

A REVISION OF THE AUSTRALIAN ODACANTHINE GROUND BEETLES,
INCLUDING CHECKLISTS FOR AUSTRALIA AND THE PAPUAN SUBREGION.
(INSECTA: COLEOPTERA: CARABIDAE)

MARTIN BAEHR

Baehr, M. 2005 01 10: A revision of the Australian odacanthine ground beetles, including checklists for Australia and the Papuan subregion (Insecta: Coleoptera: Carabidae). *Memoirs of the Queensland Museum* **50**(2): 133-194. Brisbane. ISSN 0079-8835.

The Australian Odacanthinae are revised, except for *Giachinoana* Baehr, *Ophionea* Klug (= *Casnoidea* Castelnau), *Porocara* Sloane, *Renneria* Baehr, and the *brunnea*-group of *Dicraspeda* Chaudoir. New species taxa described are: *Archicolliuris occipitalis*, *A. splendissimus*, *Clarencia breviceps*, *Deipyrus inops*, *Eudalia atrata*, *E. femorata*, *E. latipennis interioris* subsp. nov., *E. minor*, *E. obliquiceps punctifrons* subsp. nov., *E. obliquiceps tozeria* subsp. nov., *E. punctipennis*, *E. reticulata*, *Gestroania setipennis*, *G. storeyi*, *Myrmecodemus lucai* and *M. pilosellus*. *Clarencia angusticollis* (Macleay) and *Eudalia waterhousei* Castelnau are raised from synonymy to full specific status. *Eudalia froggatti* Macleay is moved to *Gestroania* Liebke. *Neoeadalia* gen. nov., is erected for *Eudalia nigra* Sloane. *Myrmecodemus (Trichodemus)* subgen. nov., is erected for *Myrmecodemus pilosellus* sp. nov. To stabilise nomenclature, lectotypes, and associated paralectotypes, are designated for the following taxa: *Anasis howittii* Castelnau, *Clarencia angusticollis* (Macleay), *C. australis* (Chaudoir), *C. clarensii* (Castelnau), *Deipyrus palustris* (Sloane), *Dicraspeda brunneipennis* (Sloane), *D. obscura* (Castelnau), *Eudalia castelnau* Sloane, *E. latipennis latipennis* (Macleay), *E. waterhousei* Castelnau, *Gestroania froggatti* (Macleay), *Myrmecodemus formicoides* (Sloane), *M. globulicollis* (Macleay), and *M. riverinae* (Sloane). A neotype is designated for *Neoeadalia nigra* (Sloane). Notes are provided about species for which new material or information is at hand. A key to genera of Odacanthinae currently recorded from Australia is provided. Keys are also provided for the Australian species of *Archicolliuris* Liebke, *Clarencia* Sloane, *Deipyrus* Liebke, *Dicraspeda* Chaudoir, *Eudalia* Castelnau, *Gestroania* Liebke, *Myrmecodemus* Sloane, *Ophionea* Klug, and *Porocara* Sloane. Checklists are provided of all odacanthine species recorded from Australia and the Papuan subregion, with some information about distribution. Representatives of all Australian genera and all new taxa described in this paper are figured. □ *Coleoptera, Carabidae, Odacanthinae, Australia, New Guinea, checklists.*

Martin Baehr, Zoologische Staatssammlung, Münchhausenstr. 21, D-81247 München, Germany (e-mail: martin.baehr@zsm.mwn.de); received 20 December, 2003.

Until recently the Australian odacanthine fauna was believed to be much less speciose than that of other continents (Moore et al., 1987). Despite this apparent species paucity, the Australian fauna is surprisingly diverse and appears to include some of the most plesiotypic Odacanthinae. My collecting in far northern and northwestern Australia convinced me that at least some genera are much more speciose than suspected.

Review of many Australian types and of many unidentified Odacanthinae in Australian museums and other collections found a new genus, a new subgenus and several new species.

Certain previously synonymised species are returned to separate species rank. Recently described genera and species (Baehr, 1986, 1996a,b, 1999, 2003b,c), revaluation of Australian species (Baehr, 2003c), and new records of widespread Oriental species in

Australia (Baehr, 2000) are incorporated in a checklist of the Australian odacanthine species.

The *brunnea*-group of *Dicraspeda* Chaudoir (Baehr, 2003c), *Ophionea* Klug (= *Casnoidea* Castelnau), *Porocara* Sloane (Baehr, 1986, 1996b,c), *Renneria kamouni* Baehr and *Giachinoana carinipennis* Baehr (Baehr, 1999, 2003b) are not added to herein.

As Sloane's (1910, 1917, 1923) partial keys to the Australian Odacanthinae are outdated, a new key to all known Australian genera is provided. Keys are also given for the species of all genera that include more than one species. Existing keys for *Ophionea* and *Porocara* (Baehr, 1986, 1996b,c) are repeated or rearranged to cover only the Australian species, because no new data are available. A checklist is provided for the Papuan subregion based mainly on the work of

Darlington (1968, 1971) and Baehr (1995, 1996a,b, 1997b, 1998, 2003a,c).

Types of newly described species are shared with the respective collections, but holotypes and spare paratypes described from material from DPIM, Mareeba, and also paratypes and duplicates of species from my own collecting have been lodged in Queensland Museum.

MATERIAL AND METHODS

Altogether c. 900 specimens of Australian Odacanthinae were available for this study. About 80 additional specimens of New Guinean and Oriental Odacanthinae were used for comparison.

The male genitalia were removed from specimens soaked for a night in a jar under wet atmosphere, then cleaned for a short while in hot KOH.

For examination of the fine punctuation and microreticulation of the surface a high resolution stereomicroscope with up to 64 × magnification was used, supported by a lamp of high intensity giving natural light that could be focussed. For exact definition of the microsculpture such light is preferable, because fibre-optics lights substantially change perception of the surface structures.

The habitus photographs were taken with a digital camera using SPOT Advanced for Windows 3.5 and subsequently were worked with Corel PhotoPaint 10.

Measurements were taken using a stereomicroscope with an ocular micrometer. Length has been measured from apex of labrum to apex of elytra. Lengths, therefore, may slightly differ from those of other authors. Length of eye includes a small dark coloured ring of ocellae that in some instances is present behind the light area. Length of orbit is taken from posterior margin of eye to 'neck' suture. Length of head is the distance from apex of labrum to 'neck'. Length of pronotum was measured from the most advanced part of base to the most advanced part of apex; width of pronotum at widest part, including those parts of the proepisternum that are visible from above. Length of elytra was taken from the most advanced part of humerus to the most advanced apex of elytra including any apical denticles or spines.

ABBREVIATIONS. *Collections.* ANIC, Australian National Insect Collection, Canberra; BMNH, The Museum of Natural History, London; CBM, Working Collection M. Baehr, München; CFP, Collection S.

Facchini, Piacenza; CGT, Collection P. M. Giachino, Torino; CMP, Carnegie Museum, Pittsburgh; CRC, Cooperative Research Centre for Tropical Rainforest Ecology and Management, Cairns; CSM, Collection R. Sciaky, Milano; CTV, Collection L. Toledano, Verona; DEI, Deutsches Entomologisches Institut, Eberswalde; HNMB, Hungarian National Museum of Natural History, Budapest; MCSN, Museo Civico di Storia Naturale, Genoa; MCZ, Museum of Comparative Zoology, Cambridge/Mass.; MNHB, Museum für Naturkunde der Humboldt-Universität, Berlin; MNHP, Museum National d'Histoire Naturelle, Paris; NMNHP, National Museum of Natural History, Prague; MV, Museum of Victoria, Melbourne; MDPI, Queensland Department of Primary Industries, Mareeba; QM, Queensland Museum, Brisbane; SAM, South Australian Museum, Adelaide; UQIC, University of Queensland Insect Collection, Brisbane; ZSM, Zoologische Staatssammlung, München.

Collectors. Collectors' names are abbreviated as follows: A. Calder (AC), A. D. Selby (AS), A.J. Watts (AW), B. Cantrell (BC), J. Balderson (BJ), Britton & Misko (BM), J. Bugeja (BU), I.C. Cunningham (CC), J. Cardale (CJ), C. Oke (CO), C. Vallis (CV), M. & G. De Baar (DB), D. Cook (DC), S. De Faveri (DF), G. Dickinson (DG), D. Heiner (DH), D.C. F. Rentz (DR), W. Dressler (DW), D.K. Yeates (DY), E.B. Britton (EB), E.C. Dahms (ED), E.D. Edwards (EE), E.G. Matthews (EM), E.S. Nielsen (EN), E.F. Riek (ER), E. Sutton (ES), Earthwatch/Qld.Museum (EW), F.P.Dodd (FD), Fay & Halfpapp (FH), F.G. Satter (FS), F.E. Wilson (FW), J.G. Brooks (GB), G. Daniels (GD), G. Hangay (GH), G.B. Monteith (GM), H.W. Brown (HB), H.W. Davey (HD), H.W. Grawes (HG), K. Hyde (HK), H. Mitchell (HM), H. Shepherdson (HS), I.F.B. Common (IC), Ian Naumann (IN), J.D. Brown (JB), J.H. Calaby (JC), J.E. Feehan (JF), J. Hasenpusch (JH), J.F. Lawrence (JL), J.H. Taylor (JT), J.W. Schomberg (JS), J.L. Wassell (JW), K.H. Halfpapp (KH), L.P. Kelsey (LK), L.A. Ring (LR), L. Toledano (LT), Lea & Wilson (LW), M. Baehr (MB), M. Mendum (ME), M.S. Moulds (MM), M.S. Upton (MU), N. Gough (NG), N.B. Tindale (NT), O. Hillert (OH), P. Aitken (PA), P.M. Giachino (PG), P.M. Hammond (PH), P. Machacek (PM), P. Zborowski (PZ), R.A. Barrett (RB), R. Kitching (RK), R. Olivieri (RO), R.I. Storey (RS), S. Bily (SB), Storey, Brown & Jacobson (SBJ), S. Fearn (SF), S.A. Hogenhout (SH), S.R. Monteith (SM), T. Gush (TG), T. Weir (TW), V. Framenau (VF), W.D. Dodd (WD), A. & M. Walford-Huggins (WH), W.J.M. Vestjens (WV).

Localities. For New Guinean localities PNG =Papua New Guinea, and IJ means Irian Jaya, the Indonesian part of the island which recently was renamed West Papua.

TAXONOMIC PRINCIPLES

Male genitalia, which are widely used for the distinction of carabid species, rarely yield good

distinctive characters in Odacanthinae. Odacanthine aedeagi, except for those of the most highly evolved species, generally lack complex and/or sclerotised internal structures and the folding of the internal sac is quite simple. The most striking differences are in size, overall shape and sometimes in the shape of their apices. Female stylomeres rarely yield characters even for generic differentiation. Nevertheless, distinction of species is reasonably easy, because most species differ in external structural characters that are generally easy to detect. Besides shape and relative size of head, prothorax, and elytra, chaetotaxy and structure of the surface, in particular striation of the elytra, punctuation, microreticulation, and degree of pilosity, are of major importance. Colouration can vary in certain species, but colouration of appendages and pattern of elytra, if present at all, seem to be fairly constant and can be of some value.

Recognition of insect subspecies is a matter of opinion, or better, a taxonomic hypothesis, when the actual interruption of gene flow between populations is not known. This is especially the case for insular populations. Such decisions are extremely difficult, particularly when the respective taxa either are able and willing to fly over considerable distances, or are easily transported by natural or human carriers. Classifications, therefore, are based mostly on morphological characters, at least where insects of almost unknown habits and life histories are concerned, such as those in the present paper. I use subspecies for taxa that exhibit small morphological differences and are allopatric (or at least allotopic), and I use species for taxa that are more strikingly different and/or are sympatric.

Generic concepts in the Australian Odacanthinae are generally well founded, with a few exceptions. Sloane (1917, 1923) who founded the systematics of the Australian Odacanthinae, was uncertain about the affiliation of the many differently shaped species of the *Dicraspeda-Eudalia*-complex and he changed his view several times. Liebke (1938) separated *Dicraspeda* and *Eudalia*, but he also split from *Dicraspeda* the genera *Philemonia* Liebke and *Macrocentra* Chaudoir and arranged them at quite different places in his system. Darlington (1968) adopted the present system, combining *Philemonia* and *Macrocentra* with *Dicraspeda* and separating *Eudalia*. This concept is followed here, but it should be noted that *Dicraspeda* in its present concept is remarkably heterogeneous and could be dismembered in future (Baehr, 2003c).

Comparable problems are faced in *Eudalia* which is also quite diverse and could be divided into two subgenera or genera. This is more likely when the rather aberrant New Guinean *E. anomala* Darlington is taken into consideration.

Liebke (1931, 1938) subdivided *Colliuris* De Geer into various subgenera, most of which are retained. Many have been raised to generic rank, but these decisions were not recognised by all authors, or they were adopted to different degrees. As no thorough phylogenetic work has been done on the *Colliuris*-complex, its division into genera and subgenera is still a matter of opinion. I follow Lorenz (1998).

NOMENCLATORIAL NOTE. A number of specimens of previously described species were designated holotype by P.J. Darlington, probably during his stay in Australia in 1956-58. Some of these designations were apparently done without comparing the original descriptions, and in some specimens, even without reading the labels. Some bear written cotype or even topotype labels, and should not have been designated holotype. It is difficult to imagine why the rules of nomenclature were neglected by a leading taxonomist in these instances. As a consequence, nomenclatorial decisions of Darlington *a priori* should be checked very carefully.

KEY TO AUSTRALIAN GENERA OF THE ODACANTHINAE

1. 4th tarsomeres deeply excised in middle and markedly bilobate 2
 4th tarsomeres not deeply excised in middle and not markedly bilobate 3
2. Head elongate, more or less distinctly triangular; prothorax rather tubular, without distinct lateral sulcus; elytra narrow, upper surface depressed, red with black or blue pattern and white spots (in Australian species) (Fig. 38D) *Ophionea* Klug
 Head not elongate, convex; prothorax not tubular, with distinct lateral sulcus; elytra rather short and wide, upper surface not markedly depressed, uniformly black or dark piceous (in Australian species) (Fig. 34D, E) *Dicraspeda* Chaudoir (part)
3. Head not distinctly narrowed behind eyes; colour of surface brick-red, elytra with serrate, cruciate dark pattern (Fig. 38E) *Porocara* Sloane
 Head distinctly narrowed behind eyes; colour of surface different, elytra with different pattern, or unicolourous 4
4. 3rd antennomere very elongate, as long as 4th and 5th together (Fig. 33F, 34A) *Clarencia* Sloane
 3rd and 4th antennomeres of about equal length 5
5. Elytra elongate, parallel, upper surface remarkably depressed, apex almost transverse, without any excision (Fig. 33A) *Anasis* Castelnau

- Elytra usually shorter and less parallel; when elongate, then upper surface not markedly depressed and apex oblique, usually more or less distinctly excised 6
6. Head with distinct longitudinal sulcus and ridge inside of eye. 7
Head without or with indistinct sulcus and ridge inside of eye 11
7. Odd elytral intervals cariniform, external apices of elytra spiniform (Fig. 37B) *Giachinoana* Baehr
Odd elytral intervals not cariniform, external apices of elytra not spiniform, at most gently angulate (in Australian species) 8
8. Pronotum with indistinct lateral margin, or margin not medially bordered by a deep sulcus; elytra glossy black with 2 or 4 small white spots (in Australian species) (Fig. 33B,C) *Archicolliuris* Liebke
Pronotum with very conspicuous ridge-like margin, margin medially bordered by a deep sulcus; elytra piceous or black, without white spots 9
9. Elytra deeply punctate-striate in basal third, barely striate in apical two thirds; with deep transverse sulcus in basal third; elytra rather narrow and elongate; lateral margins of pronotum conspicuously sinuate (Fig. 33E) *Basistichus* Sloane
Elytra fully striate, or striation becoming gradually weaker towards apex; without or with only shallow transverse sulcus in basal third, in latter case elytra more depressed and rather wide; lateral margins of pronotum barely sinuate 10
10. Surface with dense, elongate, erect pilosity; elytra with shallow transverse depression near apex, 7th interval tumid in apical third; 3rd antennomere sparsely setose; tibiae dark with conspicuous yellow ring (Fig. 38C) *Neoeudalia* gen. nov.
Surface without pilosity; elytra without transverse depression near apex, 7th interval not tumid; 3rd antennomere glabrous, except for apical setae; tibiae uniformly yellow or dark, without yellow ring (Fig. 34D, E) *Dicraspeda* Chaudoir
11. 3rd antennomere impilose. 12
3rd, and usually also 1st and 2nd antennomeres, pilose. 15
12. Elytral striae impunctate, rather sulcate; head markedly triangular towards base (Fig. 33D) *Aulacoliis* Sloane
Elytral striae punctate, not sulcate; head convex behind eyes 13
13. Lateral margin of pronotum medially bordered by a deep sulcus; all odd intervals with a row of many (>10) erect setae (Fig. 38F) *Renneria* Baehr
Lateral margin of pronotum medially not bordered by a deep sulcus; at most 3rd, 5th and 7th intervals with a row of fewer (<5) erect setae 14
14. Elytra ampliate, apically considerably widened and externally angulate or spinose; antenna very elongate, 4th antennomere not pilose (Fig. 36D-F, 37A) *Gestroania* Liebke
Elytra not ampliate, apically not or little widened and externally not angulate; antenna shorter, 4th antennomere pilose (Figs 34F, 35, 36A-C) *Eudalia* Castelnau
15. Elytral striae almost complete; prothorax densely punctate and pilose on disk. 16
Elytral striae incomplete, either only basal third striate, or but 2 inner striae complete; prothorax in middle impunctate, either glabrous or coarsely, transversely rugose, impilose on disk (Fig. 37D-F, 38A-B) *Myrmecodemus* Sloane
16. Lateral margin of pronotum medially bordered by a deep sulcus; elytral striae punctate-striate (Fig. 34B-C) *Deipyrus* Liebke
Lateral margin of pronotum medially not bordered by a deep sulcus; elytral striae only coarsely punctate (Fig. 37C) *Lachnothorax* Motschulsky

Anasis Castelnau, 1867

Anasis Castelnau, 1867: 15; 1868: 101; Csiki, 1932: 1537; Liebke, 1938: 93; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE SPECIES. *Anasis howittii* Castelnau, 1867, by monotypy.

DIAGNOSIS. Body elongate; elytra very elongate, parallel, dorsally remarkably depressed, highly glossy, impilose; elytral apices almost transverse, not at all sinuate.

RELATIONSHIPS. According to shape and structure this is an isolated genus. It may be nearest to *Eudalia* as an early offshoot of the *Eudalia* lineage. This suggestion is supported by the S Vic range of the single species (if correct as reported). Only species of *Eudalia* occur with *Anasis* in mesic Vic. and in adjacent parts of SE Australia.

Anasis howittii Castelnau, 1867 (Figs 30A, 33A)

Anasis howittii Castelnau, 1867: 15; 1868: 101; Csiki, 1932: 1537; Liebke, 1938: 93; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE MATERIAL. LECTOTYPE (here designated): ♀ (slightly damaged), Geelong 'Jul' (? uncertain) – Lewis/*Anasis howittii* Cast./*Anasis Howittii*/Cast./Type/ Holotype T-17960 (MV). Although the specimen is labeled 'holotype', this is questionable, because the description says nothing about the number of examined specimens, only that the species was captured on a flower. Moore et al. (1987) wrote 'syntypes (possible)', but did not indicate that multiple specimens were used in the original study.

Because this species has apparently never been recaptured, and as it remains enigmatic, never having been mentioned in a subsequent paper or key, I am giving a partial redescription.

DESCRIPTION. *Measurements*. Length: 8.1mm; width: 2.35mm. Ratios. Length eye/orbit: 1.0; length/width of head: 1.25; length/width of prothorax: 1.32; length/width of elytra: 1.88.

Colour (Fig. 33A). Upper surface chestnut-brown, elytra slightly lighter than fore body, mouthparts, antennae and legs reddish.

Head. Eyes large, laterally protruding, orbits moderately convex. Surface with 2 impressions behind clypeus, a triangular central one on frons, and 2 circular ones between eyes. Medially of eye without any ridge and sulcus. Posterior supra-orbital seta located well behind eye. Mentum with elongate, triangular tooth, with 2 setae behind tooth, submentum with an elongate seta on either side. Glossa and lacinia not examined due to condition of holotype. Antenna elongate, probably just surpassing base of pronotum. Three basal antennomeres glabrous. Surface glossy, impunctate, impilose, without microreticulation.

Pronotum. Elongate, lateral margin gently convex in anterior half, slightly sinuate towards base, margin distinct, forming a sharp ridge. No sulcus inside of margin. Disk slightly convex. Proepisternum narrowly visible from above. Punctuation of disk dense and coarse. Surface impilose, without microreticulation, glossy.

Elytra. Remarkably elongate, dorsally conspicuously depressed, very gently widened towards apex. Humeri indistinct, obliquely rounded, lateral margin very gently convex, apex almost transverse, gently convex, without any sinuation. Striae complete, coarsely punctate, though not impressed, punctae smaller towards apex. Intervals depressed, impunctate. 3rd interval tripunctate, fixed setae in basal third, middle, and apical third. Surface without microreticulation, very glossy. Hind wings present.

Lower Surface. Thorax with coarse, dense punctuation, impilose, glossy; abdomen impunctate. Metepisternum very narrow, elongate, $>3 \times$ as long as wide at apex. Terminal abdominal sternum in female quadrisetose.

Legs. Narrow, elongate. Tarsi not lobed, 5th tarsomere with a dense fringe of elongate setae below. Claws small, thick, smooth.

Female Genitalia (Fig. 30A). Stylocere 2 very elongate, median margin characteristically angled above middle, with elongate, acute apex, with 3 elongate ventrolateral ensiform setae almost completely on the ventral surface, a rather small dorsomedian ensiform seta about middle of stylocere, and a single short nematiform seta arising from a groove below apical third. Base of stylocere 1 with 6 elongate ensiform setae. Lateral plate with dense fringe of stiff nematiform setae at apical rim.

DISTRIBUTION. Type locality only.

Archicolliuris Liebke, 1931

Archicolliuris Liebke, 1931: 291; 1938: 61; Csiki, 1932:1525; Lorenz, 1998: 418.
Colliuris De Geer, 1774: 79; Darlington, 1968: 204; Moore et al., 1987: 277.

TYPE SPECIES. *Casnonia bimaculata* Kollar & Redtenbacher, 1842, by original designation.

DIAGNOSIS. Elongate; head posteriorly triangular; pronotum more or less elongate, rather tubular; elytra elongate, dorsally depressed. Head and pronotum without additional setae; elytra with setae on 3rd or 3rd, 5th and 7th intervals. Surface generally glabrous, glossy; elytra usually with 2 or 4 light spots.

Archicolliuris par (Darlington, 1968)

Colliuris par Darlington, 1968: 206; Moore et al., 1987: 277.
Archicolliuris par (Darlington); Lorenz, 1998: 418.

TYPES. HOLOTYPE and 5 PARATYPES: Hollandia, July-Sept. 1944, P.J. Darlington (MCZ) (not seen).

DIAGNOSIS. Relatively small, black, quadrimaculate; pronotum moderately elongate; elytra with moderately deep transverse sulcus; surface of head and pronotum with fine though distinct microreticulation.

SUPPLEMENTARY DESCRIPTION. *Measurements* (Table 1).

DISCUSSION. This New Guinean species was recorded from the northern tip of Cape York Peninsula by Darlington (1968). I have not examined type material, but have seen a specimen from New Guinea that agrees well with the description and is distinct from *A. splendissimus* sp. nov. from Cape York Peninsula. As I have not seen any genuine Australian specimen of *A. par*, Darlington's record probably refers to *A. splendissimus* and *A. par* does not occur in Australia.

DISTRIBUTION. ? extreme tip of Cape York Peninsula; New Guinea, New Britain.

RELATIONSHIPS. This species is closely related to *A. splendissimus* sp. nov.

Archicolliuris splendissimus sp. nov. (Figs 1, 30B, 33B)

ETYMOLOGY. Refers to the highly glossy surface.

MATERIAL. HOLOTYPE: ♂, Lockerbie, Q. 31.iii.64, I.F.B. Common & M.S. Upton/ *Colliuris par* Darlington, det. T.A. Weir 2000 (ANIC). PARATYPES: ♀, 'Eclectus' Iron Range, Qld 12°45'46"S 143°17'10"E, 10 June 1995,

20m, G. Daniels, mv lamp (UQIC); ♀, Iron Range, Cape York Pen., 11-17.v.1968, G. Monteith (QM); ♀, same data but 28.iv-4.v.1968 (CBM).

DIAGNOSIS. Relatively small, black, quadrimaculate; head short, wide; pronotum short, globose; elytra with deep transverse sulcus in basal third; surface without microreticulation, remarkably glossy.

DESCRIPTION. *Measurements* (Table 1). *Colour* (Fig. 33B). Black, elytra with 4 small circular to slightly elongate light yellow spots, the anterior, larger ones situated in 5th interval, the posterior ones in 5th and 6th intervals. Mandible dark reddish with blackish tip, palpi black with dark reddish basal palpomeres, antennae black with 3 dark reddish basal antennomeres. Basal half of femora reddish, apical half black, tibiae dark piceous, tarsi black.

Head. Short, very wide, markedly rhomboidal. Neck very narrow, with deep transverse impression. Eyes large, protruding, though not much separated from orbits which are very gently convex, though remarkably oblique. Surface with 2 deep impressions behind clypeus, frons in middle with a horseshoe like impression, also the anterior supraorbital seta in deep, circular impression. Medially eye with a shallow sulcus, but without ridge. Posterior supraorbital seta in front of posterior margin of eye. Mentum with short, triangular tooth, with 2 setae behind tooth, also submentum with an elongate seta on either side. Apex of glossa transverse, laterally oblique, with 2 elongate median and 2 short lateral setae. Paraglossae free, narrow, glossy. Lacinia elongate, interior margin with a fringe of few spines. Antenna short, not attaining base of pronotum. Three basal antennomeres glabrous. Surface very glossy, impunctate and impilose, without microreticulation.

Pronotum. Short, laterally and dorsally convex, near apex and base with deep transverse impressions. Apex not bordered, lateral margin complete though indistinct, base with thick border. median line very shallow. A single marginal seta in front of middle. Proepisternum narrowly visible from above. Disk impunctate, except near apex and base. Surface without microreticulation, highly glossy.

Elytra. Short, wide, subrectangular, gently widened towards apex, surface moderately convex. Base oblique, humeri distinct, obtusely rounded, lateral margin gently incised at basal fourth, apex slightly oblique, gently excised, external apical angles distinct, though obtuse.

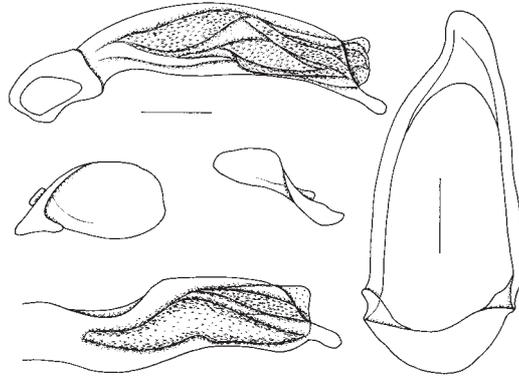


FIG. 1. *Archicolliuris splendidissima* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Base narrowly margined towards 4th stria, apex distinctly margined. Surface in anterior third with a deep, irregularly transverse impression, disk humped in front of impression. 7th and 8th striae near apex conspicuously tumid. Striae incomplete, beginning behind base, external striae not attaining apex. Striae not impressed, in basal half coarsely punctate, becoming very inconspicuous towards apex. Intervals depressed, impunctate. Scutellar stria elongate, consisting of about 10 punctures. 1st interval with 2 setae in basal third, 3rd and 5th intervals multipunctate. Surface without microreticulation, very glossy. Hind wings present.

Lower Surface. Proepisternum and prosternum coarsely punctate in basal half and near sternal suture, proepimeron and mesothorax similarly punctate. Abdomen impunctate. Whole lower surface impilose and very glossy. Metepisternum narrow and elongate almost 3 × as long as wide at apex. Terminal abdominal sternum in male bisetose, in female quadrisetose, and with short pilosity in middle of apex.

Legs. Narrow, elongate. Tarsi not lobed, 5th tarsomere with a dense fringe of elongate setae below. Claws smooth. Male anterior tarsus biserially squamose at apical half of 1st tarsomere and at 2nd and 3rd tarsomeres.

Male Genitalia (Fig. 1). Terminal abdominal sternite in middle incised. Genitalia medium sized. Genital ring strongly sclerotised, elongate, slightly asymmetric, parallel, shortly narrowed to the obtusely rounded apex. Aedeagus compact, depressed, laterally remarkably sinuate, sinuation even somewhat angulate, lower surface very gently bisinuate. Apex short, gently

TABLE 1. Measurements and ratios of all Australian species of *Archicolliuris*.

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>par</i>	1	6.6	1.36	1.18	1.92	1.60
<i>splendissimus</i>	2	6.1-6.9	1.42-1.48	1.15	1.46-1.57	1.66-1.72
<i>occipitalis</i>	2	9.5-10.5	0.50-0.51	1.69-1.73	2.03-2.08	1.75-1.77

upturned, barely knobbed, slightly turned to right, incision at right side moderately deep. Orificium short. Folding of internal sac very simple. Parameres of rather similar shape, though left paramere much larger than right one, left one with very gently convex apex, right one with wide, rounded apex.

Female Genitalia (Fig. 30A). Stylocere 2 comparatively elongate, laterally evenly curved, with acute apex. With 2 large ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylocere, and a single short nematiform seta arising from a groove in apical third. Base of stylocere 1 with 8-9 elongate ensiform setae. Lateral plate with dense fringe of stiff, elongate nematiform setae at apical rim.

Variation. Very little variation noted.

DISTRIBUTION. Northern half of Cape York Peninsula.

***Archicolliuris occipitalis* sp. nov.**
(Figs 30C, 33C)

ETYMOLOGY. Refers to the very elongate occiput.

MATERIAL HOLOTYPE: ♀, NE Qld, Roaring Meg Ck, 6km W Cape Tribulation, 22 April 1983, GB. Monteith, D.K. Yeates/QM Berlesate No. 536, 16.05S 145.24E, Rainforest, 710m, moss (QMT 99168). **PARATYPE:** 1 ♀, Mt Lewis, Via Julatten, N Qld. 3,500-4,000? 27-28.XI.1965. GM/*Clarencia* sp. det. B.P. Moore 74 (CBM).

DIAGNOSIS. Comparatively large; occiput very elongate; prothorax tubular, elongate, bimaculate or indistinctly quadrimaculate elytra; pronotum with dense transverse striolation.

DESCRIPTION. *Measurements* (Table 1).

Colour (Fig. 33C). Black, elytra with 2 small, distinct though irregularly shaped orange spots in basal third on 4th-6th intervals, and with an indistinct small spot in basal third that is composed of 2 narrow reddish lines on 4th and 5th intervals. This spot may be almost completely reduced. Mouthparts and 2 basal antennomeres light reddish, median antennomeres very slightly

darker. Basal 2/5 or 1/2 of femora light reddish, apical 1/2 black, though knees and tibiae piceous, tarsi reddish to reddish piceous. Lower surface black, abdomen in middle and near apex also laterally, reddish to piceous.

Head. Narrow, very elongate. Neck very narrow, with deep transverse impression. Eyes relatively small, laterally protruding, slightly separated from orbits which are very elongate, and gently convex. Surface with 2 deep irregular impressions behind clypeus that combine to a horseshoe like impression in middle of frons. Medially of eye with a shallow sulcus, but without ridge. Posterior supraorbital seta located far behind posterior margin of eye. Mentum with short, though markedly acute, triangular tooth, with 2 setae behind tooth, also submentum with an elongate seta and a short seta on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a fringe of rather few spines. Antenna elongate and remarkably thin, slightly surpassing base of pronotum. Three basal antennomeres glabrous. Surface moderately glossy, impunctate, impilose; basal half with extremely fine and highly superficial microreticulation composed of very transverse meshes and lines. Immediately at base surface covered with transverse sulci.

Pronotum. Elongate, tubular, laterally convex, near apex and base with very shallow transverse impressions. Apex bordered, lateral margin complete though indistinct, almost straight, base with thick border. median line very shallow. A single marginal seta situated slightly in front of middle. Proepisternum well visible from above behind middle. Disk with very dense and remarkably coarse transverse sulci. Surface apparently impunctate, with microreticulation at least within sulci, remarkably rugose.

Elytra. Moderately elongate, conspicuously widened in apical half, surface moderately convex. Base very oblique, humeri indistinct, very widely rounded, lateral margin distinctly incised at basal fourth, apex very oblique, gently excised, external apical angles distinct, though obtuse, sutural angles produced, slightly disjoined. Base margined towards 4th stria, apex distinctly margined. Surface in anterior third with a deep, irregularly transverse impression, disk gently tumid in front of impression. Striae almost

complete, originating near base, attaining apex, but becoming very inconspicuous towards apex. Striae not impressed, in basal half coarsely punctate. Intervals generally depressed, impunctate, though 5th and 6th intervals narrow and convex within the area of the basal transverse impression. Scutellar stria moderately elongate, consisting of 6-8 punctures. 1st interval unisetose in basal third, 3rd interval polysetose, 5th interval with 2-3 setae in basal half. Surface without microreticulation, very glossy. Hind wings present.

Lower Surface. Proepisternum, prosternum, and mesepisternum coarsely punctate. Metathorax and abdomen impunctate. Whole lower surface impilose, with very fine microreticulation. Metepisternum narrow and elongate, c. 3 × as long as wide at apex. Terminal abdominal sternum in female quadrisetose and with short pilosity in middle of apex.

Legs. Very narrow and elongate. Tarsi not lobed, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth.

Male Genitalia. Unknown.

Female Genitalia (Fig. 30C). Stylomere 2 fairly elongate, laterally evenly curved, with acute apex. With 2 elongate ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 9-10 moderately elongate ensiform setae. Lateral plate with dense fringe of elongate, stiff nematiform setae at apical rim.

Variation. Little variation noted due to limited material. One specimen almost completely lacks the anterior elytral spot.

DISTRIBUTION. Base of Cape York Peninsula in rainforest at high altitude. Hence, this might be an arboreal rather than hygrophilous species.

RELATIONSHIPS. This species is distantly related to Australian and New Guinean species of *Archicolluris*, and in shape and structure is more similar to certain Oriental species.

KEY TO THE AUSTRALIAN SPECIES OF *ARCHICOLLIURIS*

1. Head very elongate, orbit c. 3 × as long as eye; pronotum with extremely dense and coarse transverse wrinkles; elytra with anterior light spot indistinct or absent, though when present, not circular; body length >9mm
..... *occipitalis* sp. nov.
Head much shorter, orbit < 1.5 × as long as eye; pronotum without or with weak transverse wrinkles;

elytra with anterior light spot distinct, circular; body length <7mm 2

2. Head and pronotum with faint though distinct microreticulation; pronotum less orbicular; elytra with less deep transverse sulcus. *par* Darlington
Head and pronotum without any traces of microreticulation, highly glossy; pronotum remarkably orbicular; elytra with deep transverse sulcus.
..... *splendissimus* sp. nov.

***Aulacolius* Sloane, 1923**

Aulacolius Sloane, 1923: 32; Csiki, 1932: 1537; Liebke, 1938: 94; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE SPECIES. *Aulacolius triordinatus* Sloane, 1923, by monotypy.

DIAGNOSIS. Elytral striae impunctate though complete, deep and sulcate; body compact; head remarkably elongate, triangular.

***Aulacolius triordinatus* Sloane, 1923 (Figs 2, 30D, 33D)**

Aulacolius triordinatus Sloane, 1923: 32; Csiki, 1932: 1537; Liebke, 1938: 94; Moore et al., 1987: 276; Lorenz, 1998: 420.

MATERIAL. Holotype: ♀, GF. Hill Darwin, NT/Type/ *Aulacolius triordinatus* Sl. Type/HOLOTYPES *A. triordinatus* Sl., P.D. (ANIC). New records (13 ex.): NT: South Alligator R., 19.12.1999, MB (CBM); Crocodile I., HS (SAM). Qld: Mornington I. Mission, 12.5.1963, 15.5.1963, 23.5.1963, 5.1963, PA & NT (SAM); Stewart R., WD (SAM).

DIAGNOSIS. Head markedly triangular; pronotum short, dorsally convex, with sharp, ridge-shaped lateral borders; elytra short, compact, with complete, deeply impressed, sulcate striae and yellow-spotted apex; several marginal seta on prothorax; numerous setae on intervals 3, 5, and 7; surface absolutely glabrous, shining.

SUPPLEMENTARY DESCRIPTION. *Male Genitalia* (Fig. 2). Terminal abdominal sternite in middle incised. Genitalia comparatively large. Genital ring fairly elongate, barely asymmetric, rather parallel, shortly narrowed to the narrow, acute, triangular apex. Aedeagus very slender and elongate, depressed, laterally barely sinuate, lower surface only immediately near base concave, in apical three quarters gently convex. Apex elongate, very depressed, straight, not knobbed, but remarkably spoon-shaped, slightly turned to right, incision at right side deeper than at left side. Folding of internal sac very simple. Parameres of similar shape, though left paramere much larger than right one both with wide, rounded apex.

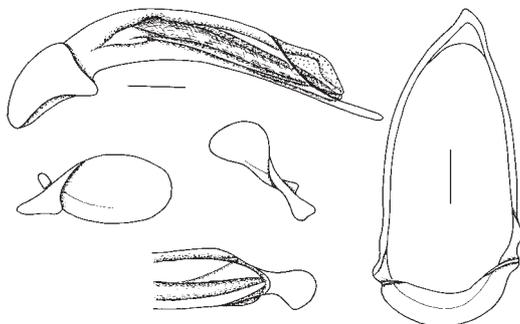


FIG 2. *Aulacolius triordinatus* Sloane. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Female Genitalia (Fig. 30D). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex. With 2 small ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 7-8 elongate ensiform setae. Lateral plate with dense fringe of stiff nematiform setae at apical rim.

DISTRIBUTION. Moore et al. (1987) gave distribution as northern NT. New records extend its range to Mornington Island in the Gulf of Carpentaria and lower Cape York Peninsula.

COLLECTING CIRCUMSTANCES. One specimen collected at light.

Basistichus Sloane, 1917

Basistichus Sloane, 1917: 415; 1923: 30; Csiki, 1932: 1535; Liebke, 1938: 81; Darlington, 1968: 208; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE SPECIES. *Odacantha micans* Macleay, 1864, by original designation.

DIAGNOSIS. Elytra elongate, parallel, with unequal striation.

Basistichus micans (Macleay, 1864)
(Figs 3, 30E, 33E)

Odacantha micans Macleay, 1864: 107.
Basistichus micans, Sloane, 1917: 415; Csiki, 1932: 1535; Liebke, 1938: 81; Darlington, 1968: 208; Moore et al., 1987: 276; Lorenz, 1998: 420.

MATERIAL. SYNTYPES: 3 ex., in poor condition, 'Port Denison'. (see Moore et al., 1987: 276) (ANIC). **NEW RECORDS** (55 ex.): Qld: 15km S Marlborough, 21.i.1982, MB (CBM); 20km N Biggenden, 22.i.1982, MB (CBM); Undara, 12.ii.2000, SB (CBM); Qld 01/31,

Mc Leod River, 12km NW Mt Carbine, 12.iv.2001, MB (CBM); 3km E of Lockerbie, Cape York, 30.i.-4.ii.1975, GM (QM); *Odacantha micans* McLeay jun. Port Denison (MV); *Casnonia micans* Sloane, Cooktown (MV); Kuranda, GB (MV); Mutchilba, xii.1936, AS (MV); Cairns, 11.i.50, CO (MV); Townsville, 8.xi.02, FD (MV); *C. micans* Macl. Rockhampton (MV); 70km SW Greenvale, 8-15.xii.1995, AW (SAM); Einasleigh R. via Mt Surprise, 6-7.i.1980, RS (MDPI); 11km WSW of Petford, 17.i.1987, 3-4.iv.1988, RS (MDPI); Tolga, 25.i.1985, JB (MDPI); 7km NE of Tolga, ii.1989, RS (MDPI); Pouth Ck via Georgetown, 8.i.1980, RS (MDPI); Mareeba, 1.ii.1979, KH (MDPI); 27km E Forsyth, 29.xii.1977, RS (MDPI); 12km E Georgetown, 4.xii.1979, RS, JB (MDPI); 6km SE of Mareeba, MDPI, FIT. Site 36, 16.xii.-15.i.1991, 28.iii.-19.iv.1991, vi.-xi.1991, SF (MDPI); 21km E of Mareeba, 21.i.1991, RS (CBM, MDPI); Cairns, 3/50, GB (ANIC); Davies Creek, 10/49 (ANIC); Mareeba-Atherton Rd, 9.vii.65 (ANIC); Cooktown, 1/71, GB (ANIC); 11.45S, 142.35E, Heathlands, 24-28.ii.1993, PZ (ANIC); Bamaga, 28.iii.64, IC, MU (ANIC); Cardstone, 11.ii.1966, HK (ANIC); 17.27S, 145.29E, nr The Crater, 18km N of Ravenshoe, 28-29.xi.1981, BJ (ANIC). - NT: Kakadu NP, Coinda, 22.-25.iii.1993, LT (CBM); 12.52S, 132.50E, Koongarra 6-10.iii.73, MU (ANIC). - WA: 14.45S, 125.47E, 10km NW by N of Mining Camp, Mitchell Plateau, 11-17.v.83, IN, CJ, DR, BJ (ANIC). According to Moore et al. (1987) and T. Weir (pers. comm.) the types are in very poor condition. As the species is easily distinguished by its external morphology, borrowing the fragile remnants for examination was not considered necessary.

DIAGNOSIS. Head short, wide, with very large, strongly protruding eyes, with a distinct sulcus and ridge inside of eyes; prothorax elongate, with sharp, sinuate lateral margin; elytra narrow, parallel, dorsally convex, deeply striate at base, with a conspicuous transverse impression in basal third, completely glabrous in apical two thirds.

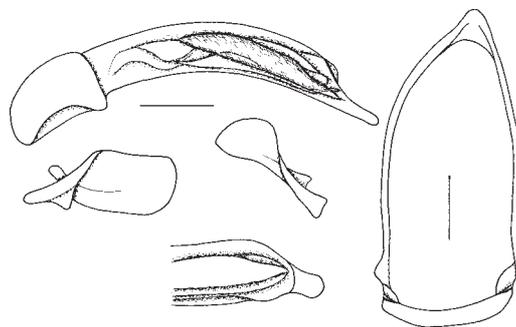


FIG 3. *Basistichus micans* (Macleay). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

SUPPLEMENTARY DESCRIPTION. *Male Genitalia* (Fig. 3). Terminal abdominal sternite incised in middle. Genital ring fairly elongate, gently asymmetric, with short basal plate, shortly narrowed to the rather narrow, obtuse apex. Aedeagus rather slender and elongate, laterally little sinuate, lower surface only near base concave, in apical half almost straight. Apex moderately short, very gently knobbed, straight, gently turned to right, and with a very slight notch at the right side. Folding of internal sac very simple. Parameres of fairly dissimilar shape, left paramere much larger than right one and with straight or even slightly concave upper margin, right one short, with obtusely angulate apex.

Female Genitalia (Fig. 30E). Stylomere 2 comparatively elongate, laterally moderately curved, with acute apex. With 2 rather narrow, elongate ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 6-7 moderately elongate ensiform setae. Lateral plate with moderately dense fringe of fairly elongate, stiff nematiform setae at apical rim.

DISTRIBUTION. E Qld, N NT, N WA; also in New Guinea. Most labeled specimens were collected at light, some at a considerable distance from water. A small series was collected on surface of ground. Probably a litter-inhabiting species.

Clarencia Sloane, 1917

Clarencia Sloane, 1917: 413; Sloane, 1923: 30; Csiki, 1932: 1535; Liebke, 1938: 81; Darlington, 1968: 209; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE SPECIES. *Casnonia aliena* Pascoe, 1860, by original designation.

DIAGNOSIS. 3rd antennomere very elongate. Head triangular; prothorax elongate; elytra elongate, dorsally depressed, with a large, light spot in apical half.

Clarencia aliena (Pascoe, 1860) (Figs 4, 30F)

Casnonia aliena Pascoe, 1860: 39; Chaudoir, 1872: 405; Sloane, 1890: 644.

Clarencia aliena, Sloane, 1917: 413; Csiki, 1932: 1536; Liebke, 1938: 82; Moore et al., 1987: 276; Lorenz, 1998: 420.

Casnonia australis Chaudoir, 1862: 277; Moore et al., 1987: 276; Lorenz, 1998: 420.

Casnonia clarensii Castelnau, 1867: 14; 1868: 100; Chaudoir, 1872: 405; Moore et al., 1987: 276; Lorenz, 1998: 420.

MATERIAL. HOLOTYPE: ♀, Type/*Casnonia aliena* Pascoe Type/Moreton Bay/Pascoe Coll./*Casnonia aliena* Pasc. (BMNH). Syntypes of *australis*: ♀, *Australis* Chaud/Ex Musaeo Chaudoir/*aliena* Pascoe Australie, Melbourne (MNHP), 1 ♀, Ex Musaeo Chaudoir/*aliena* Pascoe Australie, Melbourne (MNHP). Syntypes of *clarensii*: ♂, Clarence River Coll. Castelnau/Holotypus *Casnonia* (?) *clarensii* Castelnau, 1867 (MCSN). **NEW RECORDS** (14 EX.): Narrabeen, 29.xii.1983, GH (HNMB); Bateman's Bay, 22.i.1963, IC, MU (ANIC); NSW (ANIC). Kilcoy, 10.iv.30 (ANIC); Cooloolabbin Dam, 10km W Yandina, 1.ii.1997, DB (ANIC); 25 mls. W of Tully, 8.iii.1964, IC & MU (ANIC); 40km W Tully, 31.v.1971, ER (ANIC); Rockhampton, 20.ii.1942, CV, ES (QM); 22°02'S 148°03'E, Moranbah, 3km S Bende, 24.-25.iii.2000, GM & SM (CBM, QM); Qld3, L. Broadwater, 35km SSW Dalby, 16.-17.xii.1998, MB (CBM); *Casnonia aliena* Pascoe (MV).

DISCUSSION. This species was described by Chaudoir (1862) as *Casnonia australis* and by Castelnau (1867) as *C. clarensii*. Chaudoir (1872) recognised that both names refer to the same species. Sloane (1890), also synonymised *C. angusticollis* Macleay, 1888, and was followed by all later authors. Examination of the types and comparison of material from SE Qld and NE NT reveals that Macleay's name refers to a separate species. It is uncertain whether the Melbourne type locality of *C. australis* is correct as no modern material is from that far south.

As the determination label of the 'type' specimen of *C. aliena* in BMNH was written by Pascoe, this specimen is accepted as the holotype. The single original specimen of *C. clarensii* bears a printed label holotype that was attached to the specimen recently.

DIAGNOSIS. Head long; prothorax long, with almost complete transverse striolation; elytra with more deeply excised, but not decidedly quadridentate apex; aedeagus large relative to body size.

SUPPLEMENTARY DESCRIPTION. *Measurements* (Table 2).

Male Genitalia (Fig. 4). Very large in comparison to other species of this genus. Genital ring elongate, fairly parallel, slightly asymmetric, shortly narrowed to the wide, obtuse apex. Aedeagus slender and elongate, laterally barely sinuate, lower surface evenly but very gently concave. Apex short, slightly knobbed, suddenly turned to right, and with a distinct notch at the right side. Folding of internal sac very simple. Parameres of similar shape, though left paramere much larger than right one, and with a less sclerotised area along upper margin.

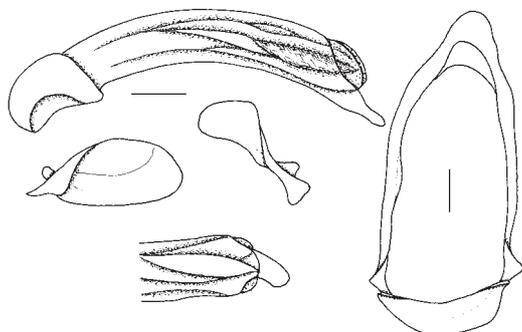


FIG. 4. *Clarenzia aliena* (Pascoe). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).



FIG. 5. *Clarenzia angusticollis* (Macleay). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Female Genitalia (Fig. 30F). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex. With 3 elongate ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 6-8 elongate ensiform setae that are characteristically curved towards apex. Lateral plate with dense fringe of stiff, elongate setae at apical rim.

DISTRIBUTION. Coastal eastern Australia from Cairns to S NSW, and perhaps Vic.

COLLECTING CIRCUMSTANCES. Specimens collected by G. Monteith and myself were at light, the latter near a reed-bordered lagoon. On the basis of body shape, this should be a hygrophilous, probably reed-inhabiting, species.

***Clarenzia angusticollis* (Macleay, 1888)**
(Figs 5, 30G)

Casnonia angusticollis Macleay, 1888: 446; Sloane 1890: 644.

Clarenzia angusticollis, Moore et al., 1987: 277; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♀ (? , damaged), N WA/SYNTYPE/*Casnonia angusticollis* Maccl., Kings Sound N WA (ANIC-MMS). PARALECTOTYPES: 2 (sex?, very damaged), N WA (ANIC-MMS). NEW RECORDS (11 ex.): Mornington I. Mission, 12.v.1963, PA & NT (SAM); St Margarets Ck, S of T'ville/*Clarenzia aliena* (Pascoe) det. R.I. Storey 1988 (MDPI); Normanton, 3.v. & 5.v. 1963, PA & NT (SAM); Cape Bedford/*Clarenzia aliena* Chd. 201. Andr. (MNHB). Goose Lagoon, 16.10S 136.15E, 11km SW by S of Borrooloola, 17.iv.1976, JF (ANIC, CBM).

DIAGNOSIS. This species differs from *C. aliena* (Pascoe) in its much shorter, more oval-shaped and far less rugose pronotum, the shorter basal part of the head, and the much smaller and slenderer aedeagus. Hence, synonymy with *C. aliena* is unjustified and the name is reinstated. From more similar *C. breviceps* sp. nov. it differs by longer prothorax, more deeply excised apex of elytra, and narrower aedeagus with almost straight lower surface.

For better comparison, measurements and ratios are given below and the male genitalia are described and figured for the first time.

SUPPLEMENTARY DESCRIPTION. *Measurements* (Table 2).

Male Genitalia (Fig. 5). Much smaller in comparison to *C. aliena*. Genital ring fairly elongate, barely asymmetric, shortly narrowed to the rather narrow, obtuse apex. Aedeagus very slender and elongate, laterally barely sinuate, lower surface only near base concave, in apical half almost straight. Apex moderately short, gently knobbed, slightly turned up, turned to right, and with a slight notch at the right side. Folding of internal sac very simple. Parameres of fairly dissimilar shape, left paramere much larger than right one and with almost transverse apex, right one with obtusely angulate apex.

Female Genitalia (Fig. 30G). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex. With 4 elongate ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 8-9 elongate ensiform setae that

are characteristically curved towards apex. Lateral plate with dense fringe of stiff setae at apical rim.

DISTRIBUTION. Far N Australia from N Qld to the Kimberley, WA.

COLLECTING CIRCUMSTANCES. According to labels, collected at light. Its body form indicates a hygrophilous, reed-inhabiting species.

***Clarencia breviceps* sp. nov.**
(Figs 6, 30H, 33F)

ETYMOLOGY. Refers to the relatively short head.

TYPE MATERIAL. HOLOTYPE: ♂, 12.36S 132.52E Magela Creek, NT 1km NNW of Mudginbarry HS. 25.v.73, Matthews & Upton (ANIC). PARATYPES: 1 ♂, 1 ♀, same data (ANIC, CBM); 1 ♂, 2 ♀♀, 12.48S 132.42E Nourlangie Creek, NT 8km N of Mt Cahill, 21.v.73 at light, EM (ANIC); 1 ♂, NT Batchelor, Lake Bennett 29.xii.96 at light, LT, RO (CBM); 2 ♀♀, NT Kakadu N.P. Cooida 25-26.xii.96 at light, LT, RO (CBM, CTV); 1 ♂, 1 ♀, NT Kakadu N.P. 22-25.iii.93 Cooida at light, LT (CBM, CTV); 1 ♂, 1 ♀, NT 1, 3km E Humpty Doo, 3.viii.1995, MB (CBM); 1 ♂, NT m 50 Victoria River Road House 1.i.1997, PG (CGT); 1 ♂, Flying Fish Pt NE Qld, 21.i.65, ED (QM).

DIAGNOSIS. Differs from *C. aliena* (Pascoe) in its much shorter, more oval-shaped and far less rugose pronotum, shorter basal part of the head, and much smaller aedeagus. From more similar *C. angusticollis* (Macleay) it differs by shorter prothorax, less deeply excised apex of elytra, and stouter aedeagus with concave lower surface.

DESCRIPTION. *Measurements* (Table 2). *Colour* (Fig. 33F). Black, apical part of elytra piceous, elytra near apex with 2 large, fairly ill delimited, oval-shaped, yellow spots, situated between about 3rd-7th intervals. Labrum and mandibles reddish, the latter with black inner and outer margins. Palpi dark, antennae piceous, usually with slightly lighter apical part. Basal half of femora light yellow, apical half black to piceous, tibiae light yellow with piceous base and apex, tarsi reddish, though apex of tarsomeres slightly darker. Lower surface of fore body blackish, abdomen in middle and near apex reddish to piceous.

Head. Rather narrow and elongate. Neck very narrow, with deep transverse impression. Eyes relatively small, laterally somewhat protruding, slightly separated from orbits which are elongate and very gently convex. Surface with 2 deep, longitudinal impressions behind clypeus.

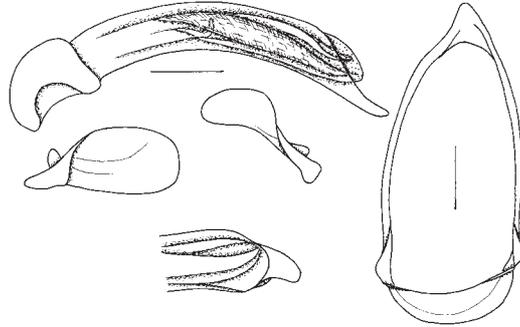


FIG. 6. *Clarencia breviceps* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Medially of eye with a shallow sulcus and ridge that extends to behind middle of eye. Posterior supraorbital seta located well behind posterior margin of eye. Mentum with short, acute, triangular tooth, with 2 setae behind tooth, also submentum with an elongate seta and a short seta on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a fringe of few spines. Antenna elongate and remarkably thin, surpassing base of pronotum by about one antennomere. Three basal antennomeres glabrous, 3rd antennomere as long as 2 following ones. Surface glossy, impunctate and impilose, without any microreticulation. Immediately at base surface covered with some transverse sulci.

Pronotum. Elongate, somewhat tubular, laterally little convex, near apex and base with shallow transverse impressions. Apex not bordered, lateral margin complete, ridge-like, almost straight, base with thick border. Apical angles angulate. Median line invisible. A single marginal seta situated slightly in front of middle. Proepisternum narrowly visible from above in middle. Disk coarsely punctate near apex and in basal half, punctures tend to form irregular transverse furrows. Surface without microreticulation, glossy.

Elytra. Elongate, slightly widened in apical half, surface depressed. Base slightly oblique, humeri fairly distinct, rounded, lateral margin slightly incised at basal third, apex moderately oblique, gently excised, external apical angles distinct, though obtuse, sutural angles obtuse. Base margined towards position of 3rd stria, apex narrowly margined. Surface in anterior third with a shallow, about v-shaped, transverse

impression. Only 5 inner striae, and 8th stria, present, barely surpassing basal half of elytra, inner striae even shorter. Striae originating well behind base, coarsely punctate, punctures becoming inconspicuous posteriorly. Striae not impressed, intervals generally depressed, impunctate, though 4th interval laterally slightly raised. Scutellar stria moderately elongate, consisting of 6-8 punctures. 1st interval bisetose in basal third, 3rd 5th, and 7th intervals polysetose. Surface without any microreticulation, glossy, but with dense, very short, inclined pilosity that is more dense on even intervals. Hind wings present.

Lower Surface. Proepisternum, apart from apex, prosternum, mesepisternum, and metepisternum coarsely punctate. Metasternum in middle and abdomen impunctate. Whole lower surface impilose, without microreticulation, glossy. Metepisternum narrow and elongate, c. 3 × as long as wide at apex. Terminal abdominal sternum in male bisetose and glabrous, in female quadrisetose and with short pilosity in middle of apex.

Legs. Very narrow and elongate. Tarsi not lobed, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st-3rd tarsomeres of male anterior tarsus sparsely squamose beneath.

Male Genitalia (Fig. 6). Much smaller in comparison to *C. aliena*. Genital ring fairly elongate, triangular, barely asymmetric, shortly narrowed to the narrow, obtuse apex. Aedeagus slender and elongate, laterally barely sinuate, lower surface almost evenly but gently concave. Apex moderately short, very gently knobbed, slightly turned up, turned to right, and with a slight notch at the right side. Folding of internal sac very simple. Parameres of slightly dissimilar shape, left paramere much larger than right one and with almost transverse apex, right one comparatively elongate, with more rounded apex.

Female Genitalia (Fig. 30H). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex. With 3 elongate ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with c. 8 elongate ensiform setae that

TABLE 2. Measurements and ratios of all Australian species of *Clarencia*.

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>aliena</i>	6	8.8-10.1	0.55-0.64	1.52-1.59	1.62-1.75	1.94-2.03
<i>angusticollis</i>	6	7.3-8.4	0.62-0.69	1.42-1.48	1.52-1.59	1.89-1.93
<i>breviceps</i>	6	7.6-8.8	0.60-0.66	1.42-1.49	1.58-1.63	1.84-2.01
<i>quadridens</i>	4	9.8-11.3	0.57-0.62	1.47-1.52	1.57-1.64	1.88-1.97

are characteristically curved towards apex. Lateral plate with dense fringe of stiff, elongate setae at apical rim.

Variation. Apart from some sexual variation, little variation noted. Males tend to possess narrower and posteriorly less widened elytra.

DISTRIBUTION. Northern part of NT, N Qld.

COLLECTING CIRCUMSTANCES. Most specimens collected at light. This is probably a reed or grass dwelling species that lives at the edges of rivers, swamps and lagoons.

RELATIONSHIPS. Most closely related to *C. angusticollis* (Macleay).

***Clarencia quadridens* Darlington, 1968 (Fig. 34A)**

Clarencia quadridens Darlington, 1968: 209; Moore et al., 1987: 277, Lorenz, 1998: 420.

TYPES. HOLOTYPE AND 14 PARATYPES from Hollandia, West New Guinea (MCZ) (not seen). NEW RECORDS (5 ex): Cairns, v.46, viii.49, JB (ANIC); Cairns, 22.iv.1992, OH (CBM); 14.xii.94 Garradunga, JH (MDPI); 12.43S, 143.17E, 9km ENE of Mt Tozer, 5-10.vii.1985, TW, AC (ANIC).

DIAGNOSIS. Elytra with decidedly quadridentate apex.

SUPPLEMENTARY DESCRIPTION. *Measurements.* (Table 2).

DISTRIBUTION. Recorded previously from Australia only from Cairns (Darlington, 1968). As the Australian occurrence noted by Moore et al. (1987) is apparently based on Darlington's record, the specimens noted here are probably the first additional specimens recorded. They show the range of this species in Australia extends down to Innisfail and north to Cape York Peninsula.

COLLECTING CIRCUMSTANCES. Unknown. Probably also hygrophilous, living either on reeds or, according to Darlington (1968: 209), 'under wet leaves or in or under low vegetation'.

KEY TO THE AUSTRALIAN SPECIES OF
CLARENZIA

1. Apex of elytra conspicuously quadridentate at suture and external apical angles. NE Qld. *quadridens* Darlington
Apex of elytra not perceptibly quadridentate. 2
2. Head longer and narrower, ratio length/width of head > 1.52; prothorax almost completely transversely striolate; apex of elytra more deeply excised, external angles considerably projecting. *aliena* (Pascoe)
Head shorter and wider, ratio length/width of head < 1.49; prothorax barely or only near base transversely striolate; apex of elytra less excised, external angles little projecting. 3
3. Prothorax slightly shorter as a rule, ratio length/width 1.52-1.59; apex of elytra more excised, outer apical angles more advanced. *angusticollis* (Macleay)
Prothorax slightly longer as a rule, ratio length/width 1.58-1.63; apex of elytra less excised, outer apical angles less advanced. *breviceps* sp. nov.

Deipyrus Liebke, 1938

Deipyrus Liebke, 1938: 104; Csiki, 1932: 1542; Moore et al., 1987: 276; Lorenz, 1998: 420.

TYPE SPECIES. *Lachnothorax palustris* Sloane, 1910, by original designation.

DIAGNOSIS. Easily distinguished by combination of pilose surface, complete elytral striation, very distinct 'neck', conspicuous lateral sulcus and ridge on prothorax, presence of a yellow spot right at apex of either elytron, and presence of 2 dorsal nematiform setae on female stylomere 2.

NOTE: Although the genus was described by Liebke in 1938, the name had already been used by Csiki (1932) in his catalogue, but without giving the citation. Obviously, Liebke must have used this name before, either in printed form, or in *litteris*.

Deipyrus palustris (Sloane, 1910)
(Figs 7, 30I, 34B)

Lachnothorax palustris Sloane, 1910: 396; 1917: 414.

Myrmecodemus palustris, Sloane, 1923: 33.

Deipyrus palustris, Liebke, 1938: 105; Csiki, 1932: 1542; Moore et al., 1987: 276; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♀, Cairns/Cotype/11556 *Lachnothorax palustris* Sln., Queensland, Cotype (SAM). PARALECTOTYPES. 1 ♂, 1 ♀, Cairns distr., E. Allen/Cotype (SAM). NEW RECORDS (24 ex.): Qld: Cairns dist. E. Allen/*Lachnothorax palustris* Sln. Id. by A.M. Lea (MV); Janie Ck. S of Mapoon Mission, Wei, 30.xi.1983, WH (CBM); Kuranda/Coll. Lemoult (IRSNB); Stewart R. i.-ii. 1927, NT (SAM); Cairns/*Lachnothorax palustris* Sln. (SAM); Cairns/French Coll. Kraatz (DEI). - NT: Darwin, HG (MV); ? (unreadable) Saltpan Roper R. Coll. ?

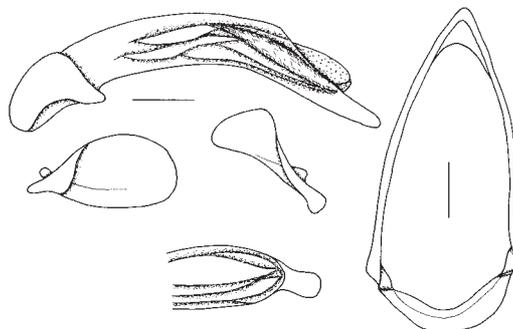


FIG. 7. *Deipyrus palustris* (Sloane). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

(unreadable)/*Lachnothorax palustris* Sl. (1910) Id. by T.G. Sloane (MV); Groote Eylandt, NT (SAM); Adelaide R., HB (SAM); Roper R., NT (SAM); Roper River, 3.iii.16 (DEI).

DIAGNOSIS. Like *D. inops* sp. nov. but: Legs reddish; antenna reddish; eyes convex, laterally projecting, composed of glossy ommatidia of about equal size.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 3).

Male Genitalia (Fig. 7). Terminal abdominal sternite in middle incised. Genital ring fairly elongate, triangular, almost symmetric, with convex basal plate, regularly narrowed to the narrow, triangular apex. Aedeagus slender and elongate, laterally sinuate, lower surface in basal half gently concave, in apical even slightly convex. Orificium very elongate. Apex rather wide, moderately short, very gently knobbed, straight, gently turned to right, and with a short, distinct notch at the right side. Folding of internal sac very simple. Parameres short, of fairly dissimilar shape, left paramere much larger than right one and with convex apex, right one short, with obtusely angulate apex.

Female Genitalia (Fig. 30I). Stylomere 2 large, though comparatively short and stout, laterally moderately curved, with fairly acute apex. With 2 small ventrolateral ensiform setae, a medium-sized dorsomedian ensiform seta situated about in middle of stylomere, and 2 short nematiform setae arising from a groove in apical third. Base of stylomere 1 with 6-7 elongate, slender ensiform setae. Lateral plate with dense fringe of elongate, stiff nematiform setae at apical rim.

DISTRIBUTION. NE Qld, N NT.

COLLECTING CIRCUMSTANCES. Little known. One specimen was collected on a salt pan, and since Moore et al. (1987) also record it as living on 'salt marsh', this may be a halophile species, generally or facultatively.

***Deipyrus inops* sp. nov.**
(Fig. 30J, 34C)

ETYMOLOGY. Refers to the small, remarkably depressed eyes.

MATERIAL. HOLOTYPE: ♀, Australia C. Oke Collection/*Myrmecodenus* sp. near *palustris* Sl. det. B.P. Moore (MV). PARATYPE: ♀, same data (CBM).

DIAGNOSIS. Like *D. palustris* (Sloane) but: legs dark; antenna dark; eyes remarkably depressed, laterally not at all projecting, composed of conspicuously rough ommatidia of very unequal size.

DESCRIPTION. *Measurements* (Table 3). *Colour* (Fig. 34C). Surface, including mouthparts, antennae and legs black. Apex of elytra with an inconspicuous, ill defined reddish-orange spot that extends from about 3rd interval to external apical margin and broadly meets the apex.

Head. Rather narrow, remarkably oval. Neck very narrow, with deep transverse impression. Eyes of moderate size, though absolutely depressed and laterally not protruding, not separated from orbits which are elongate and rather convex. Colour of eye characteristically dark grey in middle, with a slightly lighter margin. Surface of eyes remarkably rugose, in particular in middle where the ommatidia are conspicuously smaller than at margin. Medially of eye with a fairly deep sulcus that extends to behind middle of eye, but without ridge. Posterior supraorbital seta located well behind posterior margin of eye, but seta difficult to detect within the elongate pilosity of surface. Clypeus on either side with 2 additional setae behind the anterior one. Mentum with elongate, acute, triangular tooth, with 2 setae behind tooth, submentum with several elongate setae on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a dense fringe of spines. Antenna moderately elongate, almost attaining base of pronotum, pilose from 1st antennomere. Surface glossy, without microreticulation, though rather dense and coarsely punctate, with

very elongate, hirsute pilosity that is inclined anteriorly. Also lateral margin and lower surface of head pilose.

Pronotum. Short and very convex, almost hemispherical, near base with shallow transverse impression. Apex not bordered, lateral margin complete, slightly ridge-like, convex, with distinct, rather wide sulcus medially. Base with thick border. Median line shallow. Marginal seta(e) not visible within the elongate pilosity. Proepisternum broadly visible from above. Disk rather densely and coarsely punctate, near apex and base punctuation dense and rugose. Surface without microreticulation, glossy, with very elongate, hirsute, erect pilosity.

Elytra. Rather short and wide, somewhat rectangular, laterally gently convex, barely widened in apical half, surface gently convex. Base gently oblique, humeri fairly distinct but rounded, lateral evenly convex and rounded towards sutural angle without any indication of lateral apical angles. Apex, therefore, remarkably convex. Base margined towards position of 4th stria, apex very narrowly margined. Surface in anterior third in middle with very shallow, transverse impression. All striae complete, running from base to apex. Striae slightly impressed, coarsely punctate in anterior half, punctures becoming inconspicuous posteriorly, in apical half striae only linear. Intervals almost depressed, with rather dense, irregular, about biseriolate punctuation. Scutellar stria elongate, consisting of about 8 large punctures. No fixed setae visible within the elongate pilosity. Surface without microreticulation, glossy, but with dense, elongate, hirsute, pilosity that is inclined posteriorly. Hind wings present.

Lower Surface. Thorax densely and coarsely punctate and with elongate, hirsute pilosity. Abdomen with finer punctures and shorter, slightly denser pilosity. Metepisternum moderately elongate, c. 2 × as long as wide at apex. Terminal abdominal sternum in female tri- or quadrisetose on either side.

Legs. Of moderate size. Tarsi not lobed, pilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. Squamosity of male anterior tarsus unknown.

Male Genitalia. Unknown.

Female Genitalia (Fig. 30J). Stylomere 2 large, though comparatively short and stout, laterally moderately curved, with fairly acute apex. With 2 small ventrolateral ensiform setae, a medium-sized dorsomedian ensiform seta situated about

in middle of stylomere, and 2 short nematiform setae arising from a groove in apical third. Base of stylomere 1 with 6 elongate, slender ensiform setae. Lateral plate with dense fringe of elongate, stiff nematiform setae at apical rim.

Variation. Due to limited material very little variation noted.

DISTRIBUTION. 'Australia'.

KEY TO AUSTRALIAN SPECIES OF
DEIPYRUS

1. Eyes convex, laterally well projecting; antennae and legs reddish to light brown, tibiae with yellow median ring. *palustris* (Sloane)
Eyes depressed, not projecting; antennae and legs uniformly black. *inops* sp. nov.

***Dicraspeda* Chaudoir, 1862**

Dicraspeda Chaudoir, 1862: 300; Sloane, 1923: 30; Csiki, 1932: 1536; Liebke, 1938: 88; Darlington, 1968: 210; Moore et al., 1987: 274; Baehr, 1996a: 138; 1997b: 30; 1998: 174; 1999: 116; 2000: 11; 2003b: 101; 2003c: 251; Lorenz, 1998: 420.

TYPE SPECIES. *Dicraspeda brunnea* Chaudoir, 1862, by monotypy.

DIAGNOSIS. Distinct sulcus and ridge inside the eye; distinct sulcus inside the prothoracic margin; elytra impilose (except for fixed setae at 3rd interval), with elytral apex slightly excised and not bearing angulate or even spinose external angles.

DISCUSSION. For a time this genus was confused with the related *Eudalia*, and even Sloane (1917, 1923) was not sure to which genus the quite differently shaped Australian species should be referred. *Dicraspeda obscura* (Castelnau), for example, was referred to *Arame* Andrewes by Sloane (1923). Those species that are today combined to form *Dicraspeda*, are remarkably different in their external shape and structure. When considering the species that occur in New Guinea, the problem becomes even more difficult, because the former genera *Philemonia* Liebke and *Macrocentra* Chaudoir have to be taken into consideration. Today these are included in *Dicraspeda sensu lato*, but certainly they again deviate in shape and structure. Some of these problems are discussed by Baehr (1996a, 1997b, 1998, 1999, 2000, 2003b, 2003c).

Many species that have described from New Guinea fall in the former '*Philemonia*' (Baehr, 1996a, 1997b, 1998), some new Australian records of New Guinean species (Baehr, 2000), and the '*brunnea*-group' of species was revised

(Baehr, 2003c). No further taxonomic information about the species of the latter group will be given.

DISTRIBUTION. E and N Australia, New Guinea, Bismarck Archipelago, Solomon Islands, New Hebrides, Moluccan Islands, Greater and Lesser Sunda Islands, Philippines.

***Dicraspeda brunnea* Chaudoir, 1862**

Dicraspeda brunnea Chaudoir, 1862: 300; Sloane, 1923: 31; Csiki, 1932: 1536; Liebke, 1938: 89; Darlington, 1968: 211; Moore et al 1987: 274; Baehr, 1996a: 138; 1998: 174; 2003c: 251; Lorenz, 1998: 420.

DISCUSSION. This species was described from Sulawesi and is widely distributed from southernmost Thailand and Indonesia through Sulawesi and the Philippines (Baehr, 1998, 2003c). It was recorded from New Guinea by Darlington (1968) and from N Australia by Moore et al. (1987). Baehr (2003c) noted that these records are probably erroneous, because in New Guinea certain species occur that are different from *brunnea*, and moreover, I have not seen *brunnea* from New Guinea or Australia. For New Guinea, Darlington's records probably refer to either *D. nigripes* Baehr, *D. obsoleta* Baehr or *D. papuensis* Baehr. For Australia, Moore et al's (1987) records probably refer either to *D. sublaevis* (Macleay) that was synonymised with *D. brunnea* by Sloane (1923) but reinstated by Baehr (2003c), or *D. nitida* Sloane or *D. glabrata* Baehr. Therefore, *D. brunnea* probably does not belong to the Australian fauna.

***Dicraspeda sublaevis* (Macleay, 1888)
(Fig. 34D)**

Eudalia sublaevis Macleay, 1888: 448; Sloane, 1917: 418.
Dicraspeda sublaevis (as *D. brunnea* Chaudoir), Sloane, 1923: 31; Csiki, 1932: 1537; Moore et al., 1987: 274; Lorenz, 1998: 420.

Dicraspeda sublaevis, Baehr, 2003c: 253.

NEW RECORDS (37 ex.): QLD: 10km S Georgetown, 30.xii.1979, RS, JB/*Dicraspeda brunnea* Chaudoir Det. R.I. Storey 1988 (CBM, MDPI); Elizabeth Ck., Wrotham Park Stn., via Chillagoe, 6.xii.1990, DG (MDPI); Sellheim, xii/42, JB/*Dicraspeda brunnea* Chd. 1493. (ANIC); Mary Creek, 16.33°S 145.12°E, 4-5.xii.1968, BM (ANIC, CBM); 13.58°S 143.11°E, Mt White, 12.i.1994, PZ, EE (ANIC); Mt Carbine, 5.i.1964, GM (QM0. -NT: Humpty Doo, 6km E, 9.ii.-4.iii.1987, RS, GB (CBM, MDPI, QM); 12.52S 132.50E, Koongarra, 6-10.iii.93, MU (ANIC); Katherine env. 10.-14.i.2004, PM (CBM); Horn Islet., Pellew Group, 15-31.i.1968, 15-21.ii.1968, BC/ *Dicraspeda sublaevis* Macl. det. B.P. Moore 1974 (CBM, QM). - WA: Kununnurra, 22.xii.91-6.i.1992, RS (CBM, MDPI). Most specimens were collected at light.

DISCUSSION. Although synonymised with *D. brunnea* for a long period, Baehr (2003c) demonstrated that it is a well characterised, separate species.

DISTRIBUTION. The new records extend the range into N Qld, but only to the western slope of Great Dividing Range.

Dicraspeda nitida (Sloane, 1917)

Eudalia nitida Sloane, 1917: 420

Dicraspeda nitida, Csiki, 1932: 1537; Moore et al., 1987: 275; Lorenz, 1998: 420; Baehr, 2003c: 253.

NEW RECORDS (67 ex.): QLD: Mt Lewis, via Julatten, 29.xii.1979, RS, NG/*Dicraspeda nitida* Sl. det. B.P. Moore '79 (MDPI); Cape Tribulation, Daintree area, 15-16.xii.1978, RS/*Dicraspeda nitida* Sl. det. B.P. Moore '86 (MDPI); Cape Tribulation, 24.-29.xii.1980, RS, NG (MDPI); Cow Bay, N of Daintree, 25.i.-7.ii.1984, CC (MDPI); 15km WSW of South Johnstone, 19.i.1986, JH (MDPI); 45km NE of Cooktown, 23.xii.1979, RS (MDPI); Bloomfield Range via Cooktown, 24.xii.1979, RS (MDPI); Cape Flattery, 23.-28.xii.1989, RS (CBM, MDPI); Cardstone, 4-16.i.1966, KH (ANIC); 15.47°S 145.14°E, Shiptons Flat, 17-19.x.1980, TW (ANIC); 16.03S to 16.05°S 145.28°E, Cape tribulation area, 21-28.iii.1984, AC, TW (ANIC); 16.19°S 145.24°E, 12km S of Daintree, 27.xi.1981, BJ (ANIC); 15.04°S 145.07°E, Mt Webb N.P., 27-30.iv.1981, AC, JF (ANIC); 15.29°S 145.16°E, Mt Cook N.P., 10-12.v.1981, AC, JF (ANIC); Cairns, ii.50, JB (ANIC); 12.43°S 143.18°E, 11km ENE of Mt Tozer, 11-16.vii.1986, TW, AC (ANIC); Shute Harbour, 3.iii.64, 23.iv.64, IC, MS (ANIC); Barron R., Cairns, 15.i.1993, BU (ANIC); Lake Placid dist. 3.ii.1995, BU (ANIC); 15.28°S 145.15°E, Cooktown, Walker's Bay, 29.i.1995, LR (ANIC); 11.45°S 142.35°E, Heathlands, 22.i.1992, TW, IN (ANIC, CBM); 11.41°S 142.42°E, 14km ENE Heathlands, 8.xii.1992, PZ & WD (ANIC, CBM); 16.03°S to 16.08°S 145.28°E, Cape Tribulation area, 1-11.v.1992, JL (ANIC); 13.58°S 143.11°E, Mt White, 12.i.1994, PZ, EE (ANIC); Rossville env. 25.-27.xii.2003, PM (CBM); Green Hill, Thursday I., 21.5.2003, GM/10°35'S 142°13'E, 80m (QMB); Horn I. 2.5km W of Horned Hill, 19.5.2003, GM/10°36'S 142°18'E, 50m (CBM, QMB); Hammond I., 1 km W village, 20.5.2003, GB/10°35'S 142°13'E, 50m (CBM, QMB); Nelly Bay, Magnetic I. 12.1997, SF (QMB).

DISTRIBUTION. Widely distributed in NE Qld, E of Great Dividing Range, including S Torres Strait Islands. Most specimens collected at light, a few 'in rainforest', some in 'gallery forest litter' and 'vine scrub litter'.

Dicraspeda glabrata Baehr, 2003c

Dicraspeda glabrata Baehr, 2003c: 255.

NEW MATERIAL. None.

Dicraspeda brunneipennis (Sloane, 1917)
(Figs 8, 30K)

Eudalia brunneipennis Sloane, 1917: 420.

Dicraspeda brunneipennis Csiki, 1932: 1537; Liebke, 1938: 89; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♂, Cairns (K) Dodd 04 5/*Eudalia brunneipennis* Sl from Kuranda. Cotype/HOLOTYPE *E. brunneipennis* Sl. PJD (ANIC). NEW RECORDS (6 ex.): Qld: Noah Creek, 16°08'S 145°25'E, 27.vii.1993, HM, RK (CRC); Bellenden Ker Range, Cableway Base Stn, 100m, 17.x.-9.xi.1981, EW (CBM, QM); Cape Tribulation, Daintree area, 15-16.xii.1978, RS/*Dicraspeda* sp. det. B.P. Moore 1979 (MDPI).

DIAGNOSIS. Distinguished from those species bearing a narrow marginal pronotal sulcus and rather convex elytra by prothorax impunctate, elytra non-microreticulate, with barely excised apical margin and always distinctly lighter than the fore body; 4th tarsomeres not deeply excised.

SUPPLEMENTARY DESCRIPTION. *Male Genitalia* (Fig. 8). Terminal abdominal sternite in middle incised. Genital ring comparatively wide, rather triangular, barely asymmetric, with short, acute, triangular apex. Aedeagus small, elongate, fairly depressed, laterally moderately sinuate, lower surface very gently concave. Orificum moderately elongate. Apex short, wide, almost straight, slightly knobbed and spoon-shaped, moderately turned to right, with shallow incisions at both sides. Folding of internal sac rather simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, both with wide, obtusely rounded apex.

Female Genitalia (Fig. 30K). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex, with 3 large ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with c. 6 ensiform setae of decreasing size, the median ones longest and conspicuously curved. Lateral plate with dense fringe of ensiform setae at apical rim.

TABLE 3. Measurements and ratios of both Australian species of *Deipyrus*.

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>inops</i>	2	8.3-8.5	0.71-0.73	1.58-1.59	1.14-1.16	1.47-1.48
<i>palustris</i>	6	7.3-8.4	0.59-0.67	1.36-1.43	1.14-1.21	1.53-1.58

DISTRIBUTION. Wet Tropics of NE Qld. The Bellenden Ker and Noah Creek specimens were collected by insecticide fogging in rain forest.

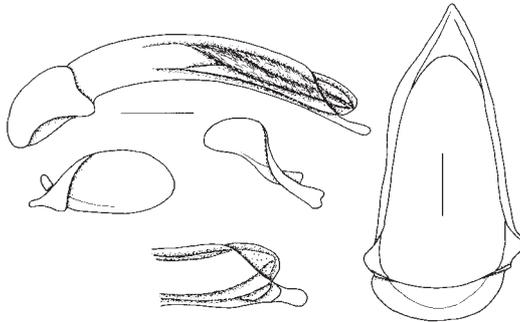


FIG. 8. *Dicraspeda brunneipennis* (Sloane). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Dicraspeda dubia (Gestro, 1879)

Odacantha dubia Gestro, 1879: 558.

Philemonia dubia, Csiki, 1932: 1536; Liebke, 1938: 83.

Dicraspeda dubia, Darlington, 1968: 212; Moore et al., 1987: 275; Baehr, 1996a: 138; 1997b: 30; 1998: 174; 2000: 11; Lorenz, 1998: 420.

DIAGNOSIS. Distinguished from all species bearing a narrow marginal pronotal sulcus and convex elytra by impunctate prothorax, microreticulate elytra with deeply excised apical margin, and not deeply excised 4th tarsomeres.

DISTRIBUTION. This New Guinean species was recorded in N Qld (Bamaga) by Darlington (1968), a record repeated by Moore et al. (1987). I have not seen *D. dubia* from Australia and since the related *D. longiloba* (Liebke), is recorded from N Qld (Baehr, 2000) I am not sure whether the *D. dubia* record is genuine.

Dicraspeda longiloba (Liebke, 1938)

Philemonia longiloba Liebke, 1938: 83.

Dicraspeda longiloba, Darlington, 1968: 212; Lorenz, 1998: 420; Baehr, 2000: 11.

DIAGNOSIS. 4th tarsomeres very deeply excised.

DISTRIBUTION. New Guinea and Australia (Baehr, 2000).

Dicraspeda obscura (Castelnau, 1867) (Figs 9, 30L, 34E)

Casnonia obscura Castelnau, 1867: 14; 1868: 100; Chaudoir, 1872: 407; Gestro, 1875: 851.

Eudalia obscura, Sloane, 1917: 418.

Arame obscura, Sloane, 1923: 31.

Dicraspeda obscura, Csiki, 1932: 1537; Liebke, 1938: 89; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♂, Rockhampton Coll. Castelnau/Esempl. tipico Coll. Castelnau/*obscura* Cast./*Casn. obscura* Cast. (Castelnau's handwriting)/SYNTYPUS *Casnonia obscura* Castelnau, 1867 (MCSN). PARALECTOTYPES: 1 ♂, 2 ♀♀, same data (MCSN). NEW RECORDS (77 ex.): Qld: 15km N Marlborough, MB (CBM); 20km N Biggenden, MB (CBM); Cairns, Whitfield Rd, 28.i.1974, WH (CBM, CMP); Mt Lewis, 21.i.1976, WH (CBM, CMP); Moa I. Torres Straits, JS (SAM); *Casnonia obscura* (Cast.)/*Casnonia* CS Rockm (MV); Mackay, (MV); Cairns, i.52, JB (MV); Cairns, i.1956, CO (MV); *Casnonia obscura* Cast./Mackay (MV); Mackay (MV); Iron Range, 4.v.1975,mm (MV); Old Bushman Beach, 20km N Townsville, 26-29.ii.1998, AW (SAM); Kuranda/Griffith Collection (SAM); Tolga, i.1980, NG, JB/*Dicraspeda obscura* (Cast.) det. R.I. Storey 1988 (MDPI); Tolga, 7.iii.1983, 23.i.1986, JB (MDPI, QM); 7km NE of Tolga, ii.1988, RS, DF (MDPI); Morehead R. N of Laura, 20.i.1990, FH (MDPI); 15km WSW of South Johnstone, 24.xii.1985, FH (MDPI); Walkamin, 8-15.iii.1985, JB (MDPI); Townsville, JT (ANIC); Cairns, iii.51, GB (ANIC); Archers Ck. iv.74, GB (ANIC); Mt Spec, i.75, GB (ANIC); 3 mi. W of Mossman, 14.iii.64, IC, MU (ANIC); Eungella N.P., 2400 ft. 2.iii.64, IC, MU (ANIC); Yeppoon, 26-29.xii.64, IC, MU (ANIC); 16.47°S, 145.22°E, 24km N by W of Mareeba, 24-25.xi.1981, BJ (ANIC); Lansdown Station, 19.40°S, 146.51°E, 7km S of Woodstock, 16.i.74, RB (ANIC). – NT: Goose Lagoon, 16.10S, 136.15E, 11km SW by S of Borrooloola, 17.iv.1976, JF (ANIC); McArthur River, 16.27°S, 136.05E, 48km SW by S of Borrooloola, 13.iv.1976, JF (ANIC); 12.52S, 132.50°E, Koongarra, 6-10.iii.73, MU (ANIC); 12.47°S, 132.51°E, 19km NE by E of Mt Cahill, 16.xii.1972, MU (ANIC); Ferguson R., 14.19°S, 131.50°E, 25.vi.1968, ME (ANIC); Tindal, 14.31°S, 132.22°E, 1-20.xii.1867, WV (ANIC); 16°41'S 135°44'E, Cape Crawford, 17-19.iv.2004, GM, DC, 11621 (QMB). – WA: 14.45°S, 125.47°E, 10km NW by N of Mining Camp, Mitchell Plateau, 11.v.83, IN, CJ (ANIC); 14.49°S, 125.50°E, Mining Camp. Mitchell Plat. 9-19.v.1983, IN, CJ, DR, BJ (ANIC); 14.25°S, 126.38°E, CALM Site 13/4, 12km S of Kalumburu Mission, 7-11.vi.1988, TW (ANIC).

DIAGNOSIS. Pronotum coarsely punctate.

SUPPLEMENTARY DESCRIPTION. *Male Genitalia* (Fig. 9). Terminal abdominal sternite in middle deeply incised. Genital ring comparatively narrow, elongate, parallel, slightly asymmetric, with short, acute, triangular apex. Aedeagus small, moderately elongate, fairly depressed, laterally moderately sinuate, lower surface very gently concave. Orificum very elongate. Apex short, wide, almost straight, knobbed and slightly spoon-shaped, moderately turned to right, with shallow incisions at both sides. Folding of internal sac rather simple. Parameres of very dissimilar shape, left paramere

much larger than right one, stout, with wide, obtusely transverse apex, right paramere narrow, with convex apex.

Female Genitalia (Fig. 30L). Stylomere 2 comparatively elongate, laterally evenly curved, with acute apex. With 2 large ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 5-6 stout ensiform setae of decreasing size. Lateral plate with dense fringe of very elongate stiff setae at apical rim.

DISTRIBUTION. E Qld, Torres Strait, N NT, and N WA. Most specimens were collected at light. It is uncertain whether this is an hygrophilous species or leaf litter species independent of water.

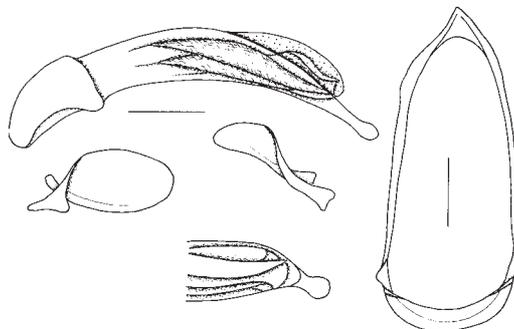


FIG. 9. *Dicraspeda obscura* (Castelnau). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

KEY TO AUSTRALIAN SPECIES OF
DICRASPEDA

1. Marginal pronotal sulcus wide; elytra short and wide, depressed (Fig. 34D) 2
Marginal pronotal sulcus narrow; elytra longer and narrower, rather convex (Fig. 34E) 4
2. Striae deeply impressed, intervals clearly convex, even near apex *sublaevis* (Macleay)
Striae not or barely impressed, intervals depressed, at least near apex 3
3. Surface of elytra in basal third without perceptible transverse impression, with superficial though distinct microreticulation. *nitida* (Sloane)
Surface of elytra in basal third with distinct transverse impression, at least in basal half without perceptible microreticulation *glabrata* Baehr
4. Whole pronotum densely and very coarsely punctate; 4th tarsomeres of anterior and median tarsi barely excised *obscura* (Castelnau).
Pronotum punctate only near base and apex, punctuation rather fine; 4th tarsomeres of anterior and median tarsi considerably excised 5
5. Excision of 4th tarsomeres of all tarsi very deep, > 3/4 of length of 4th tarsomere *longiloba* (Liebke)
Excision of 4th tarsomeres less deep, c. 1/2 of length of 4th tarsomere, in metatarsus excision shallow. 6
6. Elytra without traces of microreticulation, apical margin little excised, external apical angles little projecting; head longer and narrower, eyes barely surpassing curvature of orbit; elytra always distinctly lighter than fore body. *brunneipennis* (Sloane)
Elytra with fine microreticulation, apical margin deeply excised, lateral apical angles projecting; head shorter and wider, eyes distinctly surpassing curvature of orbit; elytra little lighter than fore body *dubia* (Gestro)

Eudalia Castelnau, 1867

Eudalia Castelnau, 1867: 16; 1868: 102; Sloane, 1917: 415; 1923: 30; Csiki, 1932: 1542; Darlington, 1968: 214; Moore et al., 1987: 273; Lorenz, 1998: 421; Baehr, 1999: 116; 2003b: 101.

TYPE SPECIES. *Odacantha latipennis* Macleay, 1864, by original designation.

DIAGNOSIS. Distinct ridge and sulcus medially of eye absent; deep sulcus inside of the marginal border of pronotum absent; full elytral striation; striae punctate; apex of elytra not or barely excised.

DISCUSSION. *Eudalia* seems to be a genus of convenience which includes quite differently shaped and structured species that are combined more by plesiomorphic than by apomorphic characters. The single New Guinean species, *E. anomala* Darlington, deviates even more and is fairly similar to the Oriental *Andrewesia* Liebke. Two well separated lineages in Australia are 1) the *obliquiceps*-lineage that comprises rather elongate, impilose or scarcely pilose species with smaller, less protruding eyes (*C. obliquiceps*, *C. minor*, *C. castelnaui*, *C. reticulata*, *C. atrata*, *C. femorata*), and 2) the *macleayi*-lineage that comprises short, compact, densely pilose species with large, protruding eyes and short, remarkably convex orbits (*E. macleayi*, *E. latipennis*, *E. punctipennis*, *E. waterhousei*).

In some character states *E. nigra* Sloane differs from *Eudalia* and resembles *Dicraspeda*. Hence, it is removed from *Eudalia*, but due to structural differences between it and all other members of *Dicraspeda*, it is given the status of a separate genus.

DISTRIBUTION. Apart from the aberrant New Guinean *E. anomala*, that may merit the erection of a separate genus, *Eudalia* is confined to Australia.

***Eudalia obliquiceps* Sloane, 1917**
(Figs 10-12, 30M, 34F, 35A)

Eudalia obliquiceps Sloane, 1917: 418; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 274; Lorenz, 1998: 421.

Dicraspeda obliquiceps, Sloane, 1923: 31.

DIAGNOSIS. Colour uniformly black; elytra without microreticulation, with extremely fine, microscopic pilosity; 3rd and 5th interval with setiferous punctures; legs conspicuously bicoloured.

DISCUSSION. Moore et al. (1987) record this species from Cairns and the type locality (Laura). New material extends the range through Qld, NT and WA. The material also reveals differences between the type and other specimens from northwestern Qld, NT, northernmost WA, Iron Range in Cape York Peninsula, and specimens attributed to *E. obliquiceps* from other localities in northern Qld and northern NSW. Hence, specimens from certain localities in northern Qld and northern NSW that differ more substantially, are described as separate species, whereas specimens from Iron Range and those from NT and northwestern Australia, respectively, are described as separate subspecies of *E. obliquiceps*. This procedure has been chosen, because available representatives of the latter populations are quite uniform in shape and degree of microreticulation, but differ in minor characters of external morphology (degree of punctuation, shape of pronotum), and in shape of male aedeagus.

***Eudalia obliquiceps obliquiceps* Sloane, 1917**
(Figs 10, 30M)

Eudalia obliquiceps Sloane, 1917: 418. All citations mentioned above under the species refer to the nominate subspecies.

MATERIAL. HOLOTYPE: ♂, Laura, Q.T.G. 18.7.16/*Eudalia obliquiceps* Sl. Type/HOLOTYPE *E. obliquiceps* Sl. PJD (ANIC). NEW RECORDS (17 ex.): Qld: Kuranda, 20.iii.1973, WH (CBM, CMP); Leo Creek Rd, Mc Illwraith Range, 30km NE of Coen, c. 500m, 29.vi.-4.vii.1976, GM, SM (QM); Archer River X-ing, 70km N of Coen, Cape York Pen., 17.-18.vii.1975, GM (QM); Moreton, Wenlock R., Cape York Pen. 14.ix.1974, GM (CBM, QM); French's Coll./807 *Eudalia niger* Sl. det. by Sloane vi.13 (MV); Tolga, ii-iii.1980, NG, JB (MDPI); Kalpower X-ing, 75km NW of Laura, 2.iv.1983, RS (MDPI); Old Laura Stn 25km N. of Laura, 3.iv.1983,

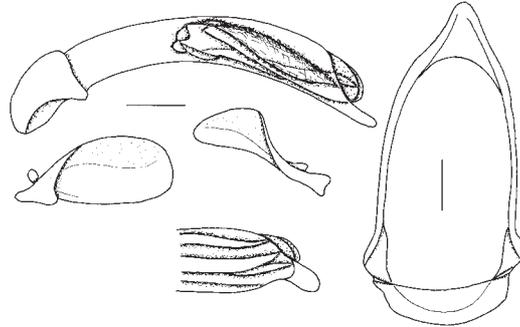


FIG. 10. *Eudalia obliquiceps obliquiceps* Sloane. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

RS (MDPI); Hann R. via Laura, 2.v.1978, RS, NG (MDPI); Pouth Ck., via Georgetown, 8.i.1980, RS (MDPI); 15.41°S 145.12°E, Annan R., 3km W by S of Black Mt., 17.ix.1980, TW (ANIC); 12.27°S 142.38°E, Moreton, 10.xii.1992, WD, PZ (ANIC).

DIAGNOSIS. Head densely punctate; pronotum narrow, elongate, completely punctate, bearing almost parallel lateral margins; rather stout, on lower surface evenly curved aedeagus bearing a short apex.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 4).

Male Genitalia (Fig. 10). Terminal abdominal sternite in middle very gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, acute, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally moderately sinuate, whole lower surface concave. Orificum short. Apex short, fairly wide, straight, gently knobbed, markedly turned to right, deeply incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, right paramere elongate, both with rounded apex.

Female Genitalia (Fig. 30M). Styломere 2 medium-sized, moderately elongate, laterally moderately curved, with fairly acute apex. With 3 small ventrolateral ensiform setae, a medium-sized dorsomedian ensiform seta situated about in middle of styломere, and a single short nematiform seta arising from a groove in apical third. Base of styломere 1 with c. 6 moderately elongate ensiform setae. Lateral plate with comparatively sparse fringe of fairly elongate, stiff nematiform setae at apical rim.

DISTRIBUTION. NE Qld including Cape York Peninsula, W to Georgetown area. One specimen collected at light. Probably a hygrophilous, ground living species.

RELATIONSHIPS. Eye and prothorax shape and additional setiferous punctures on 5th interval suggest closer relationship with *E. o. tozeria* than with *E. o. punctifrons*.

***Eudalia obliquiceps tozeria* subsp. nov.**
(Figs 11, 34F)

ETYMOLOGY. From Mt Tozer.

MATERIAL. HOLOTYPE: ♂ 12.44°S 143.14°E 3km ENE of Mt Tozer Qld 28.vi-4.vii.1986 T. Weir & A. Calder (ANIC). PARATYPES: 1 ♂, same data (ANIC); 2 ♂♂, 12.43°S 143.17°E 9km ENE of Mt Tozer Qld 28.vi-4.vii.1986, TW & AC (ANIC, CBM); 1 ♀, West Claudie R., Iron Range, N Qld 3-10.xii.1985, GM & DC, rainforest, 50m (QM).

DIAGNOSIS. Head almost impunctate; pronotum narrow and elongate, lateral margin barely convex, punctate only in basal half; elytra with more than one setiferous puncture on 5th interval.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 34F). Surface almost completely black or dark piceous, as in nominate subspecies. Femora and tibiae conspicuously bicoloured.

Head. Shape as in nominate subspecies, though eyes laterally slightly more projecting than in nominate subspecies. Surface of head largely impunctate, punctate only near eyes. *Pronotum.* Generally even slightly longer than in nominate subspecies (see Tab. 4), laterally little convex, lateral margin rather straight. Surface punctate only in basal half, and with few punctures within basal transverse sulcus.

Elytra. Slightly longer and narrower than in nominate subspecies (Table 4), apex with shallow though distinct excision, 5th interval with a more than one setiferous punctures that extend the latter of which is situated near middle.

Lower Surface. As in nominate subspecies. Terminal abdominal sternite in male bisetose and glabrous, in female quadrisetose and with very short pilosity in middle of apex.

Legs. As in nominate subspecies, though the single female specimen with only 2 ventrolateral ensiform setae.

Male Genitalia (Fig. 11). As in nominate subspecies, but aedeagus slightly more elongate and slender, apex shorter, less markedly tuned to

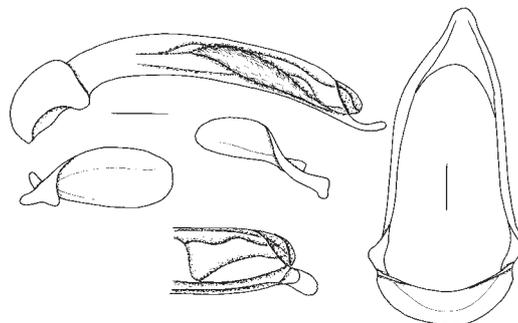


FIG. 11. *Eudalia obliquiceps tozeria* subsp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

the right side, and slightly upturned, and both parameres decidedly longer.

Female Genitalia. As in nominate subspecies.

Variation. Little variation noted.

DISTRIBUTION. Iron Ra., N Qld.

RELATIONSHIPS. Shape of eyes and prothorax, and additional setiferous punctures on 5th interval, suggest closer relationship to the nominate subspecies than to *E. o. punctifrons*.

***Eudalia obliquiceps punctifrons* subsp. nov.**
(Figs 12, 35A)

ETYMOLOGY. Refers to the densely punctate head.

MATERIAL. HOLOTYPE: ♂, Adelaide R. NT, H.W. Brown (SAM). PARATYPES: 1 ♀, same data (SAM); 1 ♂, Australien, WA Ord River, 135km N Hall's Creek, 15.ii.1984, MB/*Eudalia obliquiceps* Sl. (CBM); 1 ♀, Australien, NT Katherine 7.-8.viii.1995, MB (CBM); 1 ♂, N WA Kununurra 22.xii.1991-5.i.1992, RS (MDPI); 2 ♂♂, 2 ♀♀, 14.04°S 131.59°E, Ferguson R. 31km SE by S of Pine Creek, NT, 14.xi.1979, TW (ANIC, CBM); 1 ♀, Bessie Spring, 16.40°S 135.41°E, 8km ESE of Cape Crawford, NT 12.iv.1976, at light, JF (ANIC); 1 ♂, McArthur River, 16.47°S 135.45°E, 14km S by W of Cape Crawford, NT, 25.x.1975, MU (ANIC); 1 ♀, Dugald R., 60km W Cloncurry, 20.xi.1978, At light, RS (QM); 1 ♀, 15.11°S 143.52°E, GPS Hann River Qld 14.i.1994 at light, PZ & EE (ANIC); 1 ♂ (abdomen destroyed), Australia/Coll. Erben (DEI).

DIAGNOSIS. Distinguished from other two subspecies by completely and coarsely punctate head; pronotum short and wide, lateral margin considerably convex, surface regularly punctate; elytra with 1 setiferous puncture only near base of 5th interval; distinguished from *E. minor* sp. nov. by larger size, denser punctation of head and

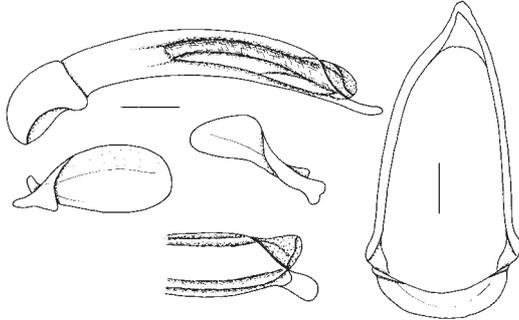


FIG. 12. *Eudalia obliquiceps punctifrons* subsp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

prothorax, and less angulate subapical excision of aedeagus.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 35A). Surface almost completely black, as in nominate subspecies. Femora and tibiae conspicuously bicoloured. *Head*. Shape as in nominate subspecies, though eyes slightly larger in comparison to orbits than in other subspecies, therefore head comparatively shorter and wider (Tab. 4). Surface of head almost completely and rather evenly punctate.

Pronotum. Shorter and wider (Table 4), laterally more convex, lateral margin more convex than in other subspecies. Surface almost completely punctate. *Elytra*. Shape and structure as in nominate subspecies, though apex not at all excised, and 5th interval with a single setiferous puncture only in basal fifth.

Lower Surface. As in nominate subspecies. Terminal abdominal sternite in male bisetose and glabrous, in female quadrisetose and with very short pilosity in middle of apex.

Legs. As in nominate subspecies.

Male Genitalia (Fig. 12). As in nominate subspecies, but lower surface slightly of aedeagus less concave, therefore, aedeagus less curved, and apex of right paramere more widely rounded.

Female Genitalia. As in nominate subspecies.

Variation. Very little variation noted, though males tend to have slightly narrower elytra than females.

DISTRIBUTION. NW Qld, N part of NT, and N WA. Some specimens collected at light in the vicinity of rivers.

***Eudalia minor* sp. nov.**
(Figs 13, 35B)

ETYMOLOGY. Refers to the small size.

MATERIAL. HOLOTYPE: ♂, Dugald R., 60km W Cloncurry, N Qld. 20.xi.1978, R.I. Storey, at light/*Dicraspeda* sp. det. B.P. Moore 1979 (QMT 99170). PARATYPE: 1 ♂, same data (MDPI).

DIAGNOSIS. Distinguished from *E. obliquiceps* by small size; head sparsely punctate; prothorax anteriorly impunctate. Further distinguished from eastern subspecies of *E. obliquiceps* by short and convex pronotum bearing convex lateral margins that are distinctly sinuate near base, and from *E. o. punctifrons* by more delicate aedeagus with a remarkably deep and angulate incision near apex.

DESCRIPTION. *Measurements* (Table 4).

Colour. Surface blackish or dark piceous, labrum, palpi, antennae, and legs reddish, knees dark.

Head. Fairly wide. Neck moderately narrow, with rather deep transverse impression. Eyes large, laterally well protruding, slightly separated from orbits which are shorter than eyes and slightly convex. Behind clypeus with fairly deep elongate, somewhat sinuate groove. Medially of eye with a slight sulcus that extends to about middle of eye, but without ridge. Posterior supraorbital seta located slightly behind posterior margin of eye. Mentum with rather elongate, acute, triangular tooth, with 2 setae behind tooth, submentum with a very elongate seta on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna elongate, surpassing base of pronotum by at least 2 antennomeres, pilose from middle of 4th antennomere. Surface glossy, without microreticulation, glabrous, with scattered, coarse punctures.

Pronotum. Moderately elongate, laterally and dorsally convex, near apex with shallow transverse impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half fairly convex, towards base distinctly diverging, without sulcus medially of margin. Median line shallow, anterior transverse sulcus somewhat v-shaped, shallow, coarsely punctate. A single marginal seta situated just in front of middle. Proepisternum narrowly visible from above in middle. Disk in basal two thirds densely and very coarsely punctate, more

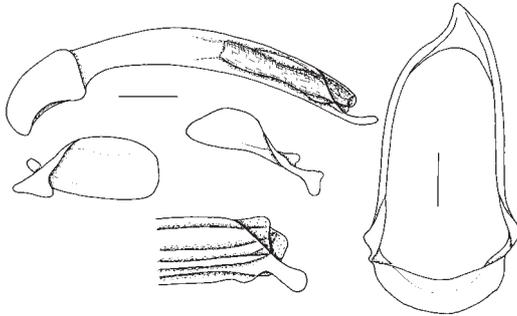


FIG. 13. *Eudalia minor* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

scattered so near apex, punctures tend to form irregular transverse sulci near base. Surface without microreticulation, impilose, glossy.

Elytra. Rather elongate, somewhat rectangular, laterally gently convex, very slightly widened in apical half, surface gently convex. Base almost transverse, humeri very distinct but rounded, lateral margin very faintly incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base narrowly margined to position of 5th stria, apex coarsely margined. Surface without transverse impression. All striae present, though originating shortly behind base. Striae deeply impressed throughout, coarsely punctate, though punctures becoming smaller posteriorly, but are present even near apex. Intervals convex, even towards apex. Scutellar stria elongate, consisting of about 8 coarse punctures. 3rd interval with 5-6, 5th interval with 1-2 setiferous punctures. Surface impunctate, without microreticulation, with extremely fine, barely visible, sparse pilosity, that is best detected laterally, surface very glossy. Hind wings present.

Lower Surface. Thorax and basal half of abdomen with very coarse, moderately dense punctuation. Apical half of abdomen impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Terminal abdominal sternum in male bisetose.

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st-3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 13). Terminal abdominal sternite in middle very gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, acute, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally moderately sinuate, whole lower surface rather concave. Orificum short. Apex short, fairly wide, decidedly upturned, gently knobbed, moderately turned to right, deeply incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, both rather elongate, left paramere much larger than right one, both with rounded apex.

DISTRIBUTION. NW Qld. Collected at light near river bank in association with *E. obliquiceps punctifrons*.

RELATIONSHIPS. Closely related to *E. obliquiceps* Sloane and in certain characters similar to *E. o. punctifrons*.

***Eudalia reticulata* sp. nov.**
(Figs 14, 30N, 35C)

ETYMOLOGY. Refers to the microreticulate elytra.

MATERIAL. HOLOTYPE: ♂, Goldsborough NQ 1/65. GB/*obliquiceps* Sl./J.G. Brooks Bequest, 1976 (ANIC). PARATYPES: 1 ♂, same data (CBM); 2 ♀♀, 14.ix.2000, Polly Ck., Garradunga, N Qld, JH (MDPI, QM).

DIAGNOSIS. Colour uniformly black; elytra not pilose, with fine microreticulation; legs not conspicuously bicoloured; 2-3 setiferous punctures on 5th interval. From similar and closely related *E. atrata* also distinguished by slightly smaller size and larger, more protruding eyes, and from *E. femorata* by far less conspicuously coloured legs and shorter, wider elytra.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 35C). Surface black or dark piceous, labrum, palpi, and 2 basal antennomeres reddish, rest of antenna dark. Legs dark piceous, femora except for apex, ill delimited reddish.

Head. Fairly wide. Neck moderately narrow, with rather deep transverse impression. Eyes large, laterally well protruding, slightly separated from orbits which are shorter than eyes and slightly convex. Behind clypeus with fairly deep elongate, somewhat sinuate groove, and in middle of frons with a shallow V-shaped groove. Medially of eye with a slight sulcus that extends to about middle of eye, but without ridge. Posterior supraorbital seta located well behind

posterior margin of eye. Mentum with elongate, acute, triangular tooth, with 2 setae behind tooth, submentum with a very elongate and a short seta on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna elongate, surpassing base of pronotum by about one antennomere, pilose from middle of 4th antennomere. Surface glossy, without microreticulation, glabrous, with few punctures only near eyes.

Pronotum. Moderately elongate, laterally little convex, dorsally convex, near apex with shallow transverse impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half gently convex, towards base slightly diverging, without sulcus medially of margin. Median line shallow. A single marginal seta situated just in front of middle. Proepisternum narrowly visible from above in middle. Disk in basal half densely and coarsely punctate, punctures tend to form irregular transverse sulci. Surface without microreticulation, impilose, glossy.

Elytra. Rather elongate, somewhat rectangular, laterally gently convex, very slightly widened in apical half, surface gently convex. Base almost transverse, humeri very distinct but rounded, lateral margin very faintly incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base narrowly margined to position of 5th stria, apex coarsely margined. Surface in anterior third with very shallow, transverse impression. All striae present, though originating shortly behind base. Striae slightly impressed throughout, coarsely punctate in anterior half, punctures becoming smaller posteriorly, but are present even near apex. Intervals little convex, in apical half almost depressed. Scutellar stria elongate, consisting of about 8 coarse punctures. 3d interval with 5-6, 5th interval with 2-3 setiferous punctures. Surface impunctate, with very fine, superficial, slightly transverse microreticulation that is even more superficial in basal half, surface glossy. Hind wings present.

Lower Surface. Thorax and basal half of abdomen with coarse and moderately dense punctuation. Apical half of abdomen impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Terminal abdominal sternum in male bisetose.

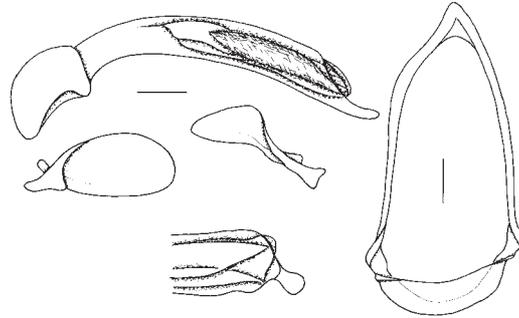


FIG. 14. *Eudalia reticulata* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st – 3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 14). Terminal abdominal sternite in middle gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally little sinuate, lower surface near base concave, in apical half almost straight. Orificum short. Apex short, rather narrow, slightly upturned, rather knobbed, turned to right, with deep but short incision at right side. Folding of internal sac simple. Parameres of dissimilar shape, left paramere much larger than right one, stout, with rounded apex, right paramere rather narrow and elongate, obtusely triangular, with narrowly rounded apex.

Female Genitalia (Fig. 30M). Stylomere 2 large, though comparatively short and stout, laterally rather little curved, with short, moderately acute apex. With 3 to 4 fairly elongate ventrolateral ensiform setae, a medium-sized dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 8-9 very elongate ensiform setae. Lateral plate with dense fringe of very elongate, stiff setae at apical rim.

Variation. In the male paratype striae slightly deeper towards apex, both females with slightly more distinct elytral microreticulation.

DISTRIBUTION. N Qld.

RELATIONSHIPS. Probably nearest to *E. atrata*.

***Eudalia atrata* sp. nov.**
(Figs 15, 30O, 35D)

ETYMOLOGY. Refers to the black body and legs.

MATERIAL. HOLOTYPE: ♂, 32.08S, 151.27E, Allyn R., Chichester S.F. NSW, 10-11.xi.1981, T. Weir/at light (ANIC). PARATYPES: 6 ♂♂, 8 ♀♀, same data (ANIC, CBM); 2 ♂♂, 2 ♀♀, same data, AC (ANIC); 7 ♂♂, 6 ♀♀, Chichester St. For., NSW, Allyn River Park, 8.xi.1982, JD (ANIC, CBM); 1 ♀, Eccleston, flood debris, 25.vii.21, G.A. Hill (ANIC); 2 ♂♂, Upper Williams R. NSW, x.1926, LW/*Eudalia* Sln. says n. sp. near *Dicraspeda*, ? (unreadable), see letter 31.v.27/F. E. Wilson Collection (MV); 1 ♂ (abdomen damaged), Upper Williams R. NSW, x.1925, LW/*Eudalia* sp. nov. M. Liebke determ. (DEI); 1 ♂, 2 ♀♀ (one immature), NSW m 500 Barrington Tops N.P. Allyn R. 24.i.1997 PG (CBM, CGT); 4 ♂♂, NSW Chichester State Forest, 32°07'S, 151°28'E, 17.i.1992/In debris in river, Tom Gush coll. 3284, TG (ANIC, CBM).

DIAGNOSIS. Colour uniformly black; elytra not pilose, with fine microreticulation; legs unicolourous piceous; setiferous punctures from 5th interval absent. Separated from *E. reticulata* under that species above and from *E. femorata* by uniformly dark legs, shorter and wider elytra, more distinct microreticulation, and narrower and longer aedeagus.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 35D). Surface black, labrum, palpi, and 2 basal antennomeres more or less dark reddish, rest of antenna dark. Mandibles reddish with black edges. Legs black or dark piceous, only tarsi reddish towards apex.

Head. Fairly wide. Neck moderately narrow, with deep transverse impression. Eyes fairly large, laterally moderately protruding, slightly separated from orbits which are slightly shorter than eyes and gently convex. Behind clypeus with fairly deep elongate, somewhat sinuate groove, and in middle of frons with a shallow v-shaped groove. Medially of eye with a slight sulcus that extends to about middle of eye, but without ridge. Posterior supraorbital seta located well behind posterior margin of eye. Mentum with rather elongate, acute, triangular tooth, with 2 setae behind tooth, submentum with a very elongate and a short seta on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna elongate, surpassing base of pronotum by about one antennomere, pilose from middle of 4th antennomere. Surface glossy, without

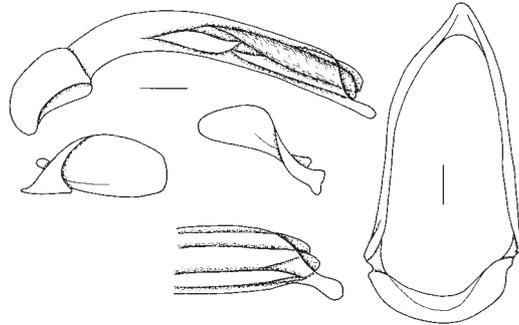


FIG. 15. *Eudalia atrata* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

microreticulation, glabrous, barely punctate or with few punctures only near eyes.

Pronotum. Moderately elongate, laterally little convex, dorsally convex, near apex with shallow transverse impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half very gently convex, towards base slightly diverging, without sulcus medially of margin. Median line shallow. A single marginal seta situated just in front of middle. Proepisternum narrowly visible from above in middle. Disk in basal half densely and coarsely punctate, apical half with more scattered punctures or even impunctate, punctures tend to form irregular transverse sulci. Surface without microreticulation, impilose, glossy.

Elytra. Rather elongate, somewhat rectangular, laterally gently convex, slightly widened in apical half, surface gently convex. Base almost transverse, humeri very distinct but rounded, lateral margin very faintly incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base narrowly margined to position of 5th stria, apex coarsely margined. Surface in anterior third with very shallow, transverse impression. All striae present, though originating shortly behind base. Striae slightly impressed throughout, coarsely punctate in anterior half, punctures become smaller posteriorly and diminish in front of apex. Intervals little convex, in apical half almost depressed. Scutellar stria elongate, consisting of about 8 coarse punctures. 3rd interval with 3 setiferous punctures, other intervals asetose. Surface impunctate, with very fine, superficial, almost isodiametric microreticulation that is as well developed in basal half

TABLE 4. Measurements and ratios of all Australian species of *Eudalia*.

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>o. obliquiceps</i>	6	7.7-8.8	1.30-1.40	1.16-1.27	1.24-1.25	1.66-1.69
<i>o. tozeria</i>	5	7.8-8.5	1.35-1.42	1.12-1.22	1.23-1.31	1.69-1.75
<i>o. punctifrons</i>	6	7.4-8.7	1.40-1.60	1.05-1.12	1.14-1.22	1.67-1.73
<i>minor</i>	2	6.9-7.3	1.47-1.50	1.06-1.07	1.18	1.69-1.73
<i>reticulata</i>	4	8.5-8.8	1.44-1.45	1.09-1.11	1.24-1.26	1.64-1.70
<i>atrata</i>	8	9.3-10.2	1.25-1.29	1.08-1.14	1.26-1.34	1.65-1.68
<i>femorata</i>	1	9.8	1.3	1.12	1.28	1.76
<i>castelnaui</i>	8	10.1-11.3	1.18-1.30	1.03-1.07	1.05-1.07	1.53-1.68
<i>macleayi</i>	8	8.5-9.9	1.70-1.90	0.99-1.03	1.01-1.07	1.59-1.65
<i>l. latipennis</i>	8	7.7-9.1	1.95-2.05	0.97-1.00	1.00-1.02	1.53-1.61
<i>l. interioris</i>	4	8.0-8.4	2.05-2.20	0.96-0.97	0.98-1.05	1.54-1.59
<i>waterhousei</i>	8	8.5-9.9	2.00-2.07	0.96-1.02	1.04-1.08	1.58-1.65
<i>punctipennis</i>	8	8.2-9.5	1.98-2.11	0.94-0.98	1.03-1.07	1.60-1.65

as near apex, moderately glossy. Hind wings present.

Lower Surface. Thorax and basal half of abdomen with coarse and moderately dense punctation. Apical half of abdomen impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Terminal abdominal sternum in male bisetose, in female quadrisetose.

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st – 3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 15). Terminal abdominal sternite in middle gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, triangular apex. Aedeagus very slender and elongate, moderately depressed, laterally little sinuate, lower surface near base concave, in apical half almost straight. Orificum short. Apex short, fairly narrow, very slightly upturned, gently knobbed, turned to right, moderately incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, right paramere stout, both with more or less rounded apex.

Female Genitalia (Fig. 300). Stylomere 2 large, though comparatively short and stout, laterally little curved, with short, moderately acute apex. With 4 fairly elongate ventrolateral ensiform setae, a medium-sized dorsomedian ensiform seta situated above middle of stylomere, and a

single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 9-10 very elongate ensiform setae. Lateral plate with dense fringe of very elongate, stiff setae at apical rim.

Variation. Slight differences noted in shape of pronotum, and in extent of punctuation on head, pronotum, and elytral striae.

DISTRIBUTION. Barrington Tops area, NSW. All specimens collected near river, several sampled at light, some 'in debris in river'. Probably a hygrophilous ground-living species that occurs on or near river banks.

RELATIONSHIPS. Closest to *E. femorata* and less closely related to *E. reticulata*.

***Eudalia femorata* sp. nov.**
(Figs 16, 35E)

ETYMOLOGY. Refers to the colour of the femora.

MATERIAL. HOLOTYPE: ♂, NW Orange, NSW, 13.xii.72, light trap, S. Misko/*Eudalia* spp. det. T. A. Weir 2000 (ANIC).

DIAGNOSIS. Colour uniformly black; elytra not pilose, with fine microreticulation; femora with conspicuously light reddish upper surface; setiferous punctures from 5th interval absent. Distinguished from *E. atrata* under that species above.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 35E). Surface black, labrum, palpi, and 2 basal antennomeres reddish, rest of antenna dark. Mandibles reddish with black edges. Legs dark piceous, but upper surface of femora contrastingly light reddish, tarsi reddish.

Head. Fairly wide. Neck moderately narrow, with rather deep transverse impression. Eyes fairly large, laterally moderately protruding, slightly separated from orbits which are slightly shorter than eyes and gently convex. Behind clypeus with fairly deep elongate, somewhat sinuate groove, and in middle of frons with a shallow v-shaped groove. Medially of eye with a slight sulcus that extends to about middle of eye, but without ridge. Posterior supraorbital seta located well behind posterior margin of eye. Mentum with elongate, acute, triangular tooth, with 2 setae behind tooth, submentum with a very elongate and a short seta on either side. Apex of

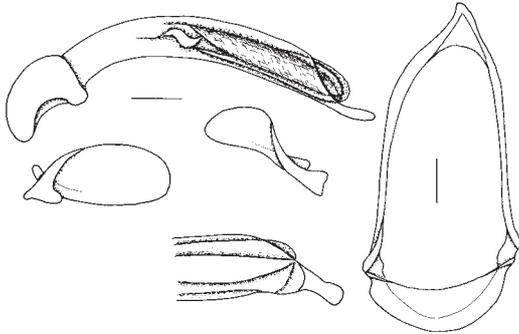


FIG. 16. *Eudalia femorata* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossa. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna elongate, surpassing base of pronotum by about one antennomere, pilose from middle of 4th antennomere. Surface glossy, without microreticulation, glabrous, with scattered coarse punctures near eyes.

Pronotum. Moderately elongate, laterally little convex, dorsally convex, near apex with shallow transverse impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half very gently convex, towards base slightly diverging, without sulcus medially of margin. Median line shallow. A single marginal seta situated just in front of middle. Proepisternum narrowly visible from above in middle. Disk in basal half densely and coarsely punctate, apical half almost impunctate, punctures tend to form irregular transverse sulci. Surface without microreticulation, impilose, glossy.

Elytra. Elongate, somewhat rectangular, laterally barely convex, not widened in apical half, thus rather parallel, surface gently convex. Base almost transverse, humeri very distinct but rounded, lateral margin barely incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base narrowly margined to position of 5th stria, apex coarsely margined. Surface in anterior third without perceptible transverse impression. All striae present, though originating shortly behind base. Striae well impressed throughout, coarsely punctate in anterior half, punctures become smaller posteriorly but are

visible towards apex. Intervals rather convex throughout, even in apical half not depressed. Scutellar stria very elongate, consisting of about 12 coarse punctures. 3rd interval with 3 setiferous punctures, other intervals asetose. Surface impunctate, with very fine, highly superficial, isodiametric to slightly transverse microreticulation that is not becoming stronger near apex, glossy. Hind wings present.

Lower Surface. Thorax and basal half of abdomen with coarse and moderately dense punctuation. Apical half of abdomen impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Terminal abdominal sternum in male bisetose.

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st – 3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 16). Terminal abdominal sternite in middle gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally little sinuate, lower surface evenly concave. Orificum short. Apex short, fairly narrow, very slightly upturned, very gently knobbed, turned to right, moderately incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, right paramere stout, both with fairly rounded apex.

Female Genitalia. Unknown.

Variation. Unknown.

DISTRIBUTION. Only type locality, SE NSW.

RELATIONSHIPS. Closest to *E. atrata*.

***Eudalia castelnaui* Sloane, 1910**
(Figs 17, 30P)

Eudalia castelnaui Sloane, 1910: 395; 1917: 417; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 273; Lorenz, 1998: 421; Framenau et al., 2002: 123.

Dicraspeda castelnaui, Sloane, 1923: 31.

MATERIAL. LECTOTYPE (here designated): ♂, labeled 'LT', Jindabyne 1/06 H.J.C./ 32/*Eudalia castelnaui* Sl. Cotype/HOLOTYPE *E. castelnaui* Sl. PJD (ANIC). **PARALECTOTYPES:** 1 ♀ (? , damaged), same data, on same card (ANIC); 1 ♂, 2 ♀♀, Jindabyne 1.06. H.J.C./*Eudalia castelnaui* (Cotypes) Sloane/H.J. Carter Coll. P. 20.4.22./Co-type/Syntype T 17961-63 (MV); 1 ♀ (partly damaged), Alps Vict. C. 7. 1904/ *Eudalia castelnaui* Sl. Cotype/PARATYPE (ANIC). **NEW**



FIG. 17. *Eudalia castelnaui* Sloane. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

RECORDS (39 ex.): VIC: Mitta Mitta River (CBM, QM); Buckland River, Stn 3 (CBM); Wonnangatta River (CBM); Castleburn Creek (CBM) – all leg. VF 11.1998-1.1999 (see Framenau et al. 2002); Tambo Crossing, i.1935, FW (MV); Beechworth, i.1914, CO (MV); Bright, HD (MV); Mt Macedon, HD (MV); Mitchell Gorge, i.1929, CO/*Dicraspeda castelnaui* Sl. (MV).– NSW: *Eudalia waterhousei* (Cast.) Murrumbidgee (MV); *Eudalia Waterhousei* ?? Casteln. Murrumbidgee (MV).

DIAGNOSIS. Completely black (including mouthparts, antennae and legs); elytra not pilose, with very distinct microreticulation; setiferous punctures on 3rd, 5th, and 7th intervals.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 4).

Male Genitalia (Fig. 17). Terminal abdominal sternite in middle not incised. Genital ring comparatively wide, moderately triangular, fairly asymmetric, with wide, rounded, in certain specimens even asymmetrically oblique apex. Aedeagus large, comparatively stout, moderately depressed, laterally moderately sinuate, lower surface concave in basal half, apically straight or even very gently convex. Orificum moderately short. Apex short, fairly wide, gently upturned, slightly knobbed and asymmetrically spoon-shaped, very markedly turned to right, deeply incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, with evenly rounded apex, right paramere short, with more triangular apex.

Female Genitalia (Fig. 30P). Styломere 2 large, though comparatively short and stout, laterally rather little curved, with short, moderately acute apex. With 4 to 5 fairly elongate ventrolateral ensiform setae, one or in some specimens

unilaterally even 2 medium-sized dorsomedian ensiform seta(e) situated above middle of styломere, and a single short nematiform seta arising from a groove in apical third. Base of styломere 1 with 9-11 very elongate ensiform setae. Lateral plate with dense fringe of very elongate, stiff setae at apical rim.

Variation. Males generally with narrower, longer elytra than females.

DISTRIBUTION. SE NSW, adjacent E Vic. All V. Framenau specimens were collected by hand sampling in sand and gravel and between pebbles on the banks of subalpine and montane streams.

***Eudalia macleayi* Bates, 1871** (Figs 18, 31A)

Eudalia macleayi Bates, 1871: 32; Sloane, 1917: 417; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 274; Lorenz, 1998: 421.

Dicraspeda macleayi, Sloane, 1923: 31.

MATERIAL. HOLOTYPE: ♂, NSW/*Eudalia Macleayi* Bates TYPE/Ex Musaeo H.W. Bates 1892 (MHNP). PARATYPES: 1 ♂, NSW, Recu de W. Bates/*Eudalia Macleayi* Bates (MNHP); 2 ♂♂, NSW/Ex Musaeo H.W. Bates 1892 (MHNP). Both named specimens were labeled by Bates. NEW RECORDS (29 ex.): VIC: Avon R. nr Weirs Cr. (CBM); Howqua R., Stn 1 (CBM); Snowy River, Mc Killops Br. (CBM); Mitta Mitta R. (CBM); Mitchell R., Wuk Br. (CBM) – all leg. VF xi.1998-i.1999 (see Framenau et al. 2002); Tambo Crossing, V, i.1935, FW (MV). - NSW: Bendemeer, 28.xii.1999, LT (CBM); Mulwala/*Eudalia macleayi* Bates, Id. by T.G. Sloane (MV); 35.34°S 149.37°E Shoalhaven R. Ballalaba Bridge, 2.ii.1991, PH (ANIC).

DIAGNOSIS. Elytra black, pilose, with distinct greenish tinge, with conspicuous and remarkably rugose microreticulation; head and prothorax with impunctate, or distinctly less densely punctate areas.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 4).

Male Genitalia (Fig. 18). Terminal abdominal sternite in middle not incised. Genital ring comparatively wide, parallel, fairly asymmetric, with short, triangular apex. Aedeagus large, elongate, fairly depressed, laterally moderately sinuate, lower surface concave in basal half, apically straight. Orificum short. Apex short, almost straight, slightly knobbed and markedly spoon-shaped, very strongly turned to right, deeply incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, both with wide, obtusely transverse apex.

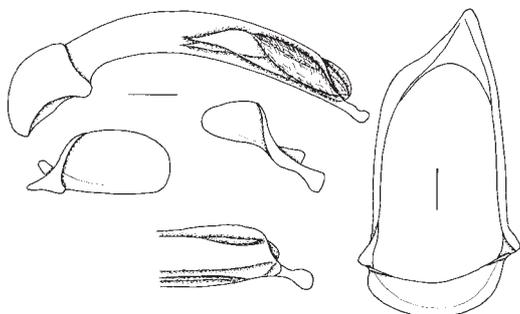


FIG. 18. *Eudalia macleayi* Bates. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).



FIG. 19. *Eudalia latipennis latipennis* (Macleay). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Female Genitalia (Fig. 31A). Stylomere 2 large, though comparatively short and stout, laterally little curved, with short, moderately acute apex. With 3 small ventrolateral ensiform setae, a small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 10-12 slender, extremely elongate ensiform setae. Lateral plate with dense fringe of very elongate, stiff setae at apical rim.

DISTRIBUTION. E Vic., SE NSW, ACT. All V. Framenau specimens were hand collected in sand and gravel and between pebbles on the banks of subalpine and montane rivers.

***Eudalia latipennis* (Macleay, 1864)**
(Figs 19, 31B, 35F, 36A)

Odacantha latipennis Macleay, 1864: 108.

Dicraspeda latipennis, Sloane, 1923: 31.

Eudalia latipennis, Castelnau, 1867: 16; 1868: 102; Sloane, 1917: 417; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 274; Lorenz, 1998: 421.

DISCUSSION. Sloane (1917: 418) suspected that *E. waterhousei* was identical with *E. latipennis* but was not able to compare Castelnau's types. Csiki (1932) followed the suggestion and synonymised the two names. All later authors followed this treatment. However, my examination of the types demonstrates that the two names denote different species.

DIAGNOSIS. Elytra pilose, with wide, distinct, yellow border, with narrow, elongate aedeagus that bears elongate, spoon-shaped apex markedly turned to the right side and, at the same time, distinctly upturned. Some specimens from the interior of Queensland deviate in some characters

from the eastern Qld populations, and thus are described as subspecies.

***Eudalia latipennis latipennis* (Macleay, 1864)**
(Figs 19, 31B, 35F)

Odacantha latipennis Macleay, 1864: 108.

MATERIAL. LECTOTYPE (here designated): ♀, (slightly damaged), Pt Denison/ SYNTYPE/*Eudalia latipennis*, Macl. Port Denison (ANIC-MMS). PARALLECTOTYPE: 1 (sex ?, damaged), Pt Denison/SYNTYPE (ANIC-MMS). NEW RECORDS (64 ex.): Qld: Qld 17, Reid Creek, 8km NW Gayndah, 9.xi.1990, MB (CBM); Foleyvale Aboriginal Reserve, 20.-25.i.1968, GH (HNMB); Qld 01/38, Burdekin R., 6km E Clarke River Cr., 15.-16.iv.2001, MB (CBM); Qld 01/31, Mc Leod River, 12km N Mt Carbine, 12.iv.2001, MB (CBM); Boulder Creek, 12km N Mossman, 8.i.1982, MB (CBM); Holroyd River, 12km S Coen, 29.xi.1974, WH (CBM, CMP); Stewart R., 5km W of Port Stewart, via Coen, 25.-27.vi.1976, GM & SM (CBM, QM); Archer River X-ing, 70km N of Coen, Cape York Pen., 17.-18.vii.1975, GM (CBM, QM); Moreton, Wenlock R., Cape York Pen., 14.ix.1974, GM (CBM, QM); *Eudalia latipennis* McL. Jun. Burnett River (MV); *Odacantha latipennis* McLeay Junior Port Denison (MV); Gayndah/*Eudalia latipennis* Macl. (MV); Coen, 20.v.67, CO/*Eudalia latipennis* M.L. det. B.P. Moore (MV); Darling R./*Eudalia latipennis* HJC/Griffith Collection (SAM); Coen, 17.xi.1982, SBJ (MDPI); Little Laura R., Laura, 30.iv.1978, RS, NG (MDPI); Old Laura Stn, 25km N of Laura, 3.iv.1983, RS (MDPI); Marina Plains via Musgrave, 17.xi.1982, RBJ (MDPI); Pinnarendi Stn, 60km W of Mt Garnet, 7.xi.1989, DH (MDPI); Bloomfield, 15.v.1986, FS (ANIC); 13.33°S, 143.03°E, Archer River, 28.vii.1982, PZ & EN (ANIC). - NSW: *Eudalia latipennis* Macl. (MV).

DIAGNOSIS. Distinguished from *E. latipennis interioris* by slightly larger size, more regularly punctate pronotum, narrower, laterally less

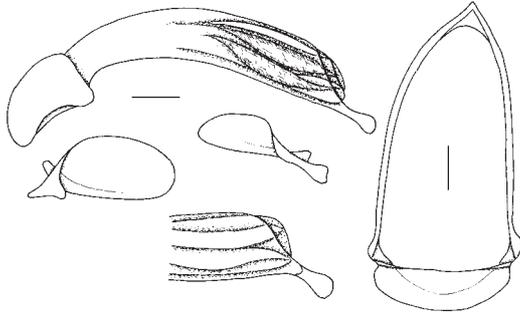


FIG. 20. *Eudalia latipennis interioris* subsp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

produced yellow margin and distinct microreticulation of elytra.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 4).

Male Genitalia (Fig. 19). Terminal abdominal sternite slightly incised in middle. Genital ring comparatively narrow, almost regularly triangular, symmetric, with short, obtusely triangular apex. Aedeagus large, elongate, depressed, laterally moderately sinuate, lower surface basally deeply concave, gently convex in apical half. Orificum short. Apex moderately elongate, slightly upturned, slightly knobbed and markedly spoon-shaped, very strongly turned to right, gently incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, both parameres elongate, with wide, obtusely transverse apex.

Female Genitalia (Fig. 31B). Stylomere 2 large, moderately elongate, rather straight and narrow, laterally little curved, with fairly short, but moderately acute apex. With 4 medium-sized ventrolateral ensiform setae, a fairly small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 8-9 very elongate ensiform setae. Lateral plate with dense fringe of markedly elongate, stiff nematiform setae at apical rim.

Variation. Apart from slight variation of shape and colouration, some sexual differences noted in degree of microreticulation of elytra that is less rugose and more superficial in males.

DISTRIBUTION. E and NE Qld from about Gayndah to tip of Cape York Peninsula, probably also N NSW. Many specimens came to light. I

also found some in and on riverbank sand, where specimens were running on the sand at night.

***Eudalia latipennis interioris* subsp. nov.** (Figs 20, 36A)

ETYMOLOGY. Refers to the range in interior Qld.

MATERIAL. HOLOTYPE: ♂, Cooper Creek at Windorah, SW Qld. 29.ix.1983, G. B. Monteith (QMT 99169). PARATYPES: 1 ♂, 2 ♀♀, same data (CBM, QM).

DIAGNOSIS. Distinguished from nominate subspecies under that species above.

DESCRIPTION. *Measurements* (Table 4).

Colour (Fig. 36A). Similar to nominate subspecies, but yellow apical margin wider and laterally more produced, attains at least middle of elytra.

Head. As in nominate subspecies, though orbits even more angulate.

Pronotum. Shape as in nominate subspecies, though disk in apical half less regularly punctate, with some glabrous areas.

Elytra. Shape as in nominate subspecies, though microreticulation in both sexes less distinct, in males even almost wanting.

Lower Surface. As in nominate subspecies.

Legs. As in nominate subspecies.

Male Genitalia (Fig. 20). Terminal abdominal sternite in middle slightly incised. Genital ring comparatively narrow, triangular, symmetric, with short, obtusely triangular apex. Aedeagus large, elongate, depressed, laterally moderately sinuate, lower surface basally concave, in apical half almost straight. Orificum short. Apex moderately short, straight, markedly knobbed and spoon-shaped, very strongly turned to right, deeply incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, both parameres elongate, with wide, obtusely transverse apex.

Female Genitalia. As in nominate subspecies, but both available females with 2-3 ventrolateral ensiform setae only.

Variation. Microreticulation of elytra more superficial in males.

DISTRIBUTION. Only type locality, SW Qld.

***Eudalia waterhousei* Castelnau, 1867** (Figs 21, 31C, 36B, 39A)

Eudalia waterhousei Castelnau, 1867: 16; 1868: 102; Macleay 1888: 447; Sloane, 1917: 418; Csiki, 1932: 1542; Moore et al., 1987: 274; Lorenz, 1998: 421.

MATERIAL. LECTOTYPE (here designated): ♀, Arnheim's Land Coll. Castelnau/Typus/*Eudalia waterhousei* Cast./*Eudalia waterhousei* Cast. (Castelnau's handwriting)/Syntypus *Eudalia waterhousei* Castelnau, 1867 (MCSN). PARALECTOTYPE: ♀, same data (MCSN). NEW RECORDS (74 ex.): WA: 15km NNE of Ajana, W.A. Murchison R. (27.49°S 114.41°E) 27.iii.71, MU (ANIC); Murchison R., 27.49°S 114.41°E 28.iii.1971 ER/*Eudalia* 'Ajana' (ANIC); 21.35°S 117.04°E Millstream, 2.xi.70 from gravel at edge of pool at pipe crossing. EB (ANIC); 21.35°S 117.04°E Millstream, 31.x.70 EB (ANIC); Gascoyne R., 15km N Carnarvon, 13.xii.1984, MB (CBM); Wittenoom Gorge, Hamersley Ra. 2.xii.1984, MB (CBM); Oakover R., 2 ml. ENE of Mt Hodgson, 10.9.1955. JC (ANIC); 68km NW Wittenoom, Hooley Creek, 2.xii.1984, MB (CBM, WAM). - NT: Ormiston Gorge, x.1972 MB (CBM, QM); Palm Creek/Cent. Aust Coll. Horn Exp./Pres 7. 94/*Eudalia waterhousei* Casteln. (MV); Cent. Aust Coll. Horn Exp. Pres 7. 94/Ellery Crk Missionary Plains/*Eudalia waterhousei* Cast. Del. by Blck. (MV); Finke R./McDonnell Rgs. Capt. S.A. White/*Eudalia waterhousei* Cast. C. Australia (SAM); 24.20S 132.53E, Finke R. at Running Water, 15.iii.1995, TW (ANIC, CBM); 24.06°S 132.46°E, Finke Gorge N.P., 13.iii.1995, TW (ANIC); 23.58°S 132.43°E, Ormiston Gorge, West Macdonnells NP, 6-10.iii.1995, TW (ANIC); Am. Ld F.G W (MV). - Qld: 22.35S 139.43E, 42km NNW of Boulia, Q. 11.v.73, MU (ANIC).

DIAGNOSIS. Elytra pilose, uniformly black or dark piceous, without any greenish tinge, with rugose punctuation forming transverse sulci, with extremely superficial or even absent microreticulation; with comparatively short, compact aedeagus that bears a short, distinctly knobbed, spoon-shaped apex markedly turned to the right side, but not upturned.

SUPPLEMENTARY DESCRIPTION.
Measurements (Table 4).

Colour (Fig. 36B). Black or dark piceous, apex of elytra sometimes faintly lighter. Palpi and legs uniformly yellow, 3 basal antennomeres yellow, the rest more or less distinctly darker.

Head. Short and wide, with large, laterally far projecting eyes and very convex, somewhat angulate orbits. Mandibles elongate and acute. Mentum with acute tooth. Lacinia with dense fringe of stiff setae. Antenna elongate, surpassing base of pronotum by about 2 antennomeres. Surface with coarse, moderately dense, regular punctuation and laterally with several elongate setae, but without any microreticulation, highly glossy. Both supraorbital setae difficult to distinguish between the erect pilosity.

Pronotum. Short and wide, laterally convex. lateral margin distinct, ridge-like. Lateral part of



FIG. 21. *Eudalia waterhousei* Castelnau. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

propisternum well visible from above. Surface with dense, regular, and coarse punctuation, without any microreticulation, along lateral margin with a dense row of erect setae, highly glossy.

Elytra (Fig. 39A). Rather short and wide, laterally gently convex, slightly widened in apical half, surface depressed. Base almost transverse, humeri very distinct but rounded, lateral margin barely incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base not margined, apex finely margined. Surface in anterior third almost devoid of a transverse impression. All striae complete and well impressed throughout, coarsely punctate or even crenulate, punctures become slightly smaller towards apex. Intervals gently convex, densely punctate, though punctures form very distinct, irregular transverse furrows, hence surface very rugose. Scutellar stria elongate, consisting of about 10 very coarse punctures. 3rd, 5th, and 7th intervals with a series of erect setae and punctures, but setae difficult to distinguish from dense and elongate pilosity. Males with traces only of microreticulation, females with very superficial microreticulation, surface comparatively glossy. Hind wings present.

Lower Surface. Head, thorax and most of abdomen with very coarse and dense punctuation. Only last 2 sternites impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Penultimate sternites plurisetose, terminal sternum in male 2-3-setose, in female 4-5-setose on either side.

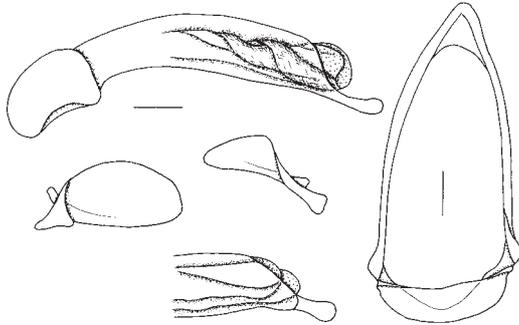


FIG. 22. *Eudalia punctipennis* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st – 3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 21). Terminal abdominal sternite in middle barely incised. Genital ring comparatively narrow, regularly triangular, almost symmetric, with short, obtusely triangular apex. Aedeagus large, comparatively short and compact, moderately depressed, laterally moderately sinuate, lower surface only near base concave, in apical three quarters almost straight. Orificum short. Apex short, straight, markedly knobbed and spoon-shaped, very strongly turned to right, moderately incised at right side. Folding of internal sac simple. Parameres of dissimilar shape, left paramere much larger than right one, fairly elongate, with wide, obtusely transverse apex, right paramere short, with obtusely triangular apex.

Female Genitalia (Fig. 31C). Stylomere 2 large, elongate, straight and narrow, laterally little curved, with acute apex. With 3 small ventrolateral ensiform setae, a fairly small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with c. 6 very elongate ensiform setae. Lateral plate with a very dense fringe of markedly elongate, stiff nematiform setae at apical rim.

Variation. Apart from some sexual variation concerning distinctness of elytral microreticulation, very little variation noted.

DISTRIBUTION. N and central NT, WA between Ashburton and Murchison Rivers, SW Qld. I captured specimens at light and in and on sand on the banks of rivers. Some were active on sand at night.

***Eudalia punctipennis* sp. nov.**
(Figs 22, 31D, 36C, 39B)

ETYMOLOGY. For the regularly punctate intervals of the elytra.

MATERIAL. Holotype: ♂; W.W.F. King's Sd., 1895/W. W. Froggatt Collection/Eudalia Kings Sd. N WA, (ANIC). Paratypes: 1 ♂; W.W.F. King's Sd., 1895/W.W. Froggatt Collection (ANIC); 12 ♂♂, 6 ♀♀, WA Ord River, 135km N Hall's Creek, 15.xi.1984, MB (CBM, MV, QM, WAM); 2 ♂♂, 5 ♀♀, WA Ord River, 105km N Hall's Creek, 15.xi.1984, MB (CBM); 1 ♀, WA Upper Panton R. 30.iv.1994 SH (CBM); 1 ♀, NT95/42 West Baines River 23.-24.viii.1995 MB (CBM); 2 ♂♂, NT95/44 Victoria R. 5km W Victoria R. Cr., 24.-25.viii.1995, MB (CBM); 1 ♀, WA95/24 Durack River Cr., 87km W Pentecost R., 11.-12.viii.1995, MB (CBM); 1 ♂, WA Windjana Gorge, 150km E Derby, 23.xi.1984, MB (CBM); 1 ♂, *Eudalia waterhousei* Cast/7608 *Eudalia waterhousei* Cast. NW Australia (SAM).

DIAGNOSIS. Elytra pilose, uniformly black or dark piceous, without any greenish tinge, with rugose punctuation, with superficial microreticulation; moderately short, depressed aedeagus bearing an elongate, straight, slightly knobbed and distinctly spoon-shaped apex that is moderately turned to the right side.

DESCRIPTION. Measurements (Table 4).

Colour (Fig. 36B). Black or dark piceous, apex of elytra very rarely faintly lighter. Palpi and legs uniformly yellow, 3 basal antennomeres yellow, the rest more or less distinctly darker.

Head. Short and wide, with large, laterally far projecting eyes and very convex, somewhat angulate orbits. Mandibles elongate and acute. Mentum with acute tooth. Lacinia with dense fringe of stiff setae. Antenna elongate, surpassing base of pronotum by about 2 antennomeres. Surface with coarse, moderately dense, regular punctuation and laterally with several elongate setae, but without any microreticulation, highly glossy. Both supraorbital setae difficult to distinguish between the erect pilosity.

Pronotum. Short and wide, laterally convex. lateral margin distinct, ridge-like. Lateral part of propisternum well visible from above. Surface with dense, regular, and coarse punctuation, without any microreticulation, along lateral margin with a dense row of erect setae, highly glossy.

Elytra (Fig. 39B). Rather short and wide, laterally gently convex, slightly widened in apical half, surface depressed. Base almost transverse, humeri very distinct but rounded, lateral margin barely incised at basal third, gently convex and almost evenly rounded towards sutural angle. Lateral apical angles barely indicated, apex oblique and very slightly excised. Base not margined, apex finely margined. Surface in anterior third almost devoid of a transverse impression. All striae complete and well impressed throughout, very coarsely punctate or even crenulate, punctures become slightly smaller towards apex. Intervals gently convex, densely and very coarsely punctate, punctures rugose though barely forming irregular transverse furrows, apart from near apex. Surface very rugose. Scutellar stria elongate, consisting of about 10 very coarse punctures. 3rd, 5th, and 7th intervals with a series of erect setae and punctures, but setae very difficult to distinguish from dense and elongate pilosity. Microreticulation superficial, but even in males well visible, surface moderately glossy. Hind wings present.

Lower Surface. Head, thorax and most of abdomen with very coarse and dense punctuation. Only last 2 sternites impunctate. Metepisternum elongate, c. 2.5 × as long as wide at apex. Penultimate sternites plurisetose, terminal sternum in male 2-3-setose, in female 4-5-setose on either side.

Legs. Of moderate size. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 1st – 3rd tarsomeres of male anterior tarsus with sparse squamosity.

Male Genitalia (Fig. 22). Terminal abdominal sternite in middle barely incised. Genital ring comparatively narrow, irregularly triangular, slightly asymmetric, with short, obtusely triangular apex. Aedeagus large, moderately elongate, remarkably depressed, laterally comparatively little sinuate, lower surface basally gently concave, almost straight in apical half. Orificum short. Apex comparatively elongate, straight, barely knobbed though markedly spoon-shaped, gently turned to right, gently incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, with oblique apex, right paramere with obtusely rounded apex.

Female Genitalia (Fig. 31D). Stylomere 2 large, elongate, straight and narrow, laterally little curved, with acute apex. With 3 small ventrolateral ensiform setae, a fairly small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 5-6 very elongate ensiform setae. Lateral plate with a very dense fringe of markedly elongate, stiff nematiform setae at apical rim.

Variation. Little variation noted.

DISTRIBUTION. WA N of Great Sandy Desert (Kimberley Division), adjacent NW NT. Common at blacklight; also under stones and slabs on the banks of rivers and ponds; during the night, in and on sand and gravel where it runs very fast.

RELATIONSHIPS. Related to *E. waterhousei*.

KEY TO AUSTRALIAN SPECIES OF
EUDALIA

1. Upper surface impilose (except for fixed setae), or with only extremely fine, microscopic pilosity 2
Upper surface densely pilose 9
2. Legs light reddish to yellowish, apex of femora and base of tibiae contrastingly black and surface of elytra without any traces of microreticulation, but with extremely fine, microscopic pilosity; female stylomere 1 with < 3 rather short ventrolateral ensiform setae, stylomere 1 with fringe of < 6 but moderately elongate setae at apical rim (Fig. 30M) 3
Legs black, or piceous, or more or less distinctly bicoloured, though elytra always at least with traces of microreticulation but without any pilosity; female stylomere 1 with > 4 elongate ventrolateral ensiform setae, stylomere 1 with fringe of > 9 extremely elongate setae at apical rim (Fig. 30N,P) 6
3. Head short and wide with comparatively large eyes; pronotum short and wide (Table 4), lateral margins considerably rounded, conspicuously sinuate near basal angles, dorsal surface rather convex. 4
Head narrower with slightly smaller eyes; pronotum narrow and elongate (Table 4), lateral margins almost parallel, not sinuate near basal angles, dorsal surface more depressed. 5
4. Body size larger, >7.7mm; pronotum anteriorly more extensively punctate; aedeagus less delicate, apex less upturned, less markedly turned to right side, without a distinct lateral notch; left paramere convex at apex (Fig. 12). *obliquiceps punctifrons* subsp. nov.
Body size smaller, <7.3mm; pronotum anteriorly barely punctate; aedeagus delicate, apex decidedly upturned, markedly turned to right side and; left paramere transverse at apex (Fig. 13). *minor* sp. nov.
5. Head barely punctate; pronotum punctate only in basal half; elytra generally slightly longer (Table 4); aedeagus longer and narrower, lower surface less curved, apex

- decidedly upturned, both parameres longer (Fig. 11).
 *obliquiceps tozeria* subsp. nov.
- Head more extensively punctate; pronotum almost completely punctate; elytra generally slightly shorter (see Tab. 4); aedeagus shorter and stouter, lower surface evenly curved, apex barely upturned, both parameres shorter (Fig. 10). *obliquiceps obliquiceps* Sloane
6. Pronotum laterally very convex, little longer than wide, margin anteriorly with several short setae; 5th stria with > 5 setiferous punctures; elytra with dense, rugose, distinct microreticulation. *castelnaui* Sloane
- Pronotum laterally little convex, considerably longer than wide, margin anteriorly without additional setae; 5th stria without or with 2-3 setiferous punctures only; elytra with much more superficial microreticulation. 7
7. 5th stria with 2-3 setiferous punctures, towards apex striae still perceptibly punctate; microreticulation of elytra in basal half indistinct, less developed than in apical half; eyes slightly larger and more protruding, ratio length of eye/length of orbit c. 1.45; aedeagus with shorter and wider apex and with deep excision on right side behind apex (Fig. 14) *reticulata* sp. nov.
- 5th stria without setiferous punctures, towards apex striae barely punctate though distinctly impressed; microreticulation of elytra in basal half about as distinct as in apical half; eyes slightly smaller and less protruding, ratio length of eye/length of orbit < 1.30; aedeagus with longer and narrower apex and with shallow excision on right side behind apex (Fig. 15). 8
8. Legs uniformly dark; elytra wider, posteriorly distinctly widened, ratio l/w < 1.68; intervals more depressed, barely convex towards apex; striae more coarsely punctate, microreticulation of intervals distinct
 *atrata* sp. nov.
- Legs dark but upper surface of femora contrastingly light reddish; elytra narrower, almost parallel, ratio l/w 1.76; intervals convex throughout; striae less coarsely punctate, microreticulation of intervals more superficial
 *femorata* sp. nov.
9. Apex of elytra more or less widely yellow and microreticulation of elytra distinct 10
- Elytra unicolourous or when apex indistinctly yellow, microreticulation of elytra very faint or absent 11
10. Body size larger, length usually > 9mm; eyes slightly smaller (Table 4); pronotum densely and regularly punctate; yellow apical margin of elytra generally narrower, less produced along lateral margins, and less distinct; microreticulation distinct, surface dull; lower surface of aedeagus more sinuate, apex less knobbed (Fig. 18). *latipennis latipennis* (Macleay)
- Body size smaller, length < 8.5mm; eyes slightly larger (Table 4); pronotum less densely and regularly punctate, anteriorly with some impunctate areas; yellow apical margin of elytra generally wider, more produced along lateral margins, and more distinct; microreticulation superficial, surface glossy; lower surface of aedeagus almost straight, apex markedly knobbed (Fig. 19).
 *latipennis interioris* subsp. nov.
11. Elytra completely black with slight greenish tinge; microreticulation of elytra conspicuous, rugose, punctuation of intervals regular, barely transversely confluent; head with impunctate areas in middle
 *macleayi* Bates

- Elytra blackish or piceous without greenish tinge, sometimes with inconspicuous, narrow, ill defined light apex; microreticulation of elytra faint or absent, punctuation of intervals more irregular, at least in parts transversely confluent; head with dense and regular punctuation, without impunctate areas. 12
12. Intervals with conspicuously confluent punctures which form irregular transverse sulci (Fig. 39A); microreticulation of elytra extremely superficial or completely absent; aedeagus short and stout, with short, wide apex (Fig. 20). *waterhousei* Castelnaud
- Punctuation of intervals not much confluent, elytra much more regularly punctate; microreticulation of elytra superficial though distinct (Fig. 38F); aedeagus longer and more delicate, with longer, narrower apex (Fig. 21).
 *punctipennis* sp. nov.

Gestroania Liebke, 1938

Gestroania Liebke, 1938: 89; Csiki, 1932: 1537; Moore et al., 1987: 275; Lorenz, 1998: 420.

TYPE SPECIES. *Casnonia amplipennis* Gestro, 1875, by monotypy.

DIAGNOSIS. Antenna elongate; elytra ampliate, depressed, with sharply angulate or even spinose external apices; 3rd, 5th, and 7th intervals setose; pronotum elongate, sharply margined, dorsally very rugosely punctuate. Pronotum.

DISCUSSION. Although the genus was described by Liebke in 1938, the name had already been used by Csiki (1932) in his catalogue, but without mentioning the citation. The genus is similar to *Giachinoana* Baehr, but is distinguished from the latter by absence of the frontal furrow and ridge near the eye, and by odd intervals not definitely carinate.

Gestroania amplipennis (Gestro 1875) (Figs 31E, 36D)

Casnonia amplipennis Gestro, 1875: 853.

Eudalia amplipennis Sloane, 1917: 413.

Gestroania amplipennis Liebke, 1938: 89; Csiki, 1932: 1537; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. HOLOTYPE: ♀, Swan River Coll. Castelnaud/Typus/*amplipennis* Gestro/HOLOTYPE *Casnonia amplipennis* Gestro, 1875/*Gestroania amplipennis* Gestro Det. M. Liebke. Hamburg (MCSN). New records (1 ex.): WA: Nicol Bay/Ex Musaeo H.W. Bates, 1892 (MNHP).

DIAGNOSIS. Distinguished from *G. froggatti* by conspicuously bicoloured femora, dark antenna, and more coarsely crenulate elytral striae; and from *G. setipennis* and *G. storeyi* by the lower number of setiferous punctures on the odd intervals.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 5).

Male Genitalia. Unknown.

Female Genitalia (Fig. 31E). Stylomere 2 moderately elongate, laterally moderately curved, with acute apex. With 2 medium-sized ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 7 moderately elongate ensiform setae. Lateral plate with fairly dense fringe of moderately elongate, stiff nematiform setae at apical rim.

DISTRIBUTION. Southern half of WA from Nicol Bay to Perth.

Gestroania froggatti (Macleay, 1888)
(Figs 23, 31F, 36E)

Eudalia froggatti Macleay, 1888: 448; Sloane, 1917: 417; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 274; Lorenz, 1998: 421.

Dicraspeda froggatti, Sloane, 1923: 31.

MATERIAL. LECTOTYPE (here designated): ? sex (damaged), NW Austr./SYNTYPE/*Eudalia froggatti*, Macl. Barrier Range N WA. (ANIC-MMS). New records (2 ex.): WA: Kununurra, 22.xii.1991-5.i.1992, RS (CBM, MDPI).

DIAGNOSIS. Distinguished from *G. amplipennis* (Gestro) by completely dark femora, yellow antenna, and less coarsely crenulate elytral striae; and from both, *G. setipennis* sp. nov. and *G. storeyi* sp. nov. by the lower number of setiferous punctures on the odd intervals.

SUPPLEMENTARY DESCRIPTION.
Measurements (Table 5).

Male Genitalia (Fig. 23). Terminal abdominal sternite in middle incised. Genital ring moderately wide, triangular, barely asymmetric, with narrow, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally little sinuate, lower surface concave near base, almost straight in apical half. Orificum short. Apex short, wide, very slightly upturned and knobbed, slightly turned to right, barely incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, left paramere stout with almost transverse apex, right paramere with narrow apex.

Female Genitalia (Fig. 31F). Stylomere 2 moderately elongate, laterally moderately curved, with acute apex. With 3 medium-sized



FIG. 23. *Gestroania froggatti* (Macleay). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 7 moderately elongate ensiform setae. Lateral plate with fairly dense fringe of moderately elongate, stiff nematiform setae at apical rim.

DISCUSSION. By comparison with the type of *G. amplipennis* Gestro it became evident that *Eudalia froggatti* Macleay is extremely closely related to this species from which it differs only in minor character states. At the same time, both species are so different in certain remarkable morphological characters from all other known species of *Eudalia* that maintenance of *Gestroania* as a separate genus is well justified.

Moore et al. (1987) record *Eudalia froggatti* only from the type locality. New records now enlarge the range from the southern margin of the Kimberley to its northeastern margin. Nevertheless, this seems still an extremely rare species.

DISTRIBUTION. Kimberley Division, WA. Both non type specimens captured at light.

Gestroania setipennis sp. nov.
(Figs 24, 31G, 36F)

ETYMOLOGY. Refers to the multisetose odd elytral intervals.

MATERIAL. HOLOTYPE: 1 ♂, Greenvale, 70km SW, 22-30.xi.1995, A.J. Watts (SAM). PARATYPES: 1 ♂, Split Rock, 14km S of Laura, Nth Qld, 23-26.vi.1975, GM (QM); 1 ♀, Nth Qld, Pouth Ck. via Georgetown, 8.i.1980, RS (CBM); 1 ♂, Windsor T'land, via Mt Garnet/Qld, 10.ii.1978, RS/*Dicraspeda* sp. n. det. B.P. Moore 1978 (MDPI); 1 ♀, 11.01E 136.45E, Rimbija I. Wessel islands NT, 3-14.ii.1977, TW (ANIC).

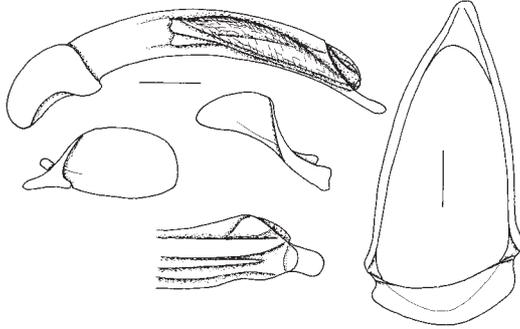


FIG. 24. *Gestroania setipennis* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

DIAGNOSIS. Distinguished from *G. storeyi* by completely dark femora, much more coarsely crenulate elytral striae, only angulate but aspinose external elytral apices, and not microreticulate head; and from *G. setipennis* and *G. amplipennis* by the larger number of setiferous punctures on the odd intervals.

DESCRIPTION. *Measurements* (Table 5).

Colour (Fig. 36F). Surface black, labrum and mouth parts reddish to dark yellow, antennae completely yellow. Femora completely dark, tibiae and tarsi yellowish.

Head. Fairly wide. Neck narrow, with conspicuous transverse impression. Eyes large, laterally protruding, slightly separated from orbits which are about half as long as eyes and gently convex. Behind clypeus with a linear, fairly deep groove. Medially of eye with a slight sulcus, but without distinct ridge. Posterior supraorbital seta located very shortly behind posterior margin of eye. Mentum with elongate, acute, triangular tooth, with 2 pairs of elongate setae behind tooth, submentum with 2 very elongate setae on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna very narrow and elongate, surpassing base of pronotum by about 3 antennomeres, pilose from middle of 4th antennomere. Surface without microreticulation, or with extremely superficial remnants only, impilose and impunctate, with some elongate wrinkles only near eyes, highly glossy.

Pronotum. Comparatively short (in genus), laterally gently convex, widest in front of apical third, dorsally moderately depressed, near apex with shallow triangular impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half except for the immediate apex, oblique and almost straight, towards base very slightly diverging, without sulcus medially of margin. Median line shallow. A single marginal seta situated just behind apical third. Proepisternum narrowly visible from above in middle. Disk with extreme dense and coarse, remarkably rugose punctuation. Surface almost devoid of microreticulation, impilose, despite the coriaceous microstructure moderately glossy.

Elytra. Moderately elongate, towards apex considerably widened, disk fairly depressed, not raised towards suture. Base oblique, humeri widely rounded, lateral margin oblique in anterior half, very faintly incised at basal third, gently convex and almost evenly rounded towards lateral apical angle. Lateral apical angle angulate, not spinose, apex moderately excised, oblique and evenly concave, sutural angle angulate. Base narrowly margined to position of 4th stria, apex coarsely margined. Surface without any transverse impression. All striae complete and deeply impressed, coarsely punctate-crenulate, punctures become smaller posteriorly, but are still well perceptible at apex. Intervals convex throughout, though not carinate. Scutellar stria elongate, consisting of 9-10 punctures. 3rd, 5th, and 7th intervals each with more than 4 (usually 6-8) setiferous punctures, other intervals asetose, setae light brown, elongate, erect. Intervals impunctate, with coarse, transverse, distinct, though somewhat superficial microreticulation, surface gently glossy. Hind wings fully developed.

Lower Surface. Proepisternum, prosternum, and lateral parts of mesothorax and metathorax including metasternum with dense, very coarse punctures. Middle of metasternum and abdomen impunctate, finely microreticulate, abdomen also

TABLE 5. Measurements and ratios of the Australian species of *Gestroania*.

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>amplipennis</i>	2	7.8-8.1	2.05-2.15	1.03-1.05	1.26-1.32	1.64-1.70
<i>froggatti</i>	2	7.4-8.0	1.90-1.95	1.04-1.05	1.25-1.31	1.59-1.60
<i>setipennis</i>	4	8.2-8.6	1.9-2.0	1.00-1.04	1.18-1.23	1.60-1.63
<i>storeyi</i>	6	8.3-9.1	1.75-2.0	1.03-1.05	1.27-1.34	1.65-1.70

slightly strigose. Metepisternum elongate, $>2.5 \times$ as long as wide at apex. Terminal abdominal sternum in male bisetose, in female quadrisetose and shortly pilose.

Legs. Narrow and elongate. Tibiae sulcate on upper surface, 2 basal tarsomeres sulcate on outer and inner surfaces, though indistinctly so on protarsus. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a fringe of setae below. Claws large, smooth. 1st–3rd tarsomeres of male anterior tarsus with sparse, slightly asymmetric squamosity.

Male Genitalia (Fig. 24). Terminal abdominal sternite in middle gently incised. Genital ring fairly narrow and elongate, moderately triangular, barely asymmetric, with narrow, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally little sinuate, lower surface gently concave throughout. Orificum short. Apex short, fairly wide, not upturned nor knobbed, turned to right, moderately bi-incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, left paramere stout with gently rounded apex, right paramere with narrow apex.

Female Genitalia (Fig. 31G). Stylocere 2 moderately elongate, laterally moderately curved, with acute apex. With 3 medium-sized ventrolateral ensiform setae, a large dorsomedian ensiform seta situated about in middle of stylocere, and a single short nematiform seta arising from a groove in apical third. Base of stylocere 1 with 6 moderately elongate ensiform setae. Lateral plate with fairly dense fringe of moderately elongate, stiff nematiform setae at apical rim.

Variation. Little variation noted.

DISTRIBUTION. N Qld, Arnhem Land, NT.

RELATIONSHIPS. Although in shape and size this species is extremely similar to *G. amplipennis* and *G. froggatti*, the multisetose intervals demonstrate a closer relationship to *G. storeyi* than to either species.

***Gestroania storeyi* sp. nov.**
(Figs 25, 31H, 37A)

ETYMOLOGY. For Ross Storey.

MATERIAL. HOLOTYPE: ♂, N WA, Kununurra, 22.xii.1991-5.i.1992, R. Storey/*Dicraspeda* spp. det. B.P. Moore 1992 (QMT 99171). *PARATYPES:* 4 ♀♀, same data (CBM, MDPI); 1 ♀, Katherine Gorge, Jan. 27/1977 N.T., mm/*Dicraspeda* sp. n. det. B.P. Moore 1978 (MDPI).

DIAGNOSIS. Distinguished from *G. setipennis* by conspicuously bicoloured femora, much less coarsely crenulate elytral striae, spinose external elytral apices, and microreticulate head; and from both, *G. setipennis* and *G. amplipennis* by the larger number of setiferous punctures on the odd intervals.

DESCRIPTION. Measurements (Table 5).

Colour (Fig. 37A). Surface black, labrum, and mouth parts reddish to dark yellow, antenna piceous, apical antennomeres usually slightly lighter. Femora in basal half yellow, in apical half contrastingly black, tibiae except for base and apex, yellow, tarsi infusate.

Head. Fairly wide. Neck narrow, with conspicuous transverse impression. Eyes large, laterally protruding, slightly separated from orbits which are about half as long as eyes and gently convex. Behind clypeus with wide, fairly deep, circular groove the bottom of which may be somewhat striolate. Medially of eye with a slight sulcus that extends to about middle of eye, but without distinct ridge. Posterior supraorbital seta located very shortly behind posterior margin of eye. Mentum with elongate, acute, triangular tooth, with 2 pairs of elongate setae behind tooth, submentum with 2 very elongate setae on either side. Apex of glossa transverse, with 2 elongate median and 2 shorter lateral setae. Paraglossae free, narrow, surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna very narrow and elongate, surpassing base of pronotum by about 3 antennomeres, pilose from middle of 4th antennomere. Surface with fine though distinct, isodiametric microreticulation, impilose and impunctate, with some transverse wrinkles only on middle of frons, moderately dull.

Pronotum. Comparatively elongate, laterally gently convex, widest at apical third, dorsally depressed, near apex with shallow triangular impression. Apex and base not bordered, lateral margin complete, slightly ridge-like, in anterior half very gently convex, towards base slightly diverging, without sulcus medially of margin. Median line shallow. A single marginal seta situated just in front of middle. Proepisternum narrowly visible from above in middle. Disk with extreme dense and coarse, rugose punctuation, punctures tend to form irregular transverse sulci. Surface also with fine, isodiametric microreticulation, impilose, dull.

Elytra. Comparatively elongate, towards apex considerably widened, disk depressed, slightly

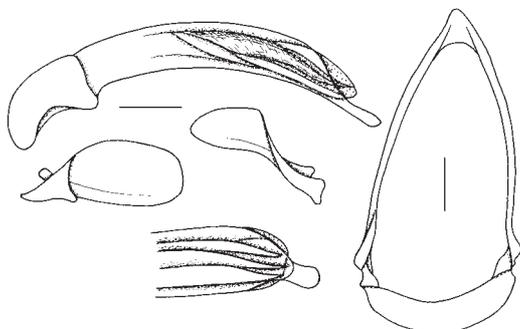


FIG. 25. *Gestroania storeyi* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

raised towards suture. Base oblique, humeri widely rounded, lateral margin oblique in anterior half, very faintly incised at basal third, gently convex and almost evenly rounded towards lateral apical angle. Lateral apical angle spinose, apex deeply excised, oblique and evenly concave, sutural angle shortly spinose. Base narrowly margined to position of 4th stria, apex coarsely margined. Surface without any transverse impression, but in apical half moderately raised towards suture. All striae complete and deeply impressed, finely punctate-crenulate, though punctures become smaller posteriorly and diminish in front of apex. Intervals convex throughout, though not carinate. Scutellar stria elongate, consisting of 9-10 punctures. 3rd, 5th, and 7th intervals each with more than 4 (usually 6-8) setiferous punctures, other intervals asetose, setae light brown, elongate, erect. Intervals impunctate, with very coarse, slightly transverse microreticulation, surface remarkably dull. Hind wings fully developed.

Lower Surface. Proepisternum, prosternum, and lateral parts of mesothorax with dense, very coarse punctures. Mesosternum, metathorax, and abdomen impunctate, densely microreticulate, and abdomen also strigose. Metepisternum elongate, $>2.5 \times$ as long as wide at apex. Terminal abdominal sternum in male bisetose, in female quadrisetose and shortly pilose.

Legs. Narrow and elongate. Tibiae sulcate on upper surface, 2 basal tarsomeres sulcate on outer and inner surfaces. Tarsi not lobed, impilose on upper surface, 5th tarsomere with a fringe of setae below. Claws large, smooth. 1st - 3rd tarsomeres of male anterior tarsus with sparse, slightly asymmetric squamosity.

Male Genitalia (Fig. 25). Terminal abdominal sternite in middle gently incised. Genital ring moderately wide, triangular, barely asymmetric, with narrow, triangular apex. Aedeagus slender and elongate, moderately depressed, laterally little sinuate, lower surface gently concave throughout. Orificum short. Apex short, fairly wide, not upturned nor knobbed, turned to right, moderately incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, left paramere stout with almost transverse apex, right paramere with widely rounded apex.

Female Genitalia (Fig. 31H). Stylomere 2 moderately elongate, laterally moderately curved, with acute apex. With 3 medium-sized ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 5-6 moderately elongate ensiform setae. Lateral plate with fairly dense fringe of moderately elongate, stiff nematiform setae at apical rim.

Variation. Slight differences noted in shape of pronotum, and in extent of punctuation on head, pronotum, and elytral striae. The single male also is definitely smaller and has larger eyes.

DISTRIBUTION. N NT, NE WA.

KEY TO SPECIES OF *GESTROANIA*

- 3rd, 5th, and 7th intervals each with more than 4 setiferous punctures 2
3rd interval at most 4-setose, 5th 2-3-setose, 7th unisetose, rarely unilaterally bisetose 3
- Elytra longer and narrower, ratio l/w >1.65 , external and sutural angles distinctly spinose, punctuation of striae finer (Fig. 37A); pronotum longer, anteriorly more incurved; head regularly and completely microreticulate; basal half of femora yellow, apical half contrastingly black; aedeagus (Fig. 24) *storeyi* sp. nov.
Elytra shorter and wider, ratio l/w <1.63 , external and sutural angles only shortly angulate, punctuation of striae coarse (Fig. 36F); pronotum shorter, anteriorly little incurved; head not or barely microreticulate; femora unicolourous dark; aedeagus (Fig. 23) *setipennis* sp. nov.
- Femora dark, coxae, tibiae and tarsi dark yellowish (Fig. 36E); orbits slightly longer, ratio eye/orbit <1.95 ; striae of elytra less coarsely punctate, especially in apical half; apex of aedeagus very slightly knobbed (Fig. 22) *froggatti* (Macleay)
Legs light yellow, only apical tip of femora dark (Fig. 36B); orbits slightly shorter, ratio eye/orbit >2.05 ; striae of elytra very coarsely punctate, even in apical half; aedeagus unknown. *amplipennis* (Gestro)

Giachinoana Baehr, 2003b

Giachinoana Baehr, 2003b: 100.

TYPE SPECIES. *Giachinoana carinipennis* Baehr, 2003b, by original designation.

DIAGNOSIS. Distinguished from most Australian genera except *Gestroania* by the sharply angulate external apices of the elytra; distinguished from *Gestroania* by the carinate odd intervals and the distinct sulcus and ridge inside of eye.

Giachinoana carinipennis Baehr, 2003
(Fig. 31I, 37B)

SUPPLEMENTARY DESCRIPTION. *Female Genitalia* (Fig. 31H). Stylocere 2 moderately elongate, laterally moderately curved, with acute apex. With 3 medium-sized ventrolateral ensiform setae, a rather large dorsomedian ensiform seta situated about in middle of stylocere, and a single short nematiform seta arising from a groove in apical third. Base of stylocere 1 with 5-6 comparatively short ensiform setae. Lateral plate with fairly dense fringe of moderately elongate, stiff nematiform setae at apical rim.

Variation. Very little variation noted, neither in size nor in shape and surface structure.

DISTRIBUTION. N NT, NE WA. Sampled at light.

NEW RECORDS. Type species (8 ex.): WA: Kununurra, 22.xii.1991-6.i.1992, RS (CBM, MDPI, QM).

Lachnothorax Motschulsky, 1862

Lachnothorax Motschulsky, 1862: 48; Sloane, 1917: 414; 1923: 33; Csiki, 1932: 1542; Liebke, 1938: 103; Darlington, 1968: 214; Lorenz, 1998: 420; Baehr, 1996d: 2; 2000: 11.

TYPE SPECIES. *Lachnothorax biguttatus* Motschulsky, 1862, by monotypy.

DIAGNOSIS. Upper and lower surfaces densely pilose; head short, rounded, lacking a sulcus and ridge medially of eyes; elytra short, conspicuously bimaculate, with coarsely punctate though not impressed striae.

AUSTRALIAN SPECIES. *Lachnothorax tokkia* Gestro 1875 (Fig. 37C).

Myrmecodemus Sloane, 1923

Myrmecodemus Sloane, 1923: 33; Csiki, 1932: 1543; Liebke, 1938: 106; Moore et al., 1987: 275; Lorenz, 1998: 420.

TYPE SPECIES. *Casnonia riverinae* Sloane, 1890, by original designation.

DIAGNOSIS. Head globose, with comparatively small, though convex eyes; prothorax globose; elytra short, wide, bearing a transverse impression across basal half; striation incomplete; propisternum and prosternum fused; elongate, erect setae on head, lower surface of prothorax, and on disk and along the margins of pronotum; rows of elongate, erect setae on odd intervals.

DISCUSSION. Until now this genus comprised *M. formicoides* (Sloane), *M. globulicollis* (Macleay) and *M. riverinae* (Sloane). *M. globulicollis* and *M. riverinae* are very closely related, and share with *M. formicoides* the glabrous, impilose surface of head, pronotum, and elytra (apart from fixed setae), the smooth surface of pronotum, and the absence of striae in the apical two thirds of the elytra. One of the new species described herein, although similar in shape and certain other features, differs in all mentioned characters common to the three species. Therefore, for this unique species *Myrmecodemus (Trichodemus)* subgen. nov. is erected.

Myrmecodemus (Myrmecodemus) s. str.

Myrmecodemus Sloane, 1923: 33.

TYPE SPECIES. *Casnonia riverinae* Sloane, 1890, by original designation.

DIAGNOSIS. See Sloane (1923: 33). Characters of subgeneric value are: surface of head, pronotum, and elytra (apart from fixed setae) impilose, surface of pronotum smooth, without any trace of transverse wrinkles, and apical two thirds of elytra not striate.

DISTRIBUTION. N NT and WA, S inland NSW, N Vic.

Myrmecodemus (M.) globulicollis (Macleay, 1888)
(Fig. 37D)

Casnonia globulicollis Macleay, 1888: 447.

Lachnothorax globulicollis, Sloane, 1910: 397; 1917: 413. *Myrmecodemus globulicollis*, Sloane, 1923: 33; Csiki, 1932: 1543; Liebke, 1938: 107; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♂ (damaged), N WA/ HOLOTYPE/ *Casnonia globulicollis*, MacL. Barrier Range N WA (ANIC-MMS). NEW RECORDS (5 ex.): NT: Tindal, 14.31S, 132.22E, 1-20.xii.1967, WV (ANIC). - WA: Kununurra, 22.xii.1991-6.i.1992, RS (CBM, MDPI); Fitzroy Crossing, 220 mi. E of Broome, 25.ii.68, EM (ANIC).

DIAGNOSIS. Distinguished from the other species, except for *M. riverinae* (Sloane), by large size and bright red prothorax. From the latter species it is distinguished by purplish black colour and quadrimaculate pattern of the elytra.

DISTRIBUTION. N NT, Kimberley. New records were collected at light.

Myrmecodemus (M.) riverinae (Sloane, 1890)
(Fig. 37E)

Casnonia riverinae Sloane, 1890: 643.

Lachnothorax riverinae, Sloane, 1910: 397; 1917: 413.

Myrmecodemus riverinae, Sloane, 1923: 33, Csiki, 1932: 1543; Liebke, 1938: 107; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♂, E.P. 7218/? HOLOTYPE (ANIC). PARALLECTOTYPES: 2 ♀♀, 2 (?sex, damaged), on same card, E.P. 7218/*Myrmecodemus riverinae* Sl. Id. by T.G. Sloane (ANIC). NEW RECORDS (7 ex.): NSW: N. S. Wales/*Casnonia riverinae* Sl. Id. By A.M. Lea (CBM, MV); *Casnonia riverinae* Sl, NSW (MV). – VIC: Inglewood, 27.xii.35, CO (MV).

DISCUSSION. Moore et al. (1987) noted the 5 type specimens as located in the SAM, Adelaide. This is a lapse because the specimens are indeed in ANIC and were labeled by Sloane himself. The 'Holotype' label is insignificant, because Sloane in his description did not give any information about type designations, and the label was attached later to the specimen. Therefore the specimen bearing the Holotype label is here designated Lectotype.

DIAGNOSIS. Easily distinguished from the other species, except for *M. globulicollis* (Macleay), by large size and bright red prothorax. From the latter species it is distinguished by glossy blue colour and semilunar pattern of the elytra.

DISTRIBUTION. S central NSW, N Vic.

Myrmecodemus (M.) formicoides (Sloane, 1910)
(Figs 26, 32A, 37F)

Lachnothorax formicoides Sloane, 1910: 397; 1917: 413.

Myrmecodemus formicoides, Sloane, 1923: 33, Csiki, 1932: 1543; Liebke, 1938: 108; Moore et al., 1987: 275; Lorenz, 1998: 420.

MATERIAL. LECTOTYPE (here designated): ♀, Port Darwin Dodd .03/*Myrmecodemus formicoides* Sl. Id. by T.G. Sloane/HOLOTYPE *Myrmecodemus formicoides* Sl. PJD (ANIC). PARALLECTOTYPE: 1 ♀ (immat.), Port Darwin Dodd .03/*Myrmecodemus formicoides* Sl. Id. by T.G. Sloane (ANIC). NEW RECORDS (4 ex.): NT: NT1, 3km E Humpty Doo, 3.viii.1995, MB (CBM); Humpty Doo, 6km E 9.ii-6.iii.1987, RS/*Myrmecodemus*

formicoides Sl. AW-H det. 1987 (MDPI); Oenpelli, from P. Cahill leg. 6.xii.18 (MV); 12.52S, 132.50E, Koongarra, 6-10.iii.73, MU (ANIC).

DIAGNOSIS. Small; pronotum dark, glabrous; distinguished from *M. lucai* by shorter, wider elytra, reddish subhumeral fascia, circular apical spot, shorter eye, and apical part of aedeagus more upturned and more decidedly spoon-shaped.

SUPPLEMENTARY DESCRIPTION.

Measurements (Table 6).

Male Genitalia (Fig. 26). Terminal abdominal sternite in middle incised. Genital ring fairly elongate, slightly asymmetric, gently triangular, shortly narrowed to the narrow, asymmetrically triangular apex. Aedeagus fairly slender and elongate, depressed, laterally barely sinuate, lower surface conspicuously bisinuate, upturned towards apex. Orificum elongate. Apex elongate, depressed, straight, not knobbed, but decidedly spoon-shaped, very slightly turned to right, incision at right side less deep than at left side. Folding of internal sac simple. Parameres of dissimilar shape, left paramere much larger and also longer than right one, right paramere short and high, both with wide, rounded apex.

Female Genitalia (Fig. 32A). Stylomere 2 comparatively short and stout, laterally evenly curved, with acute apex. With 2 small ventrolateral ensiform setae, a fairly small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 4 short but very stout ensiform setae. Lateral plate with dense fringe of stiff setae at apical rim.

DISCUSSION. Darlington designated one specimen 'Holotype', although Sloane gave no indication about type designations in his description. Thus, Darlington's designation is invalid according to the rules of ICZN and the specimen is here designated Lectotype.

Moore et al. (1987) noted the species only from the type locality. In spite of the new records, this seems to be an extremely rare species.

DISTRIBUTION. NT from W Arnhem Land to Darwin. One specimen from a Barber trap near a small pool in Tropical Savannah Woodland. Probably a hygrophilous, ground-living species.

RELATIONSHIPS. This species is closely related to *M. lucai* and might be taken for the same species, though certain differences in shape and colouration contradict this supposition. Both

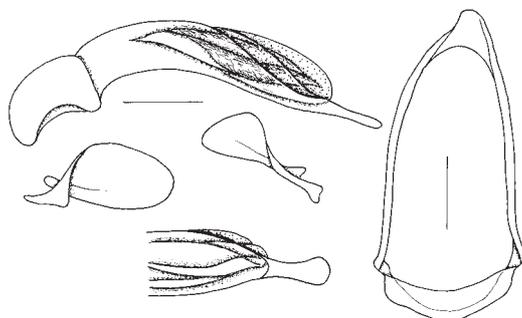


FIG. 26. *Myrmecodemus formicoides* (Sloane). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

species share the same range, although *M. lucai* probably is more widely distributed to the west. At Oenpelli both species were collected together, but even the specimens mounted together on the same card are immediately distinguished.

***Myrmecodemus (M.) lucai* sp. nov.**
(Figs 27, 32B, 38A)

ETYMOLOGY. For Luca Toledano, collector of the main series.

MATERIAL. HOLOTYPE: ♂, NT, Gregory N.P. Timber Creek 30-31.xii.96 at light/al lume Leg. L. Toledano, R. Olivieri (WAM). PARATYPES: 2 ♂, 9 ♀♀, same data (ANIC, CBM, CFP, CSM, CTV); 1 ♀ (damaged), NT Gregory N.P. Victoria Crossing 1-2.i.97 at light/al lume, LT, RO (CTV); 1 ♂, N.T. Kakadu N.P. 22-25.iii.93 Cooinda at light/al lume, LT (CBM); 1 ♀, Australie/Collection E. Rousseau (IRSNB); 2 ♂♂, Oenpili, N.T. from P. Cahill leg. 6.xii.18 (MV); 1 ♀, 15.31S 143.55E GPS 5km SE Hann River bridge, 15.i.1994, at light, PZ & EE (ANIC).

DIAGNOSIS. Small; pronotum dark; surface glabrous; distinguished from *M. formicoides* by longer and narrower elytra, indistinct or even absent subhumeral fascia, elongate apical spot, larger eye, and apical part of aedeagus barely upturned and less decidedly spoon-shaped.

DESCRIPTION. *Measurements* (Table 6). *Colour* (Fig. 38A). Surface blackish, very dark piceous on centre of head and sometimes on basal part of elytra. Labrum, mandibles, palpi, and 3 basal antennomeres more or less dark reddish, rest of antenna dark. Apical spot of elytra light yellow, sharply delimited, square, meeting apical margin. Also lateral margin narrowly yellowish in apical part. Subhumeral fascia absent or very inconspicuous, area of fascia more or less dark piceous, as sometimes the whole base of elytra.

Base of elytral epipleura dark, apical $\frac{3}{4}$ light yellow. Legs light yellow with contrastingly dark knees.

Head. Wide, rhomboidal. Neck remarkably narrow. Eyes comparatively small, though laterally protruding, slightly separated from orbits which are by far longer than eyes and gently convex. Behind clypeal suture laterally with shallow, oblique impression, and in middle with more or less distinct v-shaped impression. Medially of eye without any indication of a sulcus. Posterior supraorbital seta located slightly behind posterior margin of eye. Behind posterior seta with 2 additional pores and setae, one of which is situated laterally. Mentum with elongate, triangular, at apex slightly obtuse tooth, with 2 setae behind tooth, submentum with 2 elongate setae on either side. Glossa short, apex transverse, with 2 elongate setae. Paraglossae free, narrow, barely surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Antenna elongate, surpassing base of pronotum by at least 2 antennomeres, sparsely pilose from 2nd antennomere. Surface highly glossy, without microreticulation, glabrous, impunctate.

Pronotum. Short, somewhat globose, laterally convex, dorsally very convex, near apex with shallow, near base with deep and wide, transverse impression. Base thickly bordered, lateral margin complete, slightly ridge-like, gently convex, towards base slightly diverging, without sulcus medially of margin. Median line barely recognisable. A well developed marginal pore and seta situated in apical fifth near margin, disk with some additional elongate erect setae. Proepisternum and proepimeron well visible from above. Disk impunctate (except for elongate setae), without microreticulation, glossy.

Elytra. Rather short and wide, somewhat square, widest about in middle, dorsal surface moderately convex. Base moderately oblique, humeri rounded, lateral margin gently and almost evenly convex, but very faintly incised at basal third. Apex wide, lateral apical angles well indicated but obtuse, apex oblique and laterally well excised. Base narrowly margined halfway to scutellum, lateral margin moderately wide, apex coarsely margined. Surface in anterior third with distinct, transverse impression. Striae almost completely absent, only odd intervals marked by rows of conspicuous punctures and elongate erect setae. Surface at base slightly uneven, as odd intervals are faintly raised. Scutellar stria

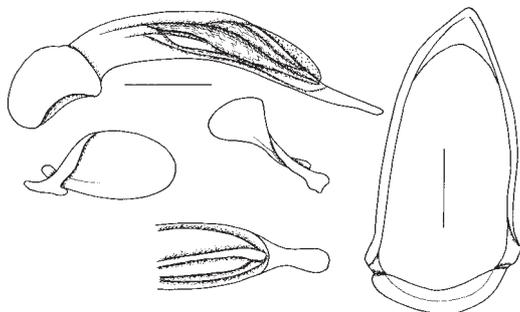


FIG. 27. *Myrmecodemus lucai* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

barely recognisable. Surface impunctate (except for elongate setae), very glossy, disk without microreticulation, but with very superficial, isodiametric microreticulation along lateral margin and in lateral parts of subhumeral grooves that give the surface a somewhat silky appearance. Hind wings present.

Lower Surface. Proepisternum not separated from prosternum. Both impunctate, except for some elongate setae on prosternum, and without microreticulation. Proepimeron with extremely rugose, ridge-like punctuation, apical rim of mesothorax with very coarse punctuation, rest of mesothorax, metathorax and abdomen glabrous, without microreticulation, very glossy. Metepisternum elongate, c. 2.5 × as long as wide at apex. Abdominal sterna quadri- or 6-setose, terminal abdominal sternum in male bisetose and glabrous, in female quadrisetose, with short adpressed pilosity.

Legs. Narrow and elongate. Tarsi not lobed, densely pilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 2nd-3rd tarsomeres of male anterior tarsus with sparse, asymmetric squamosity.

Male Genitalia (Fig. 27). Terminal abdominal sternite in middle incised. Genital ring fairly elongate, slightly asymmetric, gently triangular, shortly narrowed to the narrow, acute, triangular apex. Aedeagus fairly slender and elongate, depressed, laterally barely sinuate, lower surface only immediately near base concave, in apical three quarters gently convex. Orificum elongate. Apex elongate, depressed, straight, not knobbed, but moderately spoon-shaped, very slightly turned to right, incision at right side barely deeper than at left side. Folding of internal sac simple.

Parameres of dissimilar shape, left paramere much larger and also longer than right one, right paramere short and high, both with wide, rounded apex.

Female Genitalia (Fig. 32B). Stylomere 2 comparatively short and stout, laterally evenly curved, with acute apex. With 2 small ventrolateral ensiform setae, a fairly small dorsomedian ensiform seta situated above middle of stylomere, and a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 4-5 short but stout ensiform setae. Lateral plate with dense fringe of stiff setae at apical rim.

Variation. Rather little variation noted in shape of pronotum and distinctness of colouration of subhumeral fascia.

DISTRIBUTION. N Australia from Cape York Peninsula to NT/WA border. Recently caught specimens taken at light, close to river beds or lagoons. Probably a ground-living, hygrophilous species.

RELATIONSHIPS. This species is very closely related to *M. formicoides* with which it apparently shares part of its range.

Myrmecodemus (Trichodemus) subgen. nov.

TYPE SPECIES. *Myrmecodemus pilosellus* sp. nov.

DIAGNOSIS. Surface of head densely punctate, with elongate, depressed, anteriorly inclined pilosity; pronotum bearing dense, coarse, transverse wrinkles in middle; elytra with remarkably deep impression in anterior third and with a likewise conspicuous boss on either side in front of that impression, surface within impression and along suture striate and altogether coarsely punctate and pilose; rest of elytra (apart from fixed setae) impilose.

Myrmecodemus (T.) pilosellus sp. nov. (Figs 28, 32C, 38B)

ETYMOLOGY. Refers to the dense pilosity of the head.

MATERIAL. HOLOTYPE: ♂, 13.27S 142.42E, Qld, Mungkan Kandju N.P., Langi Lagoon, 29.vi.-5.vii.1998, T.A. Weir (ANIC). **PARATYPES:** 1 ♂, Stewart R. Q., WD/J.7710 *Lachnothorax*? *formicoides* Sln Qld (SAM); 1 ♀, 13.59S 143.33E Silver Plains, Cape York Pen. Qld 1.iv.1965, JW/*Myrmecodemus*? T.A. Weir 1993 (ANIC); 1 ♀, 13.40S 142.40E Qld 2km N Rokeby, 16.xii.1993 at light, PZ (ANIC); 1 ♀, Nth Qld 17.1.2000 Laura, SB (CBM).

TABLE 6. Measurements and ratios of species of the *formicoides*-group and *Myrmecodemus* (*Trichodemus*).

	N	length (mm)	length eye/orbit	l/w head	l/w prothorax	l/w elytra
<i>formicoides</i>	3	4.75-4.90	0.62-0.65	1.30-1.33	1.33-1.34	1.45-1.47
<i>lucai</i>	6	5.1-5.4	0.73-0.83	1.26-1.31	1.29-1.34	1.50-1.54
<i>pilosellus</i>	4	4.5-4.8	0.51-0.56	1.20-1.24	1.17-1.21	1.45-1.48

DIAGNOSIS. Head densely punctuate, pilose; pronotum rugose; elytra apically bistriate, in parts pilose.

DESCRIPTION. *Measurements* (Table 6).

Colour (Fig. 38B). Black, elytra with a triangular dirty yellow to light reddish subhumeral fascia and a similarly coloured transverse subapical fascia. Apex behind fascia more or less dark piceous. Base of elytral epipleura dark, becoming yellow towards apex. Labrum, mandibles, and palpi dark piceous with slightly lighter borders. Basal antennomere dark reddish to piceous, 3 following antennomeres darker, almost blackish, rest of antenna again slightly lighter, dark reddish to piceous. Coxae piceous, femora basally light yellow or reddish, apical half (profemur) or apical third (meso- and metafemur) blackish, tibiae light yellow or reddish with the very base and apex dark, tarsi dark. Lower surface black to dark piceous.

Head. Wide and short, laterally and dorsally very convex. Neck remarkably narrow. Eyes small, though laterally conspicuously protruding, well separated from orbits which are by far longer than eyes and very convex. Behind clypeal suture laterally with shallow, oblique impression, and in middle with shallow v-shaped impression. Medially of eye without any indication of a sulcus. Posterior supraorbital seta located just behind posterior margin of eye. Shortly behind posterior seta with an additional elongate setae, and another far behind near the 'neck', setae sometimes difficult to recognise within the adpressed setosity. Apex of labrum transverse, 6-setose, setae elongate. Mentum with elongate, triangular, at apex slightly obtuse tooth, with 2 setae behind tooth, submentum with 2 very elongate setae on either side. Glossa short, apex transverse, with 2 elongate setae. Paraglossae free, narrow, not surpassing glossy. Lacinia elongate, interior margin with a sparse fringe of spines. Penultimate palpomere of labial palpus with 2 very elongate setae. Antenna moderately elongate, just surpassing base of pronotum,

sparsely pilose from 1st antennomere, densely pilose from middle of 3rd antennomere. Surface of labrum, clypeus and middle of frons behind clypeus glabrous, apart from 2 setae just behind clypeal suture, glossy. Labrum with about isodiametric, superficial microreticulation, rest of surface without microreticulation, though with dense and somewhat rugose punctuation and covered by elongate hairs that are inclined and adpressed anteriorly.

Pronotum. Short, somewhat globose, laterally convex, dorsally very convex, near apex with shallow, near base with deep and wide, transverse impression. Base thickly bordered, lateral margin complete, coarse slightly ridge-like, gently convex, towards base slightly diverging, with a shallow sulcus medially of margin in anterior two thirds. Median line distinct, moderately impressed. A well developed marginal pore and seta situated in apical fourth near margin, disk with some additional, very elongate erect setae and several shorter setae. Proepisternum and proepimeron well visible from above. Disk in middle with coarse, very rugose, transverse sulci, impunctate (except for elongate setae), without microreticulation. Apex and base with coarse, rugose punctuation.

Elytra. Short and wide, subquadrate, widest about midlength, dorsal surface convex, very uneven. Base little oblique, humeri distinct though rounded, lateral margin gently and almost evenly convex, but very faintly incised at basal third. Apex wide, lateral apical angles well indicated but obtuse, apex oblique and laterally well excised, incurved towards suture. Base coarsely margined close to scutellum, lateral margin extremely narrow throughout, apex finely margined. Surface in anterior third with very deep, transverse impression that is laterally enlarged to form a triangle. In front of impression surface raised to 2 conspicuous humps, behind impression surface evenly convex. Striae only recognisable within the subbasal transverse impression, along suture in posterior two thirds, and at apex, marked by extremely coarse, rugose punctures and dense, moderately elongate, yellow setosity. In other parts of surface striae completely absent, only odd intervals marked by rows of conspicuous punctures and elongate erect setae. Apart from transverse subbasal impression, 2 inner striae, and apex, surface impunctate, impilose (except for elongate setae), without microreticulation, and very glossy.

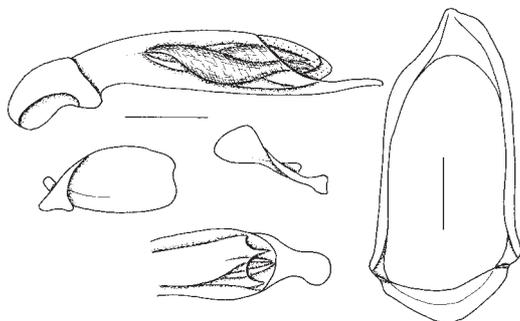


FIG. 28. *Myrmecodemus pilosellus* sp. nov. Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

Scutellar stria barely recognisable. As a summary; surface of elytra remarkably uneven and differently structured. Hind wings present.

Lower Surface. Proepisternum not clearly separated from prosternum, a very inconspicuous, superficial suture only visible in basal half. Both, proepisternum and prosternum impunctate, except for few elongate setae on prosternum, and without microreticulation. Proepimeron with rugose punctation, mesothorax and metathorax impunctate, without microreticulation, very sparsely setose. Abdomen glabrous, without microreticulation, very glossy. Metepisternum elongate, c. $2.5 \times$ as long as wide at apex. Abdominal sterna quadrisetose in middle, and with a row of 4-6 shorter setae laterally on either side. Terminal abdominal sternum in male bisetose and glabrous, in female quadrisetose, with short adpressed pilosity.

Legs. Narrow and elongate. Tarsi not lobed, densely pilose on upper surface, 5th tarsomere with a dense fringe of elongate setae below. Claws large, smooth. 2nd-3rd tarsomeres of male anterior tarsus with sparse, asymmetric squamosity.

Male Genitalia (Fig. 28). Terminal abdominal sternite in middle incised. Genital ring fairly elongate, slightly asymmetric, in basal two thirds almost parallel, shortly narrowed to the wide, obtuse apex. Aedeagus fairly slender and elongate, very depressed, laterally barely sinuate, whole lower surface gently convex, even near base barely concave. Orificum moderately elongate. Apex short, wide, depressed, straight, not knobbed, but moderately spoon-shaped, very slightly turned to right, incision at right side slightly deeper than at left side. Folding of internal sac simple. Parameres of dissimilar

shape, left paramere much larger and also longer than right one, with almost transverse apex, right paramere very short and high, with wide, rounded apex.

Female Genitalia (Fig. 32C). Stylomere 2 comparatively short and stout, laterally little curved, with acute apex. Apparently without ventrolateral ensiform setae, with a small dorsomedian ensiform seta situated above middle of stylomere, and with a single short nematiform seta arising from a groove in apical third. Base of stylomere 1 with 4 elongate, stout ensiform setae. Lateral plate with moderately dense fringe of elongate, stiff setae at apical rim.

Variation. Little variation noted due to scarce material. One specimen has colouration of light areas on elytra and legs light reddish rather than light yellow, perhaps because teneral or effected by preservation.

DISTRIBUTION. Lower Cape York Peninsula. Holotype collected at light in open forest.

KEY TO AUSTRALIAN SPECIES OF *MYRMECODEMUS*

1. Head, pronotum, and elytra (except for fixed setae) glabrous, impilose; pronotum without transverse wrinkles; elytra without striae in apical two thirds.
Myrmecodemus s. str. 2
Head densely punctate and pilose; pronotum with coarse transverse wrinkles in middle; elytra with very deep, punctate and pilose impressions in basal third, with 2 punctate and pilose striae along suture. *Trichodemus* subgen. nov. *pilosellus* sp. nov.
2. Pronotum bright red; body size larger, length >7mm . . 3
Pronotum black or piceous; body size smaller, length <5.5mm 4
3. Elytra quadrimaculate, with red posthumeral and apical maculae on purplish-black background.
. *globulicollis* (Macleay)
Elytra with a red fascia in apical half, ground colour of elytra bluish-black. *riverinae* (Sloane)
4. Elytra shorter and wider, ratio length/width c. 1.45; subhumeral fascia in the basal impression distinct, pale reddish, subapical yellow spot circular, removed from apical margin; lateral margin of elytra wider, completely and conspicuously yellow (Fig. 37F); eye shorter in comparison to orbit, ratio length eye/orbit c. 0.65; apex of aedeagus more upturned and more decidedly spoon-shaped (Fig. 25). *formicoides* (Sloane)
Elytra longer and narrower, ratio length/width >1.50; subhumeral fascia in the basal impression absent or extremely indistinct, subapical yellow spot elongate, widely meeting apical margin; lateral margin of elytra narrower, not completely and also less conspicuously yellow (Fig. 38A); eye longer in comparison to orbit, ratio length eye/orbit >0.70; apex of aedeagus barely upturned and less decidedly spoon-shaped (Fig. 26).
. *lucai* sp. nov.

Neoeudalia gen. nov.

TYPE SPECIES. *Eudalia nigra* Sloane, 1910.

DIAGNOSIS. Dense, erect surface pilosity; a shallow transverse impression near apex of elytra, tumid 7th interval in apical third, barely excised apical margin of elytra, sparsely setose 3rd antennomere.

DESCRIPTION. Head large, with large, laterally markedly protruding eyes; labrum anteriorly straight; mandibles elongate; both palpi impilose, maxillary palpus also asetose; terminal palpomeres apically transversely cut; mentum with a large triangular, apically slightly incised tooth; glossa at apex almost transverse, with 2 elongate median and 2 much shorter lateral setae; paraglossae membranous, slightly surpassing and largely separated from glossa; inner margin of lacinia markedly dentate; mentum with 2 elongate setae, submentum with 4 elongate setae, lower surface of head below eyes with an elongate seta on either side; antenna elongate, 2 basal antennomeres impilose, 3rd antennomere with few elongate setae below apical setae, antenna more densely pilose from mid of 4th antennomere, basal antennomere with a single seta; medially of eye with a sulcus which is laterally bordered by a costa; neck well separated from head; surface of head sparsely but coarsely punctate, and with elongate, erect setosity; posterior supraorbital seta difficult to distinguish; prothorax with complete but not sharply raised lateral borders; proepisterna laterally projecting beyond lateral margin and visible from above; medially of lateral border with well developed sulcus that is medially bordered by an edge; margin and sulcus with a very dense fringe of elongate setae; disk densely punctate near base, with elongate, erect setosity; elytra elongate, not spinose nor sinuate at apex, with one transverse sulcus in anterior third, and another shortly in front of apex; striae complete, coarsely punctate; intervals convex, punctate, 7th interval tumid in apical third; surface with dense, elongate, erect setosity; legs slender; upper surface of tarsi impilose, claws simple; terminal abdominal sternite in male quadrisetose; aedeagus with short, asymmetric, somewhat knobbed apex, and with simple folding of internal sac.

RELATIONSHIPS. Because of certain structural similarities, *Neoeudalia* is most probably related to *Dicraspeda*, *Basistichus*, *Gestroania* and *Giachinoana*, though in some characters it is more plesiomorphic than these genera. Probably,

Neoeudalia takes a somewhat intermediate position between *Eudalia* and *Dicraspeda* as enumerated below, and it could be regarded a plesiotypic, basic branch of the *Dicraspeda* complex.

Characters of Neoeudalia shared with Eudalia.
Disk of pronotum densely and coarsely punctate
Elytral striae coarsely punctate
Apex of elytra not excised nor spined

Characters of Neoeudalia shared with Dicraspeda.
Costa and sulcus inside of eye well developed
Lateral channel of pronotum present

Characters peculiar to Neoeudalia.
Surface with remarkably elongate, erect setosity
Head with a pair of elongate setae below eyes
Lateral margin of pronotum not costate, sulcus very coarsely punctate, margin with remarkably dense and elongate fringe of setae
Elytra with a transverse impression near apex
7th interval tumid in apical third
Terminal abdominal sternite in male quadrisetose
Legs very conspicuously bicoloured

DISTRIBUTION. S central NSW, N Vic, S central Qld, and N NT and WA adjacent to border.

Neoeudalia nigra (Sloane, 1900)
(Figs 29, 32D, 38C)

Eudalia nigra Sloane, 1900: 581; 1917: 417; Csiki, 1932: 1542; Liebke, 1938: 106; Moore et al., 1987: 274; Lorenz, 1998: 421.

Dicraspeda nigra Sloane, 1923: 31.

MATERIAL. NEOTYPE (here designated): ♀, C.H./*Eudalia nigra* Sl. Topotype/ HOLOTYPE *E. nigra* Sl. PJD (ANIC). NEW RECORDS (12 ex.): Vic: Hattah, CO (CBM, MV). – Qld: *Eudalia nigra* Sl. Qld (MV); Rockhampton, AL/J.7706 *Eudalia nigra* Sloane (SAM); *Eudalia nigra* Sl. (SAM); 623/Dawson R. (CBM, SAM); 7km NE of Tolga, xii.1988, RS & DF (MDPI); Pinnarendi Stn 60km W of Mt Garnet, 7.ii.1989, DH (QM); Musgrave, 5/72, GB (ANIC). – NT: 12.06S, 133.04E, Cooper Creek, 19km E by S of Mt Borradaile, 31.v.73, EM (ANIC); 1.6km E on Warrawarange Rd., off Stuart Hwy, 10km S. McMillans Rd Darwin, 24.vii.1979, LK (ANIC). – WA: Kununurra, 22.xii.1991-6.i.1992, RS (CBM, MDPI). – ? : CCXI (SAM).

DIAGNOSIS. Antennae completely black; femora yellow; tibiae with contrastingly black apex, black, yellow ringed.

SUPPLEMENTARY DESCRIPTION. *Measurements* (6 ex.). Length, 8.6-9.8mm; width, 3.1-3.55mm. Ratios: length eye/orbit, 2.0; length/width of head, 0.92-0.96; length/width of prothorax, 1.14-1.15; length/width of elytra, 1.63-1.66.

Colour (Fig. 38C). Black, only labrum and mouthparts reddish. Antennae black. Femora yellow, apex contrastingly black. All tibiae black, with a contrasting yellow ring below middle. Tarsi black.

Head. Eyes very large, markedly protruding, orbits short, moderately convex. Surface with 2 impressions behind clypeus, medially of eye with distinct ridge and sulcus that attain about the middle of eye. Posterior supraorbital seta located shortly behind eye, but difficult to distinguish within the elongate, erect pilosity. Antenna elongate, surpassing base of pronotum by c. 1.5 antennomeres. Two basal antennomeres glabrous, 3rd antennomere with some additional elongate setae below the ring of apical setae. Punctuation of surface coarse, though sparse, pilosity remarkably elongate, erect. Microreticulation absent, surface glossy.

Pronotum. Rather short, compact, laterally gently convex, dorsal surface slightly convex. Lateral margin little convex, indistinct, very uneven, not ridge-like. Proepisternum widely visible from above. Sulcus inside margin wide and deep, covered by very coarse punctures and by an extremely dense fringe of elongate setae. Part of this fringe is characteristically directed laterally. Punctuation coarse, dense in basal half, anteriorly sparse. Microreticulation absent, surface glossy.

Elytra. Moderately elongate, laterally slightly convex, dorsally depressed. In basal third with a distinct, transverse impression which becomes indistinct towards lateral margin, and with a minor though still distinct transverse depression shortly in front of apex. 7th interval tumid in apical third. Striae complete, well impressed and coarsely punctate till apex. Intervals convex, irregularly punctate. Apex convex, oblique, not or barely sinuate. Whole surface covered with dense, elongate, erect, grey hairs, lateral margin with conspicuous fringe of elongate hairs. Microreticulation absent, surface glossy. Hind wings present.

Lower Surface. With moderately dense, on thorax also coarse to very coarse punctuation, impilose, glossy. Metepisternum very elongate $>3 \times$ as long as wide at apex. terminal abdominal sternum in female polysetose.

Legs. Of average size. Tarsi not lobed, 5th tarsomere with a dense fringe of elongate setae below. Claws smooth.

Male Genitalia (Fig. 29). Terminal abdominal sternite in middle slightly incised. Genital ring fairly elongate, moderately triangular, barely

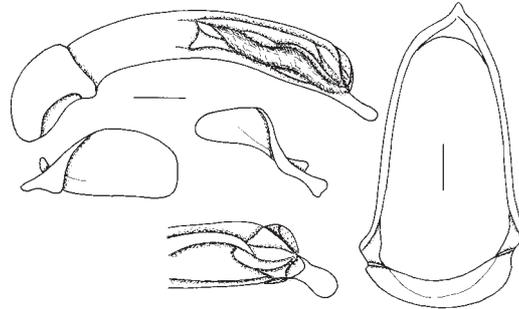


FIG. 29. *Neoeudalia nigra* (Sloane). Male genitalia: aedeagus, parameres and genital ring (scale 0.25mm).

asymmetric, suddenly narrowed to the narrow, very acute, triangular apex. Aedeagus comparatively large, slender and elongate, moderately depressed, laterally barely sinuate, whole lower surface concave. Orificum short. Apex short, fairly wide, straight, gently knobbed, markedly turned to right, gently incised at right side. Folding of internal sac simple. Parameres of moderately dissimilar shape, left paramere much larger than right one, with rounded apex, right paramere elongate, with narrower, more angulately rounded apex.

Female Genitalia (Fig. 32D). Styломere 2 large, though comparatively short and stout, laterally little curved, with short, moderately acute apex. With 3 medium-sized ventrolateral ensiform setae, a small dorsomedian ensiform seta situated above middle of styломere, and a single short nematiform seta arising from a groove in apical third. Base of styломere 1 with 6-7 slender, elongate ensiform setae. Lateral plate with moderately dense fringe of elongate, stiff setae at apical rim.

Variation. Little variation noted due to limited material. As some of the available specimens are old and damaged, little can be said about variation.

DISCUSSION. Apparently the type(s) of this species is/are lost. One specimen was labeled 'Holotype' by Darlington, though it is a topotype which is written on the determination label. Nevertheless, this specimen was labeled by T.G. Sloane himself and as it corresponds with the description, it is heredesignated neotype.

DISTRIBUTION. S central NSW, N Vic, SE and NE Qld, N NT and WA adjacent to border. In Qld this species was only recorded in dry areas west

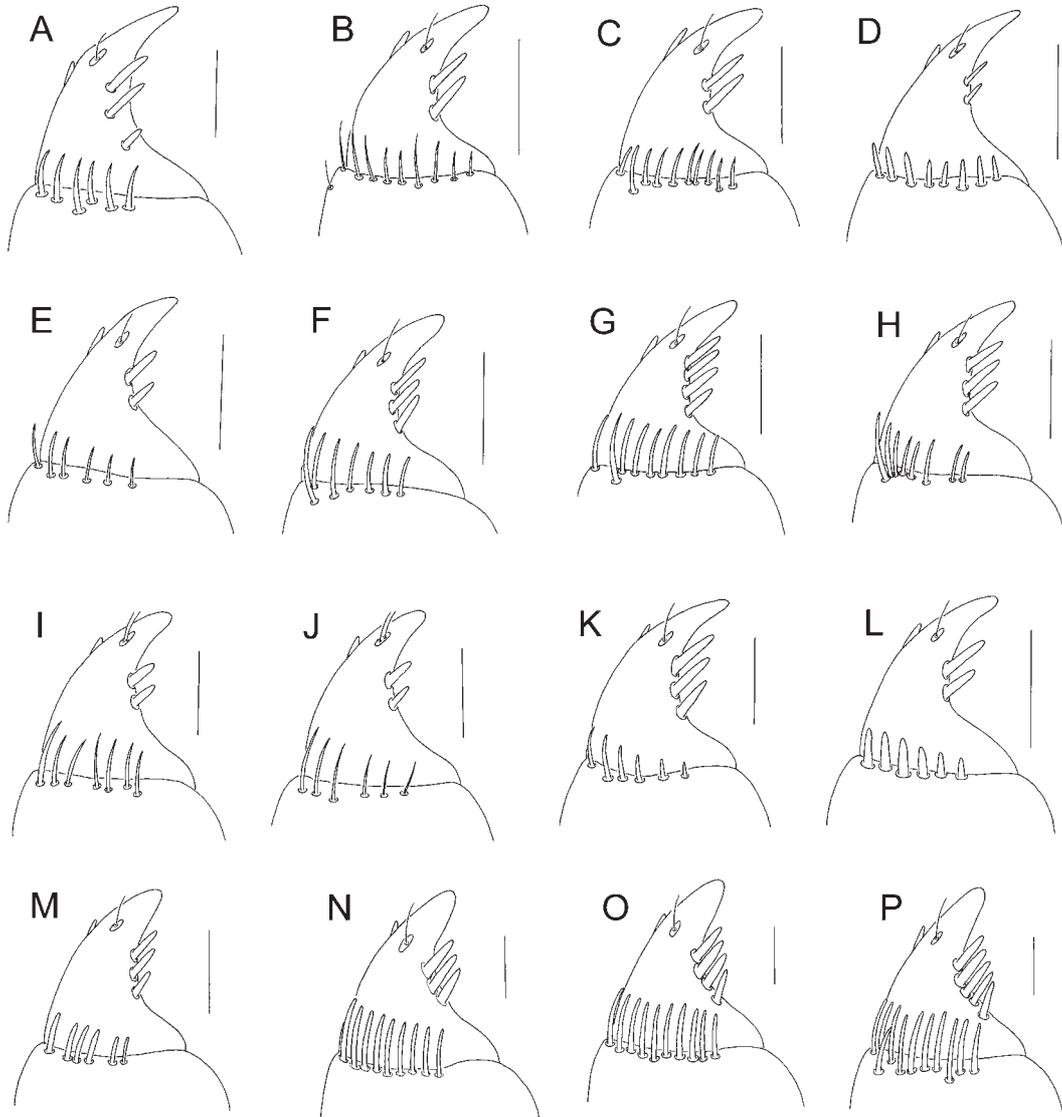


FIG. 30. Female stylomeres 1 and 2 (scales: 0.1mm). A, *Anasis howittii* Castelnau. B, *Archicollurius splendissimus* sp. nov. C, *Archicollurius occipitalis* sp. nov. D, *Aulacolius triordinatus* Sloane. E, *Basistichus micans* (Macleay). F, *Clarencia aliena* (Pascoe). G, *Clarencia angusticollis* (Macleay). H, *Clarencia breviceps* sp. nov. I, *Deipyrus palustris* (Sloane). J, *Deipyrus inops* sp. nov. K, *Dicraspeda brunneipennis* (Sloane). L, *Dicraspeda obscura* (Castelnau). M, *Eudalia obliquiceps obliquiceps* Sloane. N, *Eudalia reticulata* sp. nov. O, *Eudalia atrata* sp. nov. P, *Eudalia castelnaui* Sloane.

of the Great Dividing Range. Sloane recorded the species 'under loose bark of a Red Gum tree, having taken refuge from flood water', and 'on the muddy bank of Houlaghan's Creek, ... a single example under a stick'. All specimens

from N Qld, NT, and NW Australia were captured at light. Probably a ground-dwelling species on the banks of rivers and lagoons.

Ophionea Klug, 1821
(Fig. 38D)

Ophionea Klug, 1821: 298; Sloane, 1917: 415; 1923: 30; Csiki, 1932: 1534; Liebke, 1938: 79; Darlington, 1968: 207; Moore et al., 1987: 277; Lorenz, 1998: 417.

Ophionaea Eschscholtz, 1829: 5.

Casnoidea Castelnau, 1834: 40; Csiki, 1932: 1534; Darlington, 1968: 207; Moore et al., 1987: 277; Baehr, 1996b: 1044; Lorenz, 1998: 417.

TYPE SPECIES. *Cicindela cyanocephala* Fabricius, 1798 (= *Attelabus indicus* Thunberg, 1784), by subsequent designation.

DISCUSSION. The citation of Darlington (1968), Moore et al. (1987) and others of *Ophionea* as being first described by Eschscholtz (1829) is incorrect, as had been stated by Lorenz (1998). Bousquet (in Löbl & Smetana 2003) noted: 'The genus-group name *Ophionea* was first validated by Klug in 1821. Not only did he describe in length the genus but he included 3 available species: *Attelabus pennsylvanicus* Linnaeus, *Cicindela cyanocephala* Fabricius, and *Attelabus surinamensis* Linnaeus. The type species is *Cicindela cyanocephala* Fabricius, 1798 (= *Attelabus indicus* Thunberg, 1784), by subsequent designation of Hope (1838: 104). It is quite clear that Eschscholtz did not describe a new genus-group taxon under the name *Ophionea* but that he simply used Klug's name under a different spelling'. The type species of *Casnoidea* is *Cicindela cyanocephala* Fabricius, 1798 (= *Attelabus indicus* Thunberg, 1784), by original designation.

KEY TO AUSTRALIAN SPECIES OF
OPHIONEA

1. Base of elytra reddish; prothorax coarsely punctate *puncticollis* Sloane
Base of elytra dark; prothorax not coarsely punctate 2
2. Prothorax lacking lateral setae; each elytron with 2 small white spots in anterior third and near apex; dark basal fascia interrupted in middle. *indica* (Thunberg)
Prothorax with one pair of lateral setae; each elytron with one large white spot only near apex; dark basal fascia not interrupted in middle 3
3. Orbits markedly convex, eyes laterally markedly protruded; prothorax c. 1.5 × as long as wide, widest in middle or in front of it; antenna short, median antennomeres <2 × as long as wide. *thouzeti* Castelnau
Orbits less convex or almost regularly oblique, eyes laterally less protruded; prothorax >1.67 × as long as wide, widest clearly behind middle; antenna elongate, median antennomeres at least 3 × as long as wide. 4
4. Surface of elytra not microreticulate, glossy; light subapical spot small, clearly surpassing posterior border of dark fascia; prothorax >2 × as long as wide *australiana* Baehr

Surface of elytra perceptibly microreticulate; light subapical spot very elongate, ending at posterior margin of dark fascia; prothorax <2 × as long as wide

. *storeyi* Baehr

Porocara Sloane, 1917
(Fig. 38E)

Porocara Sloane, 1917: 415; 1923: 30; Liebke, 1938: 91; Baehr, 1986: 718; 1996c: 254; Moore et al., 1987: 273; Lorenz, 1998: 421.

TYPE SPECIES. *Porocara punctata* Sloane, 1917, by monotypy.

KEY TO SPECIES OF *POROCARA*

1. Surface of pronotum and posterior part of head impunctate or nearly so; postmedian vitta of elytra narrow, conspicuously serrate and sinuate; apex of aedeagus virtually not thickened. *glabrata* Baehr
Surface of pronotum and posterior part of head coarsely punctate; postmedian vitta of elytra wide, less serrate and sinuate; apex of aedeagus more or less thickened 2
2. Aedeagus smaller and shorter, length <1.8mm, apex not much upturned and barely curved to right; elytra shorter, laterally less regularly rounded; basal part of lateral borders of pronotum abruptly sinuate 3
Aedeagus larger and longer, length >2.2mm, apex markedly upturned and curved; elytra longer, laterally regularly rounded; basal part of lateral borders of pronotum not abruptly sinuate. 6
3. In fully coloured specimens prothorax, vertex, and most of lower surface black; in teneral specimens at least part of proepipleurae and base of head darker than remaining parts; elytra markedly square, with accentuate humerus, lateral margins almost parallel; microsculpture of elytra very conspicuous, at 10 × magnification seemingly isodiametric; lower surface of aedeagus gently curved, apex elongate, not turned down. *nigricollis* Baehr
Even in fully coloured specimens prothorax, vertex, and most of lower surface not darker than remainder; elytra not square, with less accentuate humerus, lateral margins perceptibly convex; microsculpture of elytra less conspicuous, at 10 × magnification distinctly transverse; lower surface of aedeagus gently or markedly curved, apex short or elongate, but when elongate, then apex turned down or aedeagus markedly curved 4
4. Pronotum more densely and regularly punctate, basal part of lateral borders less abruptly sinuate; aedeagus compact, apical part at orificum (as seen from below) distinctly widened, lower surface gently or markedly concave, but when gently concave, then apex short. 5
Pronotum less densely and regularly punctate, basal part of lateral borders abruptly sinuate; aedeagus delicate, apical part at orificum (as seen from below) barely widened, lower surface gently concave, apex elongate *punctata kimberleyana* Baehr
5. Elytra shorter, more square, ratio l/w <1.58; lower surface of aedeagus gently concave, apex short, less club-shaped, almost straight. *punctata punctata* Sloane
Elytra longer, more egg-shaped, ratio l/w >1.62; lower surface of aedeagus markedly concave, apex longer,

distinctly club-shaped, pointed down

- *punctata arnhemensis* Baehr
6. Pronotum densely punctate; basal lobe of aedeagus less curved, apex more upturned though less asymmetric, lower surface of aedeagus barely striate. . *ulrichi* Baehr
 Pronotum more sparsely punctate; basal lobe of aedeagus more curved, apex less upturned though more asymmetric, lower surface of aedeagus conspicuously striate *occidentalis* Baehr

Renneria Baehr, 1999

Renneria Baehr, 1999: 116.

TYPE SPECIES. *Renneria kamouni* Baehr, 1999, by original designation.

Renneria kamouni Baehr, 1999
 (Fig. 38F)

NEW RECORDS (6 ex.): NT: Tindal, 14.31S, 132.22E, 1-20.xii.1967, WV (ANIC). - WA: Kununurra, 22.xii.1991-6.i.1992, RS (CBM, MDPI, QM).

DISTRIBUTION. N NT, N WA adjacent to NT. Taken at light.

THE AUSTRALIAN ODACANTHINE
 FAUNA

The Australian odacanthine fauna includes 16 genera, 50 species, 5 subspecies and 2 doubtfully recorded species that most probably should be excluded from the Australian fauna (see checklist). *Ophionea indica*, which is widely distributed in SE Asia, but not native to Australia has been accidentally introduced by ship. Numbers of indigenous taxa per state are: Vic - 5; ACT - 1; NSW - 7; Qld - 32; NT - 23; WA - 21; unknown - 1.

Therefore, Australian Odacanthinae are predominately tropical, are numerous in the wet tropics, but barely extend to the south or into the drier parts of the continent. They are most speciose in NE Qld, still quite speciose in N NT and N WA, becoming rarer in NSW, Vic and the ACT, and apparently completely absent from SA and Tas. In Vic *Anasis howittii* was recorded from near the coast, but has never been recaptured, so the record might be doubtful. *Neoeudalia nigra* and *Myrmecodemus riverinae* were recently recorded from NW Vic. In WA south of the Great Sandy Desert, *Gestroania amplipennis* (Gestro), is known from the SW, *Porocara occidentalis* and *Eudalia waterhousei* occur in the midwest between the Ashburton and Murchison Rivers. In NT only *Eudalia waterhousei* occurs in the interior, all others being restricted to the coastal North. In Qld only *Eudalia latipennis interioris* and *Neoeudalia nigra*, occur inland. Similarly, in

NSW *Neoeudalia nigra* and *Myrmecodemus riverinae*, occur inland, i.e. west of Great Dividing Range, with the other five recorded species either in the northeastern part of the state or in the Australian Alps. In the south, only the streams of the Australian Alps harbour an odacanthine fauna worthy of mention (Framenau, Manderbach & Baehr, 2002), but the few species occurring there can be quite numerous in suitable areas.

The range of *Deipyryrus inops*, is so far completely unknown, although I suspect it might occur somewhere in the far north.

It can be seen from the lists of examined material, that quite a large number of species, or even all species of certain genera, are either rare, or are rarely collected, for whatever reasons. This particularly applies to species of *Anasis*, *Archicolliuris*, *Gestroania*, *Giachinoana*, *Lachnothorax*, *Myrmecodemus*, *Neoeudalia* and *Renneria*, but also to certain species of other genera. This may be due to either very restricted occurrence, very remote ranges, or to scarcity due to ecological factors. Indeed, only a few species are apparently common, which means: they have been collected either at many localities, or, if their range is more restricted, they are at least common where they occur. Examples of widespread and locally common species are *Basistichus micans*, *Eudalia latipennis*, *E. waterhousei*, *Neoeudalia nigra*, *Ophionea thouzeti*, whereas species like *Deipyryrus palustris*, *Eudalia atrata*, *E. castelnaui*, *E. macleayi*, *E. punctipennis* and the members of *Porocara* are generally numerous where they occur. For most species, however, we do not yet know enough about distribution and habits to make any reliable decision.

Nevertheless, some distribution patterns seem evident. In particular in the tropical northern half of Australia two patterns seem to exist: one comprising species of true wet tropical affinities that almost exclusively occur in wet NE Qld, in rain forest, either at the edge of rivers and lagoons (e.g. *Archicolliuris* spp., *Dicraspeda brunneipennis*, *D. dubia*, *D. glabrata*, *D. longiloba*, *D. nitida*, *D. obscura*, *Lachnothorax tokkia*); and another group of species that inhabit savannah country or even semiarid areas and extend through the tropical belt of northern Australia, but do not occur east of the Great Dividing Range (e.g. *Dicraspeda sublaevis*, *Eudalia punctipennis*, *E. waterhousei*, *Gestroania setipennis*, *G. storeyi*, *Giachinoana carinipennis*, *Myrmecodemus formicoides*, *M. globulicollis*, *M. lucai*, *Porocara*

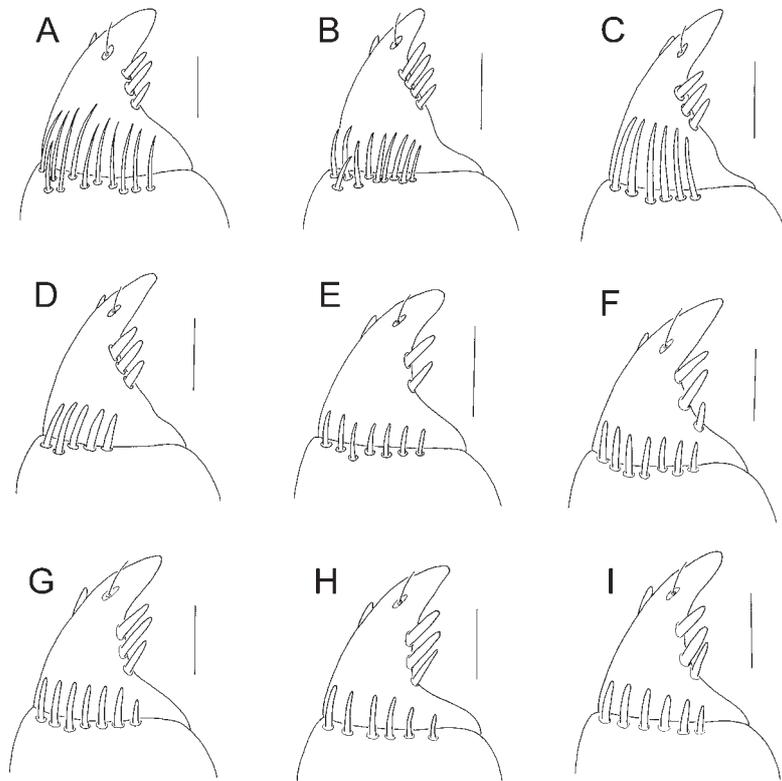


FIG. 31. Female stylomeres 1 and 2 (scales 0.1mm). A, *Eudalia macleayi* Bates. B, *Eudalia latipennis latipennis* (Macleay). C, *Eudalia waterhousei* Castelnau. D, *Eudalia punctipennis* sp. nov. E, *Gestroania amplipennis* (Gestro). F, *Gestroania froggatti* (Macleay). G, *Gestroania setipennis* sp. nov. H, *Gestroania storeyi* sp. nov. I, *Giachinoana carinipennis* Baehr.

spp., *Renneria kamouni*). The ranges of the latter species are usually much more extensive and may extend from N NT to NW Australia, and sometimes also to N Qld W of the Great Dividing Range. *Neoeadalia nigra*, however, has an unusual inland distribution pattern, extending from semiarid country in N Vic and S inland NSW to inland Qld and far N and NW Australia. In Qld it extends to mid-eastern Qld, but there only to the dry country belt that extends along the Tropic of Capricorn to the coast.

With respect to habits, the Australian odacanthine fauna is unique in that most species apparently inhabit sand or gravel banks of rivers and brooks. Plant climbing, 'true' odacanthines, on the other hand are much rarer in Australia compared with the faunas of South Asia, tropical Africa, and South America where they are common. This is easily understood, because wet, swampy habitats and rain forests are scarce in Australia compared

with the other large continents. Since all Australian species are winged, they commonly come to light, either directly to the lamp or running about at the margins of the cone of light, though generally not before absolute darkness. It is clear that good flight ability is a prerequisite for beetles living on the margins of water bodies which regularly dry out, as is the case in Australian regions which are semiarid or have a long dry season.

Very little is known about diet, feeding strategies, and life history of any Australian odacanthine species. I observed *Eudalia* and *Porocara* hunting on river banks at night and devouring larvae and adults of mayflies, but to my knowledge, no other information about diet has been recorded. I collected *Eudalia l. latipennis*, *E. punctipennis*, and *E. waterhousei* on fine sand and silt, whereas species of *Porocara* were mainly running amongst pebbles

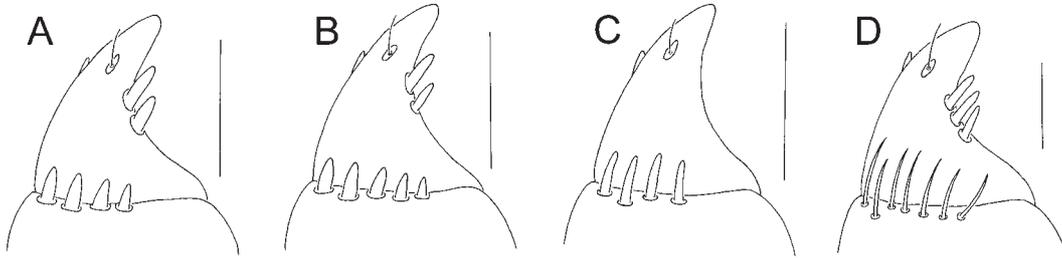


FIG. 32. Female stylomeres 1 and 2 (scales: 0.1mm). A, *Myrmecodemus formicoides* (Sloane). B, *Myrmecodemus lucai* sp. nov. C, *Myrmecodemus pilosellus* sp. nov. D, *Neoeudalia nigra* (Sloane).

and coarse gravel. *Porocara* species are extremely fast runners. *Ophionea* species are true reed climbers as are many *Archicolliuris*, though apparently not the Australian species that inhabit rainforest, although we do not know where they live there. Except for the species of the Australian Alps (*Eudalia castelnaui* and *E. macleayi*), almost all species seem to occur at low altitudes, although one species of *Archicolliuris* at least has been captured above 700m. Apart from these sparse details little is known about the other genera. Surprisingly many species occur some distance from water which may suggest rather a life in litter or even on low vegetation independent of open water bodies.

Moore (1965) described the larvae of *Eudalia macleayi* Bates and noted their high similarity to non-Australian *Colliuris*. No other larvae of Australian Odacanthinae have been described.

COMPOSITION OF THE FAUNA

The Australian Odacanthinae includes very differently shaped species, with different ecological requirements, inhabiting remarkably diverse habitats. No other continent harbours, at the same time, highly evolved, elongate, long-necked reed-climbing species like those of *Ophionea*, *Archicolliuris*, and *Clarencia*; compact, short-headed, fast running, ground-living, nocturnal species like those of *Porocara* and *Eudalia*; and extremely setose, globular species like those of *Deipyrus* and *Myrmecodemus*. Although the diversity of the Australian Odacanthinae is rather high, it is evident that highly developed reed-dwelling species are comparatively rare, whereas primitive ground-living species (and genera) are numerous and speciose. Thus the Australian odacanthine fauna in general is plesiotypic, including probably the most basal extant odacanthine of all, *Porocara*.

The strictly nocturnal *Porocara* occur with cicindelines (*Megacephala* s.l. spp., in particular species from the ripicolous *crucigera*-group), chlaeniines (*Chlaenius* s.l. spp.) and brachinines (*Pheropsophus* spp.) between pebbles, gravel, and sand on the banks of rivers in the Far North. This is perhaps one of the most basic habitats for tropical ground beetles. The serrate-cruciate, red and black colouration of the elytra and the very light colour of the legs are common colour patterns in nocturnal species living in such habitats. This colour pattern probably is well adapted to the reddish sand, as well as to the twilight. *Porocara* specimens running in the night appear like ghosts whisking along, or speaking more biologically, they resemble the fast running tiger beetles or lycosid spiders that occur in the same habitats. So, body shape and colour pattern in *Porocara* may also act as a sort of mimicry, without knowing which model *Porocara* imitates: aggressive spiders or tiger beetles, bombarding *Pheropsophus*, or distasteful *Chlaenius*.

Grundmannius dispar Basilewsky, a South African chlaeniine beetle, has exactly the same body shape, colour pattern of the elytra (serrate-cruciate reddish-and-black), bulky head and prothorax, elongate legs and elongate mandibles, as Australian species of *Porocara*. Such similarities seem to corroborate the basic structure of the fauna of the sandy or gravelly river banks in tropical, seasonally wet, or even semiarid country.

Apart from colouration, certain species of *Eudalia* are also fairly similar in shape and structure to *Porocara*. These do not match our common concept of odacanthines, but also seem to represent a very basic stock within the subfamily. The species of the *E. latipennis-waterhousei*-lineage in particular are similar in their bulky body shape to *Porocara*, and they live in exactly similar habitats — sand and gravel of river banks in wet to dry savannah country or in

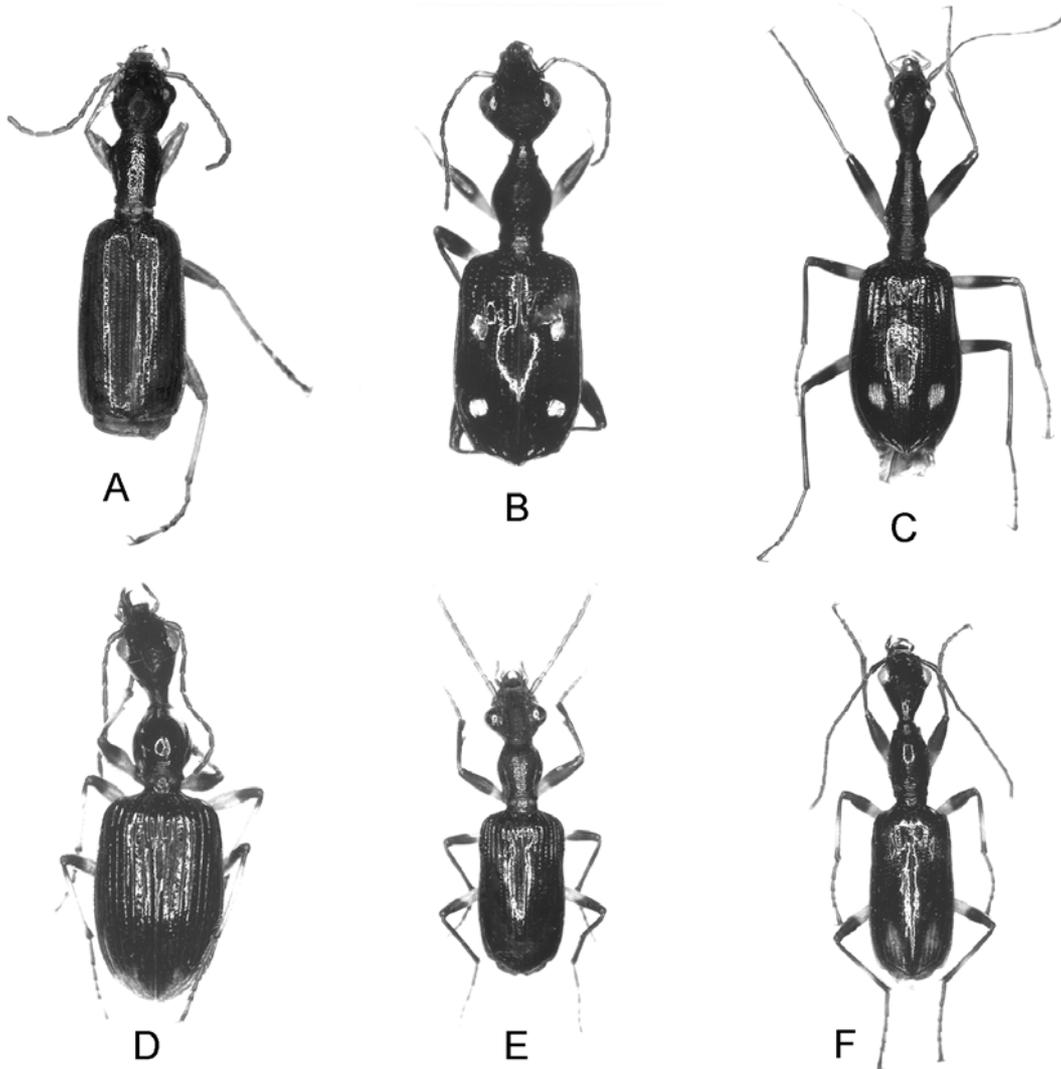


FIG. 33. Habitus of Australian Odacanthinae (length in brackets). A, *Anasis howittii* Castelnau (8.1mm). B, *Archicolliuris splendissimus* sp. nov. (6.9mm). C, *Archicolliuris occipitalis* sp. nov. (10.5mm). D, *Aulacolius triordinatus* Sloane (7.6mm). E, *Basistichus micans* (Macleay) (6.8mm). F, *Clarenzia breviceps* sp. nov. (7.9mm).

semidesert. *Dicraspeda*, *Neoeadalia*, *Anasis*, *Renneria* and even *Gestroania* and *Giachinoana*, although the latter three combine species with several apomorphic features, are probably derived from an *Eudalia*-like stock, and most probably their habits are rather similar to those of *Eudalia* (ground-living at river banks).

Some Australian genera are outstanding in certain morphological characters and their

systematic position is not easily fixed. Habits of *Aulacolius*, *Basistichus*, *Deipyros* and *Myrmecodemus* are very little known, although probably they also live on the ground beside water. They all seem to be descended from primitive ancestors, having acquired certain more highly evolved characters. The oriental *Lachnothorax*, which also includes primitive, ground-living species, should also be added to this group.

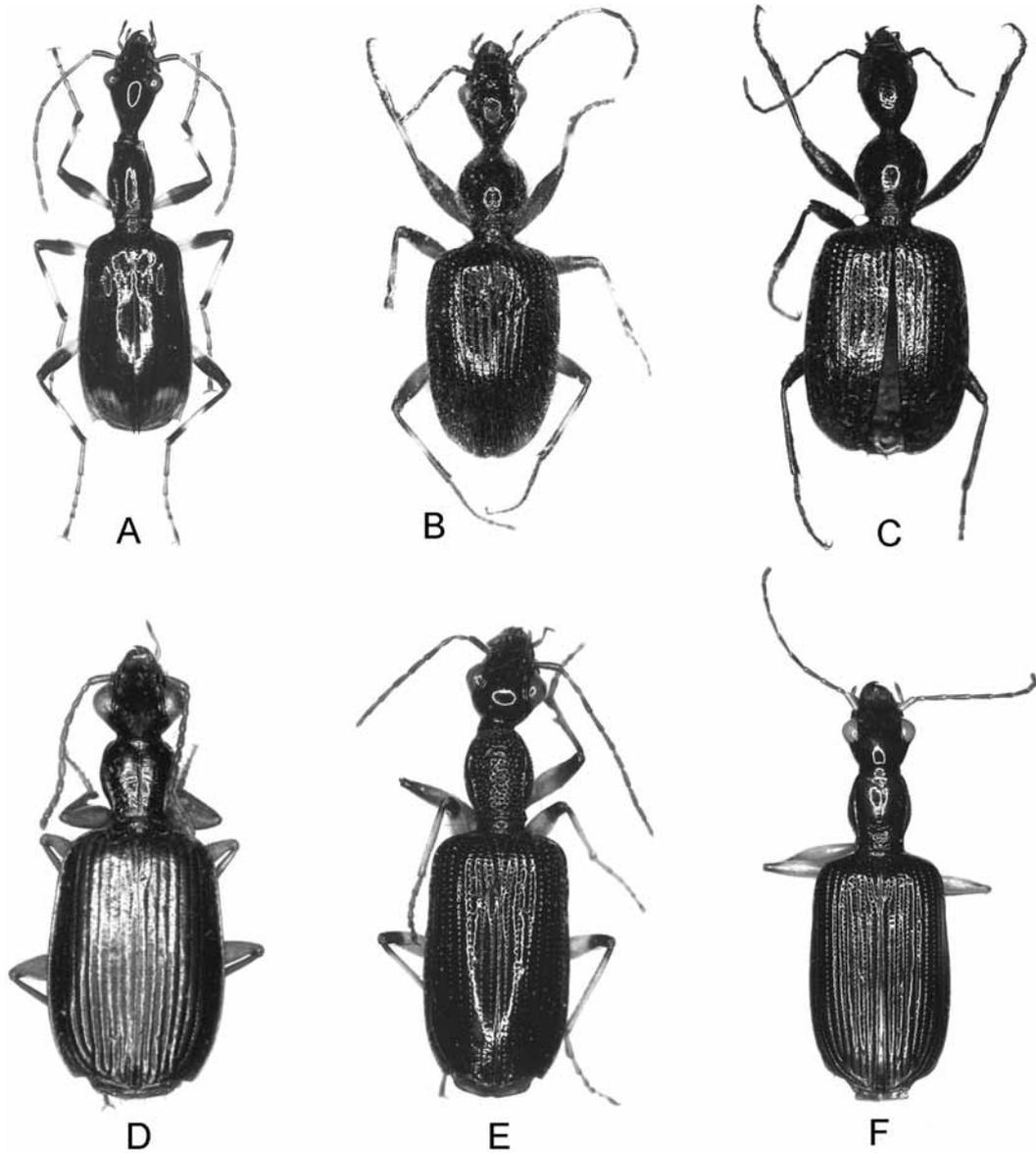


FIG. 34. Habitus of Australian Odacanthinae (length in brackets). A, *Clarenzia quadridens* Darlington (11.3mm). B, *Deipyrus palustris* (Sloane) (8.0mm). C, *Deipyrus inops* sp. nov. (8.5mm). D, *Dicraspeda sublaevis* (Macleay) (5.9mm). E, *Dicraspeda obscura* (Castelnau) (6.8mm). F, *Eudalia obliquiceps tozeria* subsp. nov. (8.2mm).

Only three Australian genera belong to the highly evolved odacanthine lineage that matches our idea of typical odacanthines. *Archicolliuris* and *Clarenzia* do not reach the extreme degree of adaptation in the structure of their tarsi to life on grass and reeds. However, *Ophionea*, with

deeply excised 4th tarsomeres, dense clothing with elongate hairs on the lower surface of tarsi, and conspicuous, probably aposematic, red-and-black colouration, form the most evolved group within the subfamily.

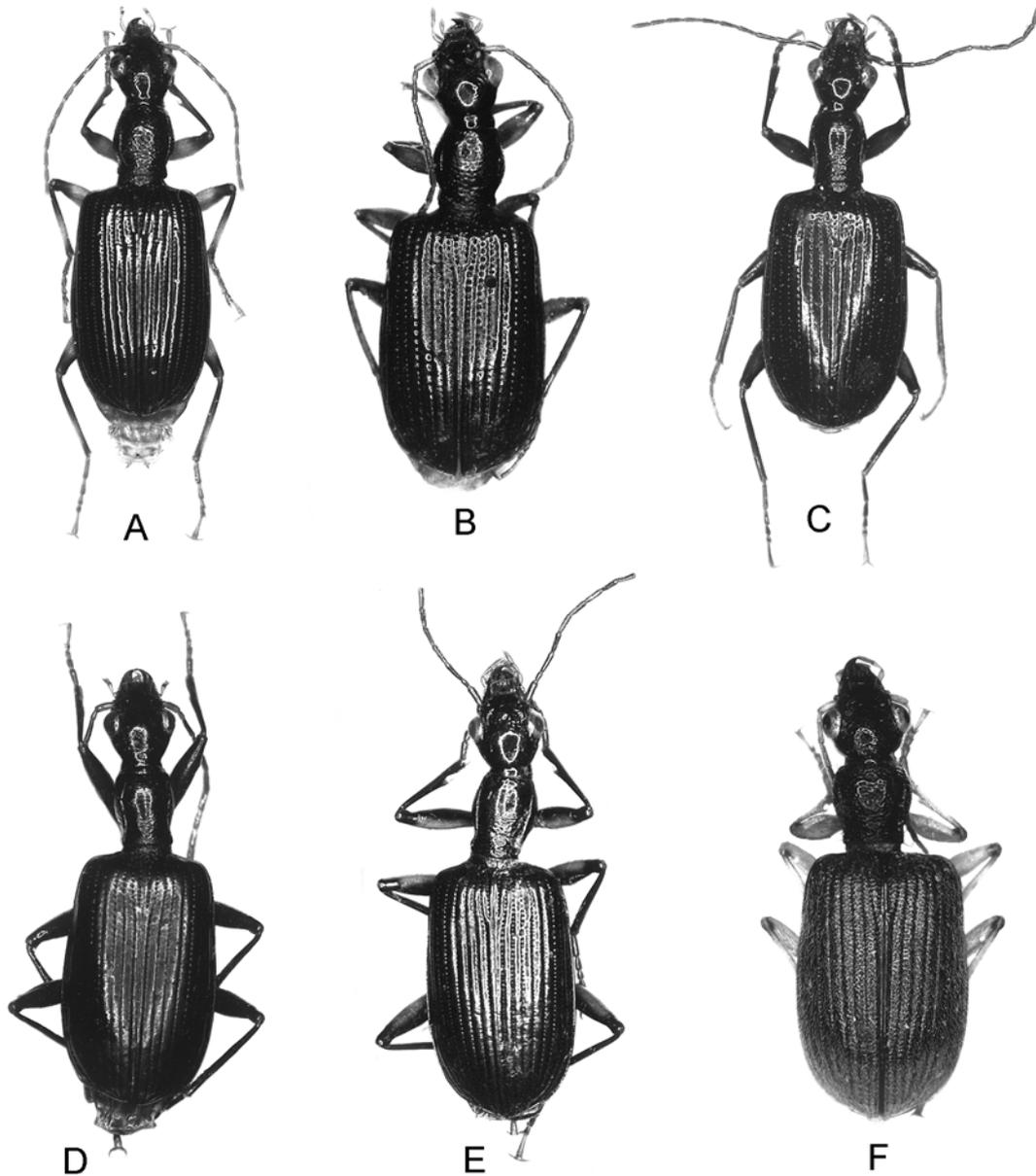


FIG. 35. Habitus of Australian Odacanthinae (length in brackets). A, *Eudalia obliquiceps punctifrons* subsp. nov. (8.5mm). B, *Eudalia minor* sp. nov. (6.9mm). C, *Eudalia reticulata* sp. nov. (8.6mm). D, *Eudalia atrata* sp. nov. (9.7mm). E, *Eudalia femorata* sp. nov. (9.8mm). F, *Eudalia latipennis latipennis* (Macleay) (8.4mm).

Archicolliuris and *Ophionea*, however, are widespread in the Oriental Region and are recent immigrants from the north that reached Australia during, or perhaps even after, the Glacial Period (*Archicolliuris*), or at least not before the meeting

of the Australian plate with the SE Asian insular belt in late Miocene. The Australian-New Guinean *Clarencia* is probably descended from a 'Colliuris'-like ancestor that may have also evolved during this period.

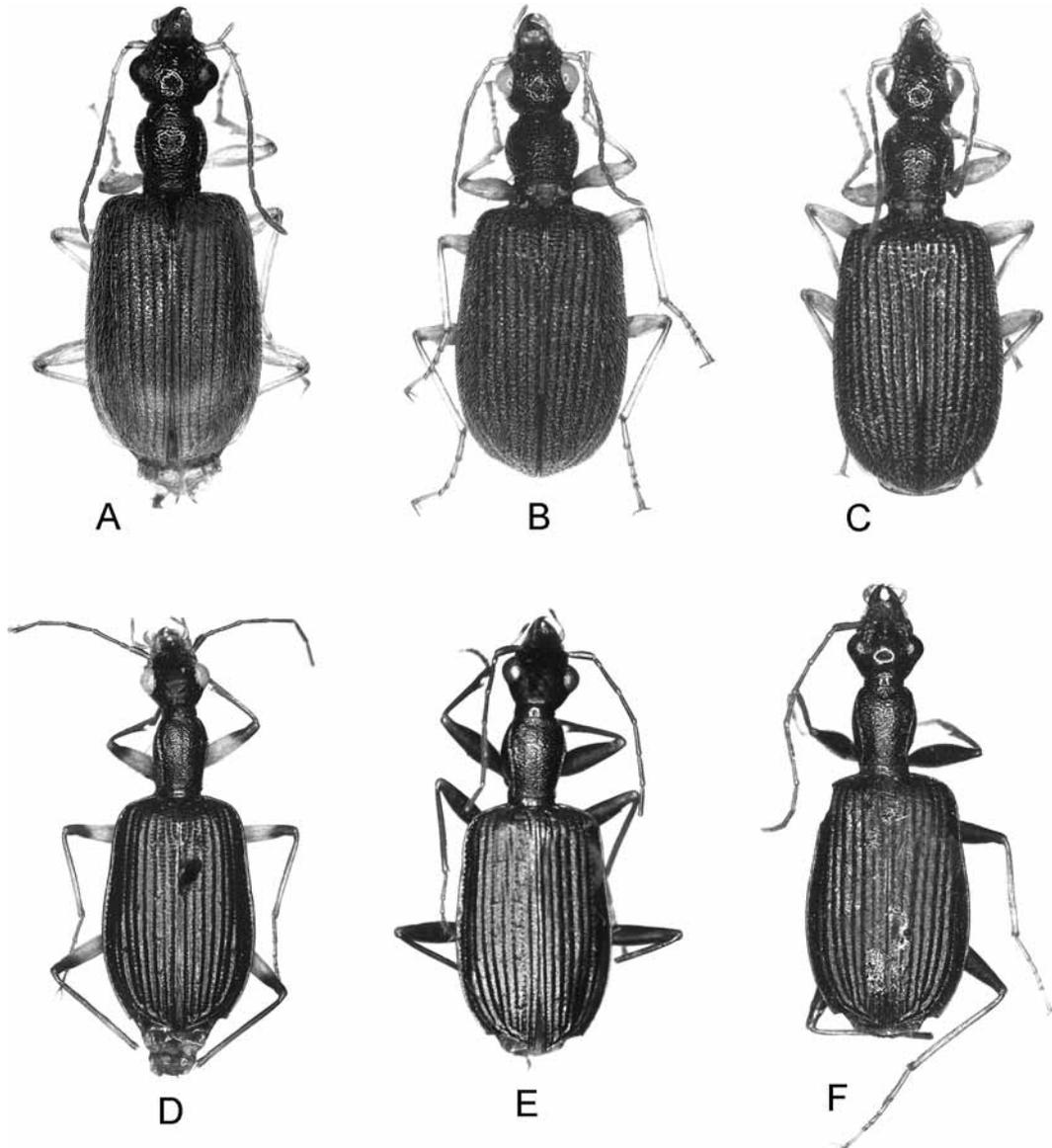


FIG. 36. Habitus of Australian Odacanthinae (length in brackets). A, *Eudalia latipennis interioris* subsp. nov. (8.0mm). B, *Eudalia waterhousei* Castelnau (9.1mm). C, *Eudalia punctipennis* sp. nov. (8.7mm). D, *Gestroania amplipennis* (Gestro) (8.1mm). E, *Gestroania froggatti* (Macleay) (8.0mm). F, *Gestroania setipennis*, sp. nov. (8.4mm).

Lachnothorax tokkia and *Dicraspeda longiloba* are recent immigrants to Australia and the latter species, with its deeply excised 4th tarsomeres, belongs to a group of New Guinean centred species within the diverse *Dicraspeda*

that in certain aspects is more evolved than any Australian members of the genus.

All other Australian genera are indigenous, systematically rather isolated, and may have originated in this continent. Considering the

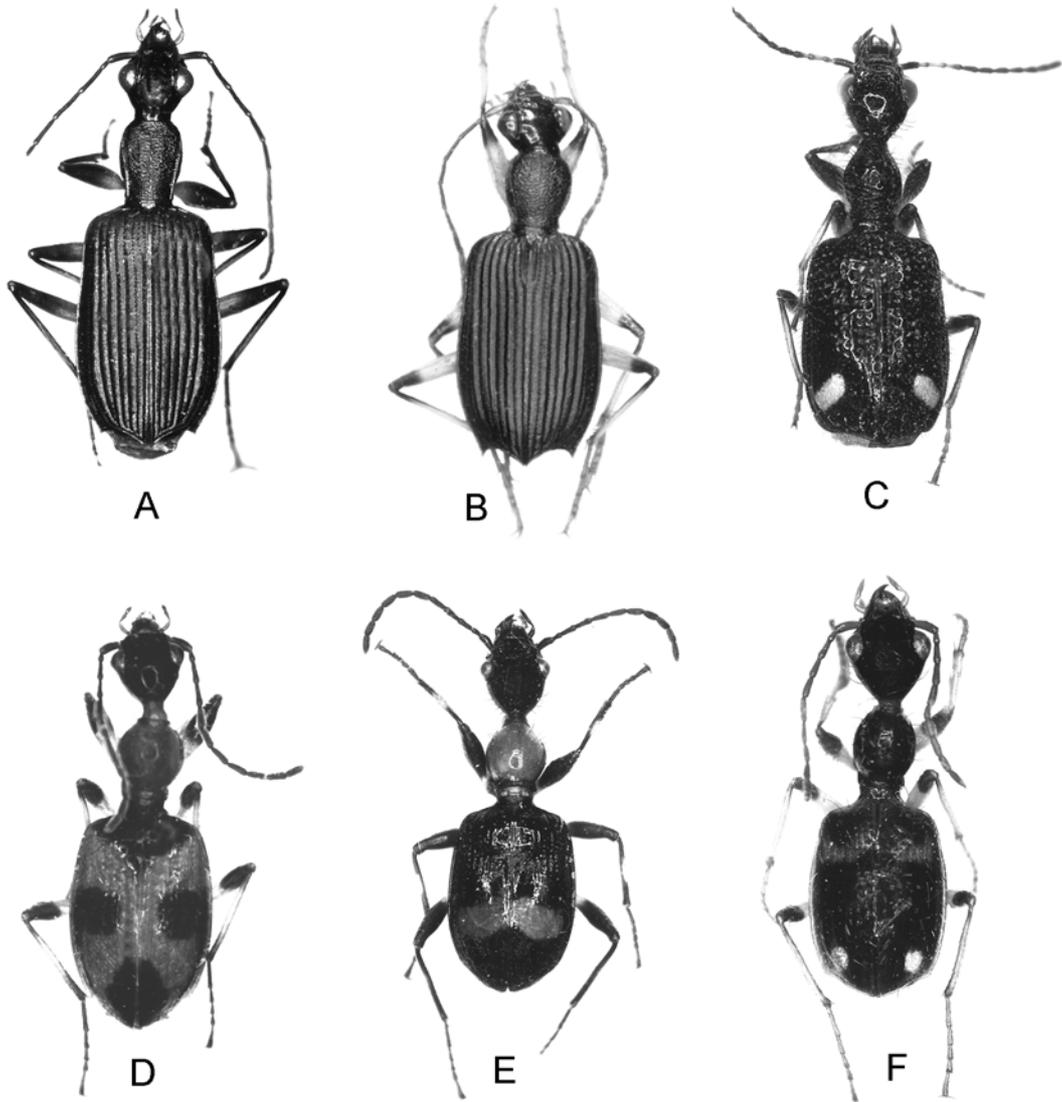


FIG. 37. Habitus of Australian Odacanthinae (length in brackets). A, *Gestroania storeyi* sp. nov. (8.8mm). B, *Giachinoana carinipennis* Baehr (7.1mm). C, *Lachnothorax tokkia* Gestro (5.6mm). D, *Myrmecodemus globulicollis* (Macleay) (7.0mm). E, *Myrmecodemus riverinae* (Sloane) (6.9mm). F, *Myrmecodemus formicoides* (Sloane) (4.9mm).

remarkable plesiotypic structure of several genera, these may be remnants of a very old, basal odacanthine stock, or they may even represent the original stock. This would mean that Australia was where the evolution of odacanthines started.

In this context, and if *Porocara* is the most plesiotypic genus, it should be kept in mind that

the habitats where species of *Porocara* occur, namely banks of rivers in tropical wet and dry savannah, are very old ones, generally containing a very old fauna. Among other Carabidae, this Australian river bank fauna includes several plesiotypic genera, e.g. *Megacephala* (*sensu lato*) of Cicindelinae, *Perileptus* of Trechinae, *Tasmanitachoides* of Bembidiinae, *Loxandrus* of

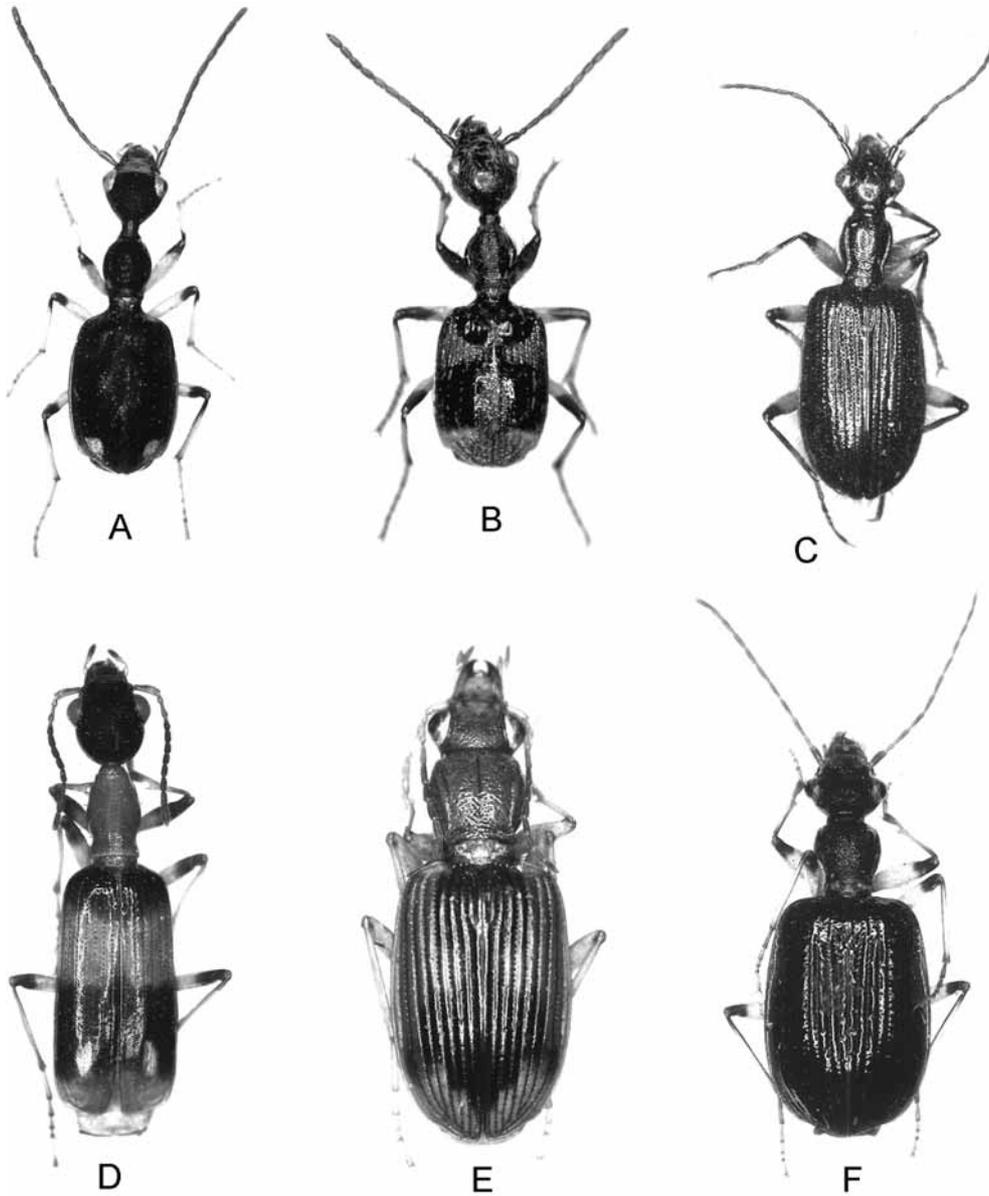


FIG. 38. Habitus of Australian Odacanthinae (length in brackets). A, *Myrmecodemus lucai* sp. nov. (5.3mm). B, *Myrmecodemus pilosellus* sp. nov. (4.6mm). C, *Neoeadalia nigra* (Sloane) (9.8mm). D, *Ophionea thouzeti* Castelnau (6.6mm). E, *Porocara punctata kimberleyana* Baehr (8.2mm). F, *Renneria kamouni* Baehr (6.8mm).

Pterostichinae and others. In spite of the radical short-term substrate changes that occur periodically due to floods, this seems to be a very stable habitat that has perhaps not changed significantly in its structure through much of the Tertiary.

The Australian odacanthine fauna is surprisingly speciose which is not expected in a continent that is exceptionally dry. The fauna is also surprisingly diverse in morphology and habits, and seems to include the most primitive existing odacanthines of all. Superimposed on

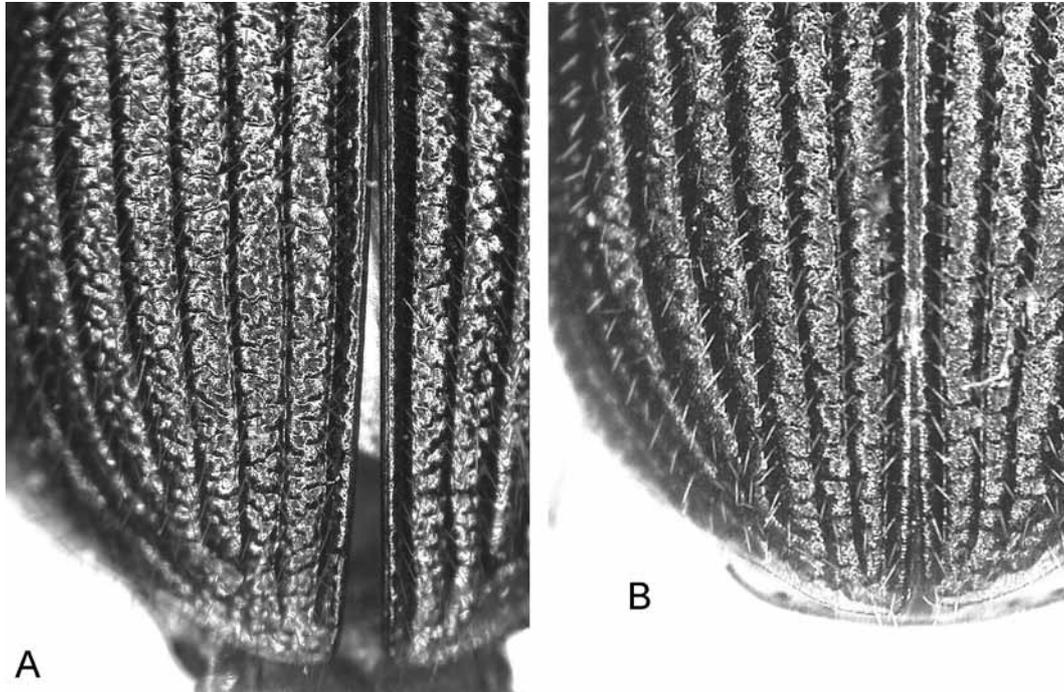


FIG. 39. Structure of elytra. A, *Eudalia waterhousei* Castelnau. B, *Eudalia punctipennis* sp. nov.

this ancient fauna are some 'modern' groups that immigrated more recently from the Oriental Region, but have not yet spread beyond the wet northern tropical and eastern subtropical parts of Australia where they remain restricted to rain forest or swampy areas.

CHECKLIST OF AUSTRALIAN ODACANTHINAE

This checklist was added to update Moore et al. (1987) which is doubled from 25 to 50 species with 5 additional subspecies (Baehr, 1986, 1996b,c, 1999, 2000, 2003b,c; Framenau et al. 2002; this paper) and additional 2 species whose occurrence in Australia is doubtful. Oriental *Ophionea indica* Thunberg was accidentally introduced to WA by ship (Baehr, 1996b).

For ease of use the checklists are alphabetical, and the most important generic synonyms are added. *Colliuris* has been divided into genera according to the systematic list of extant Carabidae of Lorenz (1998). References to the recorded range of the species are given as states, but with added N (northern), S (southern), W (western), E (eastern) where necessary. The ranges are compiled from information taken from

Darlington (1968), Moore et al. (1987), from my papers mentioned above, and from my own collecting and determining experience.

The only species of which I have not seen any Australian specimens are *Archicolliuris par* (Darlington) and *Discraspeda dubia* (Gestro), both New Guinean species that are claimed to occur in Australia at the northern tip of Cape York Peninsula.

Genus <i>Anasis</i> Castelnau, 1867	
<i>howittii</i> Castelnau, 1867	S Vic
Genus <i>Archicolliuris</i> Liebke, 1931	
<i>occipitalis</i> sp. nov.	N Qld
[<i>par</i> Darlington, 1968.	N Qld]
<i>splendissimus</i> sp. nov.	N Qld
Genus <i>Aulacolius</i> Sloane, 1923	
<i>triordinatus</i> Sloane, 1923.	N Qld, NNT
Genus <i>Basistichus</i> Sloane, 1917	
<i>micans</i> (Macleay, 1864)	N Qld, NNT, N WA
Genus <i>Clarencia</i> Sloane, 1917	
<i>aliena</i> (Pascoe, 1860).	N NSW, E. Qld
<i>angusticollis</i> (Macleay, 1888)	N Qld, NNT, N WA
<i>breviceps</i> sp. nov.	NNT
<i>quadridens</i> Darlington, 1968	N Qld

- Genus *Deipyrus*** Liebke, 1938
inops sp. nov. 'Australia'
palustris (Sloane, 1910) NQld
- Genus *Dicraspeda*** Chaudoir, 1862
Macrocentra Chaudoir, 1869
Loxocara Sloane, 1907
Philemonia Liebke, 1938
[*brunnea* Chaudoir, 1862]. [NQld]
brunneipennis (Sloane, 1917) NQld
dubia (Gestro, 1879) NQld
glabrata Baehr, 2003 NQld
longiloba (Liebke, 1938) NQld
nitida (Sloane, 1917) NQld
obscura (Castelnau, 1867) NQld, N NT, N WA
sublaevis (Macleay, 1888) NQld, NNT, N WA
- Genus *Eudalia*** Castelnau, 1867
atrata sp. nov. CE NSW
castelnau Sloane, 1910 E Vic, S NSW
femorata sp. nov. CENS
latipennis (Macleay, 1864) Qld
l. latipennis (Macleay, 1864) NQld
l. interioris subsp. nov. SW Qld
macleayi Bates, 1871 E Vic, ACT, S. NSW
minor sp. nov. NW Qld
obliquiceps Sloane, 1917 NQld, NNT, N WA
o. obliquiceps Sloane, 1917 NQld
o. punctifrons subsp. nov. NW Qld, NNT, N WA
o. tozeria subsp. nov. NE Qld
punctipennis sp. nov. NW NT, N WA
reticulata sp. nov. NQld
waterhousei Castelnau, 1867 NT, C WA
- Genus *Gestroania*** Liebke, 1938
amplipennis (Gestro, 1875) SWA
froggatti (Macleay, 1888) NWA
setipennis sp. nov. NQld, NNT
storeyi sp. nov. NNT, NWA
- Genus *Giachinoana*** Baehr, 2003
carinipennis Baehr, 2003 NNT, NWA
- Genus *Lachnothorax*** Motschulsky, 1862
Lasiocolliuris Liebke, 1931
tokkia Gestro, 1875 NQld
- Genus *Myrmecodemus*** Sloane, 1923
Subgenus *Myrmecodemus* Sloane s. str.
formicoides (Sloane, 1910) NNT
globulicollis (Macleay, 1888) NNT, NWA
lucai sp. nov. NNT
riverinae (Sloane, 1890) NVIC, SCNSW
- Subgenus *Trichodemus*** subgen nov.
pilosellus sp. nov. NQld

- Genus *Neoeadalia*** gen nov.
nigra (Sloane, 1900)
. NVIC, SCNSW, Qld, NNT, NWA

- Genus *Ophionea*** Klug, 1821
Casnoidea Castelnau, 1834

- Subgenus *Ophionea*** s. str.
australiana (Baehr, 1996) NQld, NNT, NWA
[*indica* (Thunberg, 1784)] [WA (introduced)]
puncticollis Sloane, 1923 NQld, NNT
storeyi (Baehr, 1996) NQld, NWA
thouzeti Castelnau, 1867 EQld, NNT

- Genus *Porocara*** Sloane, 1917
glabrata Baehr, 1986 NWA
nigricollis Baehr, 1986 NNT
occidentalis Baehr, 1986 NWA
punctata Sloane, 1917 NQld, NNT, NWA
p. punctata Sloane, 1917 NQld
p. arnhemensis Baehr, 1996 NNT
p. kimberleyana Baehr, 1986 NW NT, NWA
ulrichi Baehr, 1996 NNT, NWA

- Genus *Renneria*** Baehr, 1999
kamouni Baehr, 1999 NNT, NWA

CHECKLIST OF ODACANTHINAE FROM NEW GUINEA, NEW BRITAIN, SOLOMON ISLANDS AND NEW HEBRIDES

Darlington (1968, 1971) enumerated 9 genera (if *Philemonia* and *Macrocentra* are regarded as subgenera of *Dicraspeda*) and 21 species from New Guinea. Occurrences of *Andrewesia apicalis*, *Ophionea indica*, *O. nigrofasciata*, and *Dicraspeda brunnea* are doubtful because they have not been confirmed by specimens.

Andrewesia apicalis, *Ophionea indica*, and *O. nigrofasciata* are Oriental species the occurrence of which was doubted by Darlington (1968, 1971) though the last two occur on Sulawesi (Baehr, 2003a). The doubtful status of *Dicraspeda brunnea* is discussed above.

10 genera with 28 species are recorded from New Guinea, 5 from New Britain, 3 from Solomon Islands (of which *Dicraspeda inermis* and *Ophionea brandti* are apparently endemic), and *Dicraspeda hebridarum* is endemic to the New Hebrides.

Archicolliuris par, *Basistichus micans*, *Clarencia quadridens*, *Dicraspeda dubia*, *Dicraspeda longiloba*, *Lachnothorax tokkia*, *Ophionea puncticollis*, and *Ophionea thouzeti* are common to New Guinea and Australia. However, as demonstrated in Baehr (2000) and in the present paper, these faunas are not yet

adequately recorded, and additional shared species will no doubt be found.

Species in common between Australia and New Guinea are either Australian elements that are only found in southern New Guinea in environments similar to those of northern Australia (*Basistichus micans*, *Clarencia quadridens*, *Ophionea puncticollis*, *O. thouzeti*), or they are northern elements originated in New Guinea (*Archicolluris par*, *Dicraspeda dubia*, *D. longiloba*), or even more widely through the Oriental region (*Lachnothorax tokkia*).

The checklist shows how little is known of the odacanthine fauna of W New Guinea (Irian Jaya) which is neglected in Darlington (1968) because at that time almost none had been collected there. Since then the situation has improved through the efforts of recent collectors (Baehr, 1995, 1996a, b, 1997b, 1998, 2003c), but the fauna is still far from documented. Little can be said about how well the faunas of the Bismarck Archipelago, Solomon Islands, and New Hebrides are documented, but they are apparently similarly incomplete.

- [**Genus Andrewesia** Liebke, 1938]
 [apicalis (Chaudoir, 1872)] ?
- Genus Archicolluris** Liebke, 1931
 papua (Darlington, 1968) PNG
 par (Darlington, 1968) PNG, New Britain
- Genus Basistichus** Sloane, 1917
 micans (Macleay, 1864) E PNG
- Genus Clarencia** Sloane, 1917
 papua Darlington, 1968 NG
 quadridens Darlington, 1968 NG
- Genus Crassacantha** Baehr, 1995
 bidens Baehr, 1995 IJ
- Genus Dicraspeda** Chaudoir, 1862
 Macrocentra Chaudoir, 1869
 Loxocara Sloane, 1907
 Philemonia Liebke, 1938
 bispinosa Darlington, 1968 PNG
 [brunnea Chaudoir, 1862] ?
 denticulata Baehr, 1997 PNG
 dubia (Gestro, 1879) IJ
 hybridarum Baehr, 1998 New Hebrides
 inermis Louwerens, 1970 Solomon Is
 intermedia Baehr, 1997 IJ
 laticollis Baehr, 1997 IJ
 loebli Baehr, 1996 PNG
 longiloba (Liebke, 1938) PNG, New Britain
 minuta Baehr, 1998 PNG
 nigripes Baehr, 2003 PNG

- obsolata Baehr, 1996 IJ: Biak I.
 papuensis Baehr, 2003 PNG
 quadrispinosa (Chaudoir, 1869)
 NG, New Britain, Solomon Is
- ullrichi Baehr, 1996 PNG
 violacea (Sloane, 1907) NG, New Britain
- Genus Dobodura** Darlington, 1968
 armata Darlington, 1968 PNG
- Genus Eucolluris** Liebke, 1931
 fuscipennis (Chaudoir, 1850) PNG
 rossi (Darlington, 1968) PNG
- Genus Eudalia** Castelnau, 1867
 anomala Darlington, 1968 NG
- Genus Lachnothorax** Motschulsky, 1862
 Lasiocolluris Liebke, 1931
 tokkia Gestro, 1875 PNG
- Genus Ophionea** Klug, 1821
 Casnoidea Castelnau, 1834
 brandti (Baehr, 1996) Solomon Is
 gestroi Maindron, 1910 PNG, New Britain
 [indica (Thunberg, 1784)] ?
 [nigrofasciata Schmidt-Göbel, 1846]. ?
 puncticollis Sloane, 1923 PNG
 thouzeti Castelnau, 1867 PNG

ACKNOWLEDGEMENTS

I am greatly indebted especially to G.B. Monteith (QM), E. Matthews (SAM), R. Storey (MDPI), K. Walker (MV) and T.A. Weir (ANIC) for the kind loan of ample and very important material and many types. Tom Weir is also thanked for his patient re-examination of certain types. I also thank the following colleagues for kindly providing me with types or material: S. Bily (Prague), R. Davidson (Pittsburgh), T. Deuve (Paris), P.M. Giachino (Turin), S. Grove (Cairns), S. Hine (London), O. Merkl (Budapest), R. Poggi (Genoa), L. Toledano (Verona), M. Uhlig (Berlin) and L. Zerche (Eberswalde).

LITERATURE CITED

- BAEHR, M. 1986. Revision of the Australian ground-beetle genus *Porocara* Sloane (Coleoptera: Carabidae: Odacanthinae). Australian Journal of Zoology 34: 717-731.
1995. A new genus of Odacanthinae from New Guinea (Insecta, Coleoptera, Carabidae). Spixiana 18: 45-48.
- 1996a. Three new species of the genus *Dicraspeda* Chaudoir from New Guinea (Insecta, Coleoptera, Carabidae, Odacanthinae). Spixiana 19: 137-146.
- 1996b. The ground beetle genus *Casnoidea* Castelnau. Taxonomy, phylogeny,

- zoogeography (Insecta, Coleoptera, Carabidae, Odacanthinae). *Invertebrate Taxonomy* 10: 1041-1084.
- 1996c. The Australian ground beetle genus *Porocara* Sloane. Second revision (Insecta, Coleoptera, Carabidae, Odacanthinae). *Spixiana* 19: 253-265.
- 1996d. Two new species of the genus *Lachnothorax* Motschoulsky from the Philippines (Insecta: Coleoptera: Carabidae: Odacanthinae). *Stuttgarter Beiträge zur Naturkunde. Serie A (Biologie)*: 539: 1-8.
- 1997a. A new species of the genus *Casnoidea* Castelnau from Java (Coleoptera, Carabidae, Odacanthinae). *Entomofauna* 18: 385-389.
- 1997b. Three further new species of the genus *Dicraspeda* Chaudoir from New Guinea (Coleoptera, Carabidae, Odacanthinae). *Mitteilungen der Münchner Entomologischen Gesellschaft* 87: 29-37.
1998. Two further new species of the genus *Dicraspeda* Chaudoir from New Guinea and the New Hebrides (Insecta, Coleoptera, Carabidae, Odacanthinae). *Entomofauna* 19: 173-184.
1999. A new genus of Odacanthinae from northern central Australia (Insecta, Coleoptera, Carabidae). *Coleoptera* 2: 115-119.
2000. Some genera and species of ground beetles new to Australia (Coleoptera: Carabidae). *Memoirs of the Queensland Museum* 46: 9-14.
- 2003a. New taxa and new records of Odacanthinae from Sulawesi (Insecta, Coleoptera, Carabidae). *Spixiana* 26: 57-63.
- 2003b. A peculiar new genus of Odacanthinae from northern Australia (Insecta, Coleoptera, Carabidae). *Monographie di Museo di Scienze naturale de Torino* 35: 99-110.
- 2003c. A revision of the *brunnea*-group of the genus *Dicraspeda* Chaudoir (Coleoptera, Carabidae, Odacanthinae). *Spixiana* 26: 249-267
- BATES, H.W. 1871. Notes on Carabidae, and descriptions of new species. (No. 5). *Entomologists Monthly Magazine* 8: 29-34.
- CASTELNAU, F.L. de 1834. *Études Entomologiques, ou Description d'Insectes Nouveaux et Observations sur leur Synonymie*. Méquinon-Marvis, Paris. 94 pp.
1867. Notes on Australian Coleoptera. *Royal Society of Victoria*: 139 pp.
1868. Notes on Australian Coleoptera. *Transactions of the Royal Society of Victoria* 8: 95-225.
- CHAUDOIR, M. de 1862. Matériaux pour servir à l'étude des Carabiques. 3e partie. *Bulletin de la Société Imperiale des Naturalistes de Moscou* 35: 275-320.
1872. Observations sur quelques genres de Carabiques, avec la description d'espèces nouvelles. *Bulletin de la Société Imperiale des Naturalistes de Moscou* 45: 382-420.
- CSIKI, E. 1932. *Coleopterorum Catalogus*. Vol. III. Carabidae III: Pars 124, Harpalinae VII: 1279-1598. (W. Junk, Berlin).
- DARLINGTON, P.J. Jr 1968. The Carabid beetles of New Guinea. Part III. Harpalinae continued. Perigonini to Pseudomorphini. *Bulletin of the Museum of Comparative Zoology* 137: 1-253.
1971. The Carabid beetles of New Guinea. Part IV. General considerations: analysis and history of the fauna. *Taxonomic supplement. Bulletin of the Museum of Comparative Zoology* 142: 129-337.
- ESCHSCHOLTZ, J.F. 1829. *Zoologischer Atlas, enthaltend Abbildungen und Beschreibungen neuer Thierarten während des Flottencapitains von Kotzebue zweiter Reise um die Welt auf der Russisch-Kaiserlichen Kriegsschalupp Predpriaetie in den Jahren 1823-1826*, II: 13 pp. Berlin: Reimer.
- FRAMENAU, V.W., MANDERBACH, R. & BAEHR, M. 2002. Riparian gravel banks of upland and lowland rivers in Victoria (south east Australia): Arthropod community structure and life history patterns in a longitudinal gradient. *Australian Journal of Zoology* 50: 103-123.
- GESTRO, R. 1875. Nota sopra alcuni Carabici. *Annali di Museo Civico di Storia Naturale de Genova* 7: 840-894.
1879. Descrizione di nuove specie di Coleotteri raccolte nella regione Austro-Malese dal signor L. M. D'Albertis. *Annali di Museo Civico di Storia Naturale Giacomo Doria* 14: 552-565.
- KLUG, J.C.F. 1821. *Entomologiae Brasilianae specimen*. *Nova Acta Academiae Leopoldo Carlinae* 10: 277-324.
- LIEBKE, M. 1931. Die afrikanischen Arten der Gattung *Colliuris* Degeer (Col. Car.). *Revue de Zoologie et de Botanique Africaines*, 20: 280-301.
1938. Denkschrift über die Carabiden-Tribus Colliurini. *Festschrift für Prof. Dr Embrik Strand* 4: 37-141.
- LÖBL, I. & SMETANA, A. (eds) 2003. *Catalogue of Palaearctic Coleoptera 1. Archostemata – Myxophaga – Adephega*. (Apollo Books: Stenstrup).
- LORENZ, W. 1998. Systematic List of extant Ground Beetles of the World (Insecta Coleoptera "Geadephaga": Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodidae). (Printed by the author: Tutzing).
- MACLEAY, W.J. 1864. Descriptions of new genera and species from Port Denison. *Transactions of the Entomological Society of New South Wales* 1: 106-130.
1888. The insects of King's Sound and its vicinity. *Proceedings of the Linnean Society of New South Wales* 3: 443-480.
- MOORE, B. P. 1965. Australian larval Carabidae of the subfamilies Harpalinae, Licininae, Odacanthinae

- and Pentagonicinae (Coleoptera). Proceedings of the Linnean Society of New South Wales 90: 157-163.
- MOORE, B.P., WEIR, T.A. & PYKE, J.E. 1987. Rhysodidae and Carabidae. Pp. 17-320. In Zoological Catalogue of Australia, 4. (Australian Government Publishing Service: Canberra).
- PASCOE, F.P. 1860. Notices of new or little-known genera and species of Coleoptera. Journal of Entomology 1: 36-64.
- SLOANE, T.G. 1890. Studies in Australian Entomology. No. IV. New genera and species of Carabidae. Proceedings of the Linnean Society of New South Wales 5: 641-653.
1900. Studies in Australian Entomology. No. IX. New species of Carabidae (with notes on some previously described species, and synoptic lists of species). Proceedings of the Linnean Society of New South Wales 24: 535-584.
1910. Studies in Australian Entomology. No. XVI. New species of Carabidae. Proceedings of the Linnean Society of New South Wales 35: 378-406.
1917. Carabidae from tropical Australia (New genera and species, notes and synonymy, and synoptic tables. Tribes Scaritini, Harpalini, Odacanthini, Lebiini, and Helluonini). Proceedings of the Linnean Society of New South Wales 42: 406-438.
1923. Studies in Australian Entomology. No. XVIII. New genera and species of Carabidae (Scaritini, Pterostichini, Merizodini, Bembidiini, Trechini, Odacanthini, Panagaeini, Licinini, and Lebiini). Proceedings of the Linnean Society of New South Wales 48: 17-39.