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# **Three new species of Crane Fly from Australia (Diptera: Tipuloidea)**

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**Abstract:** Two new species of Australian Limoniidae are here described: *Gynoplistia* (*Gynoplistia*) *kennedyi* nov.sp. and *Molophilus* (*Molophilus*) *tarra* nov.sp., both from Victoria, and one new species of Tipulidae is described: *Dolichopeza* (*Dolichopeza*) *rowanorum* nov.sp., from Tasmania. The new *Gynoplistia* species belongs in the *Gynoplistia* (*Gynoplistia*) *zebrata* group of THEISCHINGER (1993b), the new *Molophilus* species belongs in the *Molophilus* (*Molophilus*) *plagiatus* group of THEISCHINGER (1988) and the new *Dolichopeza* species belongs to the *Dolichopeza* (*Dolichopeza*) *niveitarsis* group of THEISCHINGER (1993a).

**Key words:** Tipuloidea, new species, Australia.

## **Introduction**

Australia hosts a great diversity of tipuloid crane flies, with 1,091 species across 63 genera, belonging to the families Cylindrotomidae, Limoniidae, Pediciidae and Tipulidae, listed in the catalogue of the crane flies of the world (Oosterbroek 2018). In recent works by the present authors (THEISCHINGER 2017b, BILLINGHAM & THEISCHINGER 2017a, 2017b, 2018) several new species have been added to the Australian crane fly fauna, and, including three additional new species described in this paper, the number of recognized species is elevated to 1,104. Two of the newly described species belong to the family Limoniidae, one in the genus *Gynoplistia* WESTWOOD, 1835, and the other in the genus *Molophilus* CURTIS, 1833. The third new species belongs to the family Tipulidae and is from the genus *Dolichopeza* CURTIS, 1825.

## **Materials and Methods**

Specimens were collected by sweeping a hand net through vegetation and then preserved in 100% ethanol. As a result of this preservation, the coloration of the specimens may have changed from the natural state. For the illustration of the male genitalia (hypopygium) the specimens were cleared in KOH and displayed in glycerol. Descriptive terminology is in accord with MCALPINE (1981). Type specimens have been deposited in the Museum Victoria (NMV) and Tasmania Museum and Art Gallery (TMAG) collections.

## Systematics

### New species of *Limoniidae*

#### *Gynoplistia* (*Gynoplistia*) *kennedyi* nov.sp. (Figs 1-8)

Type material: Holotype ♂: Victoria, Morwell National Park, Fosters Gully (38.3574°S, 146.3880°E), 11-i-2014, Z. Billingham; NMV (MVT21938).

### Description

#### Male (Fig. 1)

**Head** (Fig. 2). Dark blackish grey; mouthparts blackish brown. Antenna 16 segmented, pectinate; basal two flagellomeres bearing mesoventrally directed extensions, following 10 flagellomeres bearing dorsally directed extensions, final two flagellomeres lacking extensions; scape, pedicel, and basal two flagellomeres, except for the extensions, yellowish brown, otherwise blackish brown.

**Thorax** (Figs 3-5). Pronotum brownish yellow dorsally. Prescutum yellowish brown anteriorly and laterally, darkening dorsally to form two indistinct brownish black bands extending from just beyond the anterior margin to the prescutal suture. These bands continuing onto the scutum and terminating at the transverse suture, remainder of scutum brownish with anterolateral angle paler yellowish brown. Scutellum yellowish brown. Mediotergite yellowish brown anteriorly, darkening to brownish black posteriorly. Cervical sclerite brownish. Propleuron brownish yellow. Anepisternum and katepisternum brownish black. Anepimeron brownish yellow. Katepimeron brownish yellow anteriorly, darker brown posteriorly. Meron brownish yellow, fringed basally with darker brown. Laterotergite brownish black. Metanepisternum brownish. Metakatepisternum brownish. Coxae, trochanters and proximal 4/5 of femora brownish yellow, distal 1/5 greyish black; tibiae with narrow proximal brownish yellow ring, tibia 1 and 2 otherwise greyish black, tibia 3 with middle 1/3 white, remainder greyish black; tarsi greyish black.

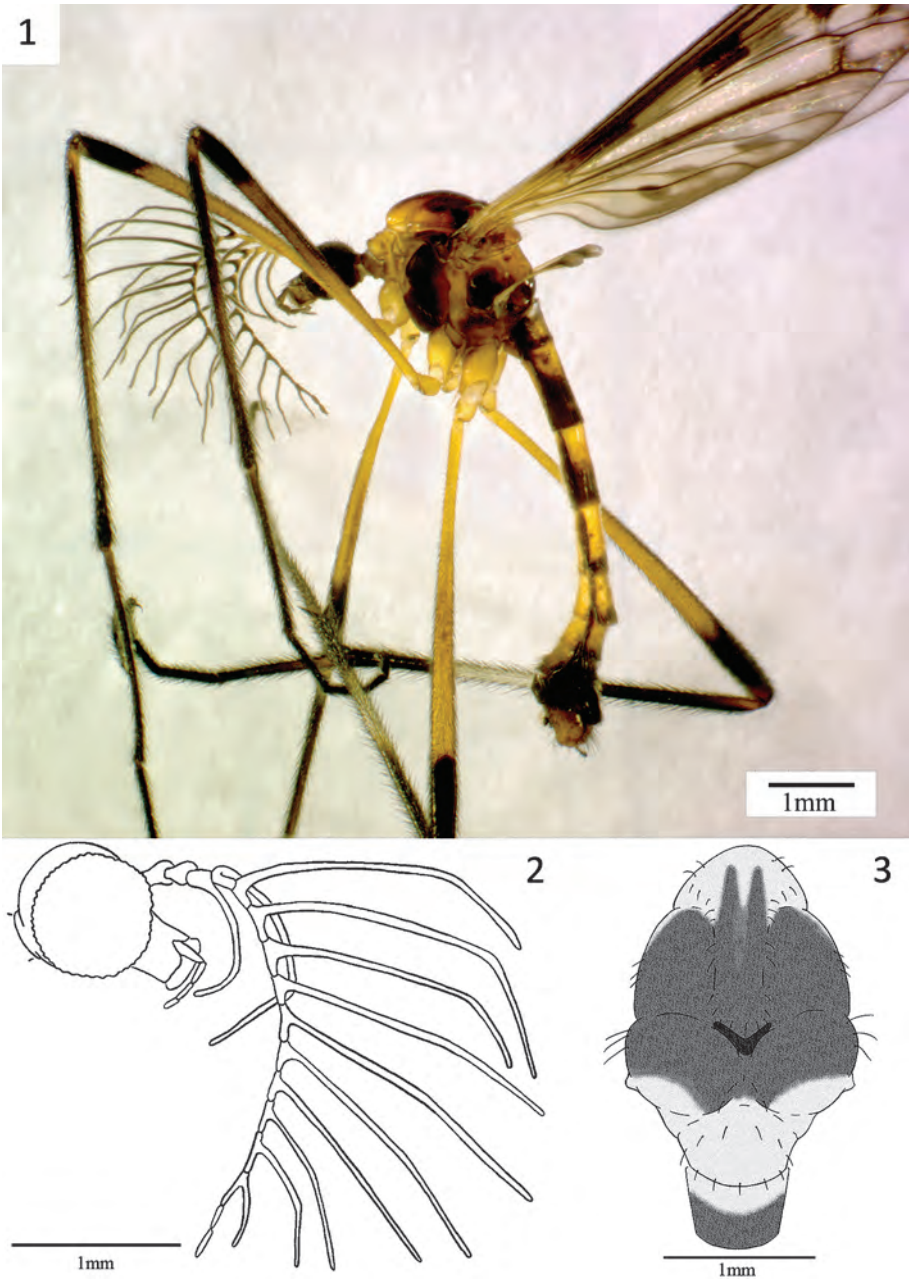
**Wing** (Fig. 6) with pale-dark pattern; costal and subcostal cells greyish black; pterostigma dark greyish black; apex and posterior margin infuscated, apex especially so; three dark brownish grey marks present: just distal to MA, at origin of Rs and at the fork of Rs; paler brownish grey markings at the origin of M1 and M2, along m-m and m-cu, and at 2/3 and 1/2 the length of A1 and A2 respectively. Halter with stem brownish yellow, knob brownish black.

**Abdomen**. Brownish yellow, greyish black on lateral and posterior margins of tergites 1-7, segment 8 and 9 brownish black.

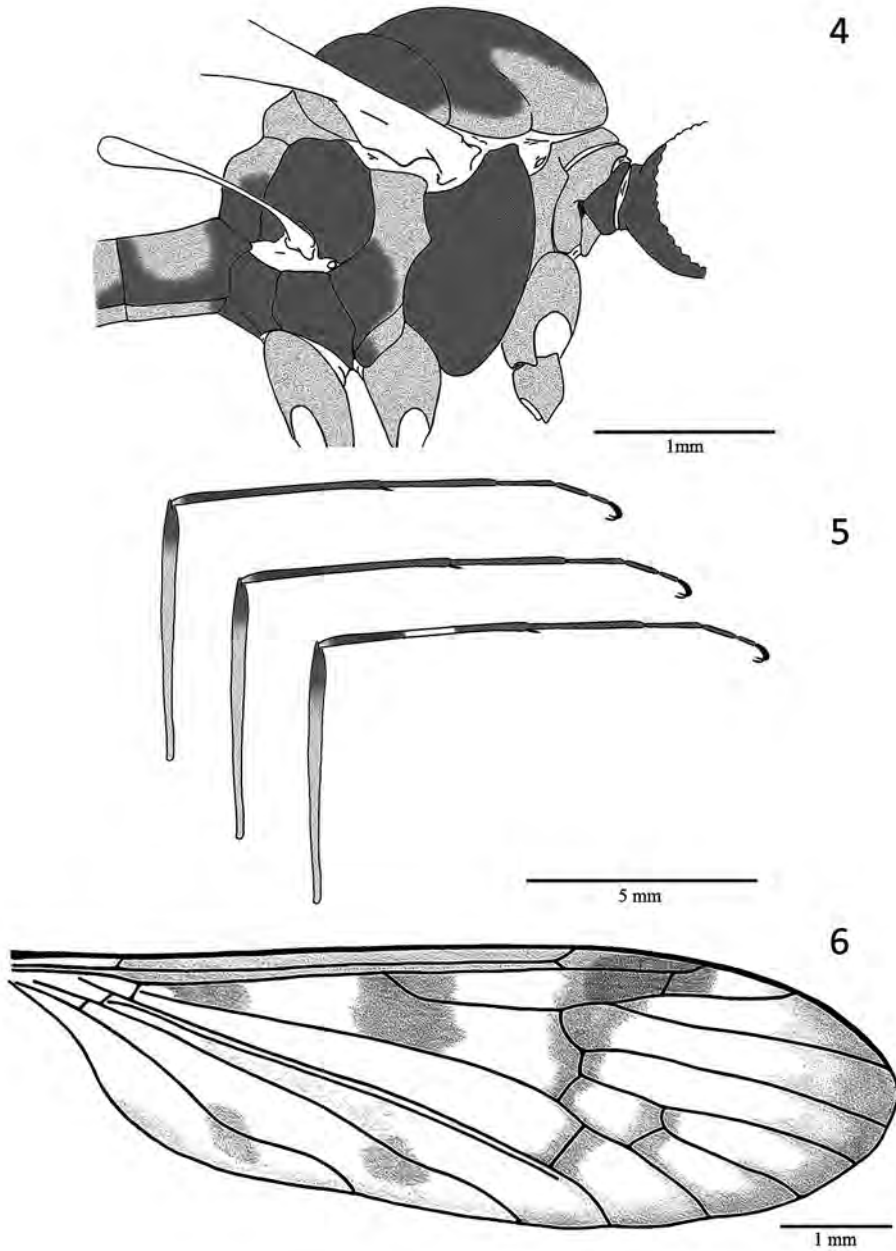
**Genitalia** (Figs 7, 8). Hypopygium with hind margin of segment 9 dorsally broadly truncate, almost widely bilobed, ventrally with wide, deep V- to U-shaped excision. Gonocoxite with medio-ventral, thumb-shaped, backward-directed, setose process. Outer gonostylus rather strongly curved with apex sharply pointed; inner gonostylus S-curved with apex rounded. Aedeagal complex with two lateral elements close to each other, both short, strongly curved and with apex pointed, and a medium-shouldered medial element (aedeagus).

**Dimensions**. Wing length 8.0 mm; body length (excluding antennae) 9.5 mm.

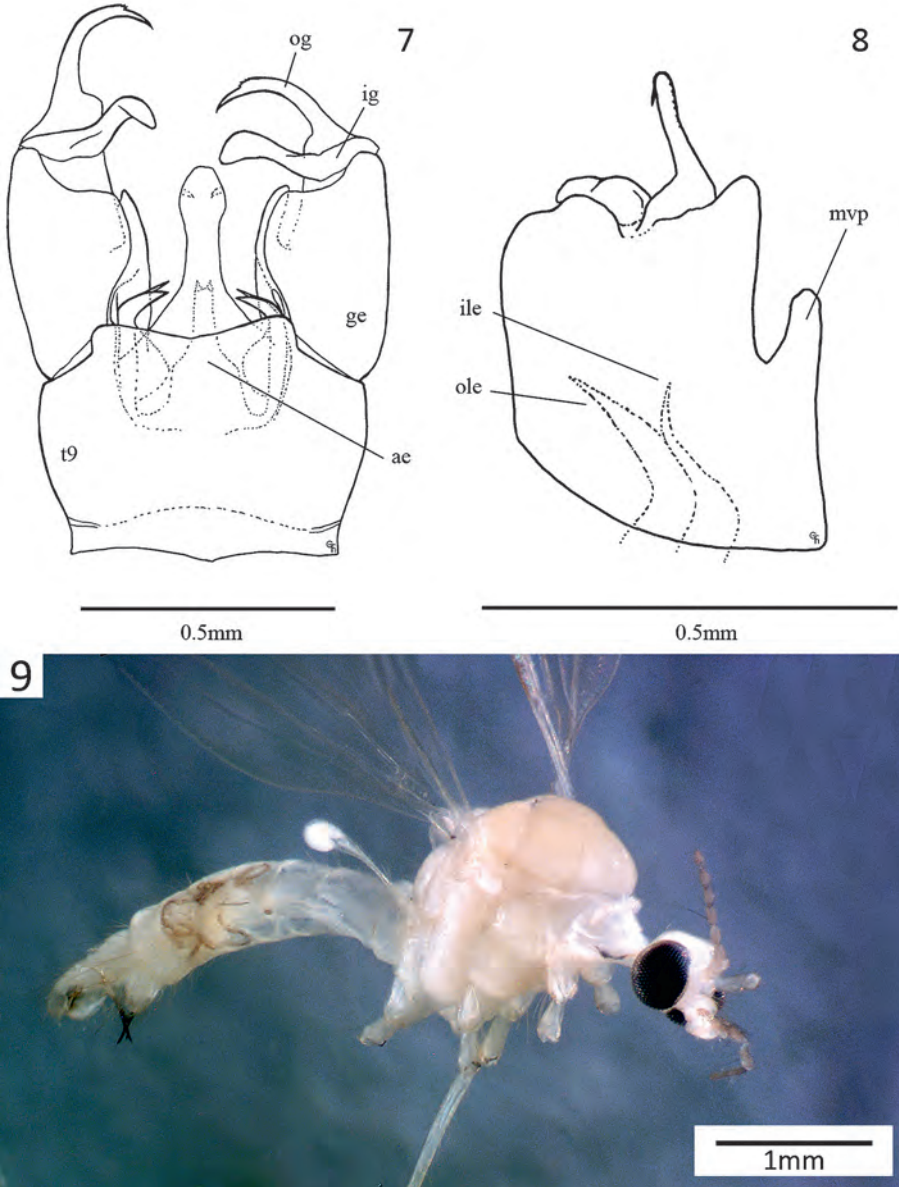
Female unknown.



**Figs 1-3:** *Gynoplistia (Gynoplistia) kennedyi* nov.sp., male: (1) habitus; (2) head and antenna, lateral; (3) thorax, dorsal.



**Figs 4-6:** *Gynoplistia (Gynoplistia) kennedyi* nov.sp., male: (4) thorax, lateral; (5) legs (from left to right: fore, mid and hind leg); (6) wing.



**Figs 7, 8:** *Gynoplistia (Gynoplistia) kennedyi* nov.sp., male hypopygium: (7) dorsal; (8) lateral showing lateral elements of aedeagal complex (stippled). **Fig. 9:** *Molophilus (Molophilus) tarra* nov.sp., male habitus. Abbreviations as used in figures: ae, aedeagus; ge, gonocoxite; ig, inner gonostylus; ile, inner lateral element of aedeagal complex; mvp, medio-ventral process of gonocoxite; og, outer gonostylus; ole, outer lateral element of aedeagal complex; t9, tergite 9.

**E t y m o l o g y .** This species is dedicated to Kennedy (Ken) Harris who assisted in the collection of the type material and who has assisted greatly in the first author's studies of Australian crane flies.

## Discussion

The Australian species of *Gynoplistia* were revised by THEISCHINGER (1993b) and descriptions of additional species were made in subsequent papers (THEISCHINGER 1994, 1999b, 2000b, BILLINGHAM & THEISCHINGER 2017a). THEISCHINGER (1993b) also established 19 species groups of *Gynoplistia* (*Gynoplistia*) and provides a key to the species groups.

The two pairs of gonostyli and absence of wing cell M1 place *G. (G.) kennedyi* nov.sp. in the *G. (G.) zebrata* species group, which includes *G. (G.) zebrata* ALEXANDER, 1930, *G. (G.) quagga* THEISCHINGER, 1993, *G. (G.) yarra* THEISCHINGER, 1993, *G. (G.) tooronga* THEISCHINGER, 1993 and *G. (G.) reidi* BILLINGHAM & THEISCHINGER, 2017. The presence of a backward-directed, thumb-shaped, setose, medio-ventral process on the gonocoxite seems to be a synapomorphy of *G. (G.) kennedyi* nov.sp. and *G. (G.) reidi*, and may indicate closer ties between these two species than with any other member of the species group. The truncate dorsum of segment 9 and two short curved lateral elements each side of the aedeagal complex are diagnostic for *G. (G.) kennedyi* nov.sp., versus the apically widely rounded dorsum of segment 9 and a long upright inner and a short curved outer lateral aedeagal element in *G. (G.) reidi*.

## *Molophilus (Molophilus) tarra* nov.sp. (Figs 9, 10)

**Type material:** Holotype ♂: Victoria, Tarra Bulga National Park, Macks Creek by Bulga picnic area (38.4252°S, 146.5716°E), 7-ii-2014, Z. Billingham; NMV (MVT22306). Paratypes: 2♂♂: same data as Holotype; NMV (MVT22307, MVT22308). 1♂: Victoria, Tarra Bulga National Park, Tarra Valley Picnic ground (38.4470°S, 146.5388°E), 8-ii-2014, Z. Billingham; NMV (MVT22309).

## Description

### Male (Fig. 9)

**Head.** Pale whitish yellow. Antennal pedicel and scape pale whitish yellow, antennal flagellum and palpus greyish brown

**Thorax.** Pronotum whitish. Prescutum, scutum, scutellum and mediotergite pale whitish yellow. Cervical sclerite and pleurites pale whitish yellow. Coxae, trochanters, femora and tibiae pale whitish yellow, tarsi greyish brown.

**Wing.** Hyaline with veins pale yellowish brown. Halter with stem pale whitish yellow, knob white.

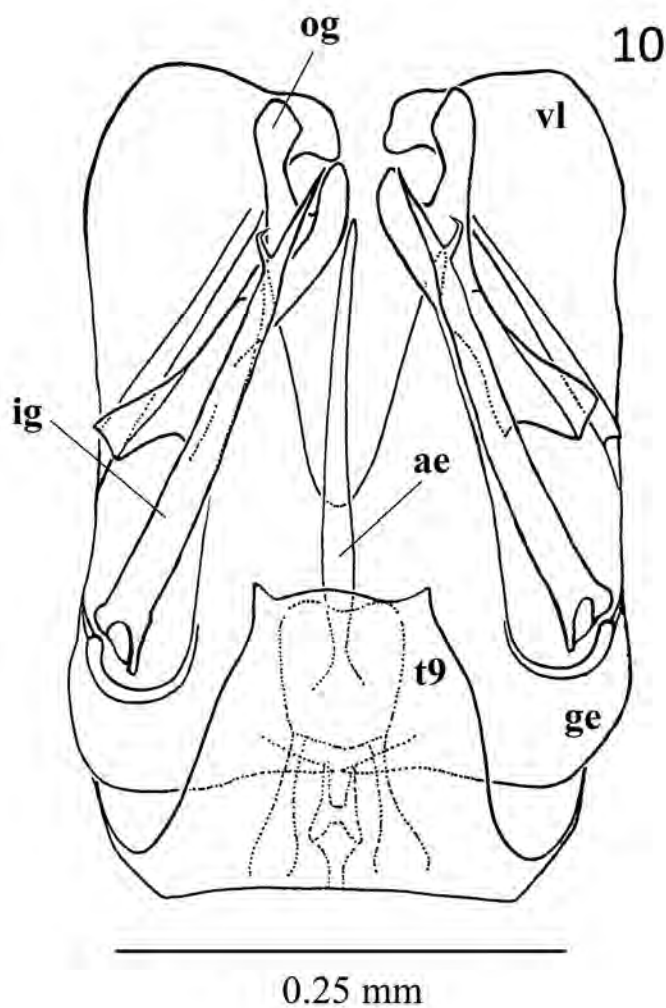
**Abdomen.** All segments pale whitish yellow.

**Genitalia** (Fig. 10). Hypopygium pale whitish yellow with dorsal lobe of segment 9 quadrate, caudal margin broadly U shaped. Gonocoxite with dorso-lateral lobe very small, medial lobe not prominent and ventral lobe large, largely parallel sided and apically strongly bowed mediad, ending in a blunt beak. Inner gonostylus long, straight and blade like, a short curved subapical spike on the lateral face. Outer gonostylus largely parallel sided, with apex forked into two subequal prongs. Aedeagus long and thin; parameres oval to truncate.

**D i m e n s i o n s .** Wing length 4.5 mm; body length (excluding antennae) 4.3 mm.

Female unknown.

**E t y m o l o g y .** This species is named after the Tarra-Bulga National Park which contains the type localities; to be treated as a noun in apposition.



**Fig. 10:** *Molophilus (Molophilus) tarra* nov.sp., male hypopygium, ventral view. Abbreviations as used in figure: ae, aedeagus; ge, gonocoxite; ig, inner gonostylus; og, outer gonostylus; t9, tergite 9.

## Discussion

THEISCHINGER (1988a, 1988b, 1992) reviewed the Australian species of *Molophilus* with descriptions of additional species being added since (THEISCHINGER 1994, 1996, 1999b, 2000b, 2012, 2017b, BILLINGHAM & THEISCHINGER 2018). THEISCHINGER (1992) also established three species groups for the subgenus *Molophilus* (*Molophilus*) and provided a key for distinguishing the species groups.

The fused parameres and prominent apically beaked ventral lobe of the gonocoxite place *M. (M.) tarra* nov.sp. as a member of the *Molophilus* (*Molophilus*) *plagiatus* group. Its male terminalia look closest to numerous species around *M. (M.) flavidellus* ALEXANDER, 1930 from Victoria. It can be distinguished from all of them by the shape of the inner gonostylus.

## New species of *Tipulidae*

### *Dolichocheza* (*Dolichocheza*) *rowanorum* nov.sp. (Figs 11-15)

**Type material:** Holotype ♂: Tasmania, Tasman National Park, Agnes Creek off Fortescue Bay Rd (43.1498°S, 147.9514°E), 20-ii-2016, Z. Billingham; TMAG F65805. Paratype: ♂: same data as Holotype; TMAG F65806.

### Description

**Male** (Fig. 11)

**Head.** Yellowish brown, vertex darker brown. Rostrum yellowish brown, palpus darker grey. Antenna with scape pale brown, pedicel pale yellowish brown and flagellum dark brown.

**Thorax** (Fig. 13). Pronotum, prescutum, scutum, scutellum and mediotergite brown, a narrow pale yellow stripe arising at the anterior margin of the prescutum, extending onto the scutum and terminating at the transverse suture. Pleurites largely pale yellowish brown with darker brown areas as follows; the whole of the anepisternum, the base of the katepisternum, the base of the meron and the whole of the anatergite. Legs with coxa, trochanter and base of femur pale yellowish brown, remainder of fore and mid leg darker greyish brown, tarsi of hind leg missing.

**Wing** (Fig. 12). Membrane largely greyish brown, pterostigma darker grey. Halter with stem dark grey, knob dark grey at the base, paling to white distally.

**Abdomen** (Fig. 11). First tergite entirely greyish brown, tergites 2-7 greyish brown dorsally with lateral pale yellow patches. These lateral patches appear to be variable in size and are more extensive in the paratype than in the holotype. Sternites 2-4 greyish brown with broad subapical transverse pale yellow band, sternites 5-7 similarly patterned but with the transverse band apical in position. Eighth abdominal segment entirely greyish brown.

**Genitalia** (Figs 14, 15). Hypopygium brownish yellow, the outer gonostylus pale whitish yellow, inner gonostylus and aedeagus greyish brown to black. Tergite 9 with two faintly developed flat posterior lobes separated by a shallow quadrate notch. Outer gonostylus straight, distal third slightly broader. Inner gonostylus moderately curved and



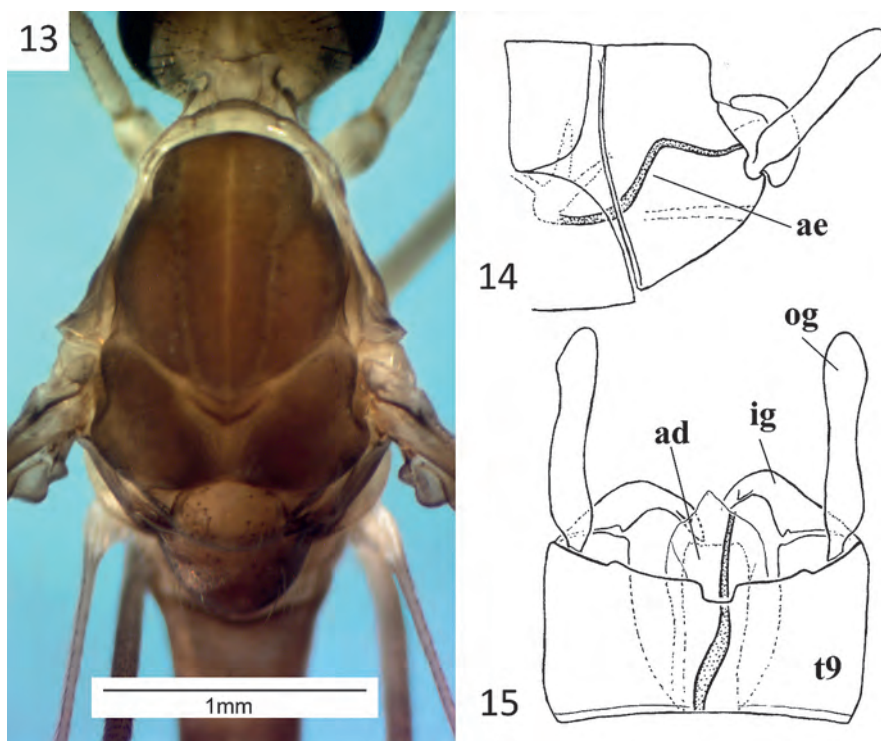


**Figs 11, 12:** *Dolichozepea (Dolichozepea) rowanorum* nov.sp. (11) general habitus; (12) wing.

with pointed beak, a row of short serrations along the dorsal edge. Aedeagus, when viewed laterally, strongly arched at mid-length. Distal portion of adminiculum not expanded, distally truncate.

**Dimensions.** Wing length 9.0 mm, body length (excluding antennae) 8.1 mm.

**Etymology.** This species is dedicated to the Rowan family, particularly Lyn Rowan, for unending support and for helping to fund the first author's Tasmanian survey work.



**Figs 13-15:** *Dolichocheza (Dolichocheza) rowanorum* nov.sp.: (13) thorax dorsal; (14) hypopygium lateral; (15) hypopygium dorsal. Abbreviations as used in figures: ad, adminiculum; ae, aedeagus; ig, inner gonostylus; og, outer gonostylus; t9, tergite 9.

## Discussion

DOBROTWSKY (1974) provided the first review of the Australian species of *Dolichocheza*, however it was not until THEISCHINGER (1993a) provided diagnostic figures of the hypopygia of many species in a second review of the genus that the Australian species of *Dolichocheza* became readily identifiable. THEISCHINGER (1993a) also established ten species groups for *Dolichocheza* and provided a key to distinguish the groups. THEISCHINGER later added six species to the genus over several subsequent publications (1999a, 2000a, 2017a).

The absence of lobes on the ninth sternite, relatively straight outer gonostylus lacking denticles and undifferentiated inner gonostylus indicate that *D. (D.) rowanorum* sp. nov. is a member of the *Dolichocheza (Dolichocheza) niveitarsis* group of THEISCHINGER (1993a). The features of its hypopygium place it near *Dolichocheza (Dolichocheza) ballaratiensis* DOBROTWSKY, *Dolichocheza (Dolichocheza) corinnaiensis* DOBROTWSKY and, most closely, *Dolichocheza (Dolichocheza) nigrina* DOBROTWSKY (all 1974), all of which co-occur in Tasmania. *D. (D.) rowanorum* nov.sp. is distinguished from *D. (D.) nigrina* by its flat versus bluntly rounded posterior lobes on tergite 9, short serrations

versus strong teeth along the dorsal edge of the inner gonostylus, distal portion of adminiculum not expanded versus expanded, and more elaborate pleural and abdominal patterning.

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### Zusammenfassung

Zwei neue Arten von australischen Limoniiden, *Gynoplistia* (*Gynoplistia*) *kennedyi* nov.sp. und *Molophilus* (*Molophilus*) *tarra* nov.sp., beide von Victoria, und eine neue Art von Tipuliden, *Dolichopeza* (*Dolichopeza*) *rowanorum* nov.sp. von Tasmanien, werden beschrieben, und ihre verwandtschaftlichen Beziehungen werden diskutiert.

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