REVISION OF THE AUSTRALIAN ASIRACINAE (HOMOPTERA: FULGOROIDEA: DELPHACIDAE)

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Abstract

Two asiracine genera are recognised from Australia, Ugyops Guérin-Méneville with 6 species and Notuchus Fennah with 4 species. Ugyops hackeri sp. n. and U. sejunctus sp. n. are described, while U. brevifrons (Jacobi), U. longiceps Muir, U. longifrons (Jacobi) and U. musgravei Muir are redescribed. Keys to Australian genera of Asiracinae and Australian species of Ugyops are provided. Additional locality records are given for Notuchus kurandae Donaldson, N. monticola Fennah and N. palmerstonensis Donaldson.

Introduction

The genus *Ugyops* Guérin-Méneville was unknown from Australia until Jacobi (1928) described *U. brevifrons* and *U. longifrons* from Queensland. Muir (1931) described *U. longiceps* from Queensland and *U. musgravei* from Lord Howe Island. These 4 little known species are redescribed below, together with 2 new ones. *Notuchus* Fennah was recorded from Australia by Fennah (1973), who described *N. monticola* from Lord Howe Island. Donaldson (1979) added *N. kurandae*, *N. palmerstonensis* and *N. rotundifacies* from Queensland. Further locality records for *Notuchus* are given below.

Abbreviations: AM, Australian Museum, Sydney; ANIC, Australian National Insect Collection, CSIRO, Canberra; BCRI, Biological and Chemical Research Institute, Department of Agriculture, Sydney; BM, British Museum (Natural History), London; NR, Naturhistoriska Riksmuseet, Stockholm; QDPI, Queensland Department of Primary Industries, Brisbane; QM, Queensland Museum, Brisbane; SAM, South Australian Museum, Adelaide; UQIC, University of Queensland Insect Collection, Brisbane; USNM, United States National Museum, Washington;

Subfamily Asiracinae Fieber

Asiracae Fieber, 1872: 5.

Two subfamilies are recognised in the Delphacidae, the Asiracinae and the Delphacinae. Both have representatives in Australia. Keys to the subfamilies and tribes were given by Fennah (1950, 1956).

Asiracinae are distinguished by an awl-shaped posttibial spur which is circular or angulate in cross-section, without lateral teeth and with an acute apex.

Key to Australian genera of Asiracinae

Vertex longer than broad at base, frons longer than broad, without sublateral carinae, antennae with segment 2 distinctly longer than segment 1, mesonotum with 5 carinae, tegmen with distinct venation, reaching or surpassing anal segment Ugyops Guérin-Méneville Vertex broader than long, frons about as wide as long, with a pair of sublateral carinae, antennae with segments 1 and 2 subequal, mesonotum with 3 carinae, tegmen with obscure venation, not reaching posterior margin of tergite 4....... Notuchus Fennah

Ugyops Guérin-Méneville

Ugyops Guerin-Méneville, 1834: 477. Type-species Ugyops percheronii Guérin-Méneville, 1834: 478.

The Australian *Lgyops* are characterised as follows: Vertex longer in midline than broad at base, posterior margin positioned at about midpoint or slightly anterior to midpoint of eyes (Fig. 36), Y-shaped carina with basal stem obsolete or subobsolete. Frons longer in midline than wide, widest about one-fifth from apex, rounding into vertex; antennae with segment 2 longer than segment 1, ocelli obsolete or subobsolete, rostrum reaching hind coxae. Pronotum with lateral carinae concave and recurved to meet posterior margin adjacent to tegulae. Mesonotum with 5 carinae. Anal segment of 3 longer than broad. Genital styles in ventral view diverging at base and converging and meeting at or near apex.

Key to Australian species of Ugyops

-	and the second s	. 21	251			7
١.	Tegmen with claval suture absent or incomplete (Fig	S Z I ,	33)	• •		- 2
	Tegmen with claval suture complete (Fig! 7)					3
2	Tegmen with claval suture absent (Fig. 21)		lon	gifron	is (Jace	obi)_
	Tegmen with claval suture present in basal half only	(Fig	. 35)	hac	keri sp). n.
3.						
	Frons less than 3 x as long as wide (Fig. 39)					
4.	Frons more than twice as long as wide (Fig. 39)	٠. ,		sejun	ctus sp	o. n.
	From less than twice as long as wide (Figs 4, 25)				٠.	5
5.	Antennal segment 2 more than twice as long		sagmen			
•	(Fig. 3)		bre	vifron	ıs (Jac	obi)
	Antennal segment 2 less than twice as long	as	segmen	t I		
	(Fig. 24)			musgi	avei N	1uir

Ugyops brevifrons (Jacobi) (Figs 1-7)

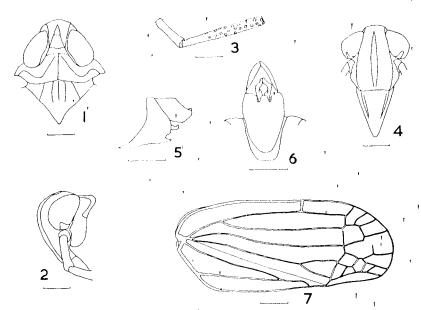
Livatis brevifrons Jacobi, 1928: 43.

Ugyops brevifrons (Jacobi); Fennah, 1965: 6.

Type, -Lectotype 's, here designated, labelled "Bellenden Ker--Queensl. Mjoberg" (NR). Type examined.

Additional material examined. Queenstand: 2,3,5, Lockerbie, Cape York, 6-10.vi.1969; 1%, Iron Range, Cape York, 26-31.v.1971, 1%, 1-9.vi.1971, 1%, 27.iv-4.v.1973, 1%, 13-20.v.1975, K. J. Houston (QDPI): 1,3, Rocky R., II.vi.1960, C. N. Smithers (AM); 1%, Rocky R., McIllwraith Range via Coen, 6-8.vi.1969, B. Cantrell; 1,5, Mt Webb Nat. Pk, 50 km N of Cooktown, 11-14.vii.1976, G. B. & S. R. Monteith; 1,5, Gap Ck, 6 mls (10 km) N (S on label) of Bloomfield R., 13.xi.1965; 1,3, Gap Ck, 6 mls (10 km) N of Bloomfield R., 13-14.xi.1965; 1,3, Gap Ck, 5 mls (8 km) N of Bloomfield R., 8-9.v.1970; 1,3, Cooper Ck Beach, 13 km N of Daintree R., 25.iii.1976, I. D. Galloway (QDPI); 1,3, Upper Daintree R. via Daintree, 27.xii. 1964, H. A. Rose; 1,3, Upper Mulgrave R., 30.iv.1970; 1,3, Palyma Dam, 24.xii.1963. Specimens collected by G. B. Monteith and in UQIC except as indicated.

Coloration.—Body light brown, with variable darker markings. Frons with 5 or 6 red to brown marks lateral and adjacent to submedian carinae, apical marks sometines extending to lateral margins. Antennae



Figs 1-7 Ugyops brevifrons (Jacobi): (1) vertex, pronotum and mesonotum; (2) head and pronotum, lateral view; (3) antenna; (4) frons and clypeus. (5-6) 3 genitalia: (5) lateral view; (6) ventral view; (7) tegmen (scale = 0.5 mm).

with 2 bands often pale and incomplete on segment 1, and 3 dark bands on segment 2. Postelypeus and apical part of elypeus often dark, producing together with dark areas on fore coxae and femora a dark transverse bar on ventral surface. Vertex, pronotum and mesonotum usually with variable dark markings along or adjacent to carinae. Tibiae and tarsi with distinct dark banding. Tegmen light hyaline, with dark areas on and adjacent to longitudinal veins giving mottled appearance, cross veins and adjacent parts of longitudinal veins whitish.

Head. Vertex in midline 1.4-1.8 x basal width, widest just before rounded apex; sides straight or nearly so; posterior margin usually convex, sometimes straight; submedian carinae meeting before apex; subobsolete at apex; basal compartment about as wide as or slightly wider than long. From in midline 1.6-1.8 x greatest width; submedian carinae slightly converging at base and apex, not meeting, becoming obsolete before apex. Segment 2 of antennae 2.2-2.6 x length of segment 1.

Thorax. Pronotum with strong median carina. Mesonotum with strong carinae, outer pair reaching posterior margin.

Legs.—Hind tibiae with single lateral spine in addition to basal and apical ones.

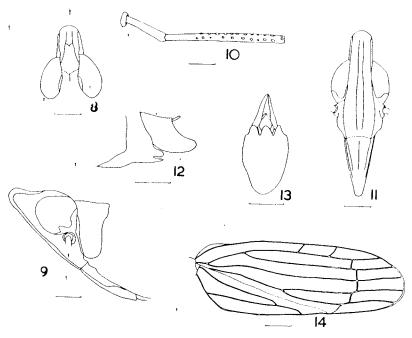
Tegmen.—Short, reaching anal segment, claval suture present; Cu forked distal to claval fork, each branch reuniting before apex; M forked, at least 2 rows of cross veins; apical veins complex.

Abdomen. Anal segment of 3 in lateral view with ventrolateral portion slightly produced posteriorly, with rounded lower angle and somewhat acute upper angle. Pygofer with median projection truncately rounded, just reaching level of broadly rounded ventrolateral margins. Genital style in ventral view with basal half robust, nearly parallel-sided, outer margin with broad rounded lateral projection just apical to midpoint and concave in apical third.

 $Dimensions. -3; length of body 4.4-5.0 \,mm, length of tegmen 3.3-3.9 \,mm; \pm length of body 4.9-5.1 \,mm, length of tegmen 3.8-4.0 \,mm.$

NOTE

Two females from Iron Range have the normal dark markings much more extensive on the ventral surface while the vertex, pronotum and mesonotum are pale. In addition most of the frons is uniformly dark and the tegmen basal to the cross veins is dark hyaline.



Figs 8-14 Ugyops longiceps Muir: (8) vertex; (9) head and pronotum, lateral view; (10) antenna; (11) from and clypeus. (12-13) \vec{c} genitalia: (12) lateral view; (13) ventral view; (14) tegmen (scale = 0.5 mm).

Ugyops longiceps Muir (Figs 8-14)

Ugvops longiceps Muir, 1931; 69.

Type. Holotype 3, labelled "Queensland, 1904, Dodd" (BM). Type examined.

Coloration. Generally yellowish brown, apex of head black, with dark brown stripe running from near apex of head and expanding against eye; area between submedian carinae of frons red. Antennal segment I with narrow ventral dark stripe; segment 2 with wider ventral dark stripe at base gradually widening, apical half completely dark. Anal segment with ventral half dark; medioventral surface of pygofer dark, becoming paler laterally, apical projections dark. Tegmen light, with veins dark except for cross veins and adjacent sections of longitudinal veins; dark round spot at junction of vein M and cross veins. I

Head. Vertex in midline 2.7 x basal width, widest about one-third from rounded apex; sides subparallel in apical two-thirds, slightly converging in basal third, emarginate just anteriorly to eyes; posterior margin strongly angulate; submedian carinae becoming obsolete before apex; basal compartment much longer than wide, dorsal surface concave in lateral view. From in midline 3.2 x greatest width; submedian carinae subparallel, becoming obsolete towards base and apex. Segment 2 of antennae 2.8 x length of segment 1.

Thorax. Pronotum with weak median carina, Mesonotum with weak carinae.

Logs. Hand tibrae missing

Tegmen. Short, reaching anal segment, claval suture present; Cu forked at level of claval fork and not reuniting; M not forked, I row of cross veins; apical veins simple.

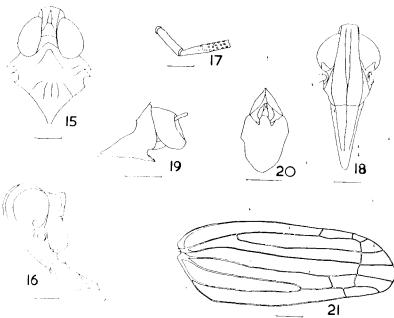
Abdomen. Anal segment of 5 in lateral view with ventrolateral portion produced posteriorly, with rounded apex. Pygofer with median and ventrolateral projections acutely rounded and level with each other, base and tapering towards apex.

Dimensions. 5: length of body 5.8 mm, length of tegmen 3.8 mm.

Ugyops longifrons (Jacobi) (Figs 15-21)

Livatis longifrons Jacobi, 1928: 44.

Ugyops longifrons (Jacobi); Fennah, 1965; 6.



Figs 15-21 Ugyops longifrons (Jacobi): (15) vertex, pronotum and mesonotum; (16) head and pronotum, lateral view; (17) antenna; (18) frons and clypeus. (19-20) 3 genitalia: (19) lateral view; (20) ventral view; (21)

Types: Lectotype 5, here designated, labelled "Malanda Queensl. Mjoberg" and bearing Jacobi's determination label (NR). Paralectotypes: 1.5, 1 nymph, same data as lectotype (NR). Types examined.

Additional material examined. QUIT-NSLAND: 1-5, Windsor Tableland via Mt Carbine, 4-29.xii.1980 (QDPI), 1-, 28.i-5.iii.1981 (QDPI); 1-, Malanda, ii.1975, G. R. Brown (BCRI); 5-3-5, 4-1, Cairns district, A. M. Lea (SAM); 1-3. Wallacha Falls, Palmerston Hwy, 30.iv.1967, D. H. Colless (ANIC); 1-3, Henrietta Ck, Palmerston Nat. Pk, 29, xii.1964, G. B. Monteith (UQIC), 1-5, 23.iv.1970, G. B. Monteith (UQIC); 1-7, Palmerston Nat. Pk via Innisfail, 7-8.viii.1968, B. Cantrell (UQIC); 2-1-1, east slope of Mt Bartle Frere, 1400 ft (420 m), 14.iv.1955, K. R. Norris (ANIC).

Coloration. Body very light brown, with darker areas on coxae, base and apex of fore and mid femora, ventral surface of hind femora, postelypeus and sometimes elypeus medially, base and apex of antennal segment 2, vertex adjacent to and on submedian carinae, veins of tegmen except for short lengths, ventral surface of pygofer and posterior area of ventral abdominal surface. From with submedian earinae and area between them red. In (i) dark areas much more extensive, with lateral areas of from often dark.

Head. Vertex in midline 1.25-1.5 x basal width, widest just before rounded apex; sides straight or nearly so, converging towards base; posterior margin concave or nearly straight; submedian carinae meeting before apex, often indistinct at apex; basal compartment about as wide as or slightly wider than long. Frons in midline 2.5-2.8 x greatest width; submedian carinae more or less straight, meeting about one-quarter to one-fifth from apex. Segment 2 of antennae 1.2-1.5 x length of segment 1.

Thorax. Pronotum with median carina subobsolete. Mesonotum with outer pair of carinae reaching posterior margin, weak median carina.

Legs.-- Hind tibiae with 2 lateral spines in addition to basal and apical ones.

Tegmen. Short, reaching anal segment, claval suture absent; Cu simple or forked very close to apex; M forked. I row of cross veins; apical veins simple.

Abdomen.—Anal segment of 3 in lateral view with ventrolateral portion barely produced, posteriorly with more or less rounded apex. Pygofer with median projection broadly rounded, terminating at about level of broadly rounded ventrolateral margins. Genital style robust in ventral view, inner margin straight in basal quarter, evenly and strongly concave medially, nearly straight in apical quarter; outer margin straight in basal half, concave just before midpoint, convex in apical half, apex broadly rounded.

Dimensions. -5: length of body 5.0-5.6 mm, length of tegmen $3.8^{4}4.1$ mm; γ : length of body 6.1-6.2 mm, length of tegmen 4.3-4.5 mm.

Ugyops musgravei Muir (Figs 22-28)

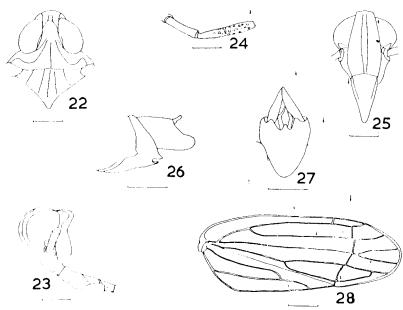
Ugyops musgravei Muir, 1931: 70.

Types—Paratype 1, labelled "Lord Howe I., A. Musgrave, R. Baxter: 12:23" (BM). Paratype examined. Holotype not located in AM. 1

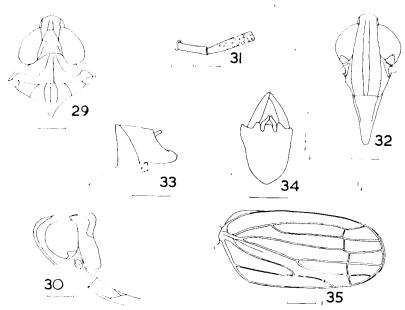
Coloration. Ground colour light brown, with or without varying finounts of dark brown to black. These areas are usually as follows: adjacent to posterior margin of vertex. 2 lateral areas near apex of vertex, often extending onto frons, frons usually with 2 lateral areas near apex and also at base, areas often joined laterally and/or medially, frons sometimes mostly black, clypeus and postelypeus varying from ground colour to nearly all black, antennae with slight darkening in basal and appeal thirds of segment 2, legs often with dark banding, pronotum normally with dark areas just behind eyes, sometimes 2 dark areas near base and adjacent to posterior edge of lateral carinae, mesonotum normally without dark coloration, though sometimes with dark areas adjacent to carinae, rarely with pronotum and mesonotum nearly all dark, ventral surface variable from pale to nearly all dark, tegmen normally with dark areas at base and near apex of claval suture, in dark specimens various dark areas along veins and on tegmen.

Head.— Vertex in midline 1.4-1.8 x basal width, widest just before rounded apex level with anterior ends of lateral margins; sides concave behind apex and nearly straight at base, converging towards base; posterior margin straight or very slightly convex; submedian carinae uniting and then separating about one-third from apex, apical part often indistinct; basal compartment slightly wider than long. From in midline 1.7-1.9 x greatest width; submedian carinae separate for entire length, subparallel medially, converging towards base and apex. Segment 2 of antennae 1.55-1.9 x length of segment 1.

Thorax. Pronotum with median carina distinct. Mesonotum with median carina not reaching posterior margin.



Figs 22-28 Ugyops musgravei Muir: (22) vertex, pronotum and mesonotum; (23) head and pronotum, lateral view; (24) antenna; (25) frons and clypeus. (26-27) genitalia; (26) lateral view; (27) ventral view; (28) tegmen (scale = 0.5 mm).



Figs 29-35 Ugyops hackeri sp. n.: (29) vertex, pronotum and mesonotum; (30) head and pronotum, lateral view; (31) antenna; (32) from and clypeus. (33-34) 3 genitalia: (33) lateral view; (34) ventral view; (35) tegmen (scale 0.5 mm)

Legs. Hind tibiae with single lateral spine in addition to basal and apical ones.

Tegmen. Short, reaching anal segment, claval suture present; Cu forked at level of claval fork, each branch reuniting before apex, if not reunited then connected by cross vein near apex; M usually forked near cross veins, rarely unforked, I row of cross veins; apical veins simple.

Abdomen. Anal segment of 5 in lateral, view with ventrolateral portion strongly produced posteriorly, with evenly rounded apex. Pygofer with median and ventrolateral projections acutely rounded, median projection not reaching level of ventrolateral projections, depressions present between bases of projections. Gental style in ventral view moderately long, robust at base and tapering towards apex.

 $Dimensions, = 5; length of body 4.3-6.1 mm, length of tegmen 3.1-4.5 mm; \ \ | length of body 4.8-6.9 mm, length of tegmen 3.8-5.5 mm.$

Ugyops hackeri sp. n. (Figs 29-35)

Types. Holotype 5, Queensland, labelled "Springbrook, 14,1,30, H. Hacker," (USNM). Paratypes: 1 5, 2 , 1, same data as holotype (QM T8601, USNM).

Coloration. Basically light yellowish-brown, vertex with apical median area and parallel apical stripes just inside lateral margins dark. Frons with basal median area dark, area between submedian carmae red. Antennae with dark band just before apex of segment 2. Coxae darker, also bases of femora, 2 dark bands on tibiae, dark band on tarsal segment 1. Ventral surface of abdomen in ; with segment before pygofer dark, with some dark markings on abdomen. Tegmen with single dark spot on posterior margin distal to apex of claval vein, veins with several dark areas.

Head. Vertex in midline 1.6 x basal width, widest just basal of midpoint, apex rounded; sides slightly convex; posterior margin slightly convex; submedian carinae becoming subobsolete before apex, basal compartment slightly wider than long. From in midline 2.6-2.9 x greatest width; submedian carinae subparallel, subobsolete at base and not meeting at apex. Segment 2 of antennae 1.4-1.6 x length of segment 1.

Thorax. Pronotum with moderately strong median carina. Mesonotum with moderately strong carinad, outer pair convex and meeting posterior margin.

Legs. Hind tibiae with single lateral spine in addition to basal and apical ones.

Teginen. Short, reaching anal segment in 5, not reaching it in 6, claval suture present in basal half only; Cudorked at level of claval fork, not reuniting: M not forked, I row of cross veins; apical veins simple.

Abdomen. Anal segment of 5 in lateral view with ventrolateral portion produced posteriorly, with subacutely rounded apex. Pygofer with median projection broad, truncately rounded, ventrolateral projections more acutely rounded, slightly curved dorsally, very slightly longer than median projection. Genital style in ventral view with basal half not tapered and straight, apical half tapering towards recurved apex.

Dimensions: 5: length of body 4.9 mm, length of tegmen 3.9 mm; :: length of body 5.8-6.3 mm, length of tegmen 3.3-3.4 mm.

Ugyops sejunctus sp. n. (Figs 36-42)

Types. Holotype 5, labelled "Cape Tribulation, N. Qld, 19 Oct 1980, G. B. Monteith. Pyrethrum, rainforest" (QM T8600). Paratypes. QLEENSLAND: 1-5, Cooloola Forestry Area E of Gympie, iv.1978, L. D. Galloway (QDPI): 1-5, Noosa Nat. Pk, 13.iii.1963, G. B. Monteith (UQIC); New SOUTH WALES: 1-7, Huonbrook nr Mullumbimby, 2.iii.1965, D. K. McAlpine (AM).

Coloration. Generally light brown, vertex with areas between carinae dark brown to black, sometimes said compartment dark. Froms with submedian carinae red, lateral carinae yellowish, black between submedian and lateral carinae at base, dark band in apical fifth below after extending to apex on each side of midline. Clypeus dark at apex, postelypeus dark at base. Pronotum dark on both sides of median carina, also atterior to recurved section of lateral carinae and a couple of areas ventral to this. Mesonotum with 2 longitudinal markings, I on each side of middle. Legs darker, with banding on tibiae, fore and mid tarsi black. Tegmen with dark area at apex of claval suture, spot on each side of vein M on cross veins, veins mostly dark, with pale sections. Abdomen with various pale markings laterally, anal segment of β with dark longitudinal stripe laterally and ventral margin dark, pygofer with apex of median projection dark.

Head. Vertex in midline 2.0-2.3 x basal width, widest just before rounded apex; sides straight and converging towards base; posterior margin slightly angulate posteriorly; submedian carinae becoming obsolete before apex; basal compartment longer than wide. From in midline 2.3 x greatest width; submedian carinae close, parallel, meeting at apex and becoming obsolete at base. Segment 2 of antennae 2.2-2.3 x length of segment 1.

Thorax.- Pronotum with strong median carina. Mesonotum with weak carinae.

Legs.- Hind tibiae with single lateral spine in addition to basal and apical ones.

Tegmen. Short, reaching anal segment, claval suture present; Cu forked near level of claval fork and not reuniting; M forked, I row of cross veins; apical veins simple.

Abdomen. Anal segment of 3 in lateral view with ventrolateral portion strongly produced posteriorly,

with broadly rounded apex. Pygofer with long truncately rounded median projection and 2 very short ventrolateral projections. Genital style in ventral view long, broad at base and gradually tapering to acute apex.

| Donaldson, J. F. (1979). Revision of the genus Notuchus Fennah (Homoptera: Fulgoroidea:

Dimensions. 5: length of body 5.4 mm, length of tegmen 3.3 mm; 4: length of body 5.3-5.4 mm, length FENNAH, R. G. (1950). Fulgoroidea of Fiji. Bull. Bernice P. Bishop Mus. 202: 1-122. of tegmen 3.8-3.9 mm.

Notuchus Fennah

Notuchus Fennah, 1969: 32; Donaldson, 1979: 181. Type-species Notuchus risioides Fennah, 1969: 32-33.

Notuchus kurandae Donaldson

Notuchus kurandae Donaldson, 1979: 184,

QUIENSIAND: 14, Mt Tiptree, 730 m, 29.vi.1971, Taylor & Feehan (ANIC).

Notuchus monticola Fennah

Notuchus monticola Fennah, 1973: 266,

NEW SOUTH WALLS: 17, 1 1, Lord Howe Is, Mt Gower summit, 9.xi,1979, G. B. Monteith, pyrethrum knockdown, moss forest (QM).

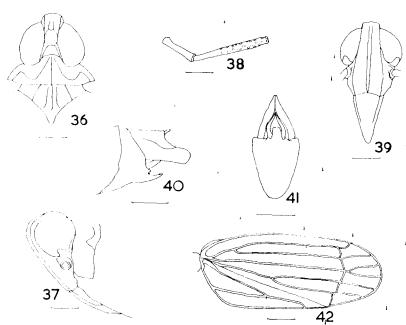
Notuchus palmerstonensis Donaldson

Notuchus palmerstonensis Donaldson, 1979: 184-185.

QUEENSLAND: 17, ca 12 km SE of Millaa Millaa, 5.vii.1971, Taylor & Feehan (ANIC); $1 \pm .700$ m, 4 km E of Lake Barrine, Lvii.1971, Taylor & Feehan (ANIC).

Acknowledgments

I thank the curators of the collections listed for the loan of specimens.



Figs 36-42 Ugrops separatus sp. n.: (36) vertex, pronotum and mesonotum; (37) head and pronotum, lateral view; (38) antenna; (39) from and clypeus. (40-41) 5 genitalia: (40) lateral view; (41) ventral view; (42) tegmen (scale 0.5 mm).

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