

A REVISION OF THE GENUS *HOROUTA* KNIGHT WITH DESCRIPTION OF TWO NEW SPECIES AND NOTES ON OTHER SPECIES OF DELTOCEPHALINAE (HEMIPTERA: CICADELLIDAE)

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Summary

The monotypic New Zealand genus *Horouta* Knight is expanded by the transfer of four Australian species described by G.W. Kirkaldy and the addition of two new species. A revised diagnosis of the genus and key to species are given. New combinations proposed are *Horouta aristarche* (Kirkaldy), *Horouta perparvus* (Kirkaldy), *Horouta lotis* (Kirkaldy) (all from *Deltocephalus*) and *Horouta austrina* (Kirkaldy) (from *Lonatura*). New species described are *Horouta jahmoi* sp. nov. and *Horouta spinosa* sp. nov. The genus now contains six Australian species and a single species from New Zealand. Other new combinations proposed are *Micrelloides polemon* (Kirkaldy), *Arawa centralis* (Evans) and *Arawa decoloratus* (Evans) all transferred from *Deltocephalus*. *Micrelloides molaris* Evans is synonymised with *M. polemon* and placed in the tribe Paralimnini. A checklist of species of *Arawa* Knight is given.

Keywords: Auchenorrhyncha, Cicadomorpha, Membracoidea, Deltocephalini, Paralimnini, Athysanini

INTRODUCTION

In his many publications on the Australian leafhopper fauna, J.W. Evans often used the nominal genus to place species within a subfamily intending that these placements would be reviewed at a later date. Examples are the Tartessinae, which were mainly placed in the genus *Tartessus* Stål, later reviewed by F. Evans (1981), the Idiocerinae in the genus *Idiocerus* Lewis, later reviewed by Webb (1983), the Macropsinae in the genus *Macropsis* Lewis, currently under review by L. Semeraro, and the Deltocephalinae in the genus *Deltocephalus* Burmeister. Several Australian deltocephaline species described by Kirkaldy (1906, 1907) were placed by Evans (1966) in the genus *Deltocephalus*. In so doing, Evans (1966) stated that a critical study was needed to determine which of the species ascribed to that genus were truly congeneric with the type, *D. pulicaris* Fallén.

The genus *Horouta* (Cicadellidae: Deltocephalinae) was created by Knight (1975) for the single New Zealand species *H. inconstans* Knight. Three of Kirkaldy's species placed in *Deltocephalus* by Evans represent species of *Horouta* and *Lonatura austrina* Kirkaldy also belongs in *Horouta*. These nomenclatural changes are proposed below together with the descriptions of two new Australian species of *Horouta*.

The following abbreviations are used in this paper: AM: The Australian Museum, Sydney, NSW; ASCU: Agricultural Scientific Collections Unit, NSW Agriculture, Orange, NSW; BMNH: The Natural History Museum, London; BPBM: Bernice P. Bishop Museum, Honolulu, Hawaii; JWE: J.W. Evans

collection, Australian Museum; MOV: Museum of Victoria, Melbourne, Victoria; NSW: New South Wales; NT: Northern Territory; NZ: New Zealand; NZAC: New Zealand Arthropod Collection, Auckland, NZ; QDPI: Queensland Dept of Primary Industries, Indooroopilly, Qld; Qld: Queensland; SA: South Australia; Tas: Tasmania; WA: Western Australia.

TRIBE DELTOCEPHALINAE

Genus *Horouta* Knight

Horouta Knight 1975: 205

Type species, by original designation, *Horouta inconstans* Knight 1975 (NZ)

Diagnosis (after Knight 1975): Short robust species, 2-3mm long, brachypterous, semibrachypterous or, occasionally, macropterous. Head wider than pronotum. Vertex shagreen, convex, medial length greater than length against eyes, slightly less than width at base; anterior margin angularly rounded in dorsal aspect, smoothly rounded to face in lateral aspect. Face shagreen, approximately as long as wide; lateral margins slightly sinuate beneath eyes. Frontoclypeus broad, laterofrontal sutures extending above antennae to outer margin of ocelli. Anteclypeus distinct, narrowing slightly towards apex. Margin of gena adjacent to anteclypeus as wide as ocellular area. Ocelli marginal, small, separated from eye by twice own diameter. Pronotum as long as vertex or slightly shorter, lateral margins very short, non-carinate; posterior margin shallowly concave. Tegmina in macropterous forms reaching apex of abdomen with broad appendix, outer subapical cell absent, inner subapical cell usually closed; in subbrachypterous

forms reaching base of tenth segment; in brachypterous forms reaching to second or third visible abdominal tergite, venation and clavus distinct, appendix absent. Hindwings strongly reduced in brachypterous forms. Hind femoral setal pattern 2:2:1.

Male genitalia. Pygofer longer than wide, lateral lobes relatively narrow, apically rounded, bearing numerous but not dense spine-like setae on apical half, lacking processes (except for one species). Tenth segment small membranous. Subgenital plates triangular, reaching apex of pygophore, a uniseriate row of spine-like setae along lateral margin. Parameres short with apical process linear, apically rounded, curving in line with preapical shoulder which is roundly right-angled, not prominent. Connective with arms parallel, closely apposed, apices contiguous; stem very short, fused with aedeagus. Aedeagus robust basally, curving dorsally, with lateral processes present.

Notes: The genus *Horouta* was diagnosed by Knight (1975) based on the single New Zealand species *H. inconstans* Knight and this diagnosis applies to the following species which are differentiated from each other primarily by the arrangement of the lateral processes of the aedeagus. All six species are known mainly from brachypterous adults and the occurrence of macropters in the Australian species is uncommon. Knight (1975) discusses brachyptery in the type species *H. inconstans* as being normally restricted to the female, which occurs in both forms, and being characteristic of populations at higher altitudes. Brachyptery in the male is said to be only found in males with parasitic infection. However, as noted

below, brachyptery is common in males and females in other species of *Horouta*.

Horouta inconstans Knight

(Figures 1, 11-12)

Horouta inconstans Knight (1975: 206)

Holotype: male (examined), 3.2km N. of Hermitage, Hooker Valley, Mount Cook National Park, Canterbury Province, New Zealand, 1037m, on tussock grass and low plants, 11.ii.1972, W.J.K. and P.S.B. (NZAC)

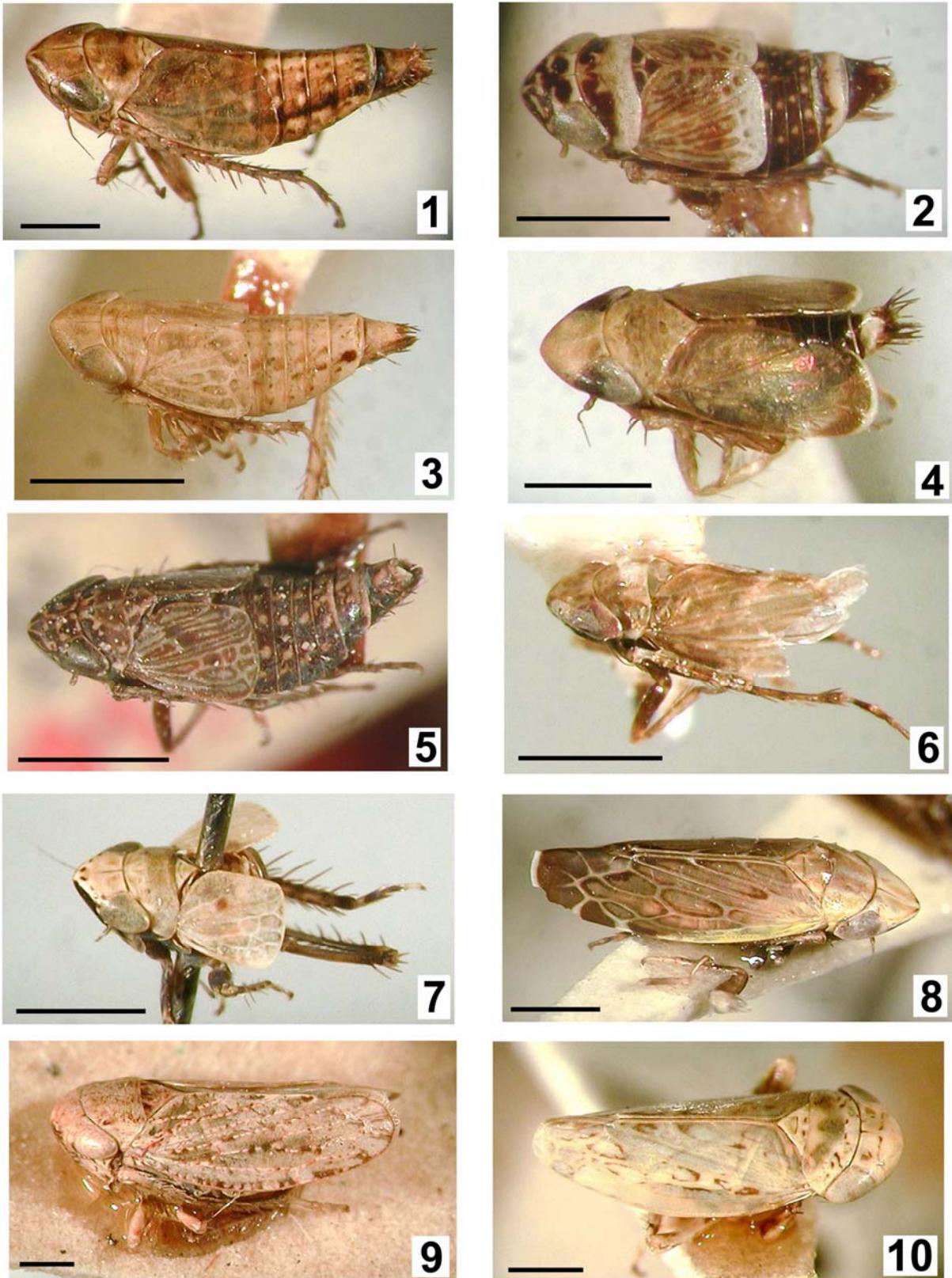
Material Examined: **New Zealand:** 1 paratype male, Hunter Mountains, Borland Saddle, Lake to West, Manapouri Exp. i.1970, J. McBurney; 5 males, Carrick Range, Watts Rock, 1295m, 13-15.ii.1963, pit trap, J.C. Watt; 15 males, Garvie Mountains, 1250m, 7-18.ii.1985, B.I.P. Barratt, 1 male, 1 female, Red Mountain, FD, 4300', 25.i.1975, J.S. Dugdale; 2 females, Dunstan Range, Thompson Gore Road, 1067m, 16.ii.1976, L.L. Deitz, sweeping tussock (all NZAC).

Description (after Knight 1975): Brachypterous, semi brachypterous or macropterous, pale testaceous, usually lacking markings, occasionally with brown mottling or with dark triangular marks at apex of vertex. Male genitalia as in generic diagnosis. Aedeagus as in Figures 11-12, bearing a single pair of linear, basal processes and apex produced beyond gonopore as elongate, linear process extending basad.

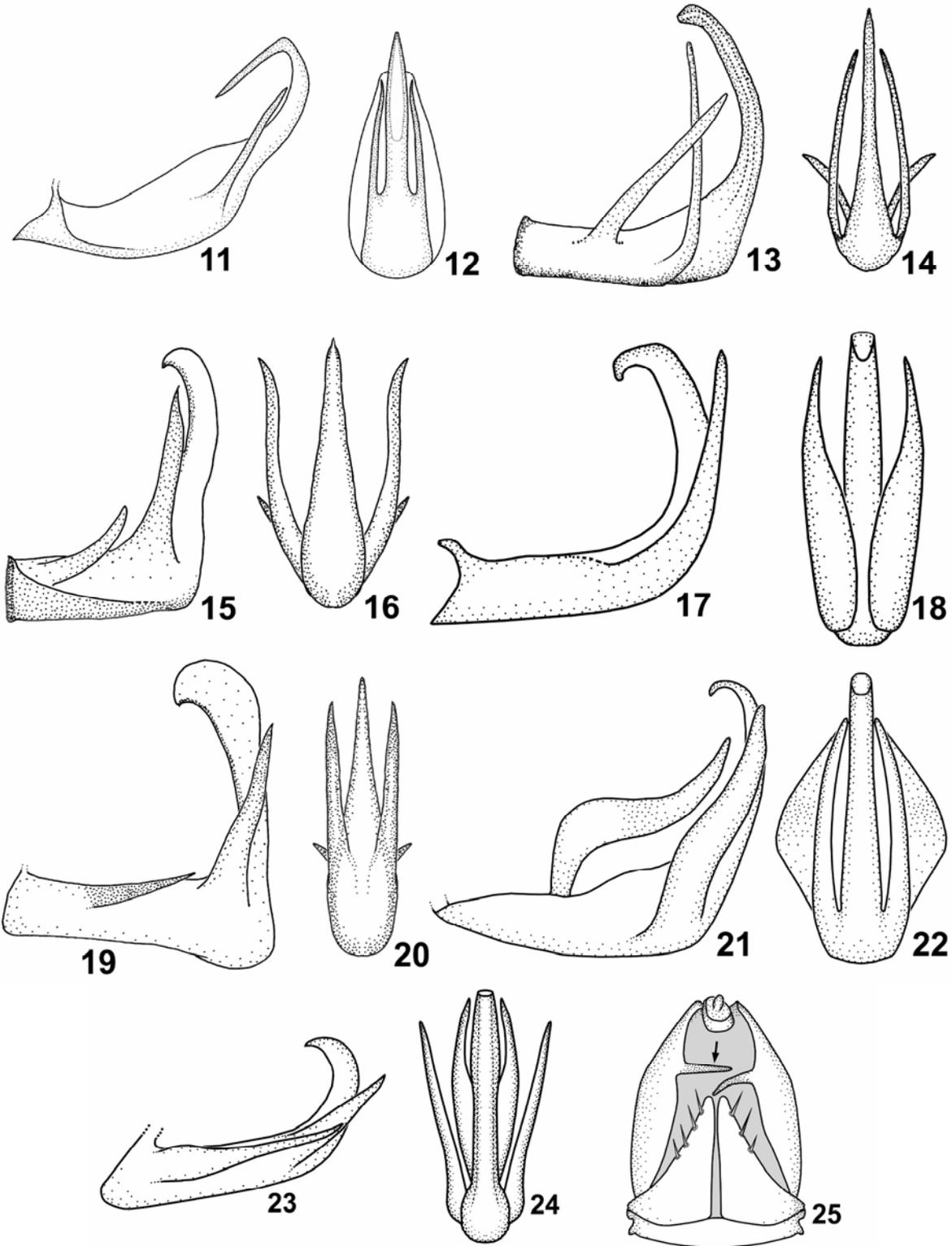
Notes: This New Zealand species differs from the

Key to Species of *Horouta* (males only)

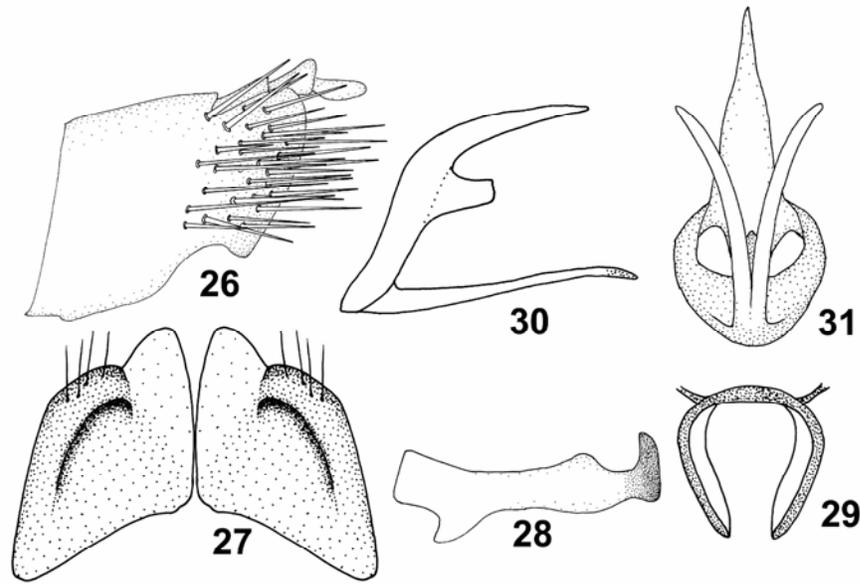
1. Posterior margin of pygofer with elongate transverse processes (Figure 25) *H. spinosa* n.sp.
Posterior margin of pygofer lacking processes 2
2. Aedeagus with one pair of basal processes (Figures 11, 17) 3
Aedeagus with two pairs of basal processes (Figures 13, 15, 19, 21) 4
3. Aedeagus with apex recurved forming elongate process (Figure 11); tegmen uniformly brown
..... *H. inconstans* Knight
Aedeagus with apex recurved forming short hook (Figure 17); tegmen becoming darker distally with fine marginal white band *H. austrina* (Kirkaldy)
4. Proximal pair of basal processes sinuate (Figure 21) *H. jahmoi* n. sp.
Proximal pair of basal processes straight or slightly curved (Figures 13, 15, 19) 5
5. Vertex primarily dark brown with paler markings (Figures 2, 5) 6
Vertex mainly testaceous/light brown, occasionally with some small darker markings (Figure 3)
..... *H. perparvus* (Kirkaldy)
6. Aedeagal processes subequal in length, crossing over each other in lateral view (Figure 13); aedeagal shaft evenly narrow in lateral view; tegmina and pronotum with posterior white bands (Figure 2)
..... *H. aristarche* (Kirkaldy)
Proximal aedeagal processes much shorter than distal processes, not crossed in lateral view (Figure 19); aedeagal shaft widening markedly towards apex; tegmina and pronotum dark brown with pale markings, lacking posterior white bands (Figure 5) *H. lotis* (Kirkaldy)



Figures 1-10 Habitus: 1. *H. inconstans*, 2. *H. aristarche*, 3. *H. perparvus*, 4. *H. austrina*, 5. *H. lotis*, 6. *H. jahmoi*, 7. *H. spinosa*, 8. *M. polemon*, 9. *A. centralis*, 10. *A. decoloratus*. Scale line = 0.5mm.



Figures 11-25 Male genitalia: 11-12, *H. inconstans* aedeagus: 11, lateral view, 12, posterior view; 13-14, *H. aristarche* aedeagus: 13, lateral view, 14, posterior view; 15-16, *H. perparvus* aedeagus: 15, lateral view, 16, posterior view; 17-18, *H. austrina* aedeagus: 17, lateral view, 18, posterior view; 19-20, *H. lotis* aedeagus: 19, lateral view, 20, posterior view; 21-22, *H. jahmoi* aedeagus: 21, lateral view, 22, posterior view; 23-25, *H. spinosa*: 23, aedeagus, lateral view, 24, aedeagus postero-ventral view; 25, pygofer and subgenital plates, posterior view (transverse process indicated by arrow).



Figures 26-31, *M. polemon*, male genitalia: 26. pygofer, lateral view, 27. subgenital plates, 28. paramere, 29. connective. 30. aedeagus, lateral view, 31. aedeagus, postero-ventral view.

Australian species by the presence of an elongate apical process on the aedeagus.

***Horouta aristarche* (Kirkaldy), comb. nov.**
(Figures 2, 13-14)

Driotura aristarche Kirkaldy (1907: 59)

Horouta aristarche (Kirkaldy), new combination

Type material examined: Lectotype male (examined), designated by Fletcher and Condello (1993: 37), Mittagong, NSW, i.1905, Koebele (BPBM); Paralectotypes: 4 females, same data as lectotype (BPBM)

Other material examined: **New South Wales:** 1 male, Razorback Mt. near Camden, 9.xi.1979, G.R.Brown (ASCU); 1 male Wally Newton's, Nadgee Nature Reserve, South Coast, 10-12.v.1979, M.J.Fletcher (ASCU); 4 males 4 females, Pearl Beach, near Woy Woy, 10.ii.1995, A. Westcott and F. Swindley, mercury vapour lamp (ASCU); 4 males 11 females, Pearl Beach, near Woy Woy, 11-12.ii.1995, M.J. Fletcher, J.A. Macdonald, R. Hoile and P.S. Gillespie, m.v.lamp (ASCU); 1 male, Bowral, i.1963, R. O'Brien (ASCU); 1 female, Pearl Beach, near Woy Woy, 11.ii.1995, M.J. Fletcher, by sweeping (ASCU); **Victoria:** 1 male, Rose River, via Whitfield, 18.iii.1963, A. Neboiss (NMV); 1 male, Toolangi, 16.iv.1986, J.A.Osmelak (ASCU); **Queensland:** 1 male, Mt. Tamborine, 10.x.1979, J.F.Donaldson (QDPI); 1 male, Springbrook, ii.1974, I.D.Galloway

(QDPI); 1 male, Bunya Mountains, 18-19.xi.1967, G. Monteith (UQIC).

Description: Head pale beige in female, whitish in male, with extensive dark brown to black markings on anteclypeus, lora, frontoclypeus and vertex. Pronotum dark brown anteriorly with light brown pattern, more extensive in female, and broadly white posteriorly. Tegmen pattern with dark brown and light brown except for broad white band across posterior margin. Abdomen dark brown with lines of pale spots.

Male genitalia: as in generic diagnosis except for aedeagus (Figures 13-14) which is elongate, narrow and curved anterodorsally, bearing two subequal elongate basal processes which cross over each other in lateral view.

Notes: This species, which is only known as a brachypterous form, can easily be distinguished from other species of *Horouta* by the broad whitish band on the hind margins of the pronotum, tegmina and usually abdominal tergite 9. The arrangement of the aedeagal processes, which cross over each other in lateral view, is also diagnostic.

***Horouta perparvus* (Kirkaldy), comb. nov.**
(Figures 3, 15-16)

Deltocephalus perparvus Kirkaldy (1906: 330)

Horouta perparvus (Kirkaldy), new combination

Type material examined: Lectotype male (examined), Mittagong, NSW, i.1905, Koebele (BPBM), designated by Fletcher and Condello (1993: 48); Paralectotypes: 4 males 13 females 2 sex unknown, Mittagong, NSW, i.1905, Koebele (BPBM)

Other material examined: **New South Wales:** 5 males 11 females, Cowra, J.A. Osmelak, on tomatoes, (1 female, 5.xi.1987, 1 male, 12.xi.1987, 1 male 1 female, 19.xi.1987, 2 females, 26.xi.1987, 2 males 1 female, 10.xii.1987, 1 male 1 female, 17.xii.1987, 1 male 1 female, 31.xii.1987) (ASCU); 1 male, Sydney, i.1905, Koebele (BPBM); 1 male, Araluen, 23.x.1989, S. McDougall, sticky trap in nectarine orchard (ASCU); **Victoria:** 4 males 1 female, Toolangi, J.A. Osmelak, on tomatoes (2 males, 2.i.1985, 1 male, 22.i.1985, 1 male, 31.xii.1986, 1 female, 27.xii.1984) (ASCU); 1 male, Myrtleford, 10.iv.1972, A. Neboiss, m.v. trap, *Eucalyptus* spp. (NMV); 4 males, Tatura, J.A. Osmelak, on tomatoes (1 male, 5.xii.1986, 2 males, 2.xi.1987) (ASCU)

Description: Brachypterous or macropterous. Colour variable, testaceous with or without pale or dark brown markings or pale dorsally and dark brown to black ventrally. Tegmen of macropters pale translucent with dark brown margins to cells. Tegmen of brachypters evenly testaceous translucent or brown with testaceous veins.

Male genitalia: As in generic diagnosis except for aedeagus (Figures 15-16) which bears two pairs of processes, the proximal being slightly over half length of distal processes.

Note: This is a common, widespread and variable species, usually brachypterous although macropters are reasonably common. The species differs from other species of *Horouta* by the arrangement of the preapical processes of the aedeagus, although some minor variation is noted in the disposition of the distal pair relative to the aedeagal shaft. In lateral view, the basal pair does not overlap the more distal pair as in *H. aristarche*.

***Horouta austrina* (Kirkaldy), comb. nov.**
(Figures 4, 17-18)

Lonatura austrina Kirkaldy (1907: 62)

Horouta austrina (Kirkaldy), new combination

Lectotype: female (examined), here designated, Sydney, NSW, ii.1905, coll: Koebele (BPBM)
Paralectotype: sex unknown, Bundaberg, Qld, ix-xii.1904, coll: Perkins (not found in BPBM)

Material examined: **Queensland:** 2 males, Moolooka, 1944, E. Riek (AM); 1 male, same data as previous (JWE); 1 male Moolooka, xi.1944, E. Riek (JWE); 3 males, Moolooka, viii.1944, E.F. Riek (BMNH)

Description: Pale testaceous except for frontoclypeus brown with lateral pale striping, gena sometimes brown around bases of antennae and brown occipital suture extending to level with front of eyes. Tegmen subbrachypterous, about twice as long as broad, reaching to 10th abdominal segment, testaceous hyaline on basal half, thence hyaline to subapical smoky brown band and whitish apical margin.

Male genitalia: As in generic diagnosis except for aedeagus (Figures 17-18) which bears only one pair of basal processes.

Note: Evans (1966) and Fletcher and Condello (1993) state that none of the type series was located in BPBM for examination. However, a female specimen matching Kirkaldy's (1907) published type data from Sydney has been found in the unsorted *Deltocephalinae* in BPBM and is here recognised as one of the missing syntypes and designated as lectotype to provide a diagnostic basis for the species. The specimen also matches Kirkaldy's (1907) description and male specimens identified as this species by J.W. Evans in the JWE collection. The male genitalia place the species into *Horouta*. The structure of the head and brachypterous tegmina support this placement. It differs from all other species of the genus, except for the type species, by bearing only a single pair of aedeagal processes. The transfer of this species to *Horouta* from *Lonatura* also represents a transfer of the species from the Tribe Paralimnini.

***Horouta lotis* (Kirkaldy), comb. nov.**
(Figures 5, 19-20)

Deltocephalus lotis Kirkaldy (1907: 56)

Horouta lotis (Kirkaldy), new combination

Holotype, by monotypy, female (examined), Mittagong, NSW, i.1905, coll: Koebele (BPBM)

Other material examined: **Victoria:** 1 male, Toolangi, 30.xii.1987, J.A. Osmelak, on tomatoes (ASCU); **Tasmania:** 1 male, Condominion Creek, SW Tas, 15.ii.1971, A. Neboiss (MOV)

Description: Macropterous or brachypterous. Black or very dark brown with distinctive cream striping on frontoclypeus and distinct longitudinal and transverse markings on vertex and anteriorly on pronotum.

Ventral surface and legs dark brown with cream markings. Tegmen testaceous along veins and in centre of cells, otherwise broadly dark brown.

Male Genitalia: As in generic diagnosis except for aedeagus (Figures 19-20) Proximal pair of aedeagal processes directed towards hind edge of shaft, barely reaching or reaching just beyond base of distal pair of processes. Both pairs more or less parallel to shaft in posterior view.

Notes: This species is immediately recognisable by its dark colouration and cream pattern, particularly distinct on the vertex, as shown in Figure 5. The male genitalia are very similar to those of *H. perparvus* with two pairs of aedeagal processes but the distal pair in *H. perparvus* diverge, in posterior view, from the shaft while in *H. lotis* they are more or less parallel to the shaft. In addition, the proximal pair in *H. perparvus* are often curved dorsally and extend beyond the base of the distal pair while in *H. lotis* they are shorter, barely reaching the base of the distal pair, and are straight rather than curved dorsally.

The holotype female of *H. lotis* is brachypterous and the two males are macropterous. Despite the low number of specimens, this is consistent with the occurrence of brachyptery in *H. inconstans* as discussed by Knight (1975). The localities at which these three known specimens have been collected are distant from each other indicating that the species is quite widespread in Australia although it is clearly uncommon. The holotype is from Mittagong, NSW, indicated by the presence of a handwritten "M" in red ink on a printed "Sydney, NSW" label. This was standard practice by Kirkaldy as detailed by Medler (1987) and Fletcher and Condello (1993).

***Horouta jahmoi* sp. nov.**

(Figures 6, 21-22)

Holotype: male, Cowra, NSW, 19.xi.1987, J.A. Osmelak, ex tomatoes (ASCU)

Paratype: male, Cowra, NSW, 21.xi.1986, J.A. Osmelak (ASCU)

Description: Small, brown, macropterous (in the only specimens known). Face dark brown with sparse, pale, transverse striping on dorsal half of frontoclypeus. Vertex with short, brown, marginal stripe on each side, then vaguely longitudinally striped with brown and testaceous, this striping continuing onto pronotum and mesonotum. Tegmen translucent brown with pale veins and pale area in centre of larger cells.

Male genitalia: as in generic diagnosis except for aedeagus which is shown in Figures 21-22. Basal aedeagal processes sinuate in lateral view (Figure 21), strongly outwardly convex in posterior view (Figure 22).

Notes: The only two specimens of this species were collected as part of a survey of insects associated with tomato big bud phytoplasma. It is possible that both a macropterous and a brachypterous form occur since this dimorphy is found in the other species of the genus. Knight's (1975) statement that brachyptery is normally restricted to the females is consistent with these two macropters being males. Both specimens in the type series have damaged tegmina.

Etymology: The species name is derived from the initials of John Osmelak who collected the type specimens and whose contribution to understanding tomato big bud phytoplasma in Australia, and the leafhoppers associated with this disease, is recognised here.

***Horouta spinosa* sp. nov.**

(Figures 7, 23-25)

Holotype: male, Pearl Beach, near Woy Woy, NSW, 17.ix.1974, M.J. Fletcher, at mercury vapour light (ASCU)

Paratype: male, Mount Tamborine, S.E. Qld, 6-17.iii.1981, yellow pan trap, open forest (QDPI)

Description: Small brachypterous species, ventrally dark brown to black with pale yellowish spotting on femora and tibiae. Face dark brown with yellowish striping on all parts. Vertex pale testaceous with line of six dark brown marginal flecks. Pronotum and mesonotum pale testaceous. Tegmen almost square in outline, pale testaceous with paler veins, dark brown smudge in clavus and indistinct brown mottling distally on anterior margin.

Male genitalia: Pygofer with hind margin incurved, bearing elongate marginal spur on each side, directed transversely and almost reaching other margin of pygofer (Figure 25). Subgenital plates as in generic diagnosis. Parameres with preapical shoulder directed posteriorly parallel with and about half length of apical process so that gap between is almost quadrate. Aedeagus with shaft curving evenly in apical half, with both pairs of elongate triangular processes almost straight and directed posteriorly.

Notes: This species differs from other species of *Horouta* by bearing pygofer processes. Despite this,

the structure of the aedeagus, with two pairs of preapical processes, and the morphology of the head and tegmina indicate that this species is otherwise typical of *Horouta*. The known specimens are fully brachypterous and bear the dorsally pale, ventrally dark coloration found in most other species.

Etymology: The specific name reflects the presence of spur-like pygofer processes, diagnostic for this species.

DISCUSSION

The changes proposed above increase the size of the genus from a single species to seven of which six are Australian and one, the type species, is from New Zealand. This also changes the status of the genus from an endemic New Zealand genus to being an Australian genus with a single representation across the Tasman.

It is also interesting to note that Knight (1975) included *Deltocephalus* in the New Zealand fauna with two species in the subgenus *Recilia* Edwards. Subsequent authors, including Oman, *et al.* (1990) recognise *Recilia* as a genus in its own right so that *Deltocephalus* is no longer represented in the New Zealand fauna. Those Australian species currently remaining in combination with the generic name *Deltocephalus* are not congeneric with *D. pulicaris* and future publications will reassign them to more appropriate genera. These species are *D. arunda* Jacobi, *D. chlorippe* (Kirkaldy), *D. lucindae* Kirkaldy and *D. viridellus* Evans.

NOTES ON OTHER DELTOCEPHALINAE

Continuing research on the Australian Deltocephalinae has shown that no Australian species belongs in *Deltocephalus*. Of those listed in *Deltocephalus* by Day and Fletcher (1994), *D. centralis* Evans and *D. decoloratus* Evans belong in the genus *Arawa* Knight (Tribe Athysanini) and *D. polemon* Kirkaldy is a senior synonym of *Micrelloides molaris* Evans (see discussion of tribal placement below). These new combinations are proposed below.

Micrelloides polemon (Kirkaldy), **comb. nov.** (Figures 8, 26-31)

Deltocephalus polemon Kirkaldy (1907: 58).
Lectotype male (examined), designated by Fletcher and Condello (1993: 50), Cairns, Queensland, viii.1904 (BPB)

Micrelloides molaris Evans (1973: 189). **new synonym.** Holotype male (examined), Millstream area, Western Australia, iv.1971, M. Wallace (AM)

Distribution: Australia: Qld, NT, WA.

Description. Face dark brown with pale transverse striping, shagreen. Vertex cream finely margined anteriorly with dark brown interrupted medially. Pronotum cream with longitudinal browning stripes extending onto mesonotum. Tegmen pale brown, darker around margins of cells with whitish veins and costal margin broadly greenish yellow over basal half. Anteclypeus almost parallel sided, reaching to level with maxillary plates apically. Maxillary plates broad between lora and face margin. Vertex expansive, triangular with clearly visible occipital suture extending almost to anterior margin, meeting face at acute angle anteriorly, margin not carinate, with ocelli placed at half an ocellar width from edge of eye. Pronotum short. Tegmina with five apical cells, the third almost triangular, and three closed preapical cells, the outer stalked at both ends. Clavus with one crossvein connecting outer claval vein with suture. Fore femora narrowing over apical third with marginal row of fine setae. Hind tibia somewhat flattened with outer margins bearing row of strong spines on enlarged bases and with smaller intercalary spines within and between the marginal rows. Inner margins also strongly spined.

Male genitalia: Pygofer (Figure 26) posteriorly produced as broad lobe covered in macrosetae. Subgenital plates (Figure 27) short, broad, apically emarginate with submarginal row of four setae on outer lobe and internal ridge articulating with parameres. Paramere (Figure 28) simple with boot shaped apex and small rounded preapical lobe. Connective (Figure 29) broadly arcuate, stem absent. Aedeagus (Figures 30, 31) forming open ring with gonopore mounted at apex of short tube on dorsal side of ring, elongate, broad, posterior extension beyond gonopore tube and with two linear, elongate, diverging basal processes on opposite side of ring from gonopore.

Note: Tribal placement of *Micrelloides* is problematic. Evans established the genus *Micrelloides* Evans (1973) and placed it in the Hecalinae (= Deltocephalinae: Hecalini) based on the expanded vertex and similarity of the genus with *Alospangbergiella* Evans (1973) although the structures of the genitalia are very different. The structure of the basal connective, with widely spaced arms articulated directly with the base of the aedeagus without a basal stem indicates affinity with species of *Soractellus* Evans which was included in the Paralimnini by Day and Fletcher (1994). Fletcher and Larivière (2001) placed the genus in the Athysanini despite the absence of a basal stem. This would seem

to be an error and the genus is here placed in the Paralimnini close to *Soractellus* with which *M. molaris* shares similarity in the structure of the male genitalia and tegminal venation.

TRIBE ATHYSANINI

Arawa centralis (Evans), comb. nov. (Figure 9)

Deltocephalus centralis Evans (1966: 242)
Holotype female (examined), Standley Chasm, McDonnell Ranges, NT, 28.vi.1939, A. Musgrave (AM)

Other material examined: 1 specimen (lacking abdomen, mounted with holotype), 2 females (mounted together), same data as holotype (AM); 1 female, Lower Portland, NSW, 2.x.1939, A. Musgrave (AM).

Notes: Despite the lack of male genitalia, the stubby shape with wide vertex broadly rounded to the face indicates that the species belongs in *Arawa* which is widespread in drier parts of Australia.

Arawa decoloratus (Evans), comb. nov. (Figure 10)

Deltocephalus decoloratus Evans (1942: 148)
Holotype male (examined), Dedari, WA, i.1936, R.E. Turner (BMNH)

Other material examined: 1 female, Augusta, WA, x.1966, J.W. and F. Evans, "Deltocephalus decoloratus Ev. J.W. Evans det." (AM)

CHECKLIST OF SPECIES OF ARAWA KNIGHT

The following species are currently placed in the genus *Arawa* Knight:

Arawa centralis (Evans) comb. nov.

Deltocephalus centralis Evans (1966: 242)
Distribution: NT, NSW

Arawa decoloratus (Evans) comb. nov.

Deltocephalus decoloratus Evans (1942: 148)
Distribution: WA

Arawa detracta (Walker)

Iassus detractus Walker (1858: 271)

Coelidia detracta (Walker), (Metcalf 1964: 46)

Euscelis detractus (Walker), (Evans 1977: 118)

Arawa detracta (Walker), (Day and Fletcher 1994: 1205)

Distribution: Tas.

Arawa dugdalei Knight

Arawa dugdalei Knight (1975: 181)

Distribution: NZ

Arawa novella Metcalf

Deltocephalus montanus Evans (1938: 16),

preoccupied by *Deltocephalus montanus* Distant (1908)

Deltocephalus novellus Metcalf (1968: 1167), nom nov. for *Deltocephalus montanus* Evans

Arawa novella (Metcalf), (Knight 1975: 183)

Distribution: NSW, Tas, SA, NZ

Arawa pulchra Knight

Arawa pulchra Knight (1975: 185)

Distribution: NSW, Vic, WA, NZ

Arawa salubris Knight

Arawa salubris Knight (1975: 180)

Distribution: NZ

Arawa taedius (Kirkaldy)

Phrynomorphus taedius Kirkaldy (1906: 326)

Deltocephalus taedius (Kirkaldy), (Evans 1966: 238)

Arawa taedius (Kirkaldy), (Fletcher and Condello 1993: 52) *nomen dubium*

Distribution: Qld

Arawa variegata Knight

Arawa variegata Knight (1975: 180)

Distribution: NZ

Notes: Of the eight recognised species currently placed in *Arawa*, three are endemic to New Zealand, three are endemic to Australia and the remaining two are shared between the two countries. However, at least five undescribed species are known in the Australian fauna and a comprehensive revision of the genus, based on the male genitalia, is needed.

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