



## New Australasian Parathalassiinae (Diptera: Dolichopodidae *sensu lato*)

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### Abstract

One species of *Chimerothalassius* Shamshev & Grootaert, namely *C. marshalli* **sp. nov.** is described from New Zealand, and two other species, namely *C. riparius* **sp. nov.** and *C. sinclairi* **sp. nov.** are described from New Caledonia. Two species of *Microphorella* Becker, namely *M. bungle* **sp. nov.** and *M. viticula* **sp. nov.**, are described from Australia. These new parathalassiine descriptions increase the Australasian species diversity of *Chimerothalassius* and *Microphorella* to four species each. In addition, the genus *Eothalassius* Shamshev & Grootaert is recorded from New Caledonia based on a single female, and the male genitalia of the Australian species *M. iota* Colless is newly illustrated. A key to the genera and species of male Parathalassiinae in the Australasian Region is also provided.

**Key words:** *Chimerothalassius*, *Eothalassius*, *Microphorella*, Australia, New Caledonia, New Zealand, new species, new records, morphology, diversity

### Introduction

The empidoid subfamily Parathalassiinae is a basal lineage of the Dolichopodidae *sensu lato*, along with the Microphorinae (Sinclair & Cumming 2006). In Australasia, three parathalassiine genera have been recorded (see Cumming & Brooks 2019), *Microphorella* Becker, 1909 from Australia and New Guinea, *Chimerothalassius* Shamshev & Grootaert, 2002 from New Zealand, and *Eothalassius* Shamshev & Grootaert, 2005 from New Guinea. Immature stages are presently unknown in the Parathalassiinae (Cumming & Brooks 2019).

The purpose of this paper is to describe several new species of *Microphorella* and *Chimerothalassius* from Australia, New Zealand and New Caledonia (Figs 1–11). In addition, the genus *Eothalassius* is formally recorded from New Caledonia for the first time based on a single female specimen. The hypopygium of the Australian species *M. iota* Colless is also fully re-illustrated, and new specimen records are listed. A key to the genera and species of Australasian male Parathalassiinae is also provided.

### Material and methods

This paper is based on examination of specimens deposited in the following institutions: Australian National Insect Collection, Canberra, Australia (ANIC); Canadian National Collection of Insects, Ottawa, Canada (CNC); University of Guelph Insect Collection, Guelph, Canada (DEBU); Muséum national d’Histoire naturelle, Paris, France (MNHN); New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand (NZAC); United States National Museum of Natural History, Washington D.C., USA (USNM).

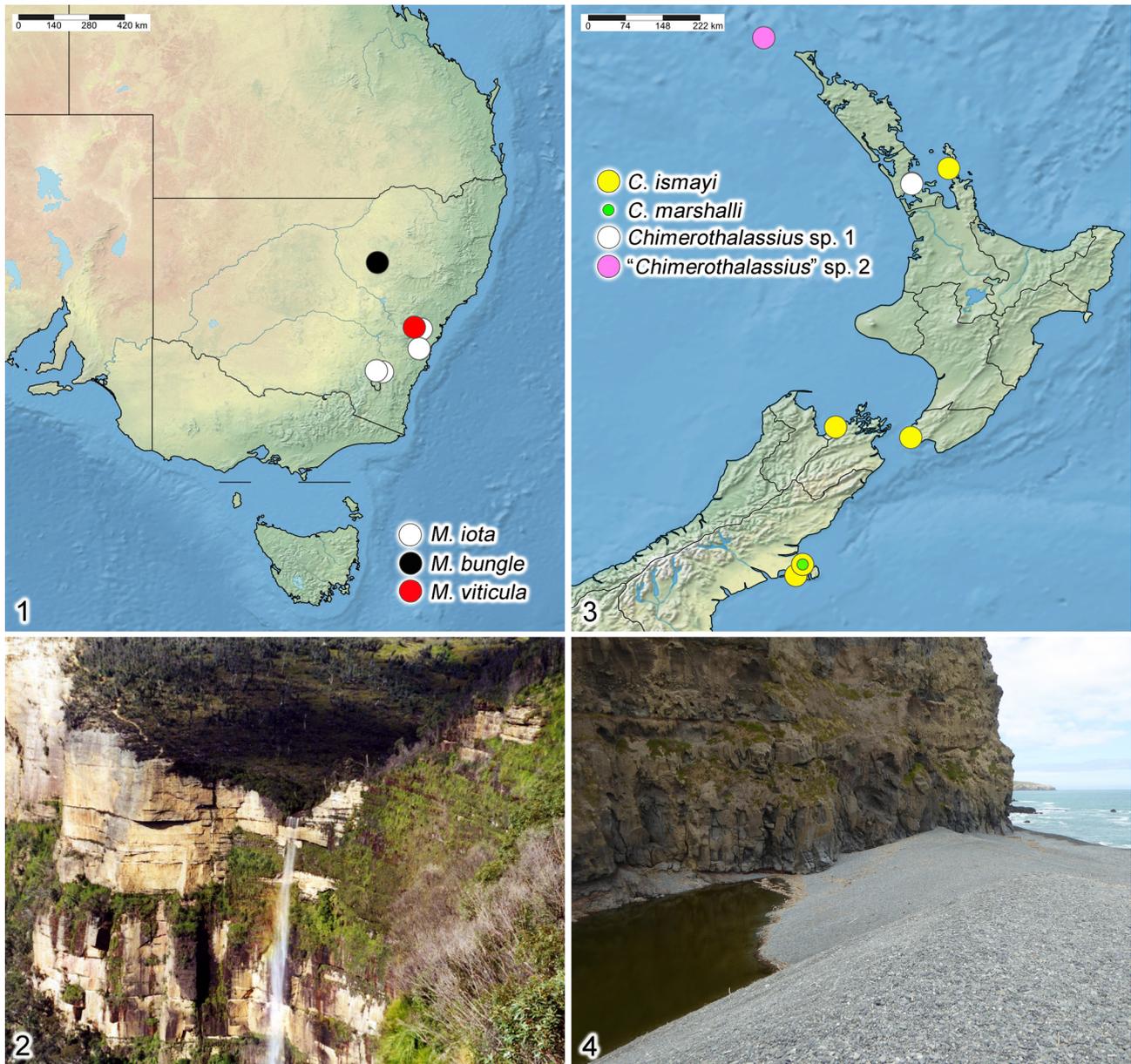
Label data for primary types are cited verbatim. Labels are listed from the top label down with data from each label in quotation marks and separated by a semicolon. Lines of text on labels are delimited by a slash (/) and annotations are placed in square brackets, *i.e.*, [ ].

Terms used for adult structures follow Cumming & Wood (2017). Homologies of the male terminalia follow Brooks & Ulrich (2012) and Brooks & Cumming (2016, 2017, 2018).

Male and female terminalia dissections were macerated in 85% lactic acid heated in a microwave oven for multiple 20–60 second intervals, until muscle tissue was dissolved, with terminalia subsequently examined and illustrated while in glycerin on a depression slide. Dissected terminalia were later transferred to polyethylene genitalia vials containing a small amount of glycerin and pinned below the associated specimen.

Figures of male genitalia in lateral view are oriented with the anatomically dorsal and ventral parts directed towards the top and bottom of the page, respectively. This means that the left and right side of the figures refer to each side prior to the rotation and twisting caused by lateroflexion (see Sinclair & Cumming 2006, p. 48).

Distribution maps were created with SimpleMappr (Shorthouse 2010). Specimen images were produced with a Leica DFC5400 photomontage system using Leica Application Suite X.



**FIGURES 1–4.** Known geographical distribution and collection localities of *Microphorella* and *Chimerothalassius* from Australia and New Zealand. **1.** Distribution of *M. bungle* **sp. nov.**, *M. iota* Colless and *M. viticula* **sp. nov.** **2.** Govetts Leap, Australia, type locality of *M. viticula* **sp. nov.** (photo by Brad Sinclair). **3.** Distribution of *C. ismayi* Shamshev & Grootaert, *C. marshalli* **sp. nov.**, *Chimerothalassius* sp. 1 (female from Takapuna Beach) and "Chimerothalassius" sp. 2 (female from Three Kings Is.). **4.** Birdlings Flat, New Zealand, type locality of *C. ismayi* Shamshev & Grootaert (photo by Rebecca Le Grice).



FIGURES 5–7. Port Levy, New Zealand, type locality of *Chimerothalassius marshalli* sp. nov. (photos by Morgane Merien).



FIGURES 8–11. Known geographical distribution and collection localities of *Chimerothalassius* and *Eothalassius* from New Caledonia. 8. Distribution of *C. riparius* sp. nov., *C. sinclairi* sp. nov. and *Eothalassius* sp. 9–10. Rivère Bleue, type locality of *C. riparius* sp. nov. and *C. sinclairi* sp. nov. (photos by Brad Sinclair). 11. Plage de Poé, collection locality of *Eothalassius* sp. (photo by Brad Sinclair).

## Systematics

### *Chimerothalassius* Shamshev & Grootaert

*Chimerothalassius* Shamshev & Grootaert, 2002: 131. Type species: *Chimerothalassius ismayi* Shamshev & Grootaert, 2002, by original designation.

**Diagnosis.** The genus *Chimerothalassius* is distinguished from other parathalassine genera by the following characters: head with gena scarcely projected below eye (Figs 12, 14, 27), mouthparts directed ventrally with fleshy labellum (e.g., Figs 14, 27), palpus elongate and narrow (Figs 12, 14), abruptly capitate apically and narrow basally (Figs 19, 27, 28), or broadly subtriangular; thorax with prosternum fused to proepisternum forming precoxal bridge, scutellum with 1 pair of strong dorsally directed setae near apex (e.g., Fig. 14); legs with fore coxa lacking field of short stout spinose setae on anterior surface, tarsomere 5 of each leg with medial apical projection, although sometimes weakly developed; wing (Fig. 22) with  $R_1$  reaching costa before middle of wing, crossvein bm-m complete or incomplete, cell dm absent without veins  $M_2$  and dm-m, CuA rounded, cell cua convex apically, CuA+CuP absent or vestigial, anal lobe not developed; male terminalia with hypopygium small (Figs 26, 29, 30), right epandrial lamella usually with dorsally directed ventral process (Figs 17, 24, 32), cerci symmetrical (or nearly so) and moderately short, hypoproct projected (Figs 18, 25, 33); female abdomen with apical segments retracted into segment 5 (Fig. 21), terminalia with syntergite 9+10 undivided and bearing acanthoporous setae and cercus narrowly rounded apically with prominent apical or preapical seta, or syntergite 9+10 divided and bearing acanthoporous spines and cercus pointed apically without apical seta (Fig. 21).

**Remarks.** Species of *Chimerothalassius* are known from the Caribbean, Costa Rica, New Zealand (Figs 3–7) (Brooks & Cumming 2018) and now New Caledonia (Figs 8–10) (Cumming & Brooks 2019, as “Undescribed genus [New Caledonia]”). The genus is found on rocky, stony or sandy habitats of coastal beaches (Figs 4–7) and emerged rocks in rivers (Figs 9, 10) (Shamshev & Grootaert 2002; Brooks & Cumming 2018; Cumming & Brooks 2019).

### *Chimerothalassius ismayi* Shamshev & Grootaert

(Figs 3, 4, 12, 13)

*Chimerothalassius ismayi* Shamshev & Grootaert, 2002: 133. Type locality: South Birdlings Flat, New Zealand.

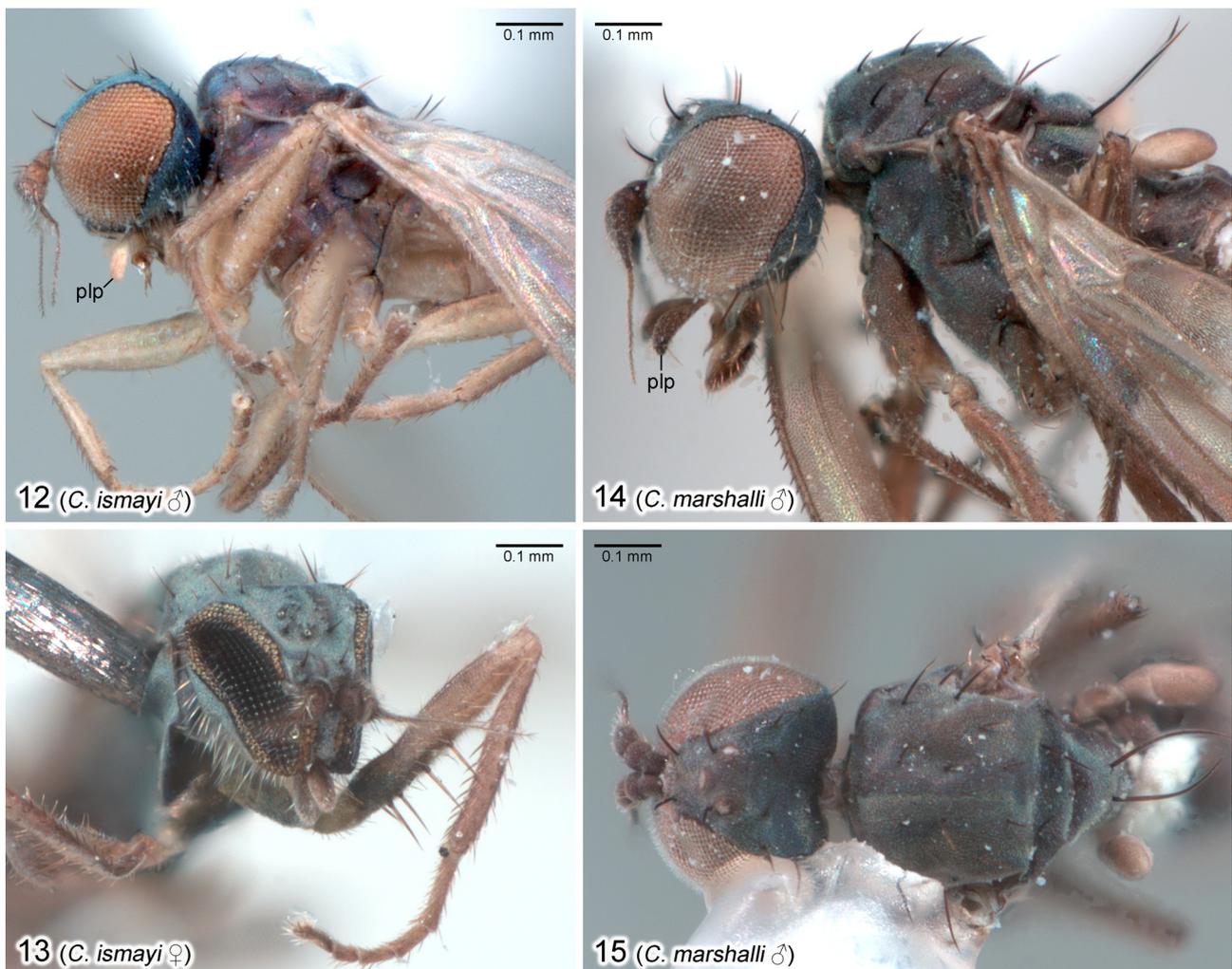
**Material Examined. NEW ZEALAND:** North Island, Waikato Region, Stony Bay, 36°30'42.3"S 175°25'24.4"E, steep short bay with river outlet, beach with mix of large pebbles & sand, 12.iv.2019, R.J. Le Grice (1♀, NZAC, photo); North Island, Wellington Region, Ôwhiro Bay, 41°20'40.8"S 174°45'32.2"E, 11.xii.2019, small steep enclosed bay with freshwater stream outlet, beach with mix of medium and small stones, R.J. Le Grice (1♀, NZAC, photo); South Island, Banks Pen., Port Levy [ca 43°39'S 172°48'E], 22–26.ii.1999, near sea streambed, pan traps, S.A. Marshall, debu00102042 (1♂, DEBU); South Island, NN [Nelson area code], Cable Bay, 41°09.6'S 173°24.9'E, 13.ii.1998, W.N. Mathis, USNM ENT 00085568 (1♀, USNM).

**Diagnosis.** Males of *C. ismayi* are distinguished from the other known Australasian species of the genus by their elongate yellow palpus (Fig. 12), grey body, yellow legs and several hypopygial features (Shamshev & Grootaert 2002, figs 18–22) including: left ventral epandrial process with tip weakly bent; left ventral surstylus relatively short with short setae; right ventral epandrial process straight; phallus with funnel-like tip; hypoproct simple and narrow. Females of *C. ismayi* (see “Remarks” below) are distinguished by the following features: fore femur with row of 4–5 long spine-like ventral setae on basal half (Fig. 13); palpus elongate and brownish with 3 long spine-like ventral setae (about 2X palpus width); terminalia with syntergite 9+10 undivided and bearing acanthoporous setae, cercus narrowly rounded apically with prominent preapical seta (Shamshev & Grootaert 2002, figs 23–25).

**Distribution.** *Chimerothalassius ismayi* is known only from New Zealand and has been collected at Ôwhiro Bay and Stony Bay on North Island, and Cable Bay, Port Levy and South Birdlings Flat [ca 43°49'S 172°42'E] on the northern part of South Island (Figs 3–7).

**Remarks.** The type series from South Birdlings Flat and the female specimens from Ôwhiro Bay and Stony Bay were swept or hand collected from stony beaches (e.g., Fig. 4) or beaches with mixed pebbles and sand, while the Port Levy male specimen was taken in a pan trap along a stream bed near the sea (Fig. 6). Shamshev & Grootaert

(2002) noted great sexual dimorphism in the chaetotaxy of the palpus and foreleg of *C. ismayi*, which is not seen in *C. runyoni* Brooks & Cumming from the Caribbean (Brooks & Cumming 2018), or *C. riparius* **sp. nov.** from New Caledonia, described below. Although we have not seen the type series of *C. ismayi* (8 males and 14 females from South Birdlings Flat, South Island deposited in the Royal Belgian Institute of Natural Sciences, Brussels, Belgium), we have examined a male collected from the nearby locality of Port Levy (DEBU), and females collected from Cable Bay (USNM), Ôwhiro Bay and Stony Bay (NZAC) that are virtually identical to the male holotype, male paratypes and female paratypes illustrated and described by Shamshev & Grootaert (2002, figs 1–26). Given the major differences in the chaetotaxy of the palpus and foreleg between the males and females of the type series (as well as the male and females we examined), we suspect that the female paratypes of *C. ismayi* and the females from Cable Bay, Ôwhiro Bay and Stony Bay actually belong to an undescribed species for which the male remains undiscovered. Even though the type specimens of *C. ismayi* were all collected from a single stony beach on the same day, multiple species of certain parathalassiine shoreline genera, such as *Amphithalassius* Ulrich, *Parathalassius* Mik, and *Plesiothalassius* Ulrich are known to co-inhabit single beaches (Ulrich 1991; Brooks & Cumming 2017). The same appears true for *Chimerothalassius*, at least at the Port Levy locality, where both *C. ismayi* and *C. marshalli* **sp. nov.** were taken during the same collecting event. The female specimens currently assigned to *C. ismayi* also do not appear to be conspecific with *C. marshalli* **sp. nov.** based on differences in chaetotaxy of the palpus, gena, thorax and foreleg.



**FIGURES 12–15.** *Chimerothalassius ismayi* Shamshev & Grootaert and *C. marshalli* **sp. nov.** **12.** Male of *C. ismayi* Shamshev & Grootaert from Port Levy, New Zealand (debu00102042), left lateral view. **13.** Female of *C. ismayi* Shamshev & Grootaert from Cable Bay, New Zealand (USNM ENT 00085568), head and foreleg. **14.** Male holotype of *C. marshalli* **sp. nov.**, left lateral view of head and thorax. **15.** Male holotype of *C. marshalli* **sp. nov.**, dorsal view of head and thorax. Abbreviation: plp—palpus.



small posterior ocellars; 1 pair of strong inclinate inner verticals (sometimes referred to as postocellars); 2 pairs of laterocline outer verticals; postoculars short and uniserial, lower setae fine and pale. Antenna entirely dark brown, inserted near middle of head in profile; scape short, funnel-shaped; pedicel subequal in length to scape, spheroidal with subapical cirlet of setulae; postpedicel 2X longer than wide, bulb-shaped with basal half round and distal half narrow, clothed in fine setulae; arista-like stylus 1.5X length of postpedicel, with minute hairs (right postpedicel of holotype deformed and elongated, with very short deformed stylus). Palpus dark brown, elongate and gradually enlarged apically, with preapical ventral seta. Proboscis dark brown, short. Gena narrow, with several strong dark setae surrounding oral cavity. **Thorax** (Figs 14, 15): Dark brown-grey pruinose, with bronze and weak greenish reflections especially dorsally, setae black. Mesoscutum moderately arched, prescutellar depression present. Proepisternum with minute seta. Postpronotal lobe with minute seta. Mesonotum longer than wide. Acrostichal setae absent; other thoracic setae well differentiated, each side of mesonotum with: 4 dorsocentrals, 1 presutural supra-alar (post-humeral), 1 postsutural supra-alar, 2 notopleurals, 1 postalar. Scutellum broadly subtriangular with 1 long, strong, dorsally projected seta per side. Mesopleuron bare. Halter pale brown. **Legs**: Evenly brown; with mostly short setae; tarsomeres 1–4 of all legs progressively shorter apically with tarsomere 5 slightly longer than 4; tarsomere 5 of all legs with dorsomedial finger-like process; tarsal claws and pulvilli normally developed on all legs (empodium not observable on available specimens). *Foreleg*: Coxa with short, sparse pale setae on anterior surface, apical margin with setae longer; femur subequal in length to tibia; tarsus slightly longer than tibia; tarsomere 1 subequal to combined length of tarsomeres 2–5. *Midleg*: Coxa with 4 pale setae; femur, tibia and tarsus subequal in length; tibia with relatively strong black preapical ventral seta; tarsomere 1 subequal to combined length of tarsomeres 2–5. *Hindleg*: Coxa with 2 pale setae on lateral surface; femur subequal in length to tibia; tarsus slightly shorter than tibia; tarsomere 1 slightly longer than tarsomere 2. **Wing**: Similar to *C. riparius* **sp. nov.** (see Fig. 22), except as follows:  $R_1$  terminating closer to middle of wing. **Abdomen**: Dark greyish-brown with small dark setae (weaker and pale on sternites); sternite 6 and segment 7 bare. Segments 5–7 narrowed and laterally compressed to form cavity on right side for hypopygium. Sternite 5 lacking pregenitalic process. Sternite 8 ovoid, with short setae; tergite 8 indistinct. *Hypopygium* (Figs 16–18): Concolorous with pregenitalic abdominal sclerites; lateroflexed to right; inverted with posterior end directed anteriorly; small and compact, about 1/4 length of abdomen; asymmetrical; foramen not formed. Epandrium divided into left and right lamellae. Left epandrial lamella (Fig. 16) partially overlapping left side of hypandrium, posterior margin trifurcate, ventrally fused with hypandrium but margin distinct; ventral epandrial process apparently articulated at base, long and slender with slight upward bend, tip hook-like and bent ventrally. Left surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which left postgonite lobe protrudes. Dorsal lobe of left surstylus with long apical seta, shorter dorsal seta and short preapical medial seta, lacking preniseta. Ventral lobe of left surstylus as long as dorsal lobe with several elongate and strong ventral setae. Right epandrial lamella (Fig. 17) partially overlapping right side of hypandrium, ventrally fused with hypandrium but margin distinct, similar in length to hypandrium, with prominent seta near middle of posterior margin; ventral epandrial process present, narrow, straight and dorsally projected with pointed tip. Right surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which right postgonite lobe protrudes. Dorsal lobe of right surstylus relatively short with medially projected apical seta, long preapical dorsal seta and shorter dorsal seta, lacking preniseta. Ventral lobe of right surstylus about 2X longer than dorsal lobe, with 1 ventral seta near base, 1 medial seta near middle and short apical seta. Hypandrium bowl-shaped, about as long as epandrium in lateral view. Left postgonite lobe large, apically bilobate, with thumb-like dorsomedial lobe and longer ventral lobe (Fig. 16). Right postgonite lobe shorter than left lobe, apically bilobate with ventral lobe as long as dorsomedial lobe and pointed medially (Fig. 17). Phallus tubular, J-shaped, projected dorsally, with pointed process near middle, with tip not expanded. Ejaculatory apodeme keel-like. Hypoproct simple and relatively narrow in dorsal view (Fig. 18), left and right sides symmetrical. Cercus subtriangular in dorsal view (Fig. 18) with projected apex bearing seta, with 3 prominent dorsal setae, left and right cercus symmetrical.

**Female.** Unknown.

**Distribution.** This new species is known only from the type locality of Port Levy and the nearby locality of Sumner Beach, near Christchurch, South Island, New Zealand (Figs 3, 5–7).

**Etymology.** This species is named in honour of our colleague, Dr. Stephen A. Marshall of the University of Guelph, who collected the holotype of this new species, as well as other valuable shoreline empidoiid specimens.

**Remarks.** The holotype male was collected in a pan trap along a stream bed near the sea (Figs 5–7) and the male from Sumner Beach was hand collected on a sandy exposed flat beach.

***Chimerothalassius riparius* sp. nov.**

(Figs 8–10, 19–25)

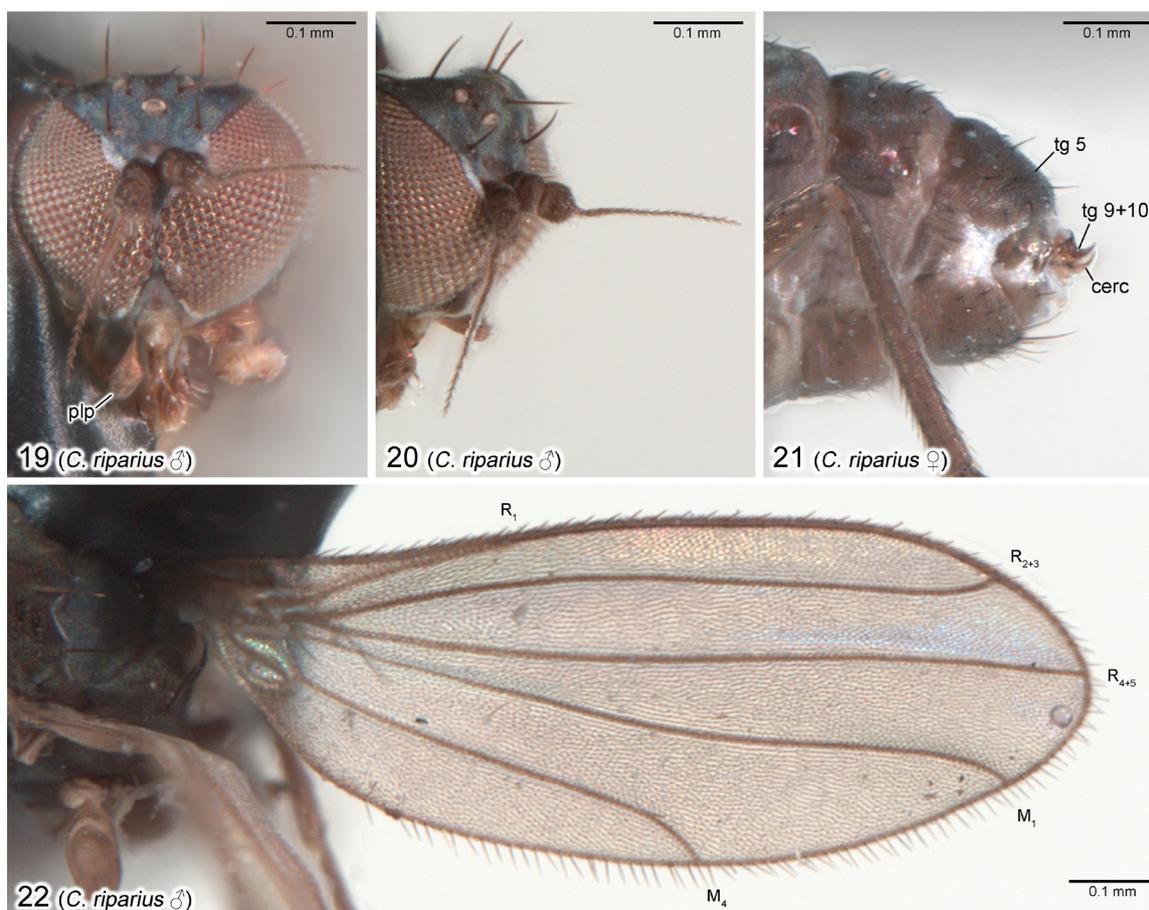
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**Type material.** **HOLOTYPE** ♂ labelled: “NEW CALEDONIA: Parc/ Rivève[sic] Bleue; R.Bleue/ nr. Refuge [ca 22°05'50"S 166°38'17"E], 20–21.vii./ 1995; B.J. Sinclair/ ex. yellow pans”; “CNC/ 1155797”; “HOLOTYPE/ *Chimerothalassius riparius*/ Brooks & Cumming [red label]” (MNHN). **PARATYPES: NEW CALEDONIA:** same data as holotype (1♀, CNC); same data as holotype except, CNC1155799 (1♀, MNHN).

**Diagnosis.** *Chimerothalassius riparius* sp. nov. is distinguished from the other known Australasian species of the genus by its brown, capitate palpus (Fig. 19). Males are further distinguished by several hypopygial features (Figs 23–25) including: left ventral epandrial process with tip weakly bent; left ventral surstylus long and narrow with short setae; right ventral epandrial process strongly upcurved; phallus with tip not expanded and lacking process near midlength; hypoproct bifid with narrow dorsal lobe and longer broader ventral lobe. Females are further characterized by their terminalia with acanthoporous spines and pointed, upturned cercus (Fig. 21).

**Description. Male** (Figs 19, 20, 22–25): Wing length 1.10 mm. **Head** (Figs 19, 20): Dark grey pruinose with green and bronze reflections dorsally; broader than thorax in dorsal view; ovoid in lateral view (higher than broad); about as broad as high in anterior view; larger setae black. Ocellar triangle conspicuous. Occiput concave on upper median part. Eyes covered with short ommatrichia; medial edge of eye with distinct emargination adjacent to antenna; ommatidia progressively smaller anterodorsally. Frons 2.3X broader than high, widening above. Face narrow, with eyes nearly contiguous, concolorous with rest of head. Clypeus not separated from face, small and triangular, weakly produced medially, brownish medially, grey laterally. Setae of head well differentiated: 1 pair of weakly inclinate fronto-orbitals about midway between base of antennae and ocellar triangle; 1 pair of laterocline anterior ocellars; 1 pair of small posterior ocellars; 1 pair of weakly inclinate inner verticals (sometimes referred to as postocellars); 2 pairs of laterocline outer verticals; postoculars short fine and pale, upper setae uniserial, lower setae scattered, lowermost seta longer. Antenna entirely dark brown, inserted slightly above middle of head in profile; scape short, funnel-shaped; pedicel subequal in length to scape, spheroidal with subapical circlet of setulae; postpedicel 1.1X longer than wide, bulb-shaped with very short narrow tip, clothed in fine setulae; arista-like stylus 3X length of postpedicel, with minute hairs. Palpus brown, narrow basally, abruptly capitate apically, with short hairs. Proboscis dark brown, short. Gena narrow. **Thorax:** Dark grey pruinose with green and bronze reflections especially dorsally, setae black. Mesoscutum moderately arched, prescutellar depression present. Proepisternum with minute seta. Postpronotal lobe with 2 minute setae. Mesonotum longer than wide. Acrostichal setae absent; other thoracic setae well differentiated, each side of mesonotum with: 4 dorsocentrals, 1 presutural supra-alar (posthumeral), 1 postsutural supra-alar, 2 notopleurals, 1 postalar. Scutellum broadly subtriangular with 1 long, strong, dorsally projected seta per side. Mesopleuron bare. Halter pale brown. **Legs:** Evenly brown, except apex of fore coxa yellow; with mostly short setae; tarsomeres 1–4 of all legs progressively shorter apically with tarsomere 5 slightly longer than 4; tarsomere 5 of all legs with very weakly developed dorsomedial process; tarsal claws, pulvilli and empodium normally developed on all legs. **Foreleg:** Coxa apparently with short, sparse pale setae on anterior surface, apical margin with setae longer; femur, tibia and tarsus subequal in length; tarsomere 1 subequal to combined length of tarsomeres 2–4. **Midleg:** Coxa with a few pale setae; femur subequal in length to tibia, with row of anteroventral setae (subequal in length to femur width); tarsus slightly longer than tibia; tarsomere 1 partially obscured from view. **Hindleg:** Coxa with 2 pale setae on lateral surface; femur, tibia and tarsus subequal in length; tarsomere 1 subequal to combined length of tarsomeres 2–3. **Wing** (Fig. 22): With brownish tinge, veins dark brown, about 2.5X longer than wide. Pterostigma absent, membrane entirely covered with minute microtrichia, alula absent. Costa circumambient. Extreme anterior base of costa apparently with 1 strong anterodorsal seta (broken in unique holotype) and at least 1 shorter proximal seta. Anterior section of costa (between base and  $R_{2+3}$ ) with double row of relatively widely spaced spine-like setae. Posterior section of costa (beyond  $R_{2+3}$ ) with setae finer, longer and more closely spaced. Radial and medial veins  $M_1$  and  $M_4$  complete and reaching wing margin,  $M_2$  and CuA+CuP (anal vein) absent, Sc faint.  $R_1$  short, terminating near basal 1/3 of wing. Base of Rs originating opposite humeral crossvein.  $R_{2+3}$  subparallel with  $R_1$  in basal part, subparallel with  $R_{4+5}$  in distal part.  $R_{4+5}$  weakly sinuous.  $M_1$  straight in basal half, sinuous in distal half and curving posteriorly to costa apically.  $M_4$  mostly straight with posterior curve to costa apically. CuA rounded. Short r-m crossvein present in basal portion of wing, distal to base of  $R_{4+5}$ . Crossvein bm-m incomplete. Cell dm, base of  $M_2$  and dm-m crossvein absent. Cells br, bm and cua in basal fourth of wing. Cell cua closed, ovoid. Anal lobe not developed. Calypter with fine setae. **Abdomen:** Brown with small dark setae (weaker

and pale on sternites); sternite 6 mainly bare, segment 7 bare. Segments 5–7 narrowed and laterally compressed to form cavity on right side for hypopygium. Sternite 5 lacking pregenitalic process. Sternite 8 ovoid, with short setae; tergite 8 indistinct. *Hypopygium* (Figs 23–25): Concolorous with pregenitalic abdominal sclerites; lateroflexed to right; inverted with posterior end directed anteriorly; small and compact, about 1/4 length of abdomen; asymmetrical; foramen not formed. Epandrium divided into left and right lamellae. Left epandrial lamella (Fig. 23) partially overlapping left side of hypandrium, posterior margin trifurcate, ventrally fused with hypandrium but margin distinct; ventral epandrial process apparently not articulated at base, long and slender, projected dorsally, tip with weakly ventral bend. Left surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which left postgonite lobe protrudes. Dorsal lobe of left surstylus with short apical seta, long preapical dorsal seta, and short dorsal seta, lacking preniseta. Ventral lobe of left surstylus longer than dorsal lobe, narrow with relatively short setae ventrally. Right epandrial lamella (Fig. 24) partially overlapping right side of hypandrium, ventrally fused with hypandrium but margin distinct, slightly longer than hypandrium, with prominent seta near middle of posterior margin; ventral epandrial process present, narrow and strongly upcurved. Right surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which right postgonite lobe protrudes. Dorsal lobe of right surstylus broad with short apical seta, long preapical dorsal seta and short dorsal seta, lacking preniseta. Ventral lobe of right surstylus about 3X longer than dorsal lobe, with 1 ventral seta near middle and 1 preapical medial seta. Hypandrium bowl-shaped, slightly shorter than epandrium in lateral view. Left postgonite lobe large, deeply bilobate, with thumb-like dorsomedial lobe and longer ventral lobe (Fig. 23). Right postgonite lobe shorter than left lobe, apically bilobate with ventral lobe about as long as dorsomedial lobe (Fig. 24). Phallus tubular, J-shaped, projected dorsally, with flange-like ventral projection near base, with tip not expanded. Ejaculatory apodeme keel-like. Hypoproct bifid with narrow dorsal lobe and longer broader ventral lobe, left and right sides symmetrical (Fig. 25). Cercus subtriangular in dorsal view (Fig. 25), with small preapical seta and 2 prominent dorsal setae, left and right cercus symmetrical.



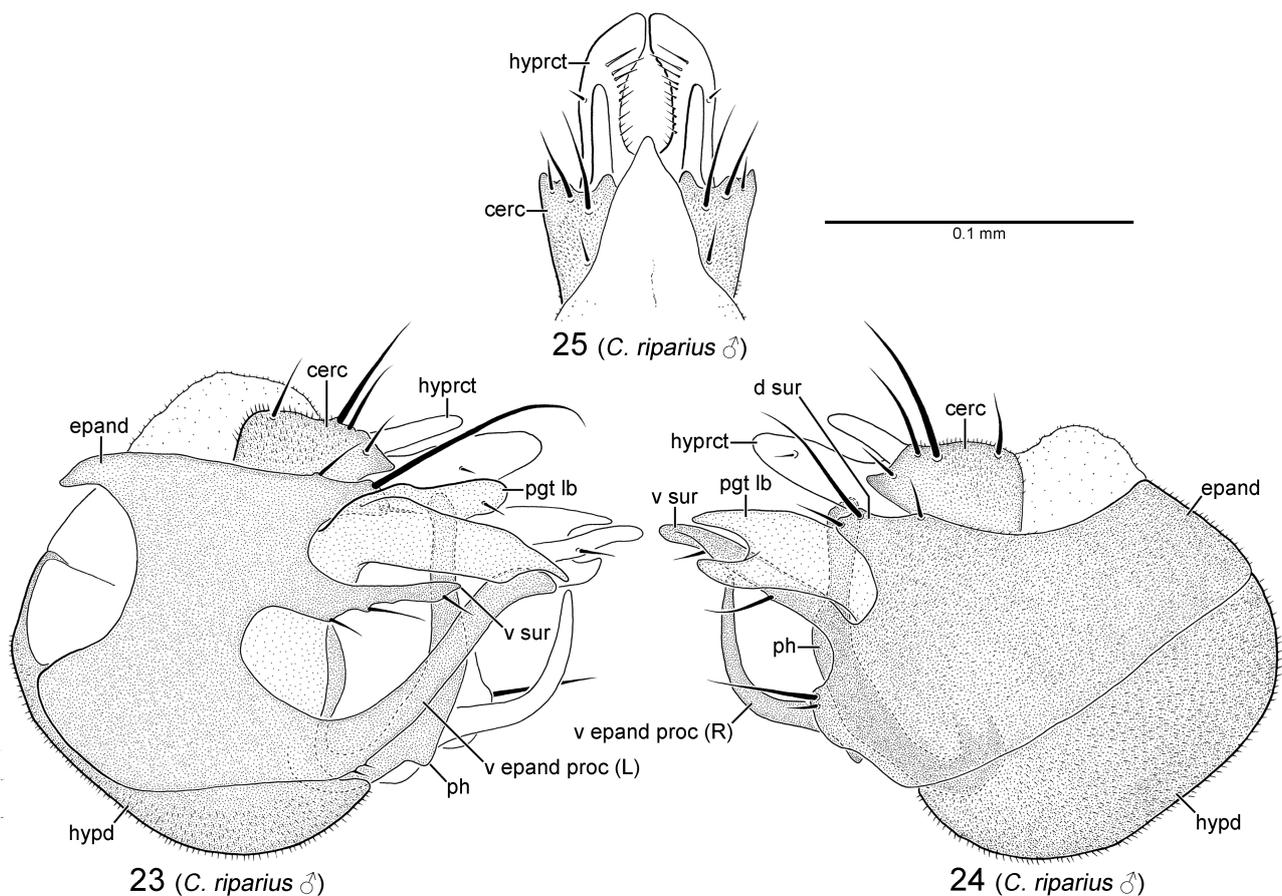
**FIGURES 19–22.** *Chimerothalassius riparius* sp. nov. **19.** Head of male holotype (CNC1155797), anterior view. **20.** Head of male holotype, showing left antenna in medial view. **21.** Abdomen of female paratype, lateral view. **22.** Right wing of male holotype, dorsal view. Abbreviations: cerc—cercus;  $M_1$ ,  $M_4$ —medial veins; plp—palpus;  $R_1$ ,  $R_{2+3}$ ,  $R_{4+5}$ —radial veins; tg—tergite.

**Female:** Body length 1.30 mm, wing length 1.40 mm. Similar to male except as follows: **Abdomen** (Fig. 21): Tapering posteriorly, apical segments retracted into segment 5. *Terminalia* with tergite 8 medially divided, narrowly fused with sternite 8 anterolaterally; syntergite 9+10 medially divided with 4 acanthoporous spines on each side; cercus with narrow, upturned and pointed tip, with short ventral setulae; spermathecal duct an unsclerotized tube with broad ridged sperm pump in basal part (terminal part lost in dissected female).

**Distribution.** This new species is known only from the type locality along Rivère Bleue in the Yaté Commune of the South Province of New Caledonia (Figs 8–10).

**Etymology.** The specific epithet refers to the riparian habit of the new species (Figs 9, 10).

**Remarks.** Formerly, Cumming & Brooks (2019) included this exemplar species (*i.e.*, “New Caledonia sp.”) as a member of “Undescribed genus [New Caledonia]” in their phylogenetic analysis of the Parathalassiinae, because presence of female terminalia with acanthoporous spines was not considered typical of *Chimerothalassius* at that time. The type series of *C. riparius* **sp. nov.** was collected together with the holotype of *C. sinclairi* **sp. nov.** in yellow pan traps placed along the margin of Rivère Bleue.



**FIGURES 23–25.** Hypopygium of *Chimerothalassius riparius* **sp. nov.**, holotype (CNC1155797). **23.** Hypopygium, left lateral view. **24.** Hypopygium, right lateral view. **25.** Cerci and hypoproct, dorsal view. Abbreviations: cerc—cercus; d sur—dorsal lobe of surstylus; epand—epandrium; hypd—hypandrium; hyprct—hypoproct; (L)—left; pgt lb—postgonite lobe; ph—phallus; (R)—right; v epand proc—ventral epandrial process; v sur—ventral lobe of surstylus.

***Chimerothalassius sinclairi* sp. nov.**

(Figs 8–10, 26–33)

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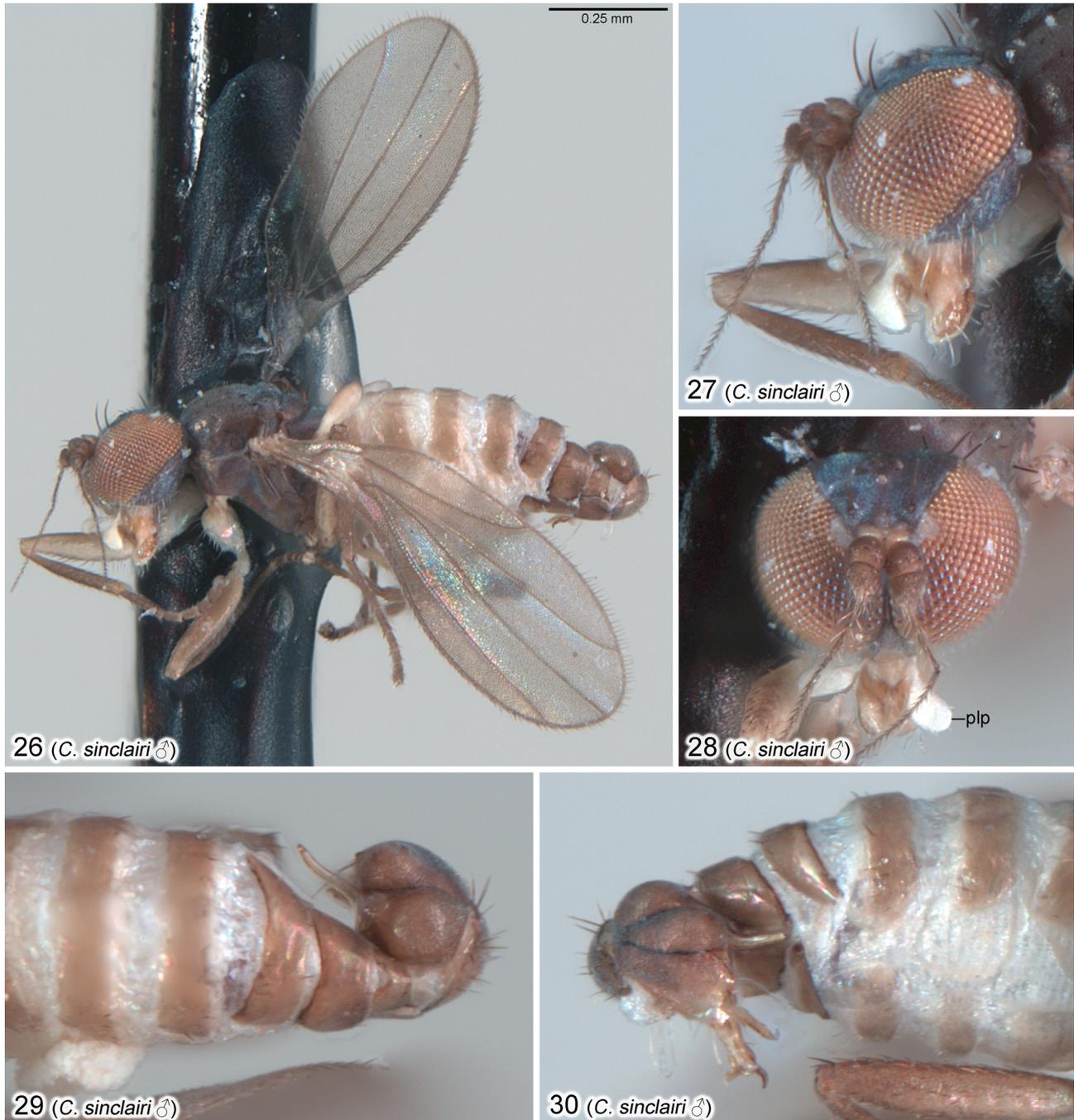
**Type material.** **HOLOTYPE** ♂ labelled: “NEW CALEDONIA: Parc/ Rivère[sic] Bleue; R.Bleue/ nr. refuge [ca 22°05'50”S 166°38'17”E], 20–21.vii./ 1995; B.J. Sinclair/ ex. yellow pans”; “CNC/ 1155798”; “HOLOTYPE/ *Chimerothalassius sinclairi*/ Brooks & Cumming [red label]” (MNHN).

**Diagnosis.** Known only from a single male, *C. sinclairi* **sp. nov.** is distinguished from the other known Australasian species of the genus by its white capitulate palpus (Figs 27, 28), and several hypopygial features (Figs 29–33) including: left ventral epandrial process with narrowed beak-like tip; left ventral surstylus short with short seta; right epandrial lamella with large elongate seta on posterior margin; right ventral epandrial process sinuous; phallus sinuous and narrow; cercus with long setae; hypoproct simple and broad.

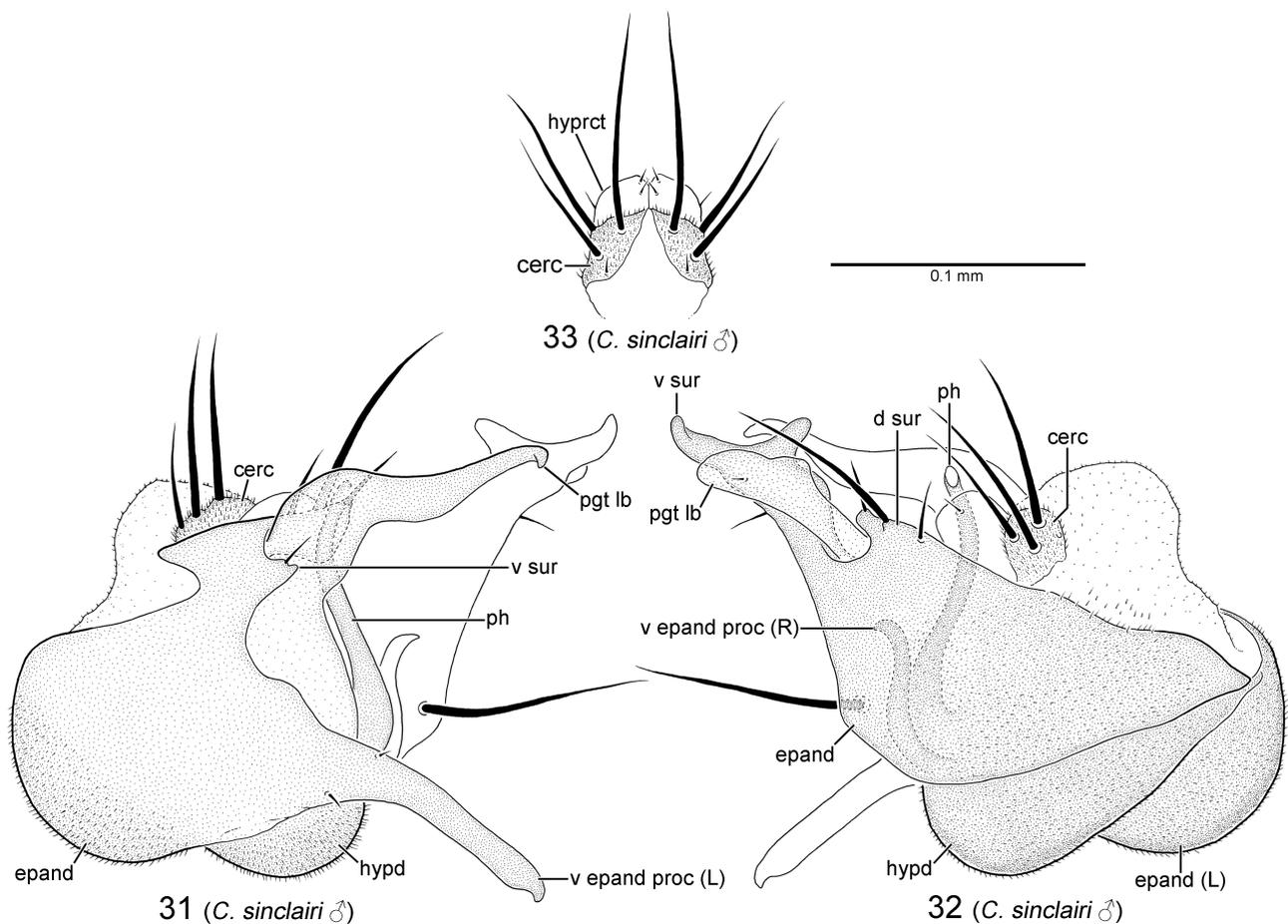
**Description. Male** (Figs 26–33): Body length 1.20 mm, wing length approximately 1 mm. **Head** (Figs 27, 28): Silvery grey pruinose with bluish reflections; broader than thorax in dorsal view; round in lateral view (about as broad as high); broader than high in anterior view; larger setae black. Ocellar triangle conspicuous. Occiput weakly concave on upper median part. Eyes covered with short ommatrichia; medial edge of eye with distinct emargination adjacent to antenna; ommatidia progressively smaller anterodorsally. Frons 3X broader than high, widening above. Face narrow, with eyes nearly contiguous. Face and clypeus concolorous with rest of head. Clypeus not separated from face, small and triangular, not produced. Setae of head well differentiated: 1 pair of weakly reclinate fronto-orbitals close to base of antennae; 1 pair of small anterior ocellars; 1 pair of small posterior ocellars; 1 pair of inclinate inner verticals (sometimes referred to as postocellars); 2 pairs of laterocline outer verticals; postoculars short fine and pale, upper few setae uniserial, lower setae scattered and longer around oral cavity. Antenna entirely pale brown, inserted slightly above middle of head in profile; scape short, funnel-shaped; pedicel slightly longer than scape, spheroidal with subapical circlet of setulae; postpedicel 2.7X longer than wide, bulb-shaped with basal 1/3 round and distal 2/3 narrow, clothed in fine setulae, longer on narrow distal part; arista-like stylus 1.6X length of postpedicel, with minute hairs. Palpus bright white, narrow basally, abruptly capitulate apically. Proboscis pale brown, short. Gena narrow. **Thorax:** Brown with light silver-grey pruinosity, with green and bronze reflections especially dorsally, setae black. Mesoscutum weakly arched, prescutellar depression present. Proepisternum with tiny upper and tiny lower seta. Postpronotal lobe with 1 minute seta. Mesonotum longer than wide. Acrostichal setae short, uniserial and irregular; other thoracic setae mostly short and weak, each side of mesonotum with: approximately 7 dorsocentrals (anterior setae similar to acrostichals, posterior seta stronger), apparently 2 short presutural supra-alars (posthumeral), postsutural supra-alar broken or absent, 2 strong notopleurals, postalar apparently broken. Scutellum broadly subtriangular with 1 long, strong, dorsally projected seta per side. Mesopleuron bare. Halter whitish. **Legs** (Fig. 26): Mostly pale brown except, fore coxa pale yellow, femora partially to mostly pale yellow ventrally; with mostly short pale setae; tarsomeres 1–4 of all legs progressively shorter apically with tarsomere 5 slightly longer than 4; tarsomere 5 of all legs with dorsomedial finger-like process; tarsal claws small, pulvilli and empodium normally developed on all legs. *Foreleg:* Coxa with fine setae on anterior surface, several basal setae longer, apical margin with setae longer; femur slightly longer than tibia and somewhat enlarged, with series of several small erect setae basally and series of stronger posteroventral setae along distal half; tarsus subequal in length to tibia; tarsomere 1 subequal to combined length of tarsomeres 2–4. *Midleg:* Coxa obscured from view; femur, tibia and tarsus subequal in length; tarsomere 1 subequal to combined length of tarsomeres 2–4. *Hindleg:* Coxa with 1 visible pale seta on lateral surface; femur slightly longer than tibia; tarsus subequal in length to tibia; tarsomere 1 subequal to combined length of tarsomeres 2–3. **Wing** (Fig. 26): Similar to *C. riparius* **sp. nov.** (see Fig. 22), except as follows: Extreme anterior base of costa bare. Base of wing proximal to tip of cell *cua* quite narrow. Calypter without setae. **Abdomen** (Figs 29, 30): Pale brown with small brownish setae (weaker on sternites); sternite 6 and segment 7 bare. Segments 5–7 narrowed and laterally compressed to form cavity on right side for hypopygium. Sternite 5 lacking pregenitalic process. Sternite 8 ovoid, with short setae; tergite 8 indistinct. *Hypopygium* (Figs 29–33): Concolorous with pregenitalic abdominal sclerites; lateroflexed to right; inverted with posterior end directed anteriorly; small and compact, about 1/4 length of abdomen; asymmetrical; foramen not formed. Epandrium divided into left and right lamellae. Left epandrial lamella (Fig. 31) largely overlapping left side of hypandrium, with broadly projecting and rounded anterior margin, posterior margin trifurcate, ventrally fused with hypandrium but margin distinct; ventral epandrial process apparently not articulated at base, long and slender, bent ventrally, with narrowed beak-like tip. Left surstylus bilobed, dorsal and ventral lobes separated by shallow U-shaped cleft through which left postgonite lobe protrudes. Dorsal lobe of left surstylus broadened mid-ventrally with short apical seta, long preapical dorsal seta and short dorsal seta, lacking prensiseta. Ventral lobe of left surstylus short with short preapical seta. Right epandrial lamella (Fig. 32) elongate and subtriangular, partially overlapping right side of hypandrium, ventrally fused with hypandrium but margin distinct, longer than hypandrium, with large elongate seta near middle of posterior margin; ventral epandrial process present, sinuous and projecting dorsally, hidden behind right epandrial lamella. Right surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which right postgonite lobe

protrudes. Dorsal lobe of right surstylus short with short apical seta, long preapical dorsal seta and short dorsal seta, lacking prensiseta. Ventral lobe of right surstylus elongate and broadly bifurcate apically, with 1 ventral seta near middle and 1 small medial seta near bifurcation. Hypandrium relatively small and narrowing anteriorly, shorter than epandrium in lateral view. Left postgonite lobe large and long, broad basally, gradually tapered to narrow apex (Fig. 31). Right postgonite lobe shorter than left lobe, with broad rounded apex (Fig. 32). Phallus tubular, sinuous and narrow, bent upwards. Ejaculatory apodeme apparently keel-like. Hypoproct simple and broad in dorsal view (Fig. 33) left and right sides symmetrical. Cercus subrectangular in dorsal view (Fig. 33), with 3 long setae, left and right cercus symmetrical.

**Female.** Unknown.



**FIGURES 26–30.** Male holotype of *Chimerothalassius sinclairi* sp. nov. (CNC1155798). **26.** Habitus. **27.** Head, lateral view. **28.** Head, anterior view. **29.** Abdomen and terminalia, dorsal view. **30.** Abdomen and terminalia, right lateral view. Photos taken prior to removal, dissection and illustration of terminalia. Abbreviation: plp—palpus.



**FIGURES 31–33.** Hypopygium of *Chimerothalassius sinclairi* sp. nov., holotype (CNC1155798). **31.** Hypopygium, left lateral view. **32.** Hypopygium, right lateral view. **33.** Cerci and hypoproct, dorsal view. Abbreviations: cerc—cercus; d sur—dorsal lobe of surstylus; epand—epandrium; hypd—hypandrium; hypprt—hypoproct; (L)—left; pgt lb—postgonite lobe; ph—phallus; (R)—right; v epand proc—ventral epandrial process; v sur—ventral lobe of surstylus.

**Distribution.** This new species is known only from the type locality along Rivère Bleue in the Yaté Commune of the South Province of New Caledonia (Figs 8–10).

**Etymology.** This species is named in honour of our colleague, Dr. Bradley J. Sinclair who collected the unique holotype along the margin of Rivère Bleue (Figs 9, 10) using yellow pan traps. Brad’s collecting efforts in Australia and New Caledonia also produced the only known specimens of *Chimerothalassius riparius* sp. nov. and *Microphorella viticula* sp. nov.

**Remarks.** The holotype of *C. sinclairi* sp. nov. was collected together with the type series of *C. riparius* sp. nov. in yellow pan traps placed along the margin of Rivère Bleue.

### *Chimerothalassius* sp. 1

(Fig. 3)

**Material examined.** **NEW ZEALAND:** North Island, Auckland Region, Takapuna Beach, 36°47′06.9″S 174°46′31.0″E, 3.iv.2019, R.J. Le Grice (1♀, NZAC, photo).

**Remarks.** This single female is probably a specimen of *C. marshalli* sp. nov., based on its postpedicel shape, dark brown palpus, strong dark genal setae, strong mesonotal setae and brownish legs, but the discovery of a male from Takapuna Beach is required to confirm its identity.

## “*Chimerothalassius*” sp. 2

(Fig. 3)

**Material.** NEW ZEALAND: Three Kings Is., [Great Island,] Castaway camp, Nov. 1970, G. Kuschal, intertidal zone (1♀, NZAC).

**Remarks.** While sorting a loan of NZAC Empidoidea in the early 1990s, Brad Sinclair (pers. comm., 2022) noted examining a single female parathalassiine specimen, with wing cell dm absent, from the Three Kings Islands (Manawatāwhi). The specimen, provisionally determined as *Microphorella*, was returned in 1995, but could not be located in the Diptera holdings of the NZAC (D. Ward, pers. comm., 2022). Although examination of the specimen will be required for precise identification, we strongly suspect it belongs to *Chimerothalassius*, in which case it would represent the most northerly record of the genus in New Zealand (Fig. 3).

## *Eothalassius* Shamshev & Grootaert

*Eothalassius* Shamshev & Grootaert, 2005: 108. Type species: *Eothalassius platypalpus* Shamshev & Grootaert, by original designation.

**Diagnosis.** The genus *Eothalassius* is distinguished from other parathalassiine genera by the following characters: head with face narrow (less than or about width of anterior ocellus, Fig. 35), gena scarcely projected below eye, antenna with arista-like stylus lengthened (at least 5X length of postpedicel, Fig. 35), mouthparts directed ventrally with fleshy labellum, palpus broad and flattened (particularly in males) with apex slightly pointed to widely rounded apically (Fig. 35); thorax with prosternum fused to proepisternum forming precoxal bridge, scutellum with 1 pair of strong setae near apex; wing with  $R_1$  short reaching costa before middle of wing (or before base of  $M_2$ ), crossvein bm-m incomplete, cell dm present (Fig. 36) or if absent without vein dm-m, CuA rounded, cell cua convex apically, anal lobe not developed; male terminalia with right epandrial lamella lacking ventral process, hypoproct projected as pair of non-setose asymmetrical lobes, cerci broad and asymmetrical; female abdomen with apical segments retracted into segment 6 (Fig. 34), terminalia (Figs 37, 38) with syntergite 9+10 divided and bearing acanthoporous setae, cercus slender and terminating with long seta.

**Remarks.** Species of *Eothalassius* are known from the Mediterranean coast of Turkey, Cyprus and Malta (*E. merzi* (Gatt)), the Pacific coast of Costa Rica (*E. borkenti* Cumming & Brooks), the coasts of Southeast Asia and Papua New Guinea (*E. gracilis* Shamshev & Grootaert and *E. platypalpus* Shamshev & Grootaert) and now the coast of New Caledonia (*Eothalassius* sp.) (Cumming & Brooks 2019). Shamshev & Grootaert (2005) indicate that the type series of *Eothalassius gracilis* was collected from littoral and supralittoral zones of sandy coastal beaches, and *E. platypalpus* was collected along creeks exiting onto sandy coastal beaches. *Eothalassius merzi* was also collected on sandy coastal beaches (Gatt 2003), whereas *E. borkenti* was found on rocky seashores (Brooks & Cumming 2011).

## *Eothalassius* sp.

(Figs 8, 11, 34–38)

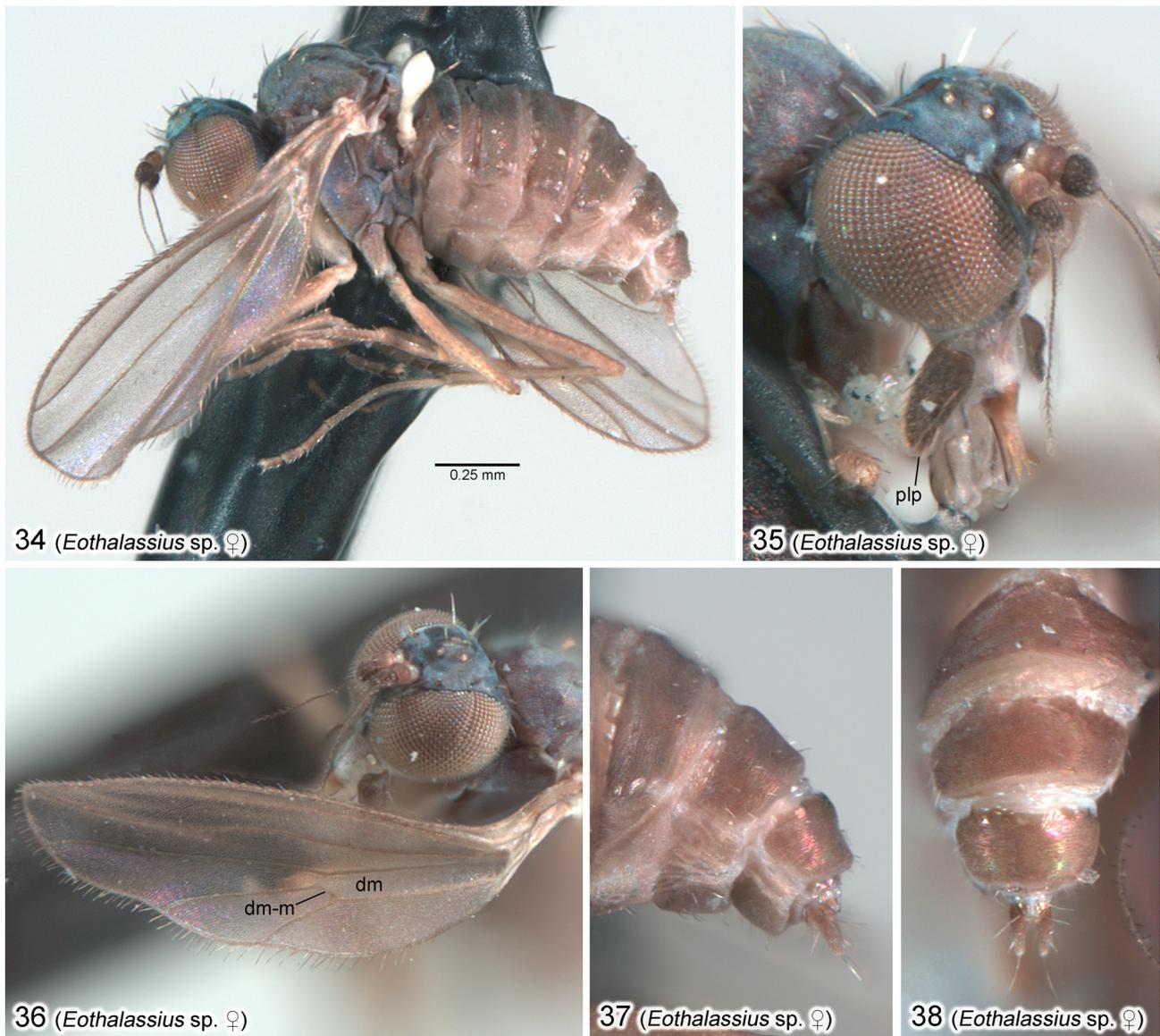
**Material Examined.** NEW CALEDONIA: Plage de Poé [*ca* 21°36'48"S 165°24'02"E], 15.5 km W Bourail, 15.vii.1995, beach/shrubs, B.J. Sinclair (1♀, CNC).

**Diagnosis.** Body length: 1.51 mm. This New Caledonian species of *Eothalassius*, known only from a single female specimen, has wing cell dm and crossvein dm-m present (Fig. 36), unlike *E. platypalpus* and *E. merzi*, but not *E. borkenti* and *E. gracilis*, and lacks spiny setae on the basal portion of the costa (Fig. 36) that are present in *E. borkenti*. The New Caledonian female is very similar to the relatively widespread *E. gracilis*, which is known from Thailand, Indonesia and Papua New Guinea, but has a dark brown postpedicel (yellow in *E. gracilis*) and dark brown palpus (brownish-yellow in *E. gracilis*) (Fig. 35).

**Distribution.** This potentially undescribed species is currently known only from the coast of the Bourail Commune in the South Province of New Caledonia (Figs 8, 11).

**Remarks.** The unique female specimen of this apparently undescribed species represents the first record of

the genus in New Caledonia. It was collected from a sandy coastal beach (Fig. 11), similar to the habitat of other *Eothalassius* species, except *E. borkenti*, which inhabits rocky seashores. Shamshev & Grootaert (2003) noted some colour variation among the type series of *E. gracilis* (with some paler specimens), so the discovery of a male of the New Caledonian *Eothalassius* is required to confirm its status as a separate species and not a darker form of *E. gracilis*.



**FIGURES 34–38.** Female of *Eothalassius* sp. from Plage de Poé, New Caledonia. **34.** Habitus. **35.** Head, oblique view. **36.** Head and left wing. **37.** Abdomen and terminalia, lateral view. **38.** Abdomen and terminalia, dorsal view. Abbreviations: dm—discal medial cell; dm-m—discal medial crossvein; plp—palpus.

### *Microphorella* Becker

*Microphorella* Becker, 1909: 28. Type species: *Microphorus praecox* Loew, 1864, by original designation.

**Diagnosis.** Australasian *Microphorella* can be distinguished from other parathalassiines by the following suite of characters: head with face broad (about width of combined antennal bases or wider) (Fig. 41), gena weakly developed to moderately broad, antenna with arista-like stylus not lengthened (about 2X length of postpedicel) (Figs 40, 51), mouthparts directed ventrally with fleshy labellum, palpus narrowly ovate (Figs 40, 41, 51), or broadly clavate and flattened; thorax with prosternum fused to proepisternum forming precoxal bridge, scutellum with 1 pair of

strong setae near apex; wing with vein  $M_2$  and cell dm present (Fig. 52), vein  $R_1$  reaching costa beyond or (rarely) just before base of  $M_2$ , cell cua convex apically, vein CuA+CuP short to absent, anal lobe barely developed; male terminalia with right epandrial lamella lacking ventral process, cerci including hypoproct nearly symmetrical and pointed (Figs 44–46, 48); female abdomen with apical segments retracted into segment 6, syntergite 9+10 divided and bearing acanthoporous setae or acanthoporous spines, cercus narrowly rounded or pointed apically with or without apical setae.

**Remarks.** *Microphorella* as currently recognized, is made up of at least 12 species groups worldwide (Cumming & Brooks 2019, 2022). Three of these species groups are known from the Australasian Region and are not closely related (Cumming & Brooks 2019). The three separate groups comprise the *M. malaysiana* species group with three Southeast Asian species plus *M. papuana* Shamshev & Grootaert from Irian Jaya, New Guinea (Shamshev & Grootaert 2004), the *M. iota* species group, with a single species from eastern Australia, and a separate Australian species group that includes two new species described below. Worldwide the genus is known from various riparian and coastal habitats (Cumming & Brooks 2019), with the New Guinean *M. papuana* restricted to coastal beaches and the Australian species collected along creeks and streams.

### *Microphorella bungle* sp. nov.

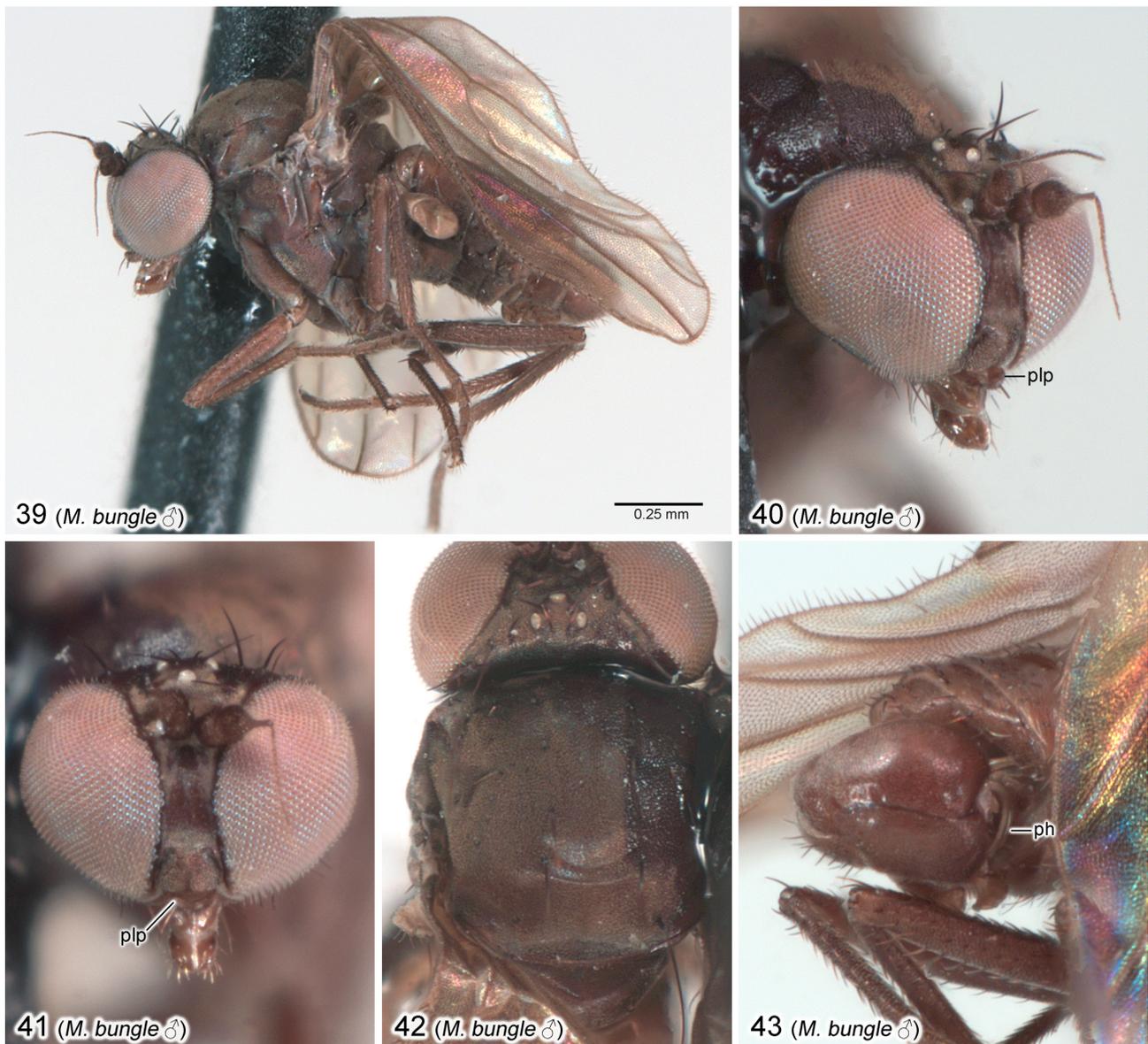
(Figs 1, 39–46)

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**Type material.** **HOLOTYPE** ♂ labelled: “AUSTRALIA: New South/ Wales: Warrumbungle NP/ Buckley’s Crk [ca 31.3083°S 149.0009°E], 12–17.xii.1995,/ M. Sharkey, CNC707570”; “HOLOTYPE/ *Microphorella bungle*/ Brooks & Cumming [red label]” (ANIC). **PARATYPES: AUSTRALIA:** same data as holotype except, CNC707594, CNC707622, CNC707624, CNC707628, CNC707690, CNC707798, (6♂, ANIC); CNC707472, CNC707574, CNC707849 (3♂, CNC)

**Diagnosis.** Males of *M. bungle* sp. nov. are distinguished from the other known Australasian *Microphorella* by the following combination of features: body and legs dark brown with black setation (Fig. 39); palpus dark and narrowly ovate (Fig. 40); hypopygium (Figs 43–45) with phallus relatively short and slender with tip straight and tubular; hypandrium relatively small, slightly wider than epandrial lamellae in lateral view.

**Description. Male** (Figs 39–46): Body length 1.50–1.88 mm, wing length 1.42–1.72 mm. **Head** (Figs 40, 41): Dark brown pruinose; about as broad as thorax in dorsal view; ovoid in lateral view (higher than broad); broader than high in anterior view; setae black. Ocellar triangle conspicuous. Occiput weakly concave on upper median part. Eyes covered with short ommatrichia; medial edge of eye lacking distinct emargination adjacent to antenna; ommatidia of uniform size. Frons over 2X broader than high, widening above. Face broad, about width of combined antennal bases. Face and clypeus concolorous, dark brown. Clypeus not separated from face, slightly broader than high, weakly produced medially. Setae of head well differentiated: 1 pair of inclinate fronto-orbitals well-separated from base of antennae; 1 pair of lateroconate anterior ocellars; 1 pair of small posterior ocellars; 1 pair of strong inclinate inner verticals (sometimes referred to as postocellars); 2 pairs of lateroconate outer verticals; postocular setae short and uniserial. Antenna entirely dark brown, inserted above middle of head in profile; scape short, funnel-shaped; pedicel subequal in length to scape, spheroidal with subapical circlet of setulae; postpedicel nearly 2X longer than wide, bulb-shaped with basal 3/4 round and distal 1/4 narrow, clothed in fine setulae; arista-like stylus slightly greater than 2X length of postpedicel, with minute hairs. Palpus dark brown, relatively small, narrowly ovate, about 2X longer than wide, with 1 long preapical seta. Proboscis brown, short, projecting ventrally. Gena narrow. **Thorax** (Fig. 42): Dark brown pruinose, setae black. Mesoscutum moderately arched, prescutellar depression present. Proepisternum bare. Postpronotal lobe with minute seta. Mesonotum about as long as wide. Acrostichal setae absent; other thoracic setae well differentiated, each side of mesonotum with: 5 dorsocentrals (posterior seta stronger), 1 presutural supra-alar (posthumeral), 1 weaker postsutural supra-alar near suture (and a few similar sized setae anteriorly), 2 notopleurals, 1 postalar. Scutellum broadly subtriangular with 1 long, strong, posteriorly projected seta per side. Mesopleuron bare. Halter pale brown. **Legs** (Fig. 39): Dark brown; with mostly short dark setae; tarsomeres 1–4 of all legs progressively shorter apically with tarsomere 5 slightly longer than 4; tarsal claws, pulvilli and empodium normally developed on all legs. **Foreleg:** Coxa with fine setae on anterior surface, apical margin with setae longer; femur, tibia and tarsus subequal in length; tarsomere 1 slightly shorter than combined length of tarsomeres 2–5.

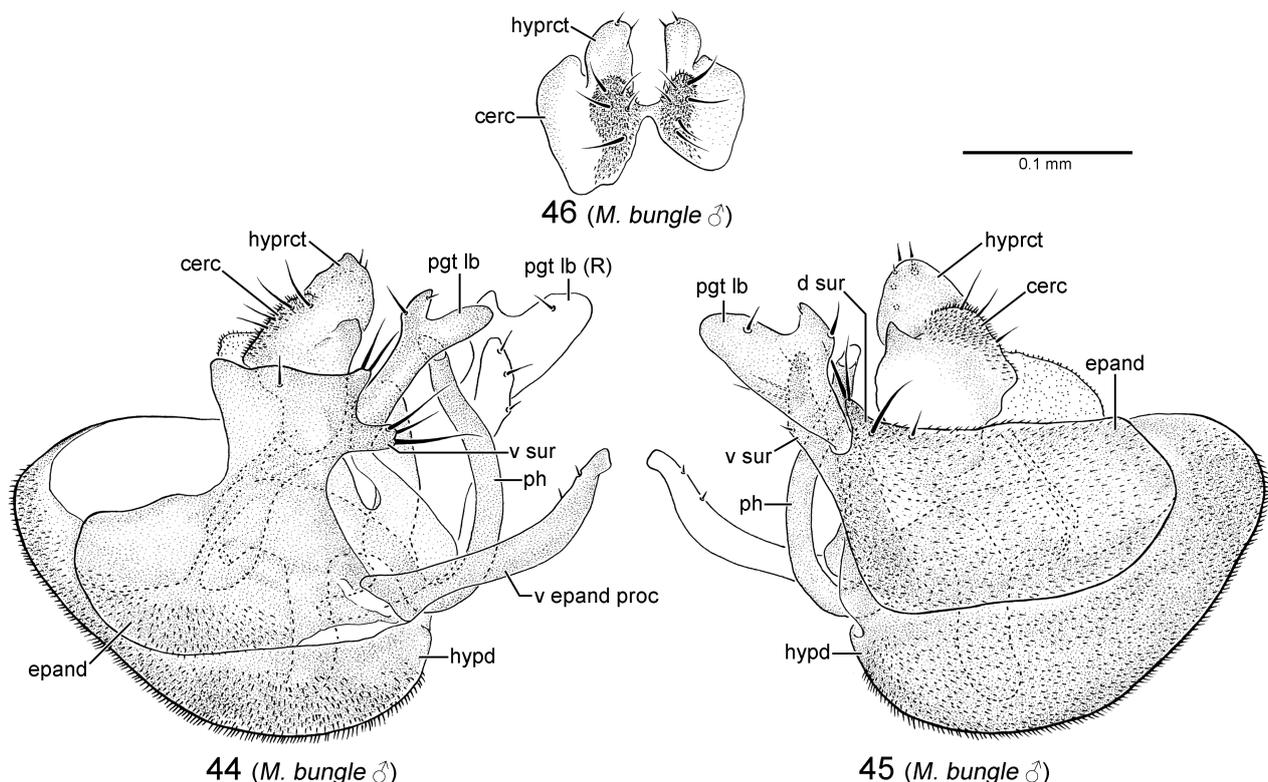


**FIGURES 39–43.** Male holotype of *Microphorella bungle* sp. nov. (CNC707570). **39.** Habitus. **40.** Head, oblique view. **41.** Head, anterior view. **42.** Thorax, dorsal view. **43.** Abdomen and terminalia, right lateral view. Abbreviations: ph—phallus; plp—palpus.

*Midleg*: Coxa with lateral seta and several similar setae on apical margin; femur, tibia and tarsus subequal in length; tibia with relatively strong black preapical ventral seta; tarsomere 1 subequal to combined length of tarsomeres 2–5. *Hindleg*: Coxa with 2 setae on lateral surface and several similar setae on apical margin; femur subequal in length to tibia; tarsus slightly shorter than tibia; tarsomere 1 slightly shorter than combined length of tarsomeres 2–3. **Wing** (similar to Fig. 52): With brownish tinge, veins dark brown, about 2.5X longer than wide. Pterostigma absent, membrane entirely covered with minute microtrichia, alula absent. Costa circumambient. Extreme anterior base of costa with strong anterodorsal seta and a few shorter proximal setae. Anterior section of costa (between base and  $R_{2+3}$ ) with double row of spine-like setae. Posterior section of costa (beyond  $R_{2+3}$ ) with setae finer and slightly longer. Radial and medial veins complete and reaching wing margin, CuA+CuP (anal vein) faint and short, Sc faint apically.  $R_1$  terminating near midpoint of wing, just beyond  $M_2$ . Base of Rs originating opposite humeral crossvein.  $R_{2+3}$  subparallel with  $R_1$  in basal 1/3, straight and subparallel with  $R_{4+5}$  in distal part.  $R_{4+5}$  nearly straight.  $M_1$  straight.  $M_2$  and  $M_4$  slightly divergent beyond cell dm. Costal section between  $M_1$  and  $M_2$  longer than costal section between  $M_2$  and  $M_4$ . CuA rounded. Short faint r-m crossvein present in basal portion of wing, distal to base of  $R_{4+5}$ . Crossvein bm-m incomplete. Cell dm present, closed by base of  $M_2$  and dm-m crossvein, cell extending nearly to

middle of wing. Cells br, bm and cua in basal fourth of wing. Cell cua closed, ovoid, partially infusate. Anal lobe not developed. Calypter with fine setae. **Abdomen** (Fig. 43): Dark brown with weak black setae; segment 7 bare. Segments 6–7 narrowed and laterally compressed to form cavity on right side for hypopygium. Sternite 5 lacking pregenitalic process. Sternite 8 round, with short setae; tergite 8 indistinct. **Hypopygium** (Figs 43–46): Concolorous with abdomen; lateroflexed to right; inverted with posterior end directed anteriorly; small and compact, about 1/4 length of abdomen; asymmetrical; foramen not formed. Epandrium divided into left and right lamellae. Left epandrial lamella (Fig. 44) partially overlapping left side of hypandrium, posterior margin trifurcate, ventrally fused with hypandrium but margin distinct; ventral epandrial process apparently articulated at base, long and slender with slight upward bend beyond middle, tip flattened. Left surstylus bilobed, dorsal and ventral lobes separated by shallow U-shaped cleft through which left postgonite lobe protrudes. Dorsal lobe of left surstylus short with 2 apical setae, lacking prensiseta. Ventral lobe of left surstylus slightly longer than dorsal lobe with 3 apical setae. Right epandrial lamella (Fig. 45) partially overlapping right side of hypandrium, ventrally fused with hypandrium but margin distinct, shorter than hypandrium; ventral epandrial process absent. Right surstylus bilobed, dorsal and ventral lobes separated by U-shaped cleft through which right postgonite lobe protrudes. Dorsal lobe of right surstylus short with pair of apical setae and 1 lateral seta of similar size near base, lacking prensiseta. Ventral lobe of right surstylus about 3X longer than dorsal lobe, with 1 short ventral seta near middle, 2 longer ventral setae beyond middle and 1 short preapical seta. Hypandrium bowl-shaped, slightly longer than epandrium in lateral view, posterior margin not pointed below protruding phallus. Left postgonite Y-shaped, apically bilobate (Fig. 44). Right postgonite lobe broad and mitten-shaped, bilobate with broad rounded apical lobe and thumb-like dorsal lobe (Fig. 45). Phallus tubular, J-shaped, projected dorsally, not extending beyond upper margin of postgonite, tip straight and unmodified. Ejaculatory apodeme keel-like. Hypoproct simple, short with rounded margin, left and right sides slightly asymmetrical. Cercus somewhat broad and globular laterally with short pointed apicolateral process, with several setae medially, left and right cercus asymmetrical.

**Female.** Unknown.



**FIGURES 44–46.** Hypopygium of *Microphorella bungle* sp. nov. (CNC707574). **44.** Hypopygium, left lateral view. **45.** Hypopygium, right lateral view. **46.** Cerci and hypoproct, dorsal view. Abbreviations: cerc—cercus; d sur—dorsal lobe of surstylus; epand—epandrium; hypd—hypandrium; hyprct—hypoproct; pgt lb—postgonite lobe; ph—phallus; (R)—right; v epand proc—ventral epandrial process; v sur—ventral lobe of surstylus.

**Distribution.** This species is known only from the type locality of Buckley's Creek in Warrumbungle National Park, New South Wales, Australia (Fig. 1).

**Etymology.** The species name is derived from Warrumbungle after the type locality in Warrumbungle National Park and should be regarded as a noun in apposition.

**Remarks.** This species was collected along Buckley's Creek. Aside from the difference in phallic structure, the hypopygial morphology of *M. bungle* sp. nov. is very similar to *M. viticula* sp. nov. and the species appear closely related.

### *Microphorella iota* Colless

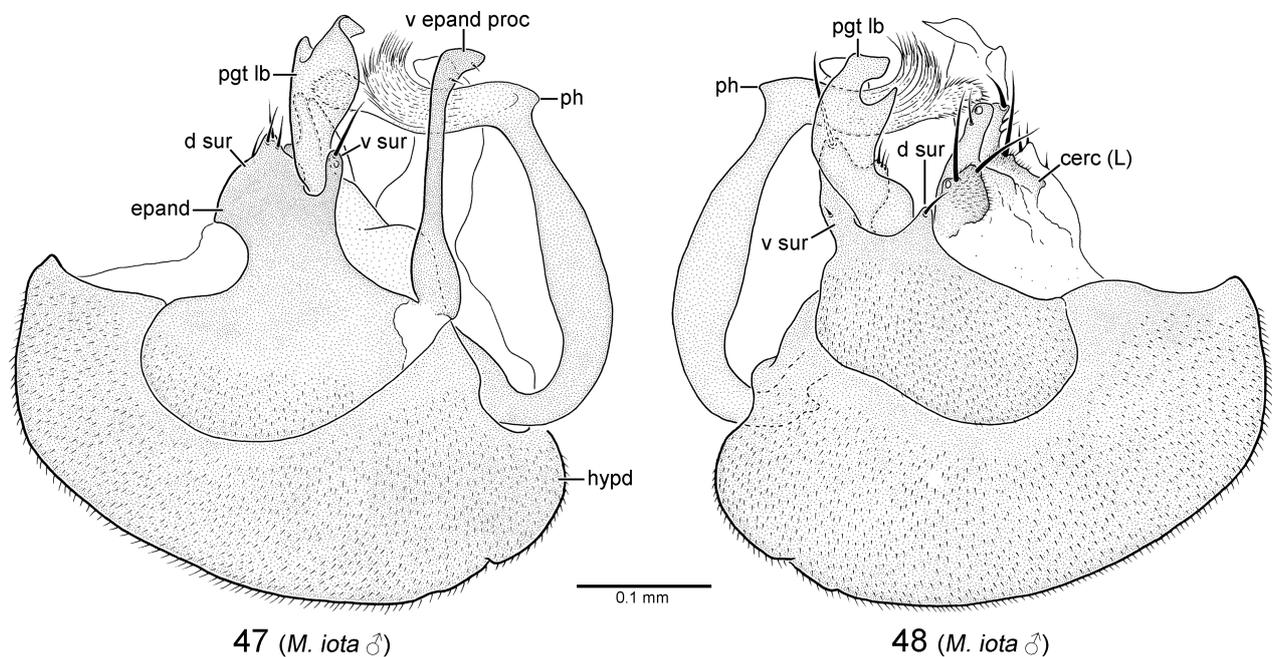
(Figs 1, 47, 48)

*Microphorella iota* Colless, 1964: 320. Type locality: Mt. Majura, ACT, Australia.

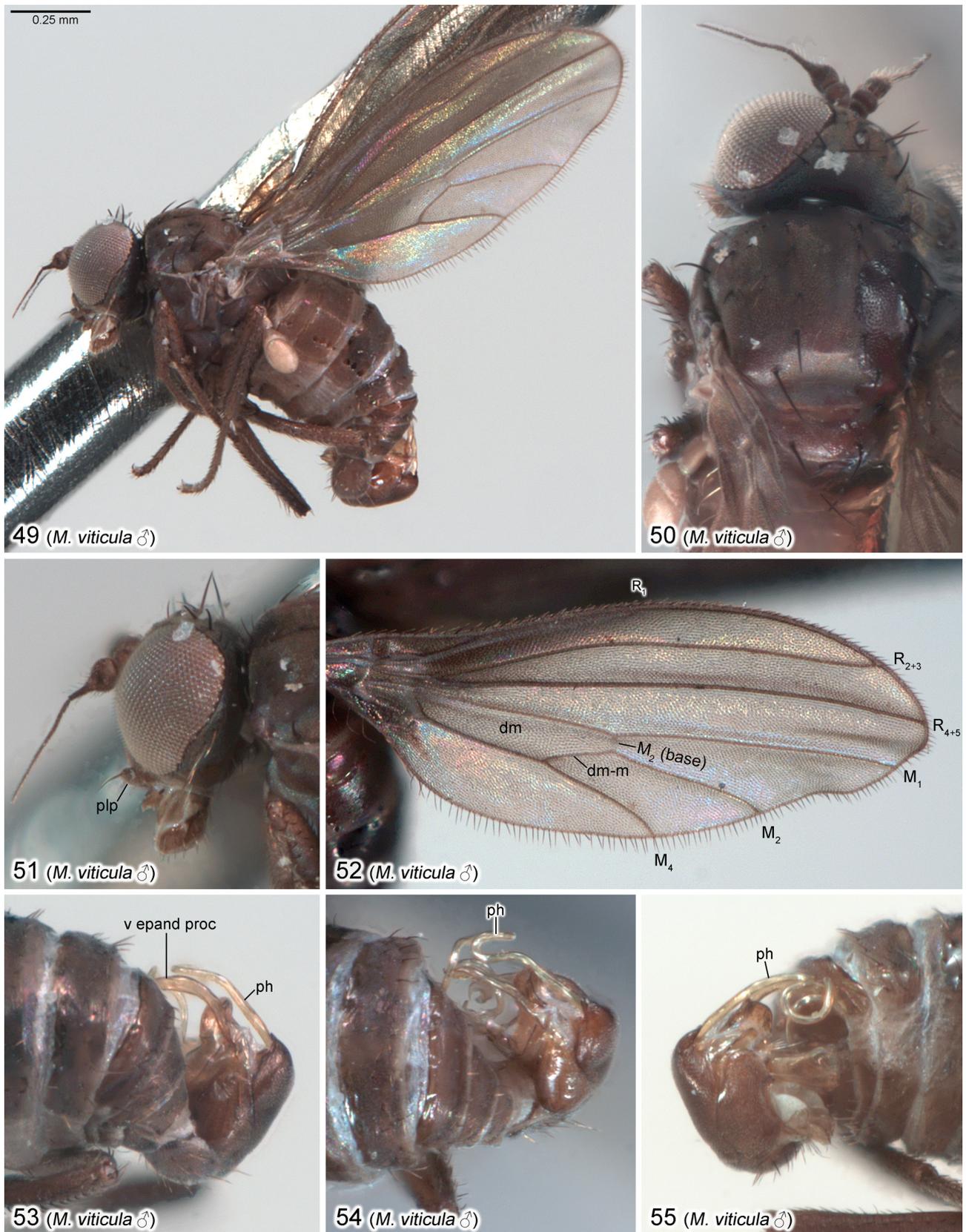
**Type material examined.** HOLOTYPE ♂ labelled: “[AUSTRALIA] Mt. Majura [ca 35.2372°S 149.1822°E], A.C.T. [Australian Capital Territory]/ 2 Apr. 1963/ D.H. Colless.”; “ANIC 5873/ HOLOTYPE/ *Microphorella/ iota*. Colless. [red label]”; “ANIC Database No./ 29 029403” (ANIC). ALLOTYPE ♀, same locality and date data as holotype (ANIC). PARATYPES: AUSTRALIA: A.C.T., Canberra, Mt. Majura, 29.ix.1960, D.H. Colless (1♂, ANIC); A.C.T. Ginninderra Falls [ca 35.1968°S 148.9617°E], 28.ii.1962, D.H. Colless (2♀, ANIC).

**Other material examined.** AUSTRALIA: New South Wales, Colo Vale [ca 34.4017°S 150.4886°E], 17.i.1957, W.W. Wirth (5♀, USNM).

**Diagnosis.** Males of *M. iota* are distinguished from the other known Australasian *Microphorella* by the following combination of features: body and legs blackish brown or blackish grey with black setation; palpus dark and narrowly ovate, dorsal surface with club-tipped processes (Colless 1964, fig. 1d); hypopygium (Figs 47, 48) with phallus relatively short, swollen along midlength, with tip bent back and brush-like; hypandrium large, distinctly wider than epandrial lamellae in lateral view.



**FIGURES 47–48.** Hypopygium of *Microphorella iota* Colless, paratype (ANIC Database No. 29 029402). **47.** Hypopygium, left lateral view. **48.** Hypopygium, right lateral view. Abbreviations: cerc—cercus; d sur—dorsal lobe of surstylus; epand—epandrium; hypd—hypandrium; (L)—left; pgt lb—postgonite lobe; ph—phallus; v epand proc—ventral epandrial process; v sur—ventral lobe of surstylus.



**FIGURES 49–55.** Male holotype of *Microphorella viticula* sp. nov. **49.** Habitus. **50.** Head and thorax, dorsal view. **51.** Head, lateral view. **52.** Wing, ventral view. **53.** Abdomen and terminalia, left lateral view. **54.** Abdomen and terminalia, dorsal view. **55.** Abdomen and terminalia, right lateral view. Abbreviations: dm—discal medial cell; dm-m—discal medial crossvein;  $M_1$ ,  $M_2$ ,  $M_4$ —medial veins; ph—phallus; plp—palpus;  $R_1$ ,  $R_{2+3}$ ,  $R_{4+5}$ —radial veins; v epand proc—ventral epandrial process.

**Distribution.** In addition to the two localities in the Australian Capital Territory listed above, Colless (1964) recorded two female paratypes (in the Australian Museum, Sydney, Australia) from Sassafras Gully [*ca* 33.6992°S 150.5711°E], Springwood, in the Blue Mountains of New South Wales collected by D.K. McAlpine on 10.i.1956. We have also seen additional specimens from Colo Vale in New South Wales (Fig. 1).

**Remarks.** Until this study, *M. iota* was the the only described species of *Microphorella* known from Australia. In their phylogenetic analysis of the Parathalassiinae, Cumming & Brooks (2019), determined that *M. iota* was not closely related to *M. papuana* from New Guinea or the two new Australian species of *Microphorella* described in this paper. Males of *M. iota* have club-tipped processes on the dorsal surface of the palpus, possess a unique phallus with a modified brush-like apex and have a large hypandrium. Colless (1964) states that specimens of *M. iota* were all collected by sweeping near streams. The females from Colo Vale differ slightly from the other known specimens by their blackish grey coloration.

***Microphorella viticula* sp. nov.**

(Figs 1, 2, 49–55)

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**Type material.** HOLOTYPE ♂ labelled: “AUST: NSW: Blue Mtns. N.P./ Blackheath, Govetts/ Leap [*ca* 33°38’S 150°19’E], 4.iv.1994/ B.J. Sinclair/ ex. dry scler. creek”; “HOLOTYPE/ *Microphorella viticula*/ Brooks & Cumming [red label]” (CNC).

**Diagnosis.** Males of *M. viticula* sp. nov. are distinguished from the other known Australasian *Microphorella* by the following combination of features: body and legs dark brown with black setation (Fig. 49); palpus dark and narrowly ovate (Fig. 51); hypopygium (Figs 53–55) with phallus greatly elongated, slender and tightly curled; hypandrium relatively small, slightly wider than epandrial lamellae in lateral view.

**Description.** Male (Fig. 49): Body length 1.32 mm, wing length 1.35 mm. Similar to *M. bungle* sp. nov. except as follows: **Head** (Figs 50, 51): 2 pairs of inclinate fronto-orbitals, posterior pair smaller; postocular setae slightly longer and pale brown; postpedicel 2X longer than wide, with basal half round and distal half narrow; arista-like stylus 1.8X length of postpedicel. **Thorax** (Fig. 50). **Legs** (Fig. 49). **Wing** (Fig. 52). **Abdomen** (Figs 49, 53–55): *Hypopygium* (some details not visible on unique undissected holotype): Left ventral epandrial process longer. Ventral lobe of right surstylus apparently short, with a few apical setae. Hypandrium with posterior margin drawn into short pointed tip projecting dorsally and supporting protruding phallus. Ventral part of left postgonite lobe (medial to base of left ventral epandrial process) apparently developed into large flap-like lobe. Phallus greatly elongated, slender and tightly curled.

**Female.** Unknown.

**Distribution.** This species is known only from the type locality of Govetts Leap in Blue Mountains National Park, New South Wales, Australia (Figs 1, 2).

**Etymology.** From the Latin *viticula*, meaning tendril, in reference to the long thin curled phallus of the male.

**Remarks.** The single holotype male is stated as having been taken in dry sclerophyl habitat near the creek (Fig. 2), but was likely collected where the trail crosses the stream (B.J. Sinclair, pers. comm., 2022). Aside from the difference in phallic structure, the hypopygial morphology of *M. viticula* sp. nov. is very similar to *M. bungle* sp. nov. and the species appear closely related.

**Key to male Parathalassiinae in the Australasian Region**

Ten species are currently known from the region, although additional species undoubtedly occur. Since a number of species are known only from males, female diagnostic features as they are understood, are summarized in the generic diagnoses above.

- 1 Wing with vein M<sub>2</sub> present; cell dm usually present (Fig. 52), but sometimes cell dm and crossvein dm-m absent (Shamshev & Grootaert 2005, fig. 12) ..... 5
- Wing with vein M<sub>2</sub>, cell dm and crossvein dm-m absent (Fig. 22) ..... *Chimerothalassius* ... 2
- 2 Palpus elongate and gradually enlarged apically (Figs 12, 14) (New Zealand) ..... 3

-	Palpus abruptly capitate apically, narrow basally (Figs 19, 27, 28) (New Caledonia) .....	4
3	Head and thorax primarily silver-grey pruinose; mesonotal setae rather short and weak; legs pale yellowish; palpus largely yellow (Fig. 12); genal setae weak and pale (Fig. 12); hypopygium with phallus tip funnel-shaped (Shamshev & Grootaert 2002, fig. 20) .....	<i>C. ismayi</i> Shamshev & Grootaert
-	Head and thorax primarily dark brown-grey pruinose; mesonotal setae strong; legs brownish; palpus dark brown (Figs 14, 15); genal setae strong and dark (Fig. 14); hypopygium with phallus tip not expanded (Fig. 16) .....	<i>C. marshalli</i> sp. nov.
4	Palpus brown (Fig. 19); antennal postpedicel with very short narrow tip (Fig. 20); mesonotum with acrostichal setae absent and dorsocentral setae strong; hypopygium with enlarged hypoproct (Figs 23–25) .....	<i>C. riparius</i> sp. nov.
-	Palpus white (Figs 27, 28); antennal postpedicel with long narrow tip (Fig. 27); mesonotum with acrostichal and dorsocentral setae short and weak; hypopygium with short hypoproct (Fig. 33) .....	<i>C. sinclairi</i> sp. nov.
5	Face narrow, about width of anterior ocellus; arista-like stylus lengthened, at least 5X as long as postpedicel (as in Fig. 35; Shamshev & Grootaert 2005, figs 1, 2) .....	<i>Eothalassius</i> ... 6
-	Face broad, about width of combined antennal bases or wider (Fig. 41); arista-like stylus shorter, about 2X as long as postpedicel (Figs 40, 51) .....	<i>Microphorella</i> ... 7
6	Wing with cell dm and crossvein dm-m present (as in Fig. 36; Shamshev & Grootaert 2005, fig. 25) .....	<i>E. gracilis</i> Shamshev & Grootaert
-	Wing with cell dm and crossvein dm-m absent (Shamshev & Grootaert 2005, fig. 12) .....	<i>E. platypalpus</i> Shamshev & Grootaert
7	Body and legs with pale setation; head and thorax pale grey pollinose; palpus broadly clavate, flattened and pale (New Guinea) .....	<i>M. papuana</i> Shamshev & Grootaert
-	Body and legs with black setation; head and thorax dark brownish or dark grey pollinose (Figs 39–42, 49–51); palpus narrowly ovate, dark brown (Figs 40, 41, 51) (Australia) .....	8
8	Hypopygium with phallus elongate, tightly curled (Figs 53–55) .....	<i>M. viticula</i> sp. nov.
-	Hypopygium with phallus relatively short, not tightly curled (Figs 43–45, 47, 48) .....	9
9	Hypopygium with phallus tip bent and brush-like (Figs 47, 48) .....	<i>M. iota</i> Colless
-	Hypopygium with phallus tip straight and tubular (Figs 44, 45) .....	<i>M. bungle</i> sp. nov.

## Discussion

Our discovery of two new species of *Microphorella*, three new species of *Chimerothalassius* and a new genus record of *Eothalassius*, based on only a handful of specimens, certainly suggests that there is additional undocumented parathalassiine diversity throughout the Australasian Region. Furthermore, we suspect that *C. ismayi* actually consists of two species, with the female potentially representing another undescribed species. This means that the 10 species of parathalassiines currently known from Australasia is a clear underestimate of the actual diversity in the Region. The reason for this is probably because these flies are small to minute and easily overlooked, especially on the inadequately sampled rocky and sandy habitats they occupy along riparian and coastal shorelines.

Increased sampling of these habitats, particularly using mass trapping techniques such as pan traps, will undoubtedly uncover additional new species of Australasian Parathalassiinae, which will continue to test the validity of current generic and species group concepts in the subfamily (see Cumming & Brooks 2019). Diagnostic features previously used to recognize some of these taxa (e.g., acanthophorous setae versus acanthophorous spines on the female terminalia) are now becoming less reliable. Further sampling of Diptera in riparian and coastal habitats throughout Australasia, such as in the recent New Zealand coastal survey conducted by Le Grice *et al.* (2022), should definitely assist with current taxonomic gaps in the Parathalassiinae.

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