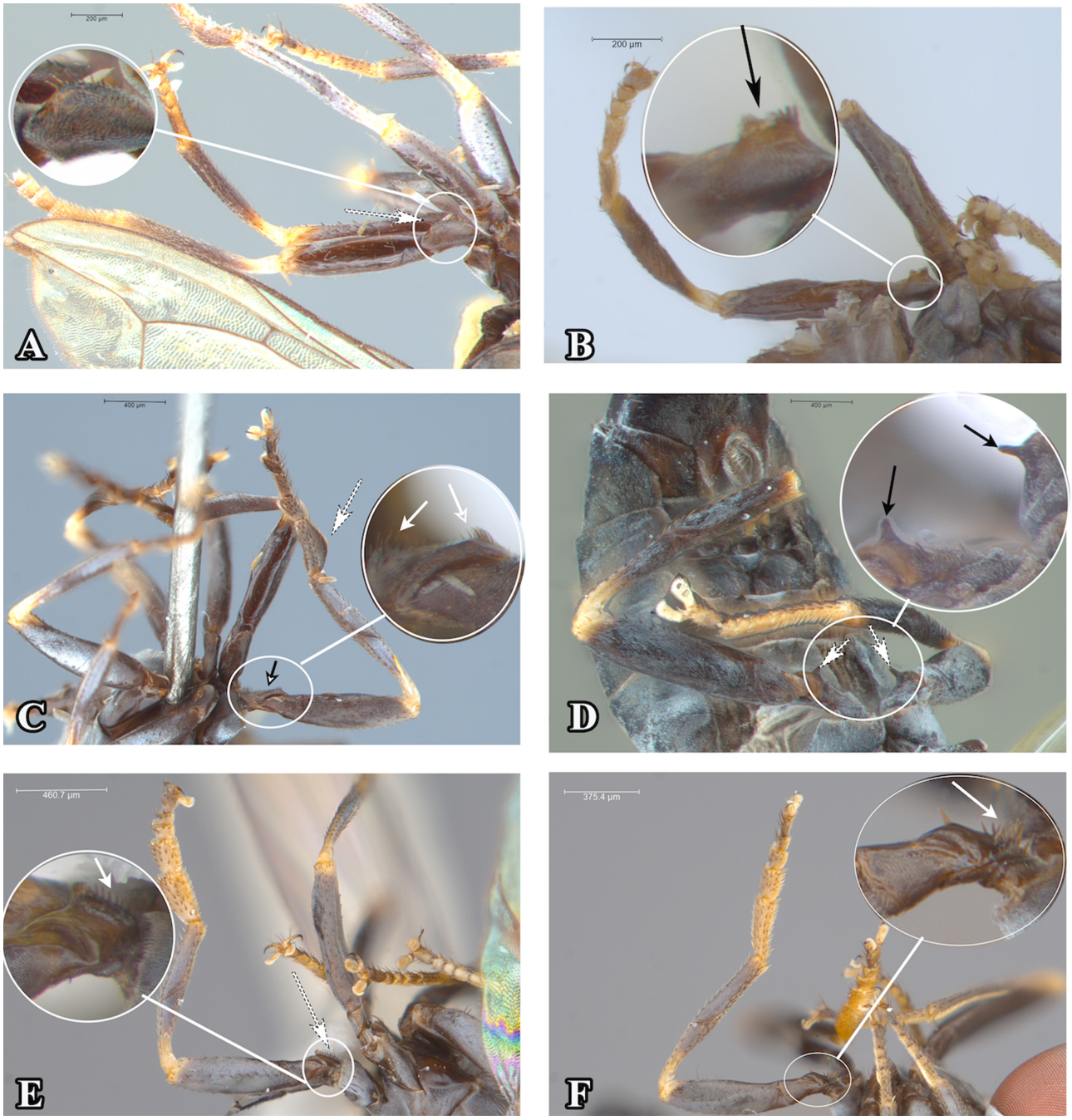



**FIGURE 145**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. arnhemensis* **sp. nov.**, holotype (CNCD5563, BPBM), **B**) *T. tesca* **sp. nov.**, holotype (CNC575371, QM), **C**) *T. caesariata* **sp. nov.**, paratype (JSS199, ANIC), **D**) *T. tribula* **sp. nov.**, holotype (JSS15675, WAM), **E**) *T. amphispina* **sp. nov.**, paratype (JSS7472, QM), **F**) *T. ngarrbekiota* **sp. nov.**, paratype (JSS7409, CNC).

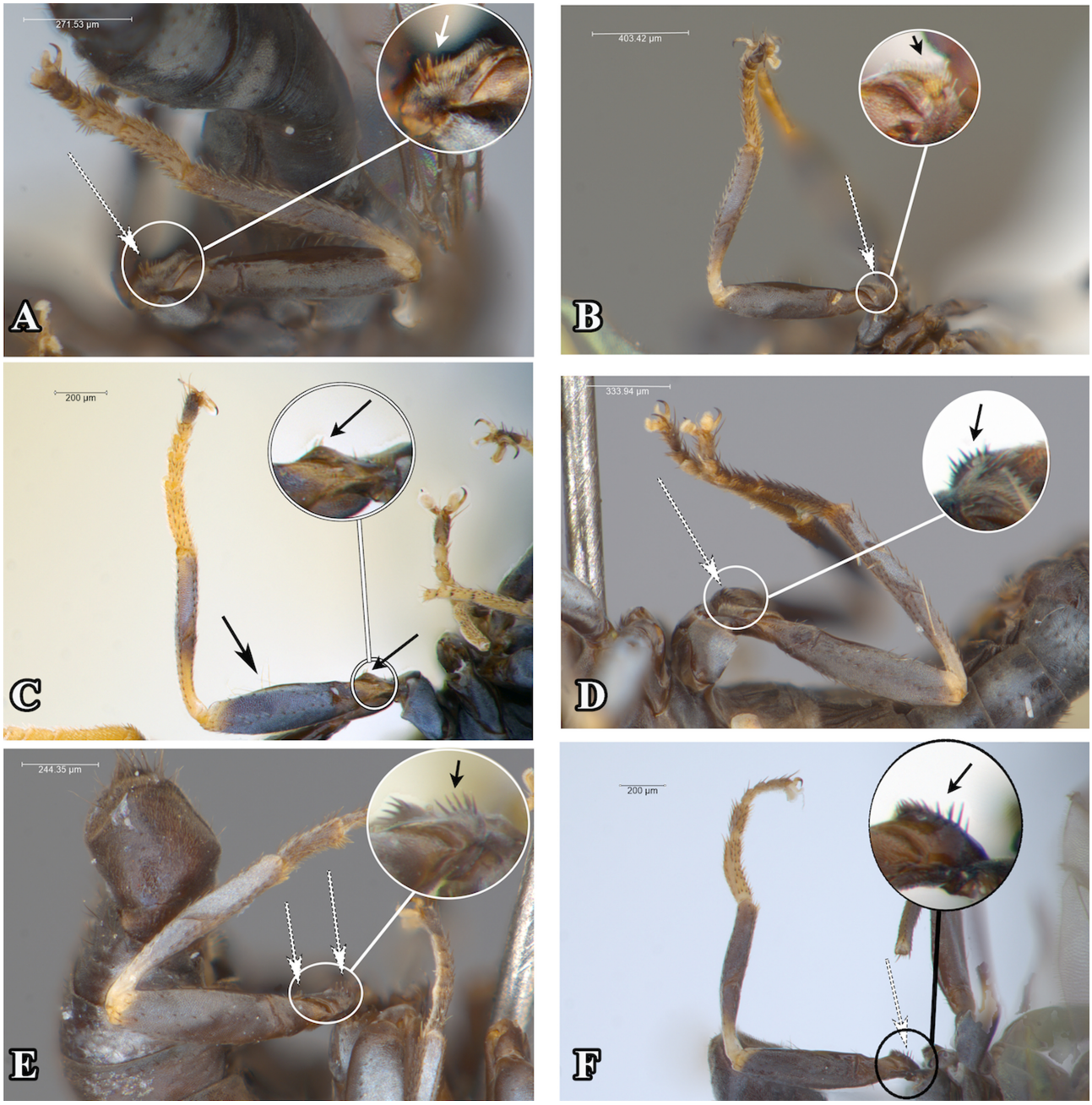



**FIGURE 146**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. atraspina* **sp. nov.**, paratype (JSS8448, CAS), **B**) *T. trispina* **sp. nov.**, holotype (JSS2352, QM), **C**) *T. spinivaria* **sp. nov.**, paratype (JSS7390, QM), **D**) *T. biflocca* **sp. nov.**, holotype (JSS8594, ANIC), **E**) *T. planca* **sp. nov.**, paratype (JSS8585, QM), **F**) *T. tetraloba* **sp. nov.**, holotype (JSS16037, ANIC).

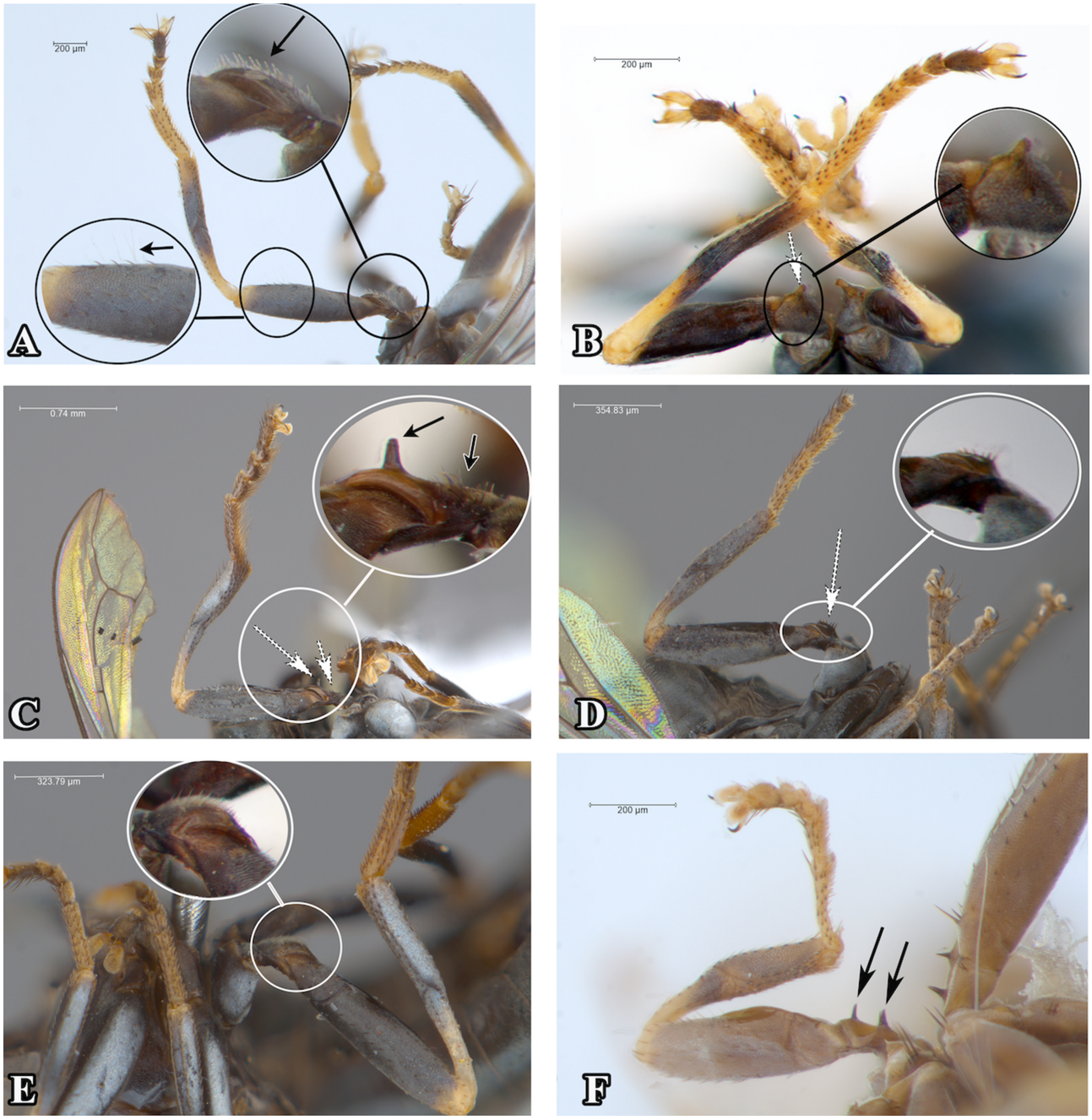



**FIGURE 147**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. lambkinae* **sp. nov.**,-holotype (JSS15593, QM), **B**) *T. paxilla* **sp. nov.**, holotype (JSS13932, QM), **C**) *T. ansa* **sp. nov.**, holotype (CNC591870, QM), **D**) *T. quadrata* **sp. nov.**, paratype (JSS374994, CNC), **E**) *T. scapania* **sp. nov.**, paratype (JSS8614, ANIC), **F**) *T. dissidens* **sp. nov.**, paratype (JSS16231, ANIC).

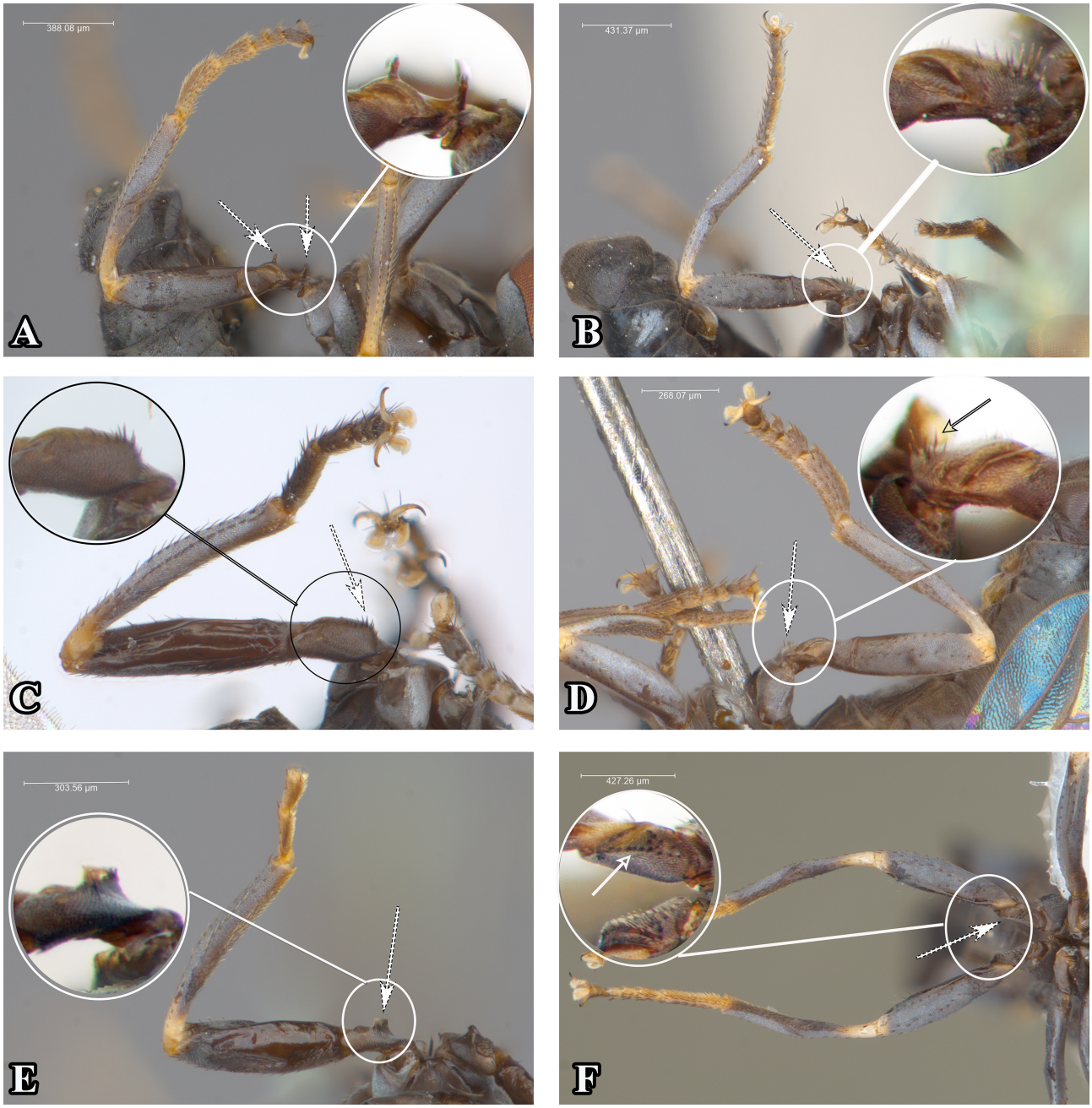



**FIGURE 148**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. bicalcarata* **sp. nov.**,-paratype (JSS8391, QM), **B**) *T. angelikae* **sp. nov.**, paratype (JSS8383, QM), **C**) *T. moffattensis* **sp. nov.**, holotype (JSS2938, QM), **D**) *T. collessi* **sp. nov.**, paratype (JSS8562, ANIC), **E**) *T. powerae* **sp. nov.**, holotype (JSS8428, QM), **F**) *T. bulbosa* **sp. nov.**, holotype in ventral view (JSS8852, QM).

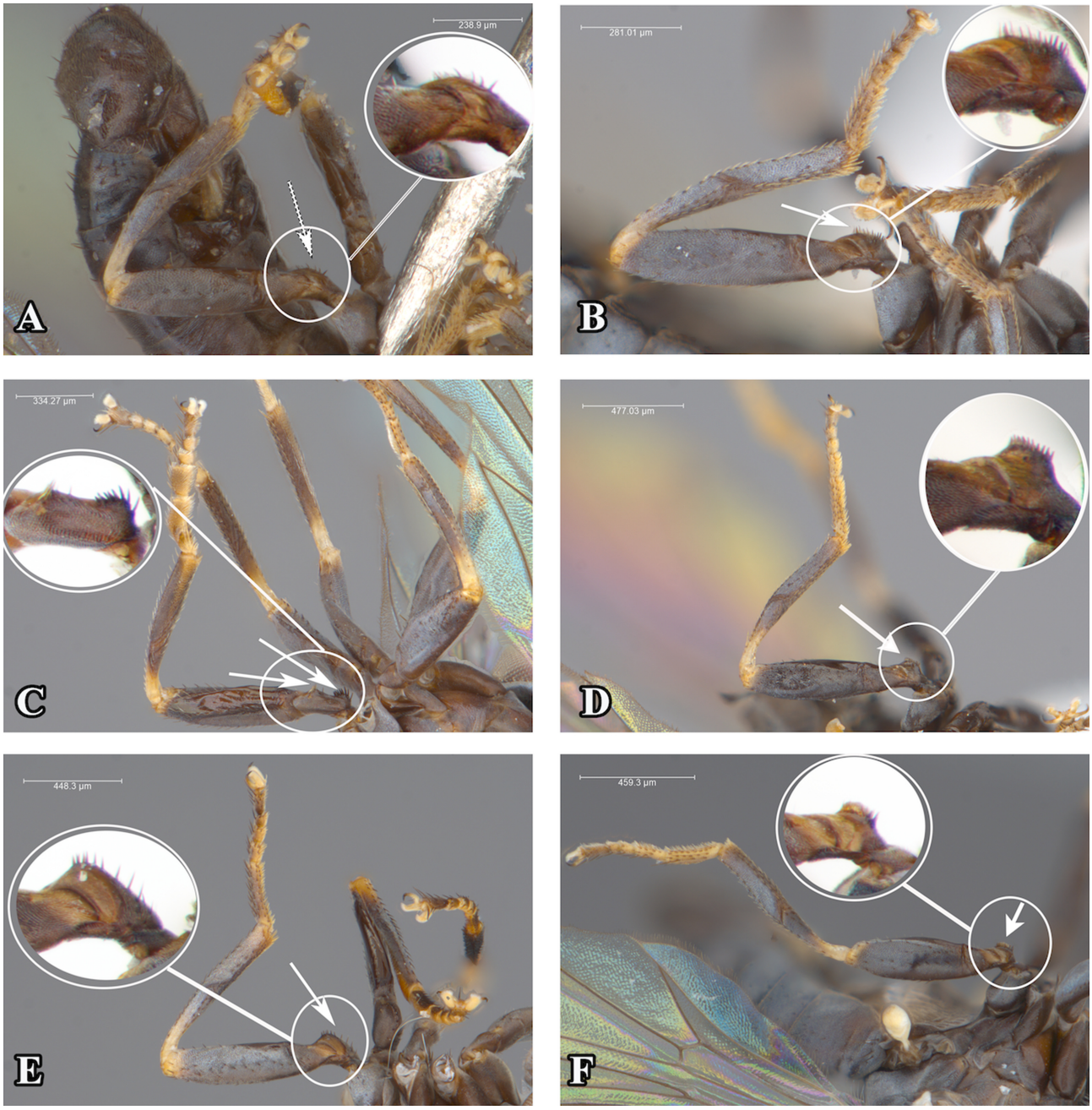



**FIGURE 149**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. calcarilonga* **sp. nov.**, paratype (JSS8638, ANIC), **B**) *T. alexanderi* **sp. nov.**, paratype (JSS2737, QM), **C**) *T. lophia* **sp. nov.**, holotype (JSS16241, WAM), **D**) *T. patula* **sp. nov.**, paratype (JSS1821, QM), **E**) *T. biloba* **sp. nov.**, paratype (CNCD3840, CNC), **F**) *T. angustistyla* **sp. nov.**, paratype (JSS16222, ANIC).

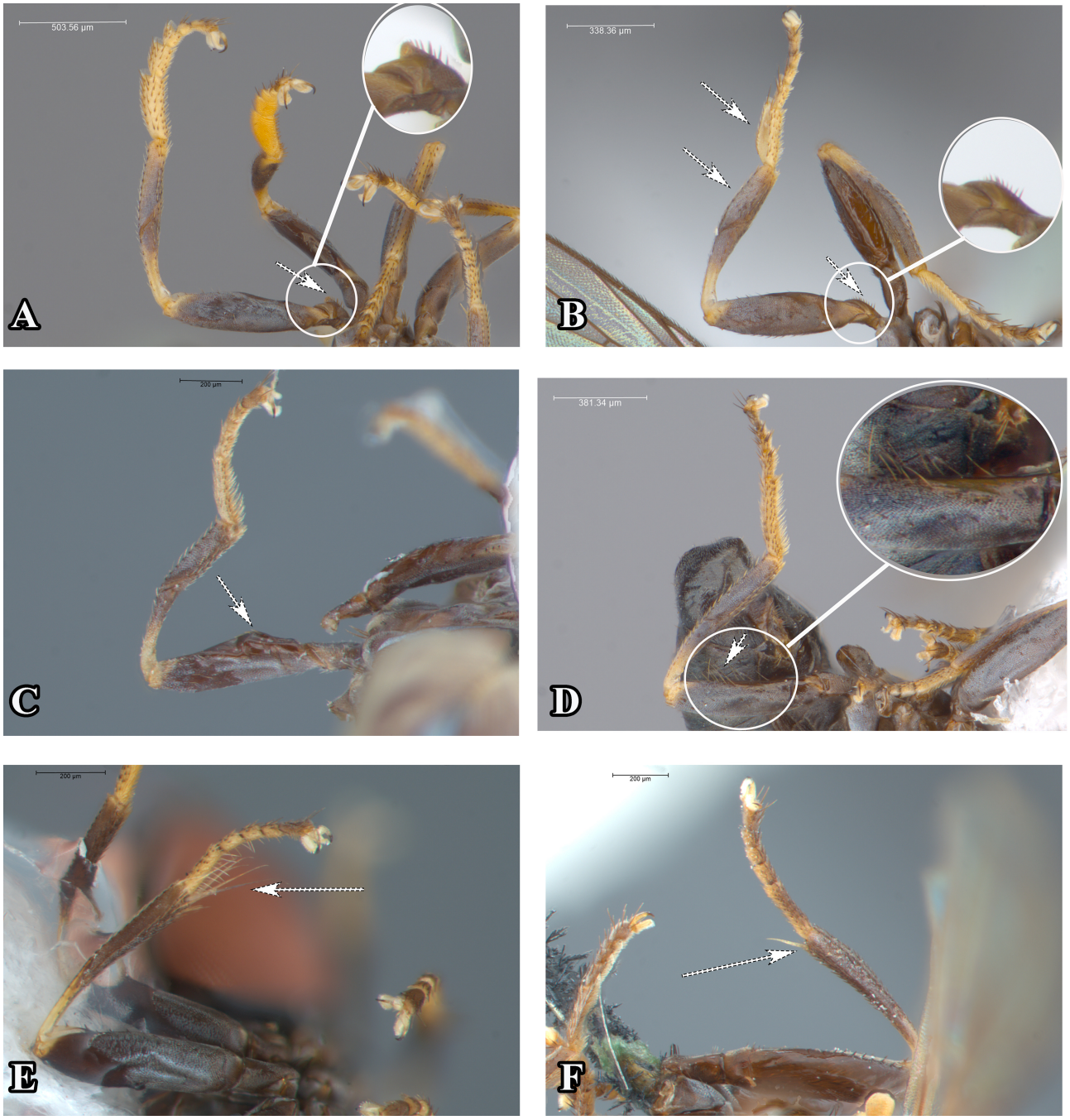



**FIGURE 150**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. spinifex* **sp. nov.**, holotype (JSS16200, WAM), **B**) *T. petala* **sp. nov.**, paratype (JSS16316, ANIC), **C**) *T. parvistyla* **sp. nov.**, holotype (CNC575122, QM), **D**) *T. minychoma* **sp. nov.**, holotype (JSS7363, WAM), **E**) Mid leg of *T. calcarilonga* **sp. nov.**, paratype (JSS7634, QM), **F**) mid leg of *T. leimonias*, holotype (JSS4150, ZMAN).

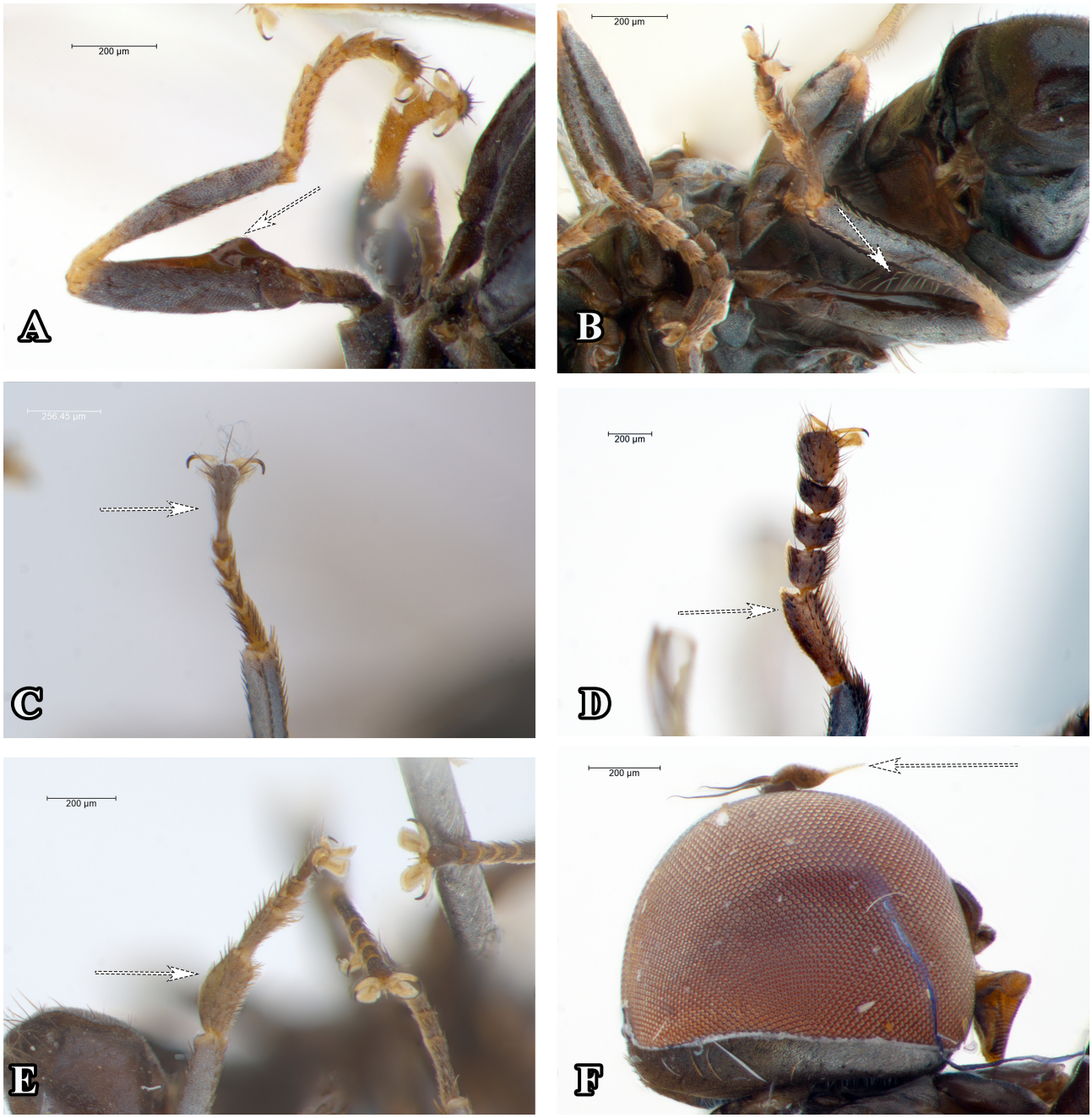



**FIGURE 151**. Hind legs of *Tomosvaryella* species in lateral view **A**) *T. latipoda* **sp. nov.**, paratype (CNC574664, QM), **B**) *T. novaezealandiae* (CNC373449, QM), **C**) fore tarsus of *T. ansa* **sp. nov.**, holotype (JSS591870, QM) in dorsal view, **D**) hind tarsus of *T. ansa* **sp. nov.**, paratype (JSS591870, QM) in dorsal view, **E**) hind tarsus of *T. planca* **sp. nov.**, paratype (JSS8585, QM) in dorsal view, **F**) compound eye of *T. acuminata* **sp. nov.**, holotype (JSS9254, ANIC) in lateral view.

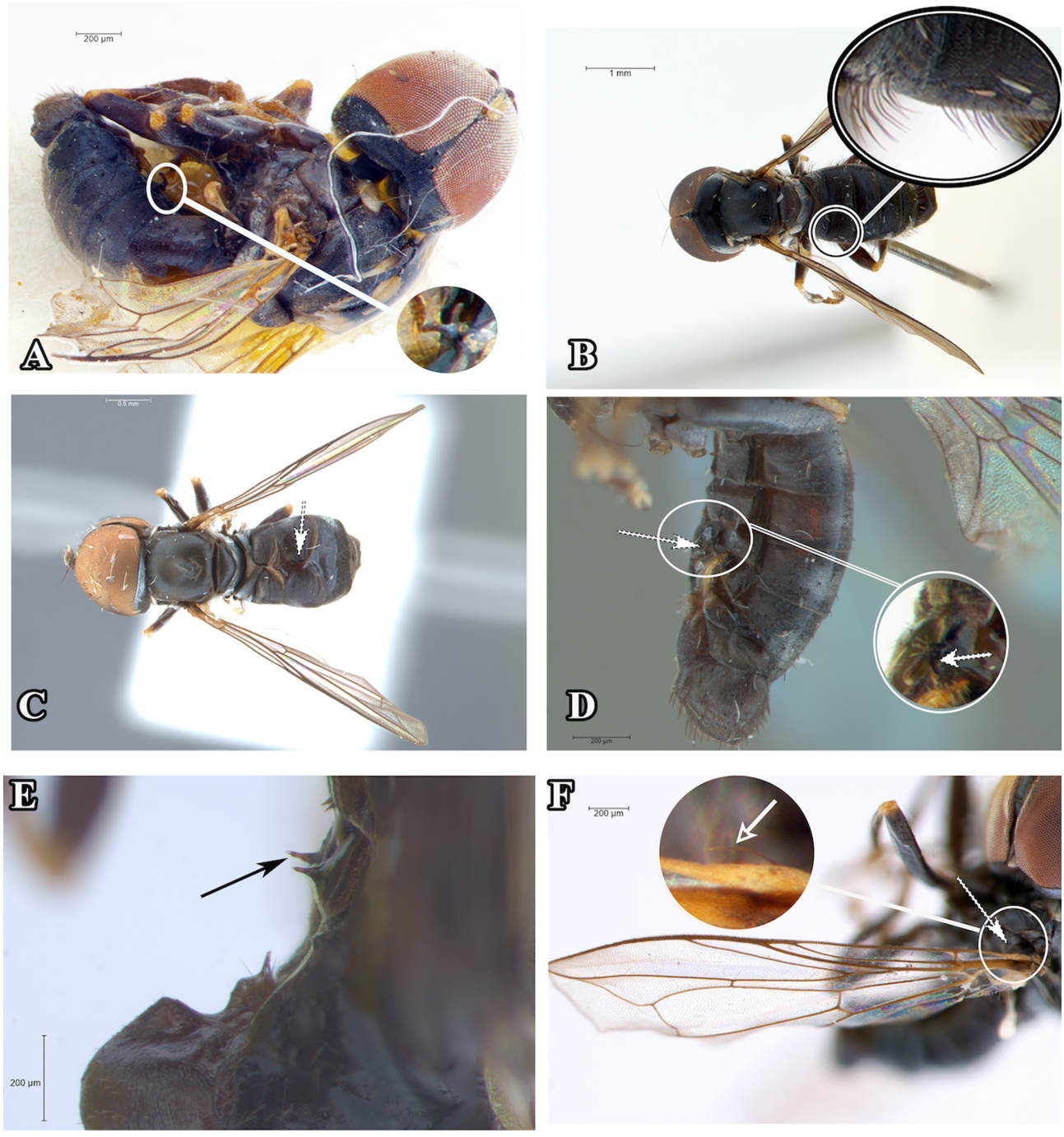



**FIGURE 152**. **A**) Male habitus of *Tomosvaryella* species **A**) *T. neboissi* **sp. nov.** holotype (JSS8782, QM) in lateral view, **B**) *T. caesariata* **sp. nov.,** holotype (JSS8580, ANIC) in dorsal view, **C**) *T. moffattensis* **sp. nov.** in dorsal view, holotype (JSS8602, ANIC),-**D**) abdomen of *T. calcarilonga* **sp. nov.**, paratype (JSS10534, USNM) in ventrolateral view,-**E**) abdomen of *T. tribula* **sp. nov.**, paratype (JSS15580, ANIC) in ventral view,-**F**) wing of *T. pterygia* **sp. nov.**, holotype (CNCD3560, QM).

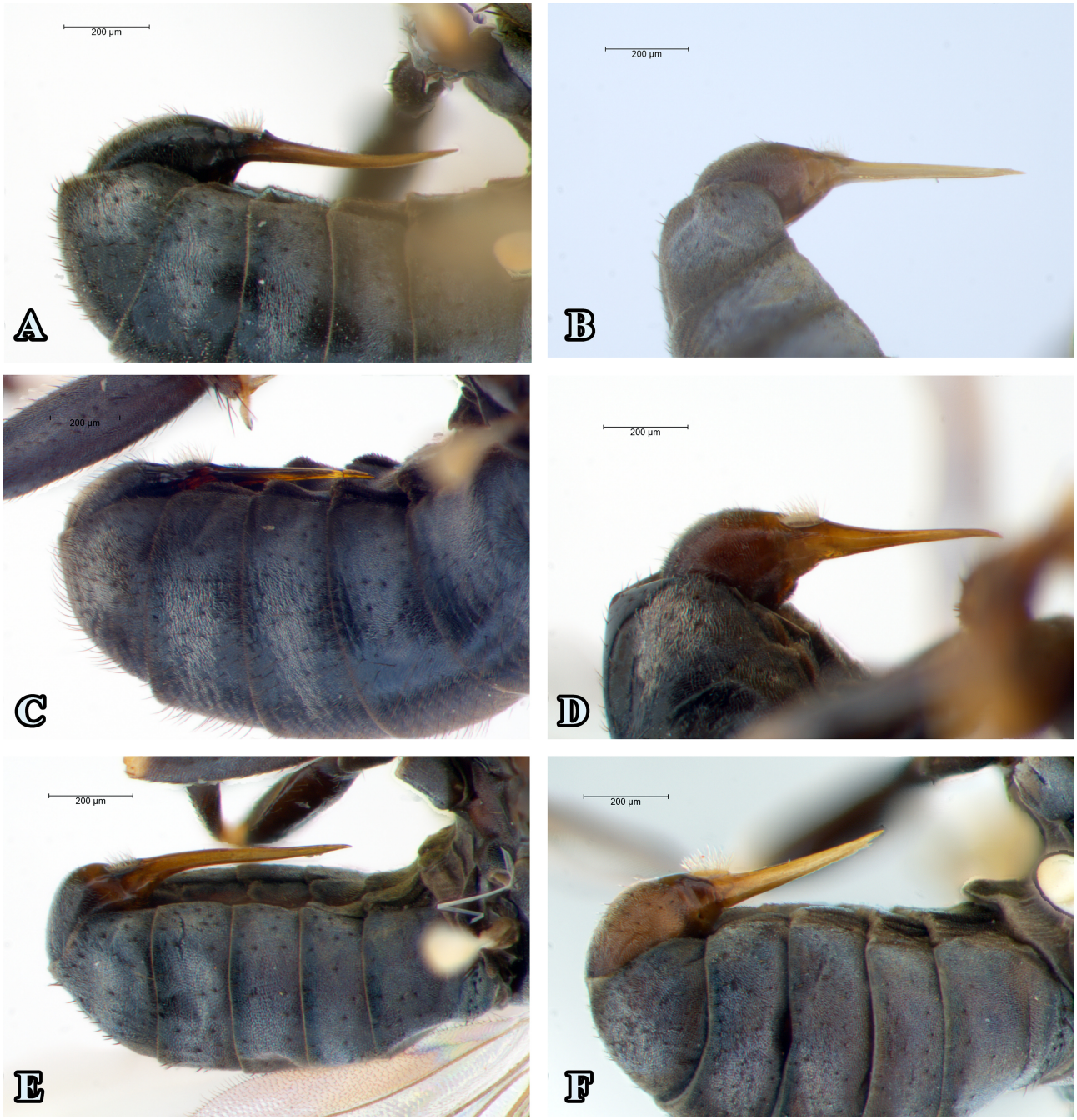



**FIGURE 153**. **A**) Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. novaezealandiae*, (CNC5074, QM), **B**) *T. brancha* **sp. nov.,** paratype (JSS16060, ANIC), **C**) *T. hirta* **sp. nov.**, paratype (JSS8907, QM),-**D**) *T. lanterna* **sp. nov.**, paratype (JSS15692, CNC),-**E**) *T. macrostyla* **sp. nov.**, paratype (JSS16094, QM),-**F**) *T. unda* **sp. nov.**, paratype (JSS16112, ANIC).




**FIGURE 154**. Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. paxilla* **sp. nov.**, paratype (JSS16127, ANIC), **B**) *T. nyctias* (CNCD159558, CNC), **C**) *T. angelikae* **sp. nov.**, paratype (CNCD16179, CNC),-**D**) *T. velutina* **sp. nov.**, paratype (CNCD136754, CNC),-**E**) *T. collessi* **sp. nov.**, paratype (JSS7905, QM),-**F**) *T. powerae* **sp. nov.**, paratype (JSS13934, QM).

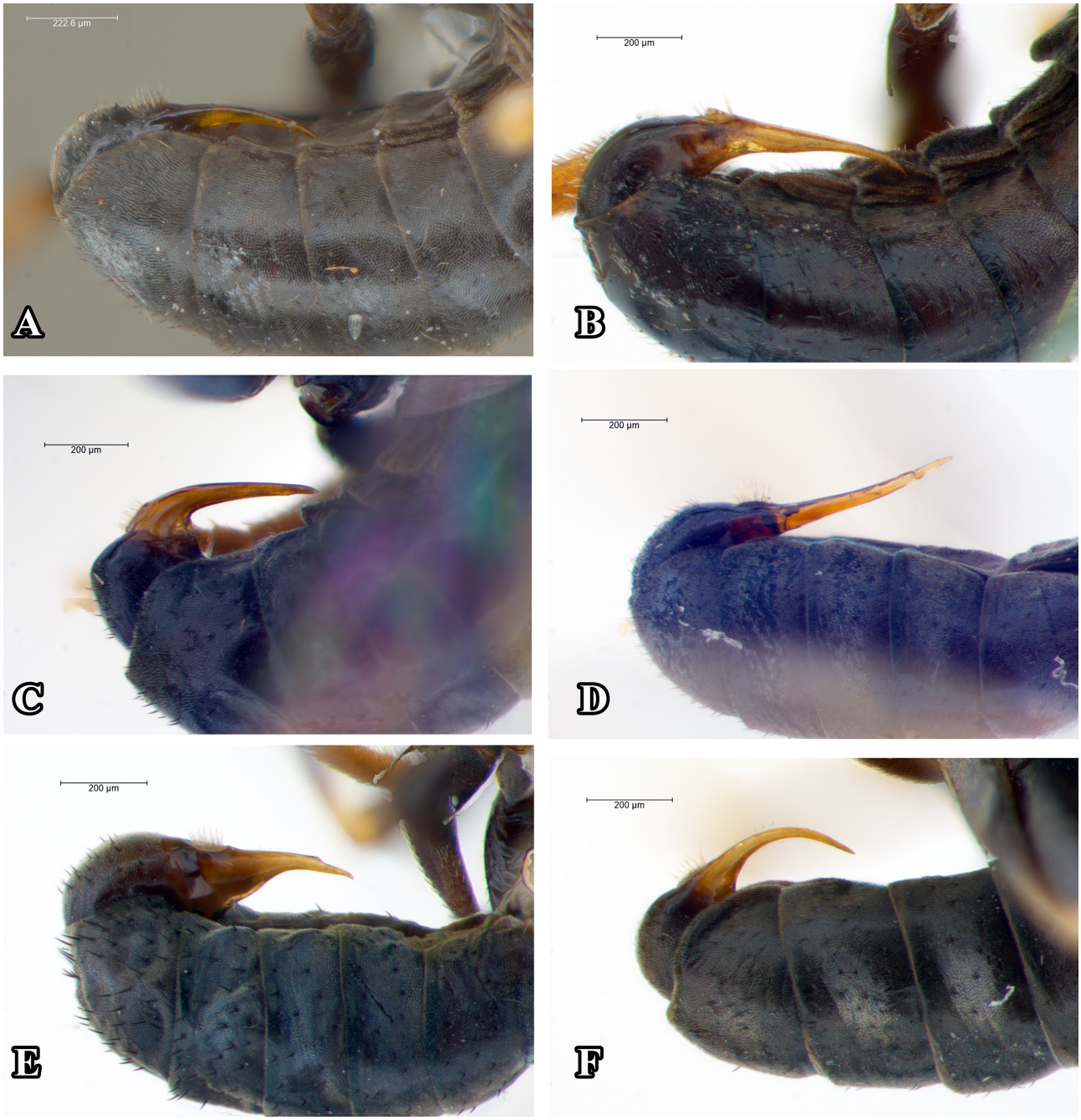



**FIGURE 155**. Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. brachystyla* **sp. nov.**, paratype (JSS8835, INHS), **B**) *T. seticosta* **sp. nov.**, paratype (JSS8299, QM), **C**) *T. parkeri* **sp. nov.**, paratype (JSS15704, QM),-**D**) *T. patula* **sp. nov.**, paratype (JSS6068, QM),-**E**) *T. deltastyla* **sp. nov.**, paratype (JSS16101, ANIC),-**F**) *T. biloba* **sp. nov.**, paratype (JSS15888, CNC).

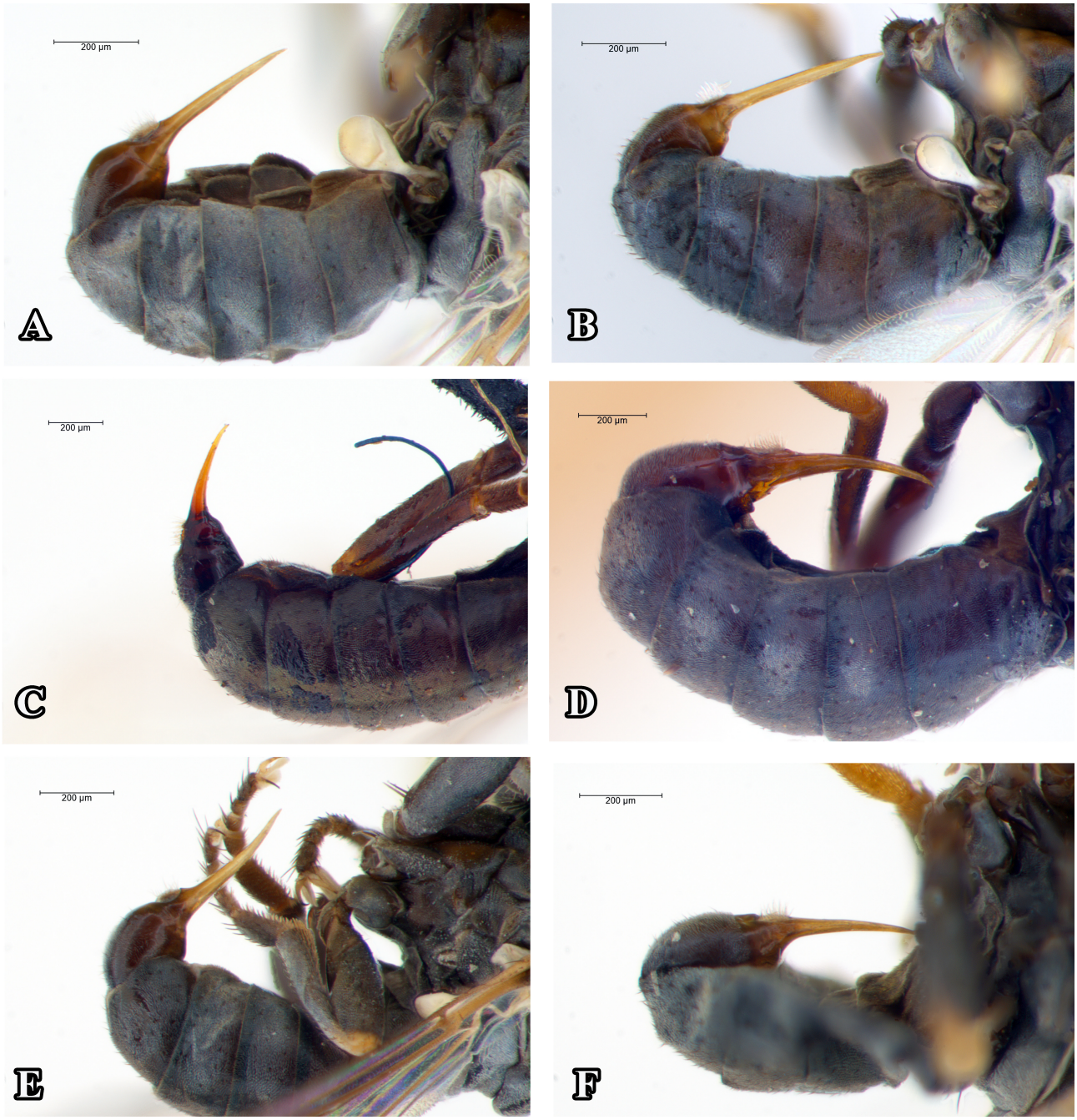



**FIGURE 156**. Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. angustistyla* **sp. nov.**, paratype (JSS16223, ANIC), **B**) *T. uncinata* **sp. nov.**, paratype (JSS16061, ANIC), **C**) *T. epichalca*, paralectotype (JSS4155, ZMAN), **D**) *T. pseudophanes*, paralectotype (JSS8480, BPBM), **E**) *T. pterygia* **sp. nov.**, paratype (JSS15882, CNC), **F**) *T. synadelpha* (JSS15981, ANIC).

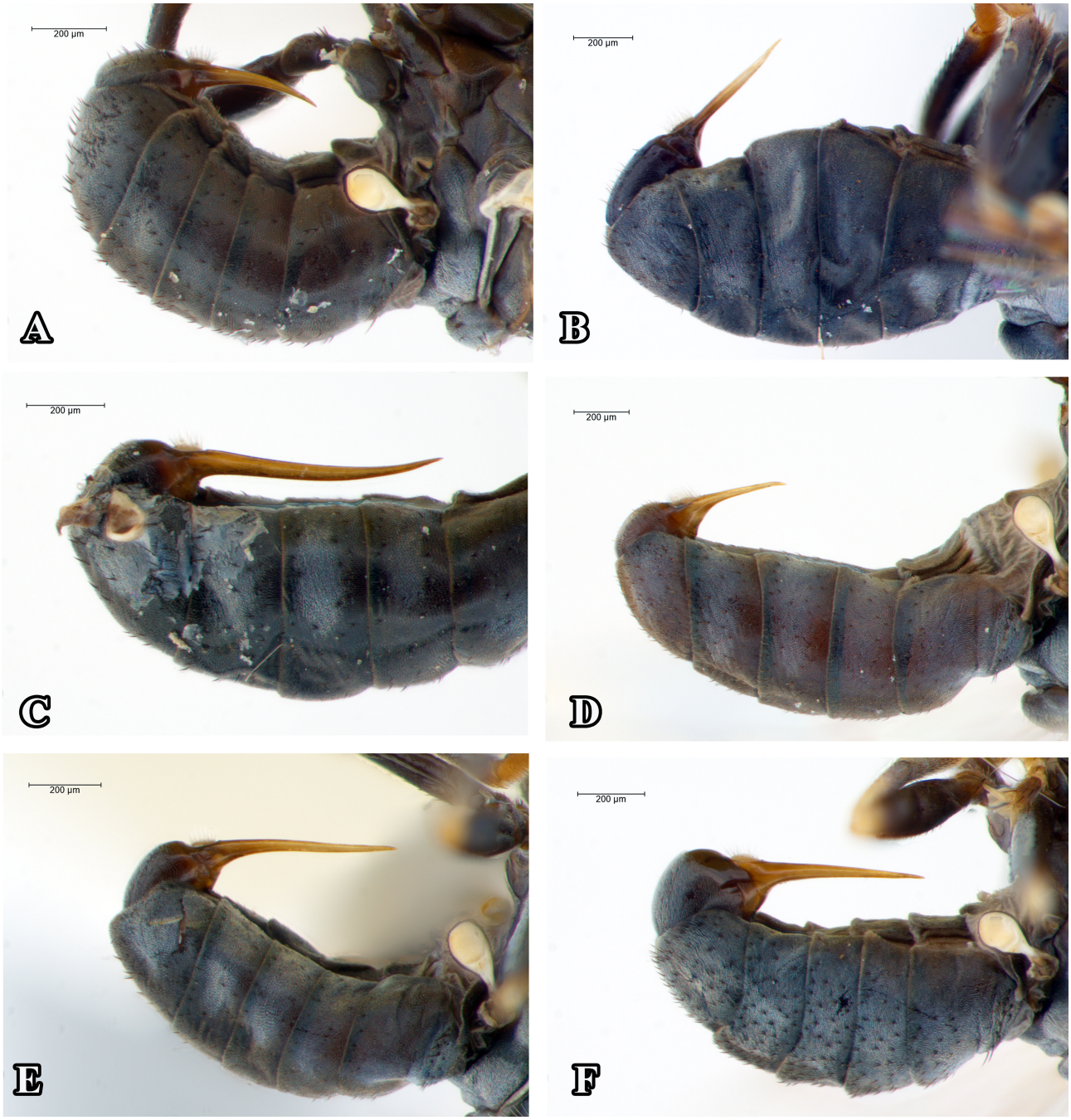



**FIGURE 157**. Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. luma* **sp. nov.**, paratype (JSS16111, ANIC), **B**) *T. ngarrbekiota* **sp. nov.**, paratype (JSS16151, ANIC), **C**) *T. cona* **sp. nov.**, paratype (JSS16166, ANIC), **D**) *T. tribula* **sp. nov.**, paratype (JSS16220, ANIC), **E**) *T. macrostyla* **sp. nov.**, paratype (CNCD3831, CNC), **F**) *T. sicula* **sp. nov.**, paratype (CNCD3851, QM).

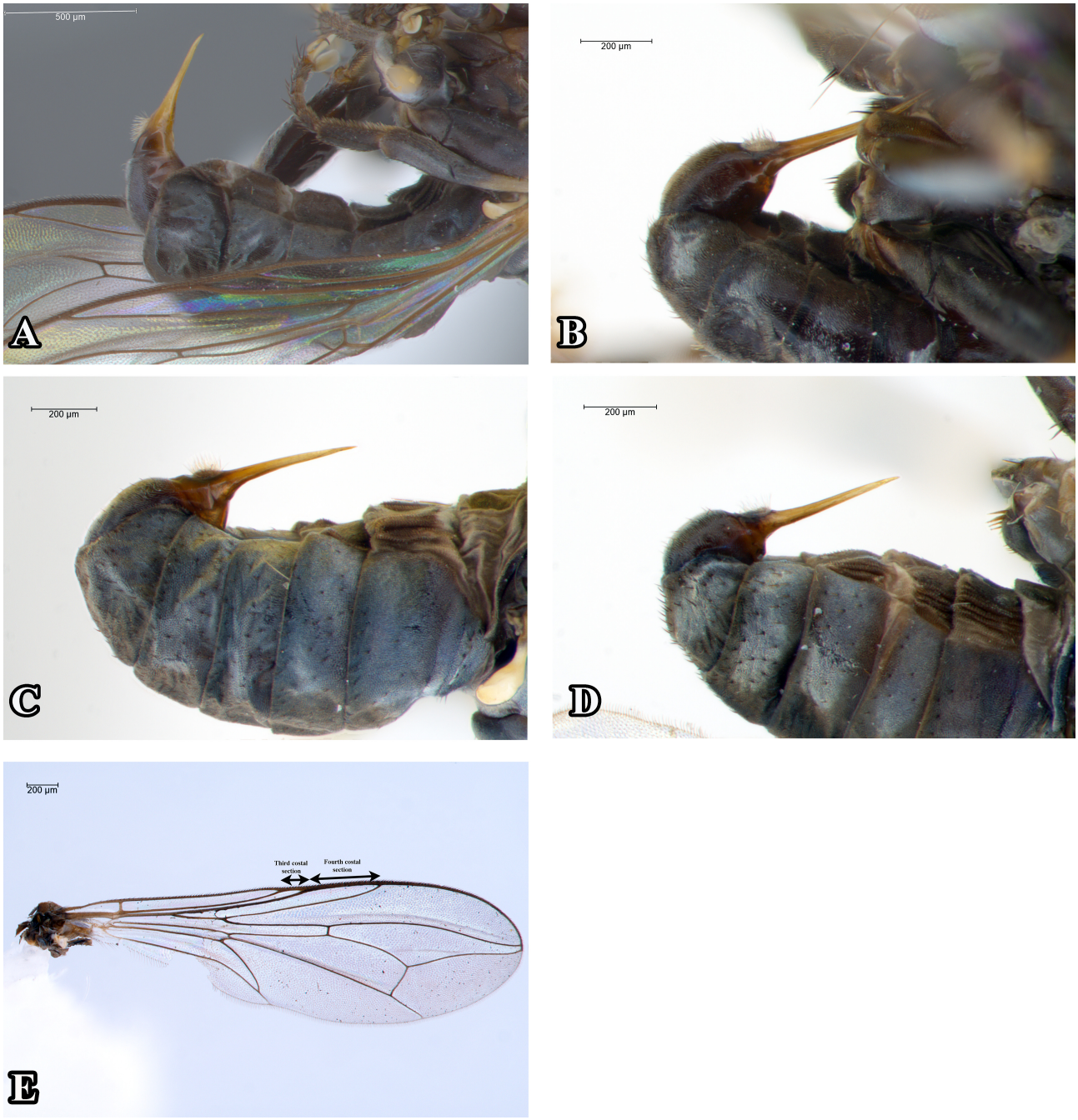



**FIGURE 158**. Ovipositor of *Tomosvaryella* species in lateral view **A**) *T. scapania* **sp. nov.**, paratype (CNCD159595, CNC), **B**) *T. biflocca* **sp. nov.**, paratype (CNCD159596, CNC), **C**) *T. setaria* **sp. nov.**, paratype (CNCD3867, CNC), **D**) *T. boomerang* **sp. nov.**, paratype (CNCD159453, CNC), **E**) wing of *T. patula* **sp. nov.**.

## Discussion

Remarkably, 27 out of the 106 species treated in this paper are known from single specimens (*T. acuminata, T. ansa, T. arnhemensis, T. birama, T. clavata, T. creagra, T. dactylopoda, T. denhamensis, T. divaricata, T. eucalypti, T. falcata, T. gaimarii, T. gibberensis, T. hardyi, T. indistincta, T. kooncheraensis, T. lambkinae*, *T. ledknapperensis, T. lophia, T. melaleuca, T. miltocentra, T. parvistyla, T. prolixa, T. setapteron, T. staricki, T. vasta* and *T. wyperfeldensis*). This shows how much we still have to learn about this genus in Australia. There are clearly dozens of species yet to be discovered, not to mention how much remains to learn about species distributions and habitat preferences.

Hilltopping is prevalent in *Tomosvaryella*, but perhaps not as much as in some pipunculid genera

(*Clistoabdominalis* for example) (Skevington 2001). Forty out of 106 species of Australian *Tomosvaryella* have been collected on hilltops (*T. alexanderi, T. amphispina, T. angelikae, T. atraspina, T. bicalcarata, T. biflocca, T. biloba, T. boomerang, T. bounites, T. brancha, T. calcarilonga, T. collessi, T. cona, T. dasyprocta, T. denhamensis, T. dirigostyla, T. dissidens, T. dolicholoba, T. eremia, T. infundibula, T. kooncheraensis, T. latipoda, T. latistyla, T. macrostyla, T. mathiesoni, T. minychoma, T. moffattensis, T. ngarrbekiota, T. novaezealandiae, T. patula, T. paxilla, T. peronensis, T. prolata, T. pterygia, T. quadrata, T. spinivaria, T. trispina, T. unda, T. velutina* and *T. wyperfeldensis*). Of these 40, four have been collected more often away from hilltops (*T. calcarilonga, T. cona, T. infundibula* and *T. macrostyla*) while the remainder are primarily found on hilltops. Hilltopping is a type of landmark mating system that is particularly common in parasitoid species that are rare in the landscape (Skevington, 2008). Males congregate on hilltops and females visit these locations when they are looking for a mate. The behavior appears to be facultative and varies depending on the abundance of potential mates in space and time. In *Clistoabdominalis*, the behavior is so prevalent that species diversity can be surveyed in a region by visiting a few hilltops. In *Tomosvaryella*, several common species appear to never use this strategy (*T. luma, T. millstreamensis, T. synadelpha* and *T. uncinata* for example) so survey work requires multiple methods.

In this study, most species were found to be as monophyletic, with the exception of a two species group including *T. millstreamensis* + *T. tribula* and *T. calcarilonga* + *T. cona* in the maximum likelihood analysis (supplementary file 5). See the notes for *T. calcarilonga and T. tribula*. We were able to obtain sequence data for 60 of the 106 species treated in this revision. Specimens sequenced are summarized with the sequence accession numbers issued by GenBank (GB) in supplementary file 4. A genetic distance summary, the maximum likelihood tree of COI and the aligned COI sequences are provided in supplementary files 3, 5 and 6, respectively.

## Acknowledgments

We would like to thank the many collection managers who loaned us material to study and were patient with the length of time that we retained their material. The many collectors who contributed the raw materials for this revision are also thanked and the key collectors are summarized in supplementary file 2 to emphasize their contributions. Without their efforts, this work would have been fragmentary at best. We also thank Khorshid Ghahari, Emma Abrams, and Otto Demark for assistance with imaging the genitalia and external characters and Bradley J. Sinclair, Jeffrey M. Cumming, and James E. O'Hara for their unwavering support at Diptera unit of Canadian National Collection of Insects, Nematodes and Arachnids, Ottawa, Canada.

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**Supplementary Materials.** The following supporting information can be downloaded at the DOI landing page of this paper:

**Supplementary file 1.** Cytochrome c oxidase subunit I (COI) primers.
**Supplementary file 2.** Contribution of key collectors to the revision of Australian *Tomosvaryella.*
**Supplementary file 3.** Uncorrected pairwise genetic distances of mitochondrial cytochrome oxidase subunit I (COI) sequences among the Australian *Tomosvaryella* species.
**Supplementary file 4.** Sequence accession numbers of Australian *Tomosvaryella* issued by GenBank (GB).
**Supplementary file 5.** Maximum likelihood tree of mitochondrial cytochrome oxidase subunit I (COI) sequences among the Australian *Tomosvaryella* species. Numbers on nodes are bootstrap supports based on 500 replicates.
**Supplementary file 6.** Aligned COI sequences of Australian *Tomosvaryella.*

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