

A Revision of the Genera *Scymnodes* Blackburn and *Apolinus* Pope et Lawrence (Coleoptera: Coccinellidae)

Author(s) :J. Poorani and Adam Ślipiński

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A REVISION OF THE GENERA *SCYMNODES* BLACKBURN AND *APOLINUS* POPE ET LAWRENCE (COLEOPTERA: COCCINELLIDAE)

J. POORANI¹ and ADAM ŚLIPIŃSKI²

¹National Bureau of Agriculturally Important Insects, P.B. No. 2491,
H.A. Farm Post, Bellary Road, Bangalore 560 024, Karnataka, India;
e-mail: pooranij@gmail.com

²CSIRO Entomology, GPO Box 1700, Canberra ACT 2601 Australia;
e-mail: Adam.Slipinski@csiro.au

Abstract.— The genera *Scymnodes* Blackburn, 1889 and *Apolinus* Pope et Lawrence, 1990 (Coleoptera: Coccinellidae), endemic to Australia and New Guinea, are revised. Fifteen species of *Scymnodes* are treated of which seven are new (*S. howdenorum* sp. nov., *S. luteohirtus* sp. nov., *S. aciculatus* sp. nov., *S. metallicus* sp. nov., *S. magnus* sp. nov., *S. riedeli* sp. nov. and *S. hirtus* sp. nov.). *Scymnodes koebeli* var. *immaculatus* Blackburn, *Platyomus baccaeformis* Blackburn, *Scymnodes (Dolinus) maculiger* Weise, *Scymnodes koebeli* var. *eugeniae* Blackburn, *Scymnodes (Dolinus) tristis* Weise, and *Scymnodes (Dolinus) fulvipes* Weise, are new junior synonyms of *Scymnodes koebeli* Blackburn (**new synonyms**). Lectotypes are designated for *Scymnodes koebeli* var. *eugeniae* Blackburn, *Scymnodes (Dolinus) tristis* Weise, and *Scymnodes (Dolinus) fulvipes* Weise. *Rhizobius laticollis* Weise, 1913 is transferred to *Scymnodes* (**new combination**) and its lectotype is designated. Seven species of *Apolinus* are recognised, of which two are new (*A. irian* sp. nov., *A. jaya* sp. nov.). *Scymnodes chapuisi* Weise, 1923 is a new junior synonym of *A. lividigaster* (Mulsant, 1853) and *Scymnodes spilotus* Weise (1923), *Scymnodes papuanus* Weise (1918), and *Scymnodes punctiger* Weise (1918) are new junior synonyms of *A. terminalis* (Blackburn, 1895) (**new synonyms**) and lectotypes are designated for all these species. *Scymnodes longicornis* Weise, 1918 is transferred to *Apolinus* (**new combination**) and a lectotype is designated. *Rhynchortalia wallacii* Crotch, 1874 is transferred to *Apolinus* (**new combination**) and is reduced to a subspecies of *A. lividigaster* (**stat. nov.**). All the species are described, illustrated, and keyed. Biological information is provided if available.



Key words.— Coleoptera, Coccinellidae, *Scymnodes*, *Apolinus*, revision, Australia, New Guinea, new species

INTRODUCTION

The genera *Scymnodes* Blackburn (1889) and *Apolinus* Pope et Lawrence (1990) (Coleoptera: Coccinellidae: Orkaliinae) are endemic to Australia and New Guinea and were historically treated under

a single genus, *Scymnodes* Blackburn in a vaguely defined “Scymnini”. *Scymnodes* was included in Coccidulinae by Korschefsky (1931), but Chazeau *et al.* (1989) returned it to Scymninae (Scymnini) and this was later followed by Pope and Lawrence (1990). Kovář (1997) included it in the newly erected

subfamily Ortaliinae but did not assign it in either Noviini or Ortaliini. Ślipiński (2007) included it under a broadly defined Coccidulini (including Scymnini and Ortaliini) in his conspectus of Australian genera of lady beetles.

Weise (1923) was the first to recognize the existence of the two distinct groups within *Scymnodes* when he erected the subgenus *Dolinus*. Unfortunately due to the misinterpretation of the type species of *Scymnodes*, his concept of that subgenus was wrong which was later corrected by Pope and Lawrence (1990). They acknowledged that the species of the two groups differed on a range of characters, including both adult and larval morphology and, apparently, food preferences, but continued to treat them as subgenera under *Scymnodes*. Ślipiński (2007) formally recognised *Apolinus* as an independent genus.

Scymnodes and *Apolinus* share some characters such as armed tibial apices, sexual dimorphism in tarsal claws, completely recurved postcoxal lines and similar body form. The members of *Apolinus* are particularly remarkable for their uniform external appearance and lack of significant features suitable for identification except for male genitalia. The structure of the male genitalia in *Apolinus* with the parameres usually fully, or rarely, only anteriorly fused with the penis guide, is unique and uniform across the genus and very different from that of *Scymnodes*.

Robert Pope initiated a revisionary study on *Scymnodes* during his research on Australian Coccinellidae in the 1980's. Pope and Lawrence (1990) discussed the status of *Scymnodes* and its erstwhile subgenera and provided a species checklist, but did not comprehensively deal with any species except *S. bellus* Pope et Lawrence and its unusual larva. Subsequently, the present authors took up this work as part of a revision of Australian Coccinellidae with generous support from the Australian Biological Resources Study (ABRS) and CSIRO.

MATERIAL AND METHODS

The following abbreviations are used for specimens and type material examined for this study.

- AM – The Australian Museum, Sydney;
- ANIC – Australian National Insect Collection, Canberra;
- BMNH – The Natural History Museum, London;
- BPBM – Bishop Museum, Honolulu;
- CMN – The Canadian Museum of Nature, Ottawa;
- CNC – Canadian National Insect Collection, Ottawa;
- DARI – Insect Collection, New South Wales Department of Agriculture, Orange, New South Wales;
- MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, Mass;

- MNHN – Museum National d'Histoire Naturelle, Paris;
- MVM – Museum Victoria, Melbourne;
- NAQS – Northern Australia Quarantine Strategy, AQIS, Mareeba;
- NHMB – Naturhistorisches Museum, Basel;
- NRM – Naturhistoriska Riksmuseet, Stockholm;
- NTMD – Northern Territory Museum and Art Gallery, Darwin;
- NTDA – Northern Territory Department of Primary Industry and Fisheries, Darwin;
- NZAC – New Zealand Arthropod Collection, Landcare, Auckland;
- QDPIB – Queensland Department of Primary Industries, Brisbane;
- QDPIM – Queensland Department of Primary Industries, Mareeba;
- QECB – Quarantine Entomological Collection, Broome;
- QMB – Queensland Museum, Brisbane;
- SAM – South Australian Museum, Adelaide;
- TMB – Természettudományi Múzeum, Budapest;
- UCCC – University of Cambridge, Crotch Collection;
- UQIC – University of Queensland Insect Collection, Brisbane;
- USNM – United States National Museum, Washington, D.C.;
- VAIC – Victoria Agricultural Insect Collection, Department of Primary Industries, Knoxfield;
- ZMB – Zoologisches Museum, Humboldt Universität, Berlin.

Measurements were made using an ocular micrometer attached to a dissecting microscope as follows: (TL) total length, from apical margin of clypeus to apex of elytra; (PL) pronotal length, from the middle of anterior margin to margin of basal foramen; (PW) pronotal width at widest part; (EL) elytral length along suture, including scutellum; and (EW) elytral width across both elytra at widest part. Male and female genitalia were dissected, cleared in 10% potassium hydroxide (KOH) and examined and photographed in glycerol. After examination, the genitalia were stored in genitalia microvials and pinned with the respective specimens. The photographs of the whole beetles, their genitalia, and other structures were executed on a digital camera and composite images generated with Auto-Montage software (Version 4.0, Synoptics Ltd., <http://www.syncroscopy.com>). The distribution maps were produced from BioLink (Version 2.0, CSIRO Entomology, <http://www.biolink.csiro.au>).

TAXONOMY

Scymnodes Blackburn

Scymnodes Blackburn, 1889: 189. Type species: *Scymnodes difficilis* Blackburn, 1889: 190, by monotypy.

Scymnodes (Dolinus) Weise, 1923: 140. Type species: *Scymnodes (Dolinus) fulvipes* Weise, 1923: 139, designated and synonymised by Pope and Lawrence 1990: 242; Korschefsky, 1931: 85.

Description. Length 1.75–6.50 mm. Form broad oval to elongate or oblong-oval, dorsum moderately to strongly convex, densely pubescent, often in symmetrical patterns (Figs 1–20). Anterior clypeal margin truncate to deeply emarginate between lateral projections. Eyes large, finely faceted, with dense, long, erect pubescence, with a sharp, deep emargination (post-antennal canthus) near antennal insertions. Antennae 10-segmented, with a compact, three-segmented club. Maxillary palps somewhat geniculate, terminal palpomere usually elongate cylindrical, occasionally more transverse, apical margin obliquely truncate. Pronotum double bordered on all sides, outer border usually broadly produced around anterolateral corners, anterolateral margins separated from disc by a deep groove; anterolateral corners often with a raised / swollen area set with coarse, closely spaced punctures. Elytra with lateral margins simply reflexed, narrowly grooved; laterally barely to strongly emarginate a little before or around middle on level with hind legs. Prosternal intercoxal process with a pair of carinae, often apically confluent forming inverted Y with a short stem and long arms in most species. Mesoventrite distinctly transverse, without discrimen. Pronotal hypomera with a deep incision or groove on either side near their junction with anterolateral corners of prosternum, running outward and / or backward to nearly as far as posterolateral corners in some species, always indicated to some degree. Elytral epipleura weakly to fairly deeply descending on level of hind legs, rarely foveolate. Number of visible abdominal sternites six, or rarely, five, in both sexes. Abdominal postcoxal lines (Figs 29–36) complete, occasionally nearly complete but obliterated near their junction with anterior corner of first ventrite (Fig. 36), or, rarely distinctly incomplete (Fig. 35) (varies from complete to incomplete in *S. styx* (Blackburn)); symmetrically or asymmetrically curved, closely approaching or overlapping posterior margin of ventrite. Legs with tibiae externally strongly angulate or not; mid- and hind tibiae with a pair of apical spurs. Tarsal claws sexually dimorphic, in female all appendiculate, in male fore- and midtarsi bifid, hind tarsi appendiculate. Male genitalia with tegmen (Figs 41–77) always bearing free parameres; penis guide apically symmetrical or asymmetrical. Female genitalia with elongate triangular genital plates with apical styli, with a true infundibulum or a sclerotized bursal process, very characteristically shaped and diagnostic in most species (Figs 78–91), occasionally absent.

Related genera. *Scymnodes* is similar to many species of *Rhyzobius* Stephens (1829) in general

facies and shares the following characters with the latter: eyes with dense, erect pubescence; presence of a deep incision or groove on pronotal hypomera near the anterolateral corners of prosternum; a convex, swollen area below anterolateral corners of pronotum (commonly present in both genera, but not always); and complete abdominal postcoxal lines. *Rhyzobius* is separated from *Scymnodes* mainly by the more coarsely faceted and usually obliquely positioned eyes, longer, 11-segmented antennae, and the appendiculate tarsal claws, not sexually dimorphic. *Scymnodes* is apparently related to *Apolinus* in possessing similar body form, armed tibial apices, and complete postcoxal lines, but differs in having 10-segmented antenna, distinctly emarginated eyes, thickened and bordered pronotal margins, and a different aedeagal structure (Ślipiński, 2007).

Distribution. Endemic to Australia, New Guinea and neighbouring islands.

Biology. Some species are known to feed on coccids and aleurodids (Hemiptera), while one species, *S. bellus* Pope and Lawrence, has been observed feeding on ants belonging to the genus *Iridomyrmex* Mayr (Pope and Lawrence 1990). Specimens are collected mostly during summer months in flight intercept traps and by beating vegetation (Ślipiński 2007).

Key to the species of *Scymnodes*

1. Pronotum without a distinct swollen or convex area around anterolateral corners. Anterior clypeal margin shallowly emarginate and densely punctate **2**
- . Pronotum distinctly swollen and thickly punctured within anterior angles. Anterior clypeal margin deeply emarginate or subtruncate **3**
2. Length 3.7–4.0 mm. Elytral punctation distinctly dual. Dorsum entirely black (Fig. 1). Anterolateral corners of pronotum with a narrow groove. Male genitalia (Figs 46–48) and spermatheca (Fig. 78). Australia *bellus* Pope et Lawrence
- . Length 2.5–3.0 mm. Elytral punctures of one size. Dorsal colour pattern as in Figs 3, 4. Anterolateral corners of pronotum with a more pronounced groove. Male genitalia (Figs 49–51) and spermatheca (Fig. 83). Australia *consimilis* (Blackburn)
3. Frons sparsely punctured, especially on disc where punctures are usually several diameters apart and not larger than eye facets **4**
- . Frons closely punctured, punctures separated by one diameter or less and distinctly larger than eye facets **10**
4. Elytra brown with a greenish metallic sheen (Fig. 2); suberect elytral setae brown, others almost white. Lateral elytral borders only shallowly curved

- at the level of hind coxae. Male genitalia (Figs 41, 42) and spermatheca (Fig. 79) as illustrated. Australia *difficilis* Blackburn
- . Elytra black, all elytral setae of the same colour, white or pale yellowish. Lateral elytral borders strongly curved at level of hind coxae. Male genitalia and spermatheca not as above 5
5. Anterior clypeal margin shallowly emarginate. Head with pale patches on either side of a median dark area; pronotum with a broad triangular red patch on either side extending from anterior angles to almost hind margin (Fig. 6), pubescence of dorsal side whitish. Male genitalia (Figs 43–45) and spermatheca (Fig. 87) as illustrated. Australia *obscuricollis* (Blackburn)
- . Anterior clypeal margin distinctly, deeply emarginate. Head and pronotal color, pubescence and genitalia not as above 6
6. Dorsum dark brown to black, pubescence on pronotum and elytra white. Prosternal carinae very broadly bell-shaped. Postcoxal line variable, complete to distinctly incomplete (Fig. 35). Male genitalia (Figs 62, 63) as illustrated. Australia *styx* (Blackburn)
- . Dorsal coloration and other combination of characters not as above 7
7. Dorsum black, body covered with yellowish or yellowish and white pubescence. Postcoxal lines complete 8
- . Dorsal color pattern not as above. Postcoxal lines complete or incomplete 9
8. Body outline elongate oval, dorsum with uniform, short yellowish pubescence (Fig. 7). Male genitalia (Figs 64, 65) and spermatheca (Fig. 90) as illustrated. Australia *fulvohirtus* (Blackburn)
- . Body outline broad oval (Fig. 8). Pubescence on pronotum yellow, very conspicuous, long, and dense on lateral flanks, medially sparser; elytra with a mixture of erect and recumbent silvery white hairs. Male genitalia (Figs 66–68) as illustrated. Australia *luteohirtus* sp. nov.
9. Head and pronotum black, elytra black with a metallic bluish or aeneous reflection (Fig. 19). Male genitalia (Figs 74, 75) and spermatheca (Fig. 86) as illustrated. New Guinea *metallicus* sp. nov.
- . Head reddish-testaceous, pronotum black with anterior and lateral margins narrowly testaceous, elytra black with apical one-fifth reddish-testaceous (Fig. 16). Pronotum with inner groove on anterolateral corners not conspicuously produced. All tibiae externally strongly angulate. Male genitalia (Figs 76, 77) as illustrated. New Guinea *riedeli* sp. nov.
10. Abdominal postcoxal line apically incomplete 11
- . Abdominal postcoxal line apically complete 12
11. Dorsum black with yellow markings on pronotum

- and apices of elytra (Fig. 10). Australia and New Guinea *aciculatus* sp. nov.
- . Body robust, large (6.5 mm). Elytra metallic bluish violet with reddish apices (Fig. 17). New Guinea *magnus* sp. nov.
12. Body distinctly elongate, oblong-oval (Fig. 20); elytral punctation dual, comprising irregular, very deeply impressed coarse punctures and much finer punctures in interstices. New Guinea *laticollis* (Weise)
- . Body broadly-oval (Fig. 11–15, 18); elytral punctation variable, mostly dual 13
13. Spermatheca (Figs 80, 82) with a distinct sclerotized bursal process. Australia *koebeleri* group
- . Spermatheca (Fig. 81) without a distinct bursal process 14
14. Elytra dark pitchy brown to black (Fig. 5). Male genitalia (Figs 59–61) as illustrated. Australia *howdenorum* sp. nov.
- . Elytra black with reddish brown apices. Male genitalia (Figs 72, 73) as illustrated. New Guinea *hirtus* sp. nov.

Review of species of *Scymnodes* Blackburn

Scymnodes bellus Pope et Lawrence

(Figs 1, 29, 46–48, 78, 117)

Scymnodes (*Scymnodes*) *bellus* Pope et Lawrence, 1990: 244 (Holotype male, apparently lost; Type locality: Brindabella Range, ACT).

Diagnosis. This species can be identified by its comparatively larger size, completely black oblong-oval body with dual punctation on elytra (Fig. 1), and the externally angulate tibiae. The male genitalia (Figs 46–48) are also diagnostic.

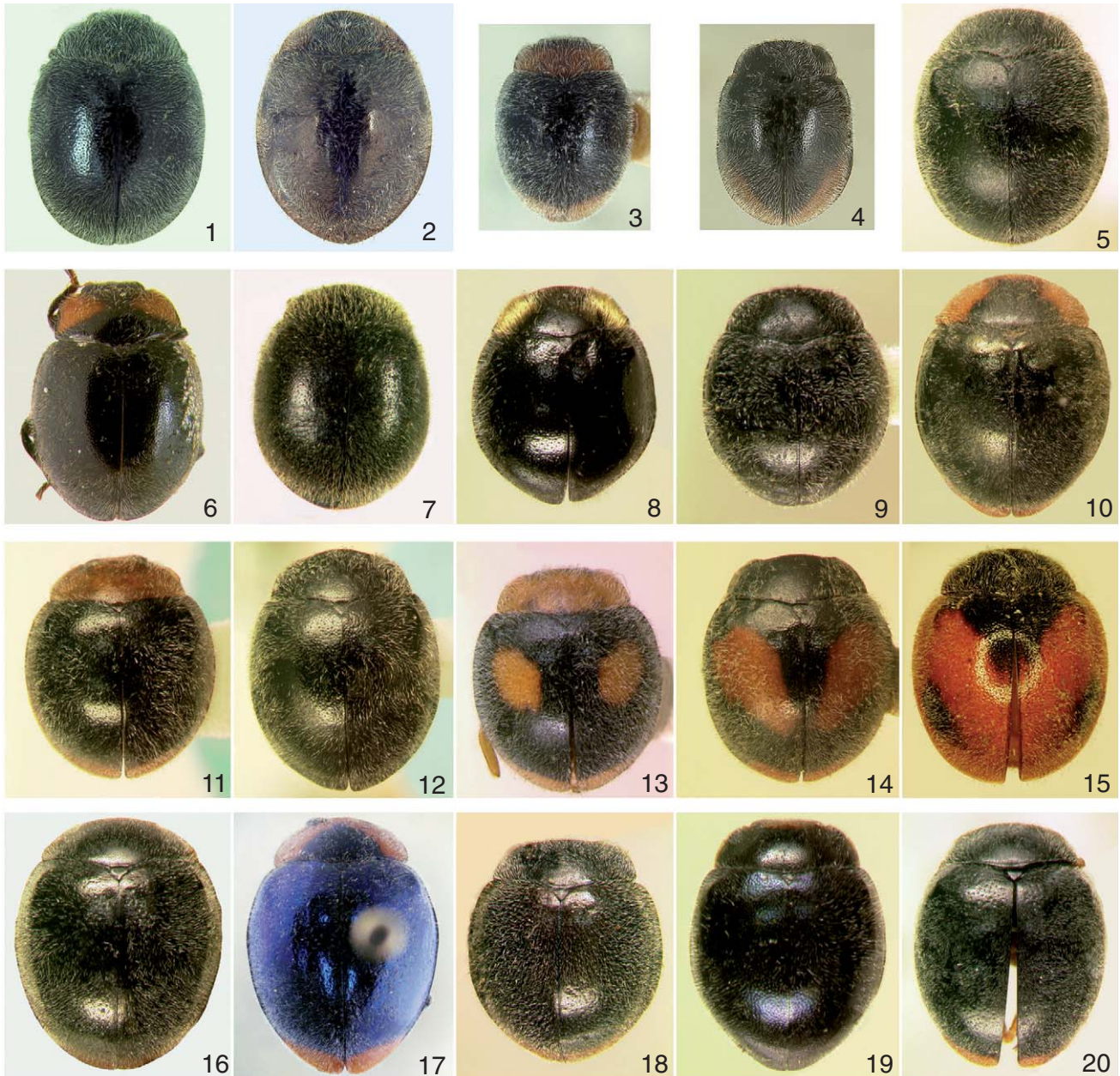
Description. Length: 3.75–4.00 mm. TL/TW: 1.25–1.32; PL/PW: 0.51; EL/EW: 1.05–1.09. Form (Fig. 1) oblong-oval, convex, covered with silvery white pubescence arranged in a symmetrical pattern. Dorsum black, antennae and mouthparts yellowish-testaceous. Ventral side black except lateral sides of abdominal ventrite I and ventrites II–VI yellowish-testaceous, tarsi darker, testaceous. All tibiae anteriorly externally angulate. Abdominal postcoxal line (Fig. 29) complete. Male genitalia (Figs 46–48) and spermatheca (Fig. 78) as illustrated.

Types. “Holotype male” (damaged, only head, pronotum and left elytron remaining on card point), with the following data: “Piccadilly Circus, Brindabella Range ACT 24 Oct, 7 Nov.1982, under bark of living *Eucalyptus*, adults emgd in lab, J. & N. Lawrence/Emgd. 20 Dec./ Label by R.G. Booth “Presumably this specimen is the Holotype of *Scymnodes bellus* Pope

& Lawr. Det. R.G. Booth, 2003" (ANIC). Paratypes: Piccadilly Circus Brindabella Rge ACT 24 Oct. 1982 J.F. Lawrence coll./ under *Eucalyptus* bark/ Emgd 25 Dec/ PARATYPE *Scymnodes bellus* Pope & Lawr. Det. R.G. Booth 2003, one female, mounted with the larval exuviae, one male with same data, except emgd. 20 Dec.; one paratype with abdomen missing, with the same collection data, Emgd 1 Jan/ VOUCHER SPECIMEN ILL

(green label)/ PARATYPE *Scymnodes bellus* Pope & Lawr. (Blue label), larval exuviae mounted with specimen (ANIC).

Other specimens examined. ACT: Piccadilly Circus Brindabella Ra. ACT 1200 m 13.iii.1987, *Euc. dalrympleana* & *pauciflora*, C. Reid (1, ANIC). **Victoria:** 12 km SE Merrijig, Vic. Howqua River, 30 Nov. 1971, Neboiss (2, MVM); Victoria, C. French's Coll., 6.1.08



Figures 1–20. *Scymnodes* spp., dorsal habitus. (1) *S. bellus* Pope et Lawrence; (2) *S. difficilis* Blackburn; (3–4) *S. consimilis* (Blackburn); (5) *S. howdenorum* sp. nov.; (6) *S. obscuricollis* (Blackburn); (7) *S. fulvohirtus* Blackburn; (8) *S. luteohirtus* sp. nov.; (9) *S. styx* (Blackburn); (10) *S. aciculatus* sp. nov.; (11–15) *S. koebeli* Blackburn; (16) *S. riedeli* sp. nov.; (17) *S. magnus* sp. nov.; (18) *S. hirtus* sp. nov.; (19) *S. metallicus* sp. nov.; (20) *S. laticollis* (Weise).

(1, MVM); **New South Wales:** Yetholme, 1.8.1966, C.E. Chadwick, under bark, *Eucalyptus* sp. (1, DARL).

Distribution. Australia: ACT, New South Wales, Victoria (New record).

Notes. The holotype of *S. bellus* is apparently lost as the data labels of the remnants of “presumably the holotype” (label attached by R.G. Booth, BMNH) do not exactly match those provided by Pope & Lawrence (1990) for the holotype.

Biology. The larva, described in detail by Pope et Lawrence (1990), was found in association with small ants of the genus *Iridomyrmex* Mayr (Hymenoptera: Formicidae) on *Eucalyptus*, possibly it also feeds on coccoids (Hemiptera).

Scymnodes consimilis (Blackburn)

(Figs 3, 4, 31, 49–51, 83, 117)

Platyomus consimilis Blackburn, 1895: 244 (Holotype, BMNH; Type locality: Queensland).

Scymnodes consimilis: Korschefsky, 1931: 85.

Scymnodes (Scymnodes) consimilis: Pope and Lawrence, 1990: 243.

Diagnosis. *S. consimilis* differs from other *Scymnodes* by the small oblong-oval body, black to partially or fully red pronotum and the apically testaceous elytra (apical marking often extended upwards up to middle, Figs 3–4), head with dense punctation, shallowly emarginate clypeal margin, and the greatly produced anterolateral border of pronotum. The colour pattern is similar to *S. koebelei*, but the latter has a more strongly rounded and convex dorsum and truncate anterior clypeal margin.

Description. Length: 2.50–3.00 mm; TL/TW: 1.37–1.45; PL/PW: 0.50; EL/EW: 1.07–1.16.

Male. Form oblong-oval (Figs 3, 4), weakly convex, covered with dense silvery white pubescence. Head black. Pronotum black, occasionally dark reddish brown with black patches on anterior or posterior margins or a median black area, or completely dark reddish with dark brown to black border. Elytra black with an apical yellow-orange marking (Fig. 3), extending along lateral margins almost to mid length in some examples (Fig. 4). Ventral side with mouthparts, pronotal hypomera, tarsi of all legs and abdomen yellowish testaceous, pro-, meso- and metaventrites dark pitchy brown to black; in some examples, entire ventral side except abdominal ventrites dark pitchy brown to black, tarsi lighter brown.

Head with clypeal margin shallowly emarginate; densely and evenly punctate, punctures slightly larger than eye facets, separated by one diameter or less, slightly coarser towards clypeal margin. Pronotum evenly punctate, punctures separated by 2–4 diameters, progressively coarser towards sides, particularly anterolateral corners, anterolateral corners without

a conspicuous swollen area, outer border anterolaterally prominently produced. Elytra very shallowly emarginate laterally a little before middle; densely pubescent with a mixture of recumbent, procumbent and suberect pubescence, the latter conspicuous on lateral sides. Punctures on elytra more deeply impressed than those on pronotum, separated by 1–2 diameters, on either side of disc more or less of the same size, dorso-lateral, lateral and apical areas with clear dual punctation, coarser punctures fewer. Pronotal hypomeron with an oblique groove on either side running backward and outward from near its junction with anterior angle of prosternum. Prosternal intercoxal process with broad, bell-shaped carina with a short broad stem, in some examples posteriorly divergent. Five abdominal ventrites clearly visible, 6th slightly or not visible in both sexes. Abdominal postcoxal line (Fig. 31) complete, obtriangular, touching posterior margin of ventrite for a short distance, area enclosed evenly punctate, except for a narrow, smooth area adjoining postcoxal line. Ventrite V with posterior margin deeply concave, ventrite VI slightly less deeply emarginated. Male genitalia (Figs 49–51) as illustrated, with parameres as long as basal piece (Fig. 50) in lateral view, penis guide cylindrical, narrowed into a short, tubular apex in ventral view (Fig. 49); penis (Fig. 51) as illustrated.

Female similar to male, except abdominal ventrites V and 6 posteriorly subtruncate and arcuate, respectively. Spermatheca (Fig. 83) as illustrated.

Types. Holotype male (on card point, labeled “T”) “TYPE (red bordered circular label)/ 5907 (in red)/ Blackburn coll. 1910–236/ *Platyomus consimilis*, Blackb. (BMNH).

Other specimens examined. AUSTRALIA: Nov. Holl. / *Cibdelina obscura* m. (in Weise’s handwriting (1, NRM); Australia, Koebele/ *Platyomus consimilis* Blackb (1, BPBM). **Queensland:** 7 km NE of Tolga, 9.i.1987, xi.1987, 23.i.1987, 27.i.1987, Storey & De Faveri, light trap (3, QDPIM; 2, ANIC); 14 km S. Mt. Carbine Station Creek, 2.i.1989, H & A Howden (1, CMN). **New South Wales:** Tamsworth (1, ANIC); Tamsworth, xi.92, Lea, (3, SAM); Armidale, x.92, Lea (2, SAM); Dorrigo, W. Heron/ SAMS (1, SAM). **South Australia:** Adelaide, 1.viii.12, Griffith/ Griffith Collection (1, SAM); Bordertown, 22.x.1963/ J. Sedlacek (1, BPBM); 35.16S 140.55E, Pinna-roo, v.1989, *Acacia, Cassia, Euc.*, C. Reid (1, ANIC).

Distribution. Australia: Queensland, New South Wales and South Australia.

Scymnodes obscuricollis (Blackburn)

(Figs 6, 30, 43–45, 87, 118)

Platyomus obscuricollis Blackburn, 1895: 244. (Holotype male, BMNH; Type locality: Queensland, near Cairns).

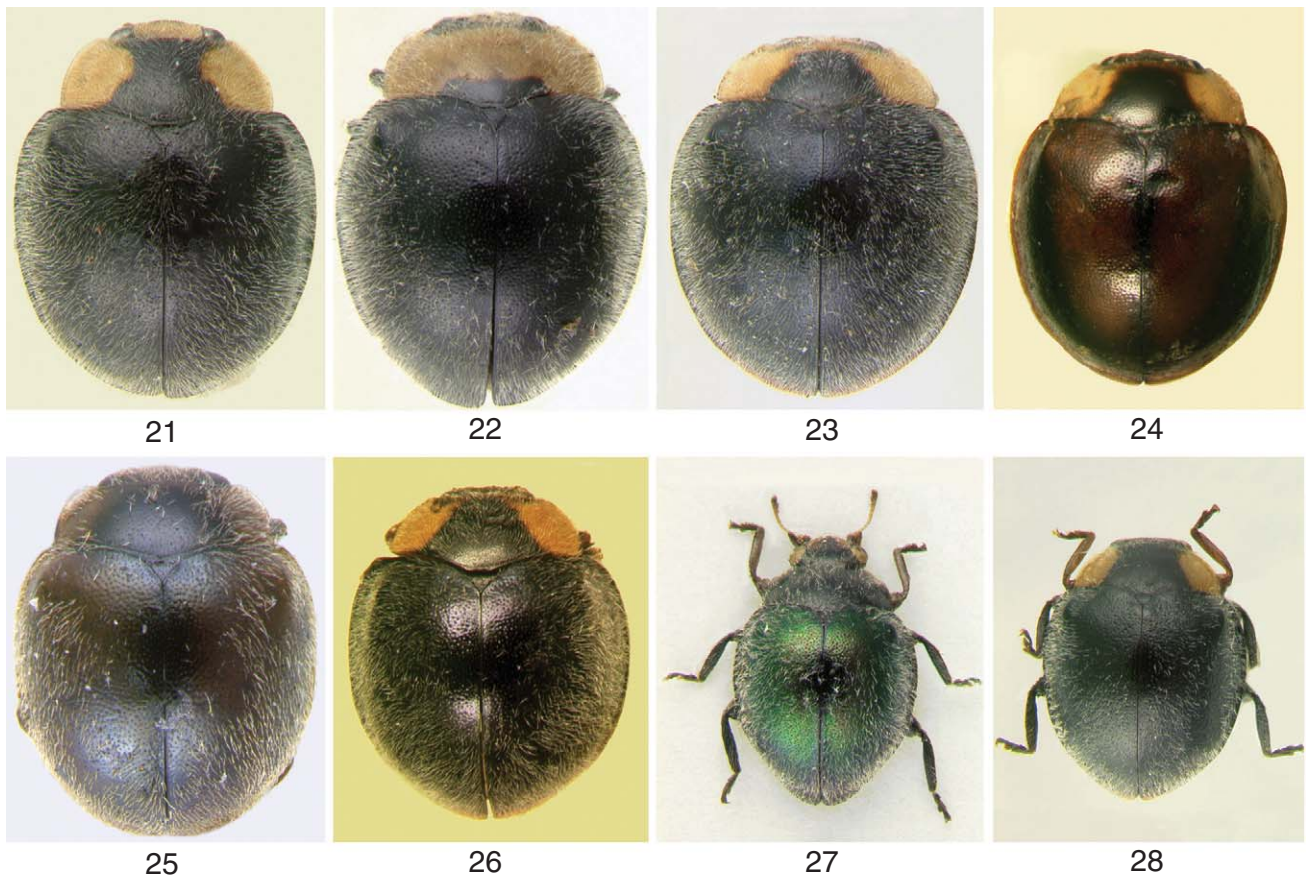
Scymnodes (Scymnodes) obscuricollis Pope & Lawrence, 1990: 243 (name misspelled).

Diagnosis. This species can be recognized by the dorsal colour pattern (Fig. 6), very deeply sigmoidal lateral emargination of elytra, much deeper than in the other species of *Scymnodes*, and the shallowly semi-circular abdominal postcoxal line (Fig. 30), not touching posterior margin of abdominal ventrite I. The male genitalia (Figs 43–45) are diagnostic.

It appears to be very closely related to *S. bellus*. The male genitalia are very similar to those of *S. bellus*, but with short apical hairs of parameres, not exceeding the apex of penis guide in profile. In *S. bellus*, apical hairs of parameres are much longer and go beyond the apex of penis guide, elytra are clearly dually punctate in both sexes, pronotal anterolateral corners lack a clear swollen area, and the postcoxal plates are more broadly and deeply semicircular. Besides, *S. bellus* is dorsally fully black. It also appears to be similar to *S. difficilis* in terms of fine elytral punctation, but *S. difficilis* is distinctly metallic, with much more widely separated eyes and laterally barely emarginate elytra.

Description. Length: 3.50 mm; TL/TW: 1.36; PL/PW: 0.54; EL/EW: 1.07.

Female. Form (Fig. 6) oblong-oval, convex. Head black; pronotum reddish-testaceous, with a median, broadly triangular black marking, anterior margin narrowly black, lateral margins dark brown; elytra black, apically narrowly testaceous. Ventral side dark pitchy brown to black, except antennae, mouthparts, pronotal hypomera, outer parts of prosternal arms, abdominal ventrites 3–6 and tarsi of all legs testaceous. Head with clypeal margin shallowly emarginate, densely punctate, punctures subequal to slightly larger than eye facets, separated by less than to a little more than one diameter, slightly finer in posterior half. Pronotum with punctures on disc dense, more or less regular, shallowly impressed, separated by 2–4 diameters, coarser punctures confined to lateral margins and anterolateral areas; anterolateral corners with a moderately swollen area marked with coarse, close and deeply impressed punctures. Elytra with a very deep, S-shaped / sigmoidal lateral emargination a little before middle; punctures on disc more or less uniformly fine, only a little more deeply impressed than those on pronotum, separated by 2–6 diameters, dually punctate on lateral sides with a few larger punctures,



Figures 21–28. *Apolinus* spp., dorsal habitus. (21) *A. lividigaster* (Mulsant); (22) *A. cribratus* (Blackburn); (23, 24) *A. terminalis* (Blackburn); (25) *A. rotundus* (Blackburn); (26) *A. longicornis* (Weise); (27) *A. irian* sp. nov.; (28) *A. jaya* sp. nov.

particularly between humeral callus and lateral emargination, and elytral apices. Prosternal carinae apically convergent with a short stem. Pronotal hypomera with lateral grooves on either side near their junction with anterior corners of prosternum. Abdominal postcoxal lines (Fig. 30) broadly semicircular and complete, not close to posterior margin of ventrite I, area bound by postcoxal line densely punctate, punctures separated by less than their own diameter. Elytral epipleura with a deep, distinctly sigmoidal declivity on level with hind legs. Posterior margin of abdominal ventrite V broadly, and that of 6 narrowly, arcuate. Legs with tibiae anteriorly externally angulate. Tarsal claws appendiculate. Spermatheca (Fig. 87) as illustrated, with a distinct infundibulum.

Male similar to female in general appearance and coloration. Head dark brown to black, with four ill-defined, paler testaceous spots – two below clypeal margin and two on either side of eyes, interspaces brownish. Pronotum with a broad triangular marking occupying nearly entire posterior margin, reaching up to middle, joining a smaller, inverted triangle-shaped marking on anterior margin (in one of the two males examined, only the basal triangular marking present). Elytra fully black; elytral punctures larger and more closely spaced than in females, separated by 3–4 diameters, much coarser around elytral apices, separated by less than 1–2 diameters. Fore and mid-tarsal claws bifid, hind tarsal claws appendiculate, with a short basal tooth. Posterior margin of abdominal ventrite V medially deeply, and VI more shallowly, emarginate. Male genitalia (Figs 43–45) as illustrated.

Types. Holotype male, specimen on card point pasted on rectangular card; “TYPE (red bordered circular label)/ T 5908 N. Qu./ Blackburn coll. 1910-236/ *Scymnodes obscuricollis*, Blackb./ HOLOTYPE *Platyomus obscuricollis* Blackb. 1895 det. R.G. Booth, 2006” (BMNH).

Other specimens examined. Queensland: Brisbane, Koebele (1, ANIC; 1, BPBM).

Distribution. Australia: Queensland.

Remarks. This is the only species where the elytral punctation in female and male are different, with the female having much finer and denser punctation on disc, as observed by Blackburn (1895). However, in both sexes, the lateral emargination of elytra is very deeply sigmoidal, much deeper than that in other species of *Scymnodes*.

***Scymnodes difficilis* Blackburn**
(Figs 2, 41, 42, 79, 117)

Scymnodes difficilis Blackburn, 1889: 190 (Holotype, BMNH; Type locality: South Australia, near Adelaide or Port Lincoln District).

Scymnodes difficilis: Korschefsky, 1931: 85.

Scymnodes (Scymnodes) difficilis: Pope and Lawrence, 1990: 243.

Diagnosis. This species can be distinguished by the brown to black elytra with a metallic coppery reflection (Fig. 2) and the unique setal pattern on dorsal side, with a mixture of recumbent silvery white hairs and erect, long, ferruginous hairs, the latter particularly conspicuous on the lateral sides and apices of elytra.

Description. Length: 3.12–3.84 mm; width: 2.34–2.94 mm. TL/TW: 1.28–1.36; PL/PW: 0.45–0.50; EL/EW: 1.02–1.07.

Male. Form (Fig. 2) narrow and elongate oval, dorsum moderately convex. Head black, except clypeal margin and labrum narrowly reddish-testaceous. Pronotum reddish testaceous, medially black, lateral grooves dark brown. Scutellum black. Elytra dark pitchy brown to black, with a metallic coppery sheen, apices dark reddish brown. Pronotum and elytra covered with dense pubescence comprising short, recumbent, silvery white hairs intermixed with long, suberect to erect brown hairs, more conspicuous towards elytral apices and sides. Ventral side with mouthparts, antenna, legs, pronotal hypomera yellowish brown to testaceous; prosternum testaceous, intercoxal process darker, pitchy brown; meso- and metaventrites black. Abdominal ventrites yellowish brown, except median portion of first ventrite dark pitchy brown.

Head with frons densely and coarsely punctate, more visibly so in apical half with punctures separated by less than half a diameter, slightly more widely spaced in posterior half; clothed with very conspicuous, long, dark brown setae projecting forward. Pronotum with somewhat irregular punctation on disc, separated by 2–4 diameters, progressively denser and coarser towards anterolateral areas. Posterior margin of pronotum completely bordered. Elytra with punctures on disc uniform more or less of one size, separated by 2–4 diameters, larger towards lateral sides, lateral sides of elytra with clear dual punctation, but with few very coarse punctures intermixed with finer punctures, particularly visible around humeral callus. Number of visible abdominal ventrites 5 in both sexes, 6th only rarely visible. Abdominal postcoxal lines complete, semicircular, not very closely approaching posterior margin of ventrite I, area enclosed by postcoxal line with evenly distributed, fine punctation; posterior margin of ventrite V medially shallowly emarginate, ventrite VI subtruncate. Male genitalia (Figs 41, 42) as illustrated.

Female similar to male. Ventrite V posteriorly subtruncate to weakly arcuate. Bursa (Fig. 79) with a long, tubular infundibulum.

Types. Holotype “ T2607 on the mounting card / TYPE (red bordered circular label)/ Blackburn coll. 1910-236/ *Scymnodes difficilis*, Blackb.” (BMNH).

Other specimens examined. Victoria: Langwarrin, 17.ii.24 (4, MVM); North Shore, E.W. Ferguson

(1, MVM); Baxter, various collectors (10, MVM); Crib Pt., J.E. Dixon (10, MVM); Sandring, xi.32, Goudie (1, MVM); Melbourne, E. Fischer, 10.iv.19 (1, MVM); Noble Park, F.E. Wilson, 5.x.18 (2, MVM); Wilson's promontory, 31.v.1975, S. Nesar (1, ANIC); Blackrock, J.E. Dixon, 30.ii.32 (4, MVM). **New South Wales:** Charleyong, nr. Braidwood, NSW. 16–17.vi.75, S. Nesar (5, ANIC); Wabe' Uga, i.28, HJC, (1, MVM); Blue Mts., E.W. Ferguson collection (1, MVM). **South Australia:** SA, Muston, KI. Dense underscrub, 24.vi.1967, H.M. Cooper, 1 ex (SAM).

Distribution. Australia: New South Wales; South Australia; Victoria

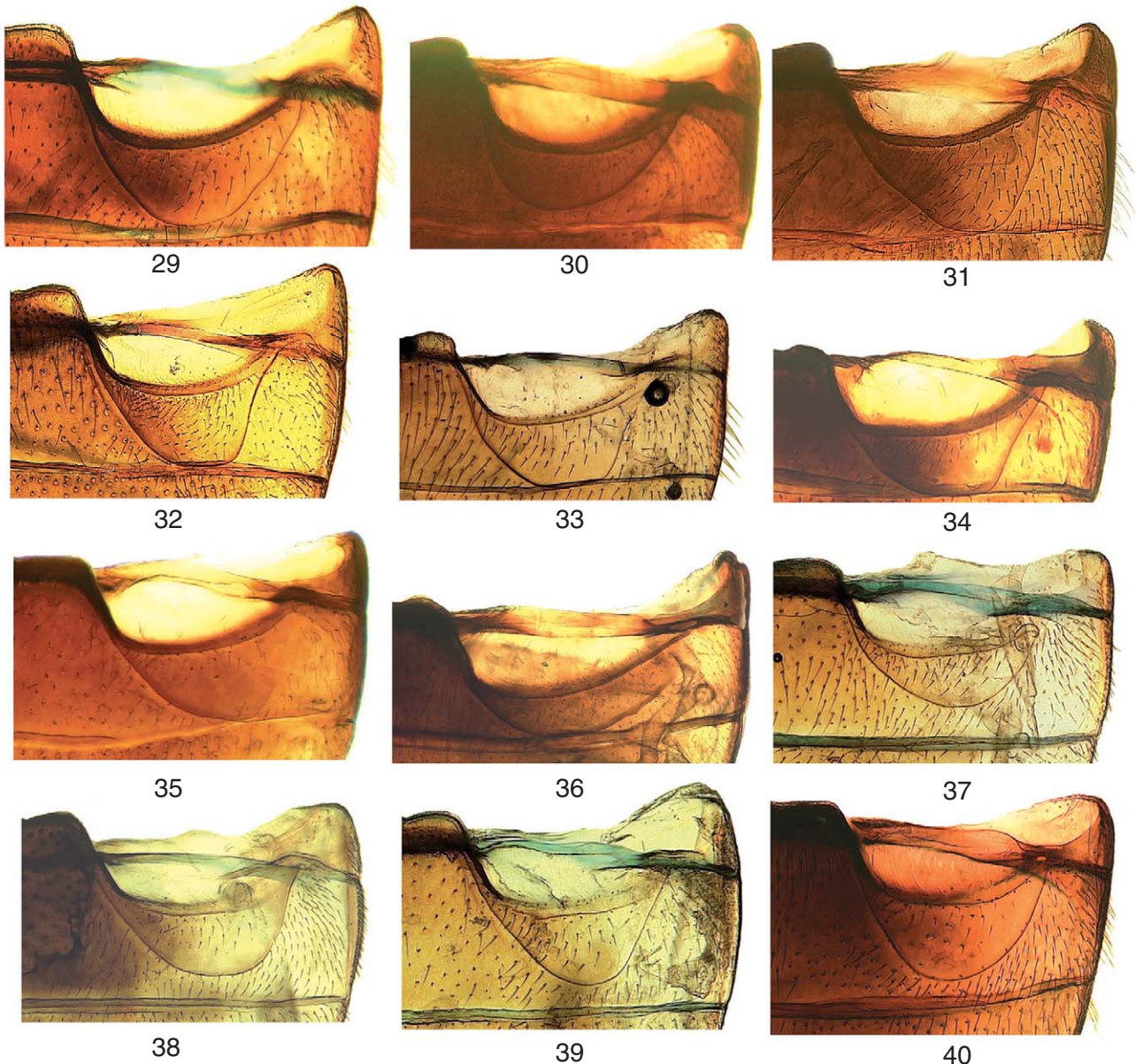
Scymnodes fulvohirtus Blackburn
(Figs 7, 32, 64, 65, 90, 117)

Scymnodes koebeli var. ?*fulvohirtus* Blackburn, 1892a: 243.

Platyomus (Scymnodes) fulvohirtus: Blackburn, 1895: 243.

Scymnodes fulvohirtus: Korschefsky, 1931: 85.

Scymnodes (Scymnodes) fulvohirtus: Pope & Lawrence, 1990: 243.



Figures 29–40. Abdominal postcoxal line of *Scymnodes* and *Apolinus*. (29) *Scymnodes bellus* Pope et Lawrence; (30) *S. obscuricollis* (Blackburn); (31) *S. consimilis* (Blackburn); (32) *S. fulvohirtus* (Blackburn); (33) *S. howdenorum* sp. nov.; (34) *S. luteohirtus* sp. nov.; (35) *S. styx*; (36) *S. aciculatus* sp. nov.; (37) *Apolinus lividigaster* (Mulsant); (38) *A. cribratus* (Blackburn); (39) *A. terminalis* (Blackburn); (40) *A. rotundus* (Blackburn).

Diagnosis. *S. fulvohirtus* can be identified by the fully black dorsum with yellowish white pubescence, head with deeply emarginate clypeal margin and closely set, dense punctures, and broad, bell-shaped prosternal carinae.

Description. Length: 2.75–3.00 mm; TL/TW: 1.21–1.26; PL/PW: 0.50–0.54; EL/EW: 0.95–1.00.

Male. Form (Fig. 7) elongate oval, convex. Dorsum more or less uniformly black, anterolateral corners of pronotum slightly paler, dark testaceous brown, covered with yellowish pubescence, particularly conspicuous on lateral sides of pronotum. Ventral side dark reddish brown to pitchy brown except antennae and abdominal ventrites yellowish to testaceous.

Head with anterior clypeal margin deeply, semicircularly emarginate; interocular distance 2.2–2.3 times as wide as an eye; uniformly and densely punctate in posterior half and on either side of eyes, separated by less than 1 diameter, punctures slightly larger and more widely spaced near clypeal margin. Pronotum with more or less uniform, dense punctures on disc, separated by 1–2 diameters, anterolateral corners with a convex / swollen area set with coarse, very closely placed punctures. Elytral punctures shallowly impressed, even on disc with very few larger punctures, separated by 3–5 diameters, coarser punctures clearly visible only in a small strip below humeral callus, punctures around lateral margins uniformly fine and widely separated; lateral margins of elytra deeply, sigmoidally emarginate on level with hind legs, a little before middle.

Prosternal intercoxal process with broad bell-shaped carinae, anteriorly convergent with a short stem, divergent in posterior half. Anterior margin of mesoventrite medially broadly, semicircularly emarginate. Pronotal hypomera with oblique grooves running backwards from their junction with anterolateral corners of prosternum, almost to posterolateral corners. Abdomen with five visible ventrites in both sexes, 6th only slightly or not visible in most examples. Abdominal postcoxal line (Fig. 32) complete, broadly boat-shaped, running along posterior margin of ventrite I for some distance; area enclosed evenly punctate except for a narrow smooth area along margins. Ventrite V subequal to or as long as III–IV, posteriorly deeply emarginate and concave with a conspicuous marginal ridge, VI deeply emarginate. Male genitalia (Figs 64, 65) as illustrated.

Female similar to male. Ventrite V subtruncate. Spermatheca (Fig. 90), bursa with a large, pointed, hat-shaped infundibulum.

Types. Holotype male, mounted on card point pasted on rectangular card: “TYPE (red bordered circular label)/ T5906 Toowoomba (in red)/ Blackburn coll. 1910-236/ *Scymnodes fulvohirtus*, Blackb.” (BMNH).

Other specimens examined. AUSTRALIA: “Nov. Holl. / *Cibdelina obscura* m. (in Weise’s handwriting?) (1, NRM). Queensland: Mistake Mtns., 3000–3500’ via Laidley, 10–11.ii.1973, G.B. Monteith (1, UQIC); Mt. Beerwah, via Glasshouse, altitude 1800’ 5.xii.1965, T. Weir (1, UQIC); Tambourine Mts., 2–9.iv.1935, R.E. Turner (1, BMNH); Mt. Tambourine, A.M. Lea (2, SAM); Lamington NP, Binna Burra, Old Cedar Road, 11.viii.2004, M. Wanat (2, ANIC). New South Wales: Tweed R. (1, ANIC); Orara river, H. Davidson (1, ANIC).

Distribution. Australia: New South Wales; Queensland.

Notes. It is one of the species of *Scymnodes* with only five visible ventrites in both sexes, though occasionally the sixth ventrite is slightly visible. It is similar to the members of *S. koebelei* complex in general appearance and elytral punctation, though it can be separated by the densely and closely punctate head with distinctly emarginate clypeal margin and more strongly convex, rounded dorsum with yellowish pubescence.

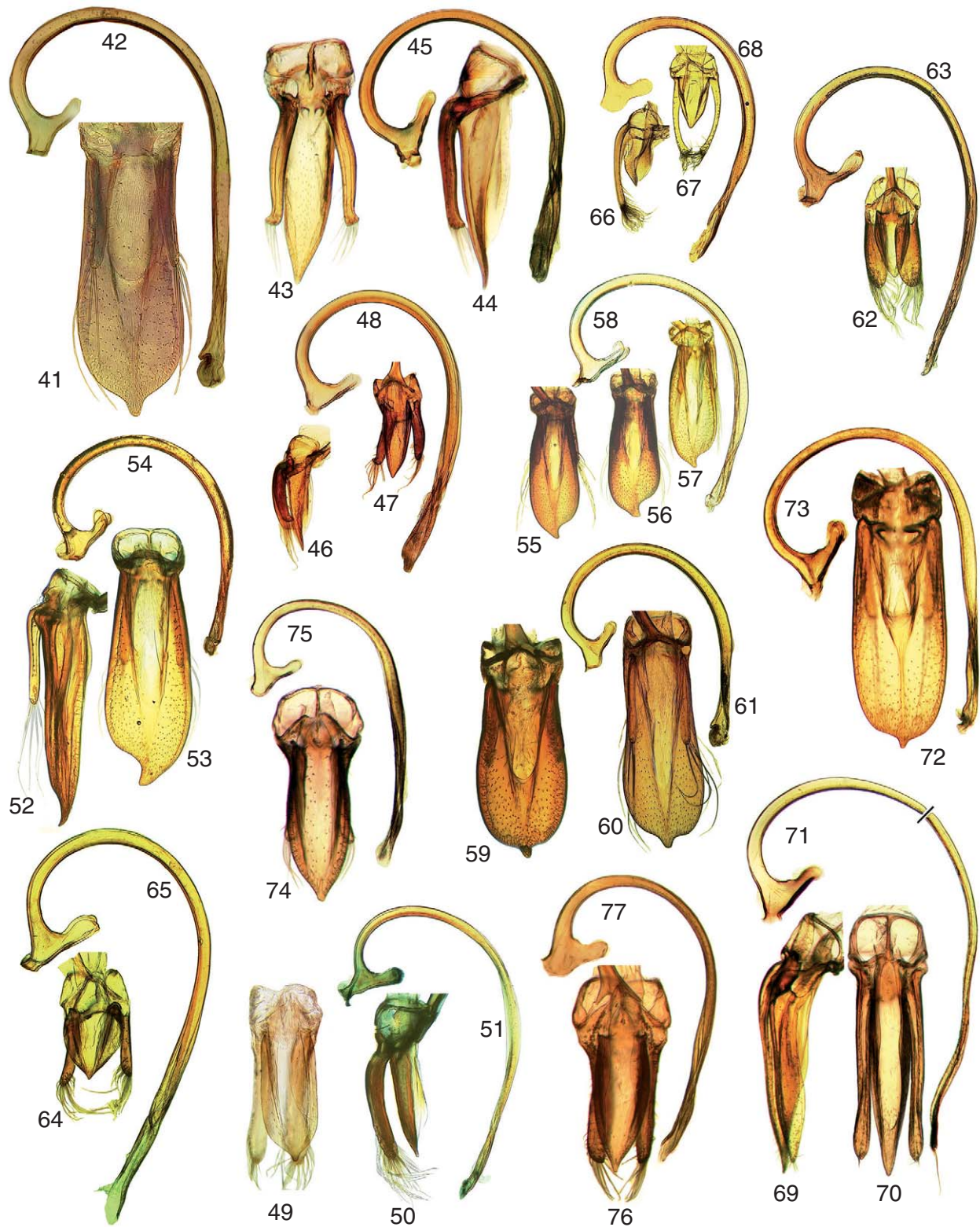
Scymnodes luteohirtus sp. nov.

(Figs 8, 34, 66–68)

Etymology. The specific epithet refers to the bright yellow pubescence on the pronotum.

Diagnosis. This species can be distinguished from the other Australian species of *Scymnodes* by the very dense and long bright yellowish pubescence on pronotum, making the pronotal flanks appear yellowish (Fig. 8), and the silvery white, erect and recumbent pubescence on elytra, the erect pubescence very long and particularly conspicuous on anterior and lateral margins. This species is very similar to *S. fulvohirtus* from which it differs by the smaller size, denser and distinctly longer bright yellowish pubescence on pronotum and the silvery white pubescence on elytra with a mixture of recumbent and much longer erect pubescence. The male genitalia are, however, very different with the parameres nearly as long as penis guide (much longer in *S. fulvohirtus*). The abdomen appears to be somewhat circular in outline in *S. luteohirtus*, but more elongate in *S. fulvohirtus*.

Description. Length: 2.50 mm; TL/TW: 1.24; PL/PW: 0.47–0.50; EL/EW: 0.95–1.00. Male. Form (Fig. 8) broad and short oval, convex, elytra particularly subhemispherical. Dorsal side completely black, covered with characteristic pubescence as follows: head with procumbent silvery white pubescence; pronotum densely covered with bright yellowish pubescence projecting forward, particularly dense on lateral sides, longer than those on elytra; elytra with silvery white erect and recumbent hairs on disc, erect hairs



Figures 41–77. *Scymnodes* species, male genitalia. (41–42) *S. difficilis* Blackburn; (43–45) *S. obscuricollis* (Blackburn); (46–48) *S. bellus* Pope et Lawrence; (49–51) *S. consimilis* (Blackburn); (52–58) *S. koebelei* Blackburn; (59–61) *S. howdenorum* sp. nov.; (62–63) *S. styx* (Blackburn); (64–65) *S. fulvohirtus* Blackburn; (66–68) *S. luteohirtus* sp. nov.; (69–71) *S. aciculatus* sp. nov.; (72–73) *S. hirtus* sp. nov.; (74–75) *S. metallicus* sp. nov.; (76–77) *S. riedeli* sp. nov. (41, 43, 47, 49, 53, 55–57, 59, 60, 62, 64, 67, 70, 72, 74, 76) tegmen ventral view; (42, 45, 48, 51, 54, 57, 61, 63, 65, 68, 71, 73, 75, 77) penis; (44, 46, 50, 52, 66, 69) tegmen lateral view.

conspicuous on anterior margin and lateral sides. Ventral side black except antennae, mouthparts and tarsi of all legs lighter, testaceous; abdominal ventrites I and II medially dark brown, other ventrites testaceous.

Head with clypeal margin deeply emarginate; eyes large, interocular distance twice as wide as an eye; frons densely punctate, punctures separated by less than their own or one diameter, subequal to or slightly larger than eye facets. Pronotum densely and evenly punctate, punctures separated by 0.5–2 diameters, anterolateral corners without a well marked swollen area, only slightly convex with a few coarse, very closely placed punctures. Elytra shallowly emarginate on lateral side around hind legs, discal area with clear dual punctation bearing few coarser punctures in area between humeral callus and apices of elytra on lateral side. Prosternal intercoxal process with broad, bell-shaped carinae, anteriorly convergent with a short stem. Pronotal hypomeron with a short oblique groove on either side near its junction with anterior corners of prosternum. Mesoventrite medially shallowly emarginate. Elytral epipleura deeply descending on level with hind legs. Abdominal postcoxal lines (Fig. 34) complete, running along posterior margin of ventrite I for some distance and then apically joining anterior corner of ventrite in a straight line forming an obtuse angle; area bound by postcoxal plate irregularly punctate, punctures concentrated in anterior half. Posterior margin of ventrite V medially deeply concave, ventrite VI very shallowly emarginate. Male genitalia (Figs 66–68) as illustrated.

Female unknown.

Types. Holotype, male: AUSTRALIA: Queensland: Kuranda, N.Q. VIII.10.1904/ coll. Koebele/ W.M.Giffard Collection (BPBM). Paratype: NEQ: 16.06S, 145.27E, Cape Tribulation (Crane) FIT canopy 2, 4–18 Feb 2002 Alt < 50 m, Cermak & Stork C332, abdomen missing (1, ANIC).

Distribution. Australia: Queensland.

Scymnodes styx (Blackburn)
(Figs 9, 35, 62, 63, 91, 118)

Scymnus styx Blackburn, 1895: 249 (Holotype, BMNH; Type locality: Australia, exact locality not known).

Scymnodes styx: Ślipiński, 2007: 99.

Diagnosis. It is the smallest species of *Scymnodes* in Australia and can be identified by the uniform dark reddish brown to black dorsum, head with dense, closely set punctures and emarginate clypeal margin, and the broad, bell-shaped carinae on prosternal intercoxal process. The postcoxal plates show a lot of variation from complete to incomplete, with some intermediate forms and the male genitalia are diagnostic in such instances. This species is very similar to

S. fulvohirtus by the following characters: head densely punctate with deeply emarginate clypeal margin, broad prosternal carinae, and 5 visible ventrites in both sexes, though occasionally the sixth ventrite is slightly visible. The penis of male genitalia also looks very similar in both species.

Description. Length: 1.80–2.50 mm; TL/TW: 1.20–1.30; PL/PW: 0.46–0.48; EL/EW: 0.98–1.00.

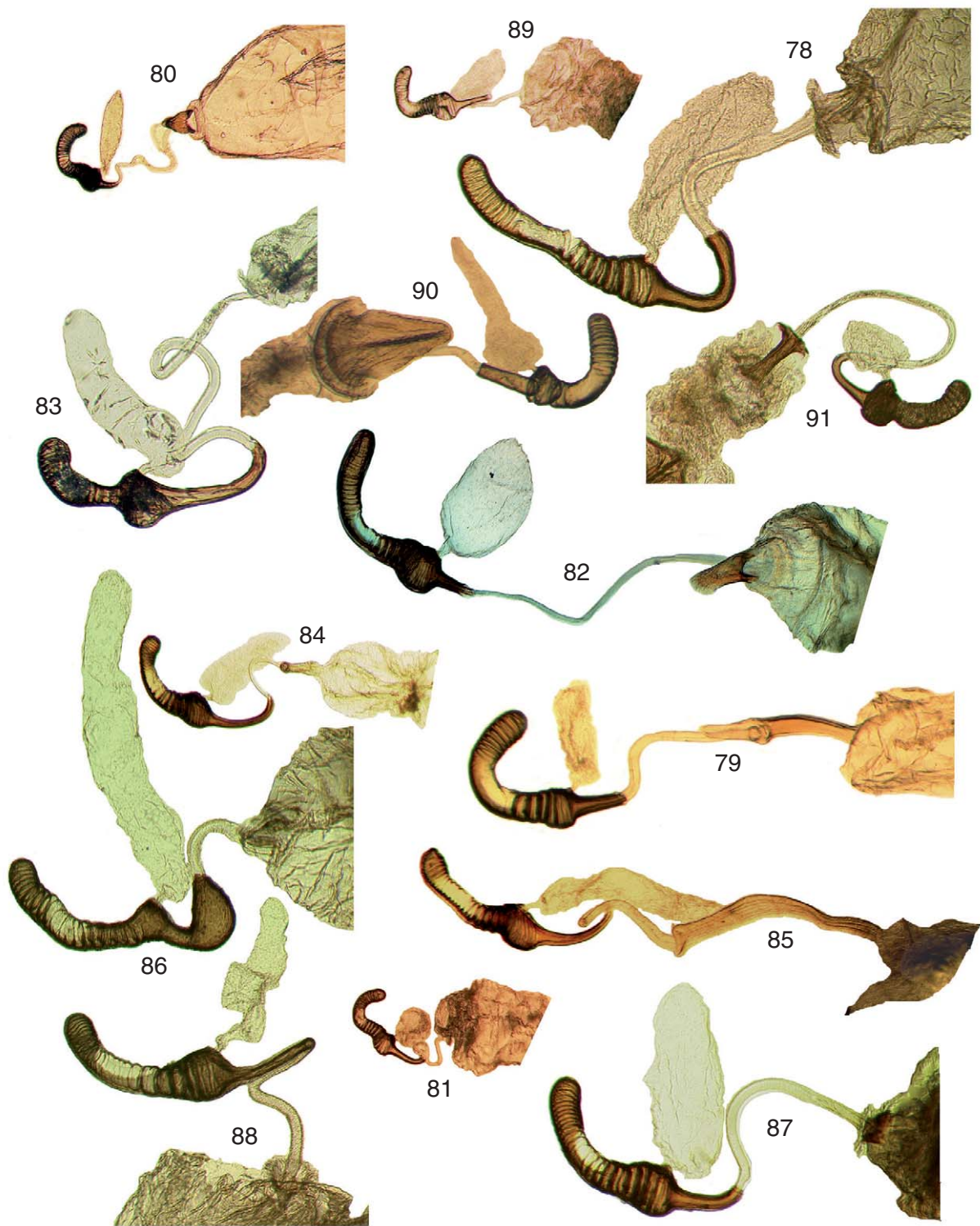
Male. Form elongate to short oval (Fig. 9), broadest around middle of elytra, convex, dorsum covered with silvery white pubescence, elytra with recumbent and semi-erect hairs, the latter conspicuous on lateral sides and apices. Dorsum uniformly dark reddish brown to black, dull brown in older specimens. Ventral side with antennae and mouthparts yellowish brown to testaceous, legs dark reddish brown, tarsi lighter testaceous, abdominal ventrites (except median portion of ventrites I and II) dark reddish brown to black; more or less uniformly dull brown in older specimens.

Head with clypeal margin deeply emarginate, densely and closely punctate, punctures separated by less than their own to one diameter near innerocular margins, more widely separated towards clypeal margin. Pronotum with punctures on disc regular, shallowly impressed, separated by 2–4 diameters, progressively coarser towards lateral sides and anterolateral corners, anterolateral areas with a clear convexity or swollen area having very coarse and deeply set punctures. Elytra shallowly emarginate on lateral sides on level with hind legs, punctures on disc very shallowly impressed, dual, large punctures separated by 4–6 diameters, more conspicuous on lateral side between humeral callus and elytral emargination, only slightly larger than finer punctures present in interstices. Prosternal intercoxal process quadrate, with a broad, bell-shaped carina with a short anterior stem. Mesoventrite medially very shallowly emarginate. Elytral epipleura clearly foveolate on level with hind legs.

Abdominal postcoxal line extremely variable, with the following variations: complete, touching posterior margin of ventrite I for a short distance and joining anterior corner of ventrite I forming an obtuse angle; incomplete, posteriorly recurved (Fig. 35); nearly complete, but somewhat obliterated near its junction with anterior corner; incomplete and *Diomus* type, not reaching beyond posterior margin of ventrite I; area enclosed punctate in outer half. Ventrite V as large as III and IV combined, posteriorly deeply concave. Male genitalia (Figs 62, 63) as illustrated.

Female similar to male. Abdominal ventrite V as long as III and IV, apically broadly subtruncate. Spermatheca (Fig. 91); bursa with a prominent infundibulum.

Types. Type/ 5919 T Aust./ Australia Blackburn Coll. BM 1910-236/ *Scymnus styx* Blackb./ Holotype *Scymnus styx* Blackburn, 1895 det. R. Booth 2006 (BMNH, Holotype).



Figures 78–91. *Scymnodes* species, apices of bursa copulatrix and spermatheca. (78) *S. bellus* Pope et Lawrence; (79) *S. difficilis* Blackburn; (80, 82) *S. koebelei* Blackburn; (81) *S. howdenorum* sp. nov.; (83) *S. consimilis* (Blackburn); (84) *S. hirtus* sp. nov.; (85) *S. magnus* sp. nov.; (86) *S. metallicus* sp. nov.; (87) *S. obscuricollis* (Blackburn); (88) *S. laticollis* (Weise); (89) *S. hirtus* sp. nov.; (90) *S. fulvohirtus* (Blackburn); (91) *S. styx* (Blackburn).

Other specimens examined. AUSTRALIA: Queensland: Island Point Lookout (16.29S 145.28E), Port Douglas, 19.v.76, by sweeping, E.B. Britton (1, ANIC); Cairns, Q. Koebele, Aug. (3, BPBM); Bundaberg, Q. Koebele/ mangrove (1, BPBM); Bundaberg, Q. Koebele (1, BPBM); the Saddle, c. 2000' Paluma Rd, Mt. Spec. NP, 1.xii.1968, Britton & Misko (2, ANIC); N. Stradbroke Isl, 15.iii.1975, H & A. Howden, 1 ex. (1, CNC); Kuranda, R.C.L. Perkins (1, BMNH). New South Wales: Gosford, Koebele, (1, ANIC); 5 km N. Harrington, 14.ix.1983, G. Williams, *Acacia-Banksia* assoc (1, ANIC); 12 km N or Lismore (28.48S, 153.16E), 7.x.71, S. Misko (1, ANIC); Booti Booti NP, 32;16:47 152:31:28, 3.iv.96 L.Wilkie, ex. *Leptospermum laevigatum* BB101/03F (1, AM); Liverpool, A.M. Lea (1, SAM); Mittagong, A.M. Lea (1, SAM); Mururillambah, F. Muir viii.1919 (1, ANIC); Dalmorton, N.S.W., 3.93 Lea, 1 ex. (1, DARD); Colo River Valley, Colo River Reserve, 1.i.1962, M.I. Nikitin (1, BMNH); Chinaman's Beach, Sydney, 27.xi.80, D. Pope (4, BMNH); Sydney, G.E. Bryant, Norman 11.ix.08 (1, BMNH). NEW GUINEA, Irian Jaya: Jayawijaya: Emdoman, 29.ix.1993, 900–1200 m, leg. A. Riedel (1, NHMS).

Notes. The abdominal postcoxal lines in *S. styx* show a great deal of variation from complete to incomplete, with some intermediate forms. The tarsal claws are, however, sexually dimorphic. It is also close to the members of *S. koebelei* complex in general appearance and elytral punctation, though it is much smaller. The larval skin mounted on the same card with one of the specimens examined looks similar to those of other known *Scymnodes* larvae. One male examined from Irian Jaya is much larger in size, but has identical male genitalia.

Distribution. Australia: Queensland, New South Wales. NG: Irian Jaya.

***Scymnodes koebelei* Blackburn**
(Figs 11–15, 52–58, 80, 82, 117)

Scymnodes koebeli Blackburn, 1892b: 69 (Holotype male, BMNH; Type locality: Gosford, New South Wales) – 1892a: 242.

Platylomus (Scymnodes) koebelei: Blackburn, 1895: 243.

Scymnodes (Scymnodes) koebelei: Pope & Lawrence, 1990: 243.

Scymnodes koebeli var. *immaculatus* Blackburn, 1892a: 243. **New synonym.**

Platylomus (Scymnodes) immaculatus: Blackburn, 1895: 243.

Scymnodes koebeli var. *eugeniae* Blackburn, 1892a: 243. **New synonym.**

Platylomus (Scymnodes) eugeniae: Blackburn, 1895: 244.

Scymnodes (Dolimus) tristis Weise, 1923: 140 (Lectotype female, NRM; Type locality: Queensland, Glen Lamington, Lamington Plateau). **New synonym.**

Platylomus baccaeformis Blackburn, 1895: 242 (Holotype female, BMNH; Type locality: Queensland, near Cairns). **New synonym.**

Scymnodes baccaeformis: Korschefsky, 1931: 85.–Pope and Lawrence, 1990: 243.

Scymnodes (Dolimus) fulvipes Weise, 1923: 139 (Lectotype female,

NRM; Type locality: Malanda, Bellenden Ker, Queensland). **New synonym.**

Scymnodes fulvipes: Korschefsky, 1931: 85.

Scymnodes (Dolimus) maculiger Weise, 1923: 140 (Holotype female, NRM; Type locality: Queensland, Christmas Creek). **New synonym.**

Scymnodes maculiger: Korschefsky, 1931.

Scymnodes (Scymnodes) maculiger: Pope and Lawrence, 1990: 243.

Diagnosis. It is one of the most variable species in terms of external appearance, punctation and genitalia. Blackburn (1892a: 243) rightly observed that *S. koebelei* might prove to be one of the most difficult and variable species with no two specimens agreeing with each other in punctation and other characters. The general shape of male genitalia and bursa copulatrix bearing distinct infundibulum will serve as distinguishing characters for this species.

Description. Length: 2.50–4.00 mm; TL/TW: 1.15–1.28; PL/PW: 0.47–0.51; EL/EW: 0.90–1.00. Form distinctly elongate to broad oval to subrounded, dorsum moderately to very strongly convex in both sexes.

Male. Head yellowish-testaceous, rarely with a transverse black marking in posterior half; pronotum black or black with only anterolateral corners and anterior margin yellowish-testaceous, sometimes completely yellowish-testaceous or yellow with a median black marking of variable size and shape; rarely, black with a pair of small reddish to yellowish brown spots on posterior margin on either side of scutellum. Elytra with the following variations: (i) black with broadly or narrowly reddish-testaceous apices or completely black (typical *S. koebelei*, Fig. 12); (ii) black, with a pair of reddish to orange-yellow, elongate oval, obliquely or diagonally placed spots starting from humeral callus and extending towards elytral suture, their apices reaching beyond middle of elytra, occasionally confluent forming a vase shaped median marking, elytral apices reddish brown (*S. maculiger* type, Fig. 14); (iii) reddish-testaceous, with three black spots – one broad basal marking extending along suture to nearly $\frac{1}{3}$ rd of elytra, two lateral, oval spots just behind middle (Fig. 15); or (iv) with a large discal black patch leaving only lateral margins and apices yellowish-testaceous (*S. fulvipes* and *S. baccaeformis* type, Fig. 11). Ventral side yellowish-testaceous to black, anterior abdominal ventrites yellowish to testaceous (except first ventrite medially dark brown to black); prosternum sometimes only anteriorly narrowly testaceous; leg colour variable, only fore legs yellow or fore and middle legs yellow, hind legs dark brown except tibiae and tarsi or all legs yellowish, except middle of tibiae and femoral apices darker or all legs tending to be darker.

Head with anterior clypeal margin subtruncate; inner margins of eyes divergent towards posterior; punctures on inner margins of eyes and posterior half as large as or slightly larger than eye facets, separated



Figures 92–113. *Apolinus* species, male genitalia. (92–94) *Apolinus terminalis*; (95–97) *A. lividigaster* (Mulsant); 98–100. *A. rotundus* (Blackburn); (101–103) *A. cribratus* (Blackburn); (104–106) *A. longicornis* (Weise); (107–110) *A. jaya* sp. nov.; (111–113) *A. irian* sp. nov. (92, 95, 99, 101, 104, 107, 110, 111) tegmen lateral view; (93, 96, 98, 102, 105, 108, 112) tegmen, ventral view; (94, 97, 100, 103, 106, 109, 113) penis.

by 1.0–2.0 diameters, sparser and more widely spaced in middle and towards clypeal margin, separated by 2–6 diameters; interspaces smooth and shiny. Pronotum with anterolateral corners having a distinct swollen area set with coarse, closely spaced punctures; punctures on disc more or less even, fine, shallowly impressed, separated by 2–5 diameters, coarser towards lateral sides and anterolateral corners, dual around lateral margins. Elytra with a moderately deep emargination a little before middle; elytral punctation highly variable, always dual, sometimes irregular, shallowly to moderately deeply impressed, large punctures separated by 2–7 diameters, finer, widely separated punctures in interstices, occasionally a narrow strip from around humeral callus to a little before elytral apices with prominent, deeply impressed punctures, interspaces smooth, shiny; lateral margins usually with finer punctures.

Prosternal process with carinae variable, narrow to much broader, anteriorly fused with a short stem, posteriorly divergent. Mesoventrite anteriorly very shallowly emarginate. Elytral epipleura with a moderately deep declivity on level with hind legs. Abdomen with six visible ventrites, postcoxal line complete, broadly boat-shaped, running parallel to posterior margin of ventrite I for nearly three-fourths of its length and then flattened apically; shape of postcoxal line variable, sometimes posteriorly much narrower and apically rounded. Posterior margin of ventrites V and VI broadly and shallowly emarginate, respectively. Male genitalia (Figs 52–58) as illustrated, penis guide apically strongly asymmetrical (Figs 53, 55–57), with the following variations: with a narrow tubular projection (Fig. 53, 55, 57) or with a much broader, blunt projection (Fig. 56) to-wards right, apices of parameres with very long apical hairs; penis (Fig. 54, 57) more or less similar in all variants.

Female similar to male but with all legs black, except tarsi and ventral side of fore tibiae yellowish. Posterior margin of ventrite V subtruncate, that of ventrite VI arcuate. Female genitalia (Figs 80, 82) with a sclerotized, apically two-pronged bursal process.

Types. Holotype male of *S. koebelei*, card point labeled “T” pasted on another: “TYPE (red bordered circular label)/ 4171 (in red)/ Gosford/ Blackburn coll. 1910-236/ *Scymnodes koebelei*, Blackb.” (BMNH); one paratype male of *S. koebelei*: Australia, Blackb’s Coll./ *Scymnodes koebelei* Blackb. Co-type (hand written, not by Blackburn)/ *Platyomus koebelei* Blkb., Australia, Cotype, I. (T.?) 9729 (SAM).

Lectotype and paralectotype of *S. tristis* (**here designated**): ‘Lectotype’ (circular, violet bordered label)/ Glen Lamington / Queensl., Mjoberg/ Dolinus *tristis* m./ Type/ nov./ 276 80/ Lectotype *Scymnodes tristis* Wse. R.D. Pope det. 1980 (NRM); ‘Paralectotype’ (circular, blue bordered label)/ Lamington Plat./

Queensl. Mjoberg/ 277 80/ Paralectotype *Scymnodes tristis* Wse., R.D. Pope det. 1980 (NRM).

Lectotype of *S. eugeniae* (**here designated**): “Toowoomba, Eugenia/ 5905/ *Scymnodes immaculatus* Blackb., type of var. ?*eugeniae* (in Blackburn’s handwriting)” (SAM).

Holotype female of *S. baccaeformis*, on card point labeled ‘T’, pasted on another card point: “TYPE (red bordered circular label)/ 5904 N. Qu./ Blackburn coll. 1910-236/ *Platyomus baccaeformis*, Blackb./ HOLOTYPE *Platyomus baccaeformis* Blkb. 1895 det. R.G. Booth, 2006” (BMNH).

Holotype of *S. maculiger*: Type (circular, red bordered label)/ Queensl., Mjoberg/ Christmas Creek/ Dolinus *maculiger* m./ 272 80/ Holotype *Scymnodes maculiger* Wse., R.D. Pope det. 1980 (NRM);

Lectotype and two paralectotypes of *S. fulvipes* (**here designated**): “Lectotype (circular, violet bordered label)/ Bellenden Ker/ Queensl., Mjoberg/ Type/ *fulvipes* m./ 269 80/ Lectotype *Scymnodes fulvipes* Wse., R.D. Pope det. 1980”, female (NRM); “Paralectotype (circular, blue bordered label)/ Malanda/ Queensl. Mjoberg/ ♂/ 270 80/ P. lectotype *Scymnodes fulvipes* Wse., R.D. Pope det. 1980”, 1 male, 1 female (NRM).

Other specimens examined. Australia: Queensland: Bundaberg, R.C.L. Perkins, (2, BMNH); Bundaberg, R’d, 14.xii.04, Koebele and Perkins (2, BMNH); same data except 6.xii.04 (1, BMNH); Bundaberg, 1964 (2, BMNH); C. Queensland (1, BMNH); Mary River 27.xii.1986, H. & A. Howden (1 female, CMN); Mt. Elliott NP, 1.5 km S. Cockatoo Ck. Campsite, 29.vi.1992, C. Reid, beating riverside vegetation (1 male, ANIC); 12 km W. Maidenwell, 18–2.xi.1986 C. Reid, Ex. *Angophora subvelutina* (1 male, 1 female, ANIC); Cairns, vii–viii.1904, R.C.L. Perkins (1 male, BMNH); Cairns, E. Allen (1 male, SAM); Cairns dist., F.P. Dodd (1 male, SAM); Cairns dist., A.M. Lea, *Platyomus immaculatus* Bl., Ty. of var. ?*eugeniae* Blkb., Queensland, Cotype (3 males, 2 females, SAM); Kuranda, vii–viii.1904, R.C.L. Perkins, 1942–95 (1 male, BMNH); N. Queensland, Blackb’s Coll. (2 males, SAM); Ban-Ban Range, via Coalstoun Lakes, i.1974, H. Frauca (1 male, ANIC); (17.22S 144.44E) 6 km ESE Almaden 530 m 31.iii. 1984, A. Calder & T. Weir (1 male, ANIC); Rockhampton, 15.ii.71, RCL, D.P.Sands, E1785/ Reared on *Coccus hesperidum* on Oleander (1 male, ANIC); 19 km S. of Bundaberg, Gorge at Burnett R., 20–24.xi.75, H. Frauca (1 male, ANIC); Microphyll Vine Forest Mulgowie, 29.iii.1984, M.D. Peart (1 male, UQIC); Darnley I., Torres Straits, Lea, (1 male, SAM); Yarraman, *Eucalyptus* blossom, 3.i.1978, K.J. & C.L. Lambkin, (1 male, QMB); Julatten, 20–23.x.80, R.D. Pope, “Milky Bean” (1 male, BMNH); Lotus Glen, Q., 1.XI.1994, J. Watson, larvae on green coffee scale (1 male, QDPIM); Magnetic Is., H.J. Carter, vii.21 (1, MVM); Magnetic Is., A.M. Lea (1, SAM); Childers,

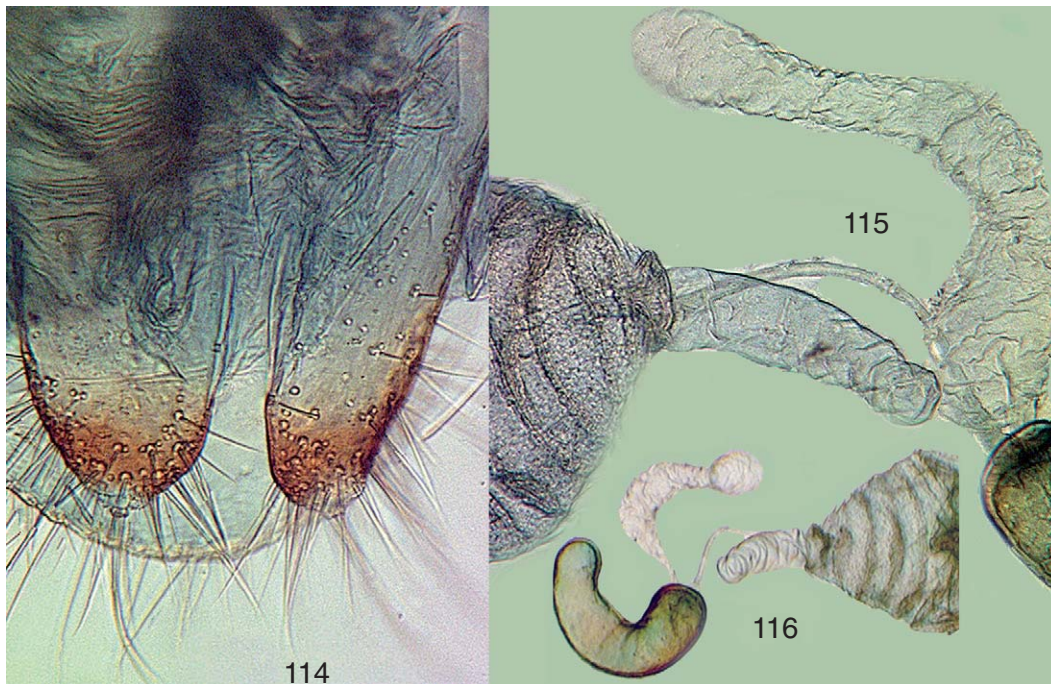
21.i.1999, A. Podlussány (1 male, TMB). **New South Wales:** Mt. Victoria, Biró, 1900 (3 females, TMB); 19 mls W of Woodenbong, Nr. Kilarney, 8.xii.1948, E.B. Britton P.B. Carne (1 male, BMNH); Comboyne, J. Armstrong (1 male, ANIC); Hartburn, ix.1969, B. May & C. G.L. Gooding (1 male, ANIC); Orara River, H. Davidson (1 male, ANIC); Sydney, R.C.L. Perkins, 1942-95 (1 female, BMNH); Richmond R, 1909-174 (1 female, BMNH). **Victoria:** no further locality, "Staud., Dolinus victoriensis m." in Weise's handwriting (1 male, NRM).

Distribution. **Australia:** Queensland, New South Wales, Victoria.

Notes. We find that there is a wide range of variation in terms of external appearance, punctuation and genitalia in *S. immaculatus*, *S. eugeniae*, *S. tristis*, *S. baccaeformis*, *S. maculiger* and *S. fulvipes*, all of which belong to the same species group here called as *S. koebelei*. These variations are not consistent and hence very difficult to interpret on morphological grounds alone. *S. maculiger* and *S. fulvipes* belong to a subgroup within the *S. koebelei*-group, with some differences from the other species in the nature of punctuation on the head and elytra, and the male genitalia. However, all these species have identical female genitalia. Significantly, the type locality of nearly all these species is Queensland. In view of this and the absence of dependable and constant characters for separating them, all these species are synonymised here with *S. koebelei*, which is the seniormost available name.

We designate lectotypes for *S. eugeniae*, *S. tristis*, and *S. fulvipes* and paralectotypes for the latter two. The specimens had been examined and labeled by R.D. Pope during his earlier unpublished studies on Australian Coccinellidae. The lectotype of *S. eugeniae* (originally described as a variety of *S. koebelei* by Blackburn, examined) and paralectotype of *S. tristis* (examined) have similar genitalia with an apically two-pronged sclerotised structure at the apex of bursa as in *S. koebelei* and hence are synonymised. They do not vary much from *S. koebelei* otherwise also, except by their nearly fully dark brown to black dorsal coloration. The variations in general punctuation are within the range of variations exhibited by *S. koebelei*.

The holotypes of *S. baccaeformis* and *S. fulvipes* have similar external appearance, but the holotype of *S. baccaeformis* is not much different from *S. koebelei* except by its slightly broader oval form and is definitely conspecific with *S. koebelei*. However, the lectotype and paralectotypes of *S. fulvipes*, particularly the females, have a distinctly more strongly convex dorsum, broader, bell-shaped prosternal carinae and a more elongate bursal process of female genitalia compared to typical *S. koebelei*. The penis guide of the male genitalia in the paralectotype of *S. fulvipes* is apically only slightly asymmetrical with a narrow but blunt projection. Similarly, *S. maculiger* mainly differs from typical *S. koebelei* by its often more rounded and convex form of body, elytral pattern, more densely punctate head, and the penis guide of male genitalia



Figures 114–116. Female genitalia of *Apolinus* sp. (114) ovipositor; (115) infundibulum; (116) spermatheca.

with an apical, blunt projection. The elytral punctures in *S. maculiger* appear to be more regularly dual and broadly separated than in *S. koebelei* and the prosternal carinae also are often broader. The elytra are broader than long in *S. fulvipes* and *S. maculiger* types compared to *S. koebelei* where the elytra are as broad as long.

Initially, Blackburn (1892a, b) spelt the species name as *S. koebeli* and in his later publication (Blackburn, 1895), emended it as *S. koebelei*. The species described as var. *varipes* Blackburn of *S. koebeli* var. *immaculatus* (Blackburn, 1892a: 243) was later placed in *Scymnus* by Blackburn (1895: 252). However, Korschefsky (1931) merely ascribed the original description of *Scymnus varipes* to Blackburn 1895: 252, omitting the earlier reference as a variety of *S. koebelei*. Examination of a specimen identified as *varipes* (based on comparison with the type) from Hawaii and a few apparently conspecific specimens from Australia indicates that it is a true *Scymnus* and not a *Scymnodes*.

Biology. Recorded from various scales, *Eriococcus leptospermi* Maskell, *Chionaspis eugeniae* Maskell, *Aspidiotus cynaripiae* Maskell, and *Fiorinia* sp. (Koebele, 1893); *Chrysomphalus aonidum* (L.) and indet. aleurodids (Pope & Lawrence, 1990); *Coccus viridis* (Green); *Coccus hesperidum* L. (label data).

Scymnodes howdenorum sp. nov.

(Figs 5, 33, 59–61, 81, 117)

Etymology. The specific epithet is a noun in the genitive case (plural), dedicated to the collectors of the type series, Drs Anne and Henry Howden.

Diagnosis. This species is very similar to *S. koebelei* and can be distinguished reliably only by the male genitalia, particularly the symmetrical penis guide and the penis apex, and the spermatheca without a distinct infundibulum. Externally, most specimens of *S. howdenorum* can be separated by the very conspicuous strip of coarse punctures on the lateral side of elytra from around humeral callus to a little before apex, but they are not always very distinct. The lateral margins of elytra, however, have distinctly dual punctures, with conspicuous coarser punctures in several examples. Further, the lateral emargination of elytra is in general much shallower than that in *S. koebelei*, though this feature is again variable to some extent. In some specimens examined, the elytra appear to be apically more broadly rounded than in *S. koebelei*.

Description. Length: 2.50–3.50 mm; TL/TW: 1.20–1.30; PL/PW: 0.50–0.55; EL/EW: 0.96–1.02.

Male. Form elongate oval (Fig. 5) with somewhat angular edges, elytral apices together very shallowly arcuate, widest around middle of elytra, dorsum

covered with yellowish white pubescence. Dorsal side black to dark brown, except anterolateral corners of pronotum dull reddish testaceous, anterior margin of pronotum very narrowly dark reddish brown; rarely pronotum reddish-testaceous with a median black marking; elytra dark pitchy brown to black with very narrowly reddish brown / testaceous apices, very rarely elytral apices prominently reddish testaceous. Ventral side dark reddish brown, except antennae, mouthparts, fore legs, midcoxae and tibiae, mid- and hind tarsi, abdominal ventrites 2–6 reddish brown to yellowish testaceous.

Head with anterior clypeal margin truncate between lateral projections, eyes widely divergent towards posterior; posterior half and inner margins of eyes densely punctate, punctures much larger, fewer, and very widely separated in middle, anterior clypeal margin more or less devoid of punctures. Pronotum with dense, even punctation on disc, punctures separated by 1–3 diameters, coarser towards sides, lateral sides with clearly dual punctures separated by less than half a diameter; anterolateral corners with a moderately swollen area set with coarse, closely spaced punctures. Elytra laterally shallowly emarginate a little before middle, with dual punctures on disc, moderately impressed, large punctures widely separated by 3–5 diameters, finer punctures in interstices, coarse punctures very conspicuous in a narrow strip from humeral callus to a little beyond lateral emargination, lateral sides with distinct dual punctures.

Prosternal intercoxal process with carinae anteriorly convergent with a stem, posteriorly divergent. Mesoventrite transverse, anterior margin medially deeply semicircularly emarginate. Metaventrite with coarse punctation. Abdominal postcoxal line (Fig. 33) complete, somewhat boat-shaped with rounded corners, densely punctate inside; posterior margin of ventrites V and VI broadly emarginate, the latter less deeply so. Male genitalia (Figs 59–61) with penis guide apically symmetrical (Figs 59, 60), penis (Fig. 61) as illustrated.

Female. Head black, all legs dark, except fore tibiae and all tarsi yellowish testaceous; ventrite V subtruncate, VI weakly arcuate; otherwise similar to male. Spermatheca (Fig. 81) as illustrated; bursa without a distinct infundibulum or a bursal process.

Types. **Holotype** male: AUSTRALIA: Queensland, 12 km SW Mareeba, Granite Gorge, 23.xii.1988, H. & A. Howden (ANIC). **Paratypes.** 8 km N. Mareeba, 6.ii.1997, H. & A. Howden, Day sweeping (2 females, CMN); Southedge Sta., 12 km NW Mareeba, 6.ii.1997, H. & A. Howden (1 female, CMN); 8 km N. Mareeba, 30.I.1997, 1.ii.1997, 8.ii.1997, H. & A. Howden, Day beating (3 males, 2 females, CMN; BMNH); 12 km NW Mareeba, Southedge Tob. R. Sta. 26–29.xii.1988, H. & A. Howden (1 female, CMN); 12 km SW Mareeba, Granite Gorge, 23.xii.1988, H. & A. Howden (2 females,

CMN); 10 km W Mareeba, 22.xii.1986, H. & A. Howden (1 male, ANIC); Mary River 27.xii.1986, H. & A. Howden (2 females, CMN); Watsonville, 24.xii.1986, H. & A. Howden (1 male, CMN); 14 km S. Mt. Carbine Station Creek, 2.i.1989, H. & A. Howden (1 female, CMN); 17–20 mi W. Atherton, Bakerville, 21.ii.1975, H. & A. Howden (1 female, CNC); Peregian, 20 mi N. Maroochydore, Qld.; 11.iii.1975, H. & A. Howden (1, male, CMN); Station Creek, 2.ii.1970, R.E. Parrott, (2 males, CNC); Southedge Res. Sta. 12 km NW Mareeba, 4.i.1989, H. & A. Howden (1 female, CNC); Ayr, 15.x.70, W.B. Muir (1 male, ANIC); 3 km W. Batavia Downs (12.40S 142.39E). 17.i.1993 sweepnet, P. Zborowski (2 females, 2 males, ANIC); Batavia Downs Hs (12.40S 142.40E), 11.xii.1992, W. Dressler, P. Zborowski, sweeping trees in garden (1 female, ANIC); Mt. Webb NP (15.04S 145.07E), 27–30.iv.1981, A. Calder, by sweeping (1 male, 2 females, ANIC); 12 km SSE Heathlands (11.51S 142.38E), 26.i–29.ii.1992, P. Feehney, Malaise #3 closed forest (1 female, 1 male, ANIC); Miriam Vale, 17 km S. (24°28'S 151°35'E), 28.xi.1990 (1 male, 1 female, ANIC); 6 km ESE Almaden (17.22S 144.44E) 530m 31.iii.1984, A. Calder & T. Weir (1 female, 1 male, ANIC); Weipa, July 1982, J.D. Majer. Pitfall trap & by beating vegetation (1 female, ANIC); Split Rock (15.39S 144.31E), 18.ii–25.iv.1993, Malaise trap, P. Zborowski (1 male, 1 female, ANIC). **New South Wales:** 4 km W. Lansdowne, Lorien, 5–6.xii.1986, H. & A. Howden (1 male, CMN); Pinnirendi, 60 km SW Mt. Garnet, 24.i.1989, H. & A. Howden, (1 female, CMN); Orara river, N.S. Wales, H. Davidson, (1 female, ANIC); **Western Australia:** Anjo Penin., 15.ii.1945, B. Malkin (1 male, USNM).

Distribution. Australia: Queensland, New South Wales and Western Australia.

Notes. It is named as a new species as the other species in the *S. koebelei* group which are externally dark, namely, *S. tristis* and *S. eugeniae*, are conspecific with *S. koebelei*. *S. immaculatus*, the other fully black species in the *koebelei* group, was originally described as a variety of *S. koebelei* and only on examination of a second specimen, Blackburn (1895) confirmed it as a distinct species. Considering the kind of variability in *S. koebelei*, the original type could easily have been only a variant of *S. koebelei*. The original type of *S. immaculatus* could not be examined and its type is apparently lost (only the mount is standing in BMNH - R.G. Booth, *in litt.*). The female genitalia are very distinctive in *S. howdenorum*, lacking the sclerotized bursal process present in *S. koebelei*.

Scymnodes hirtus sp. nov.
(Figs 18, 72, 73, 89)

Etymology. The species name refers to the dense dorsal pubescence.

Diagnosis. This species belongs to the *koebelei* group and appears to be similar to *S. koebelei* in general appearance, but is much larger in size with a more strongly convex dorsum and the presence of very coarse, pit-like punctures on the lateral sides of elytra between humeral callus and elytral apices is very characteristic. The penis guide of the male genitalia with a symmetrical apex is very similar to that of *S. howdenorum*, but the penis apex is different.

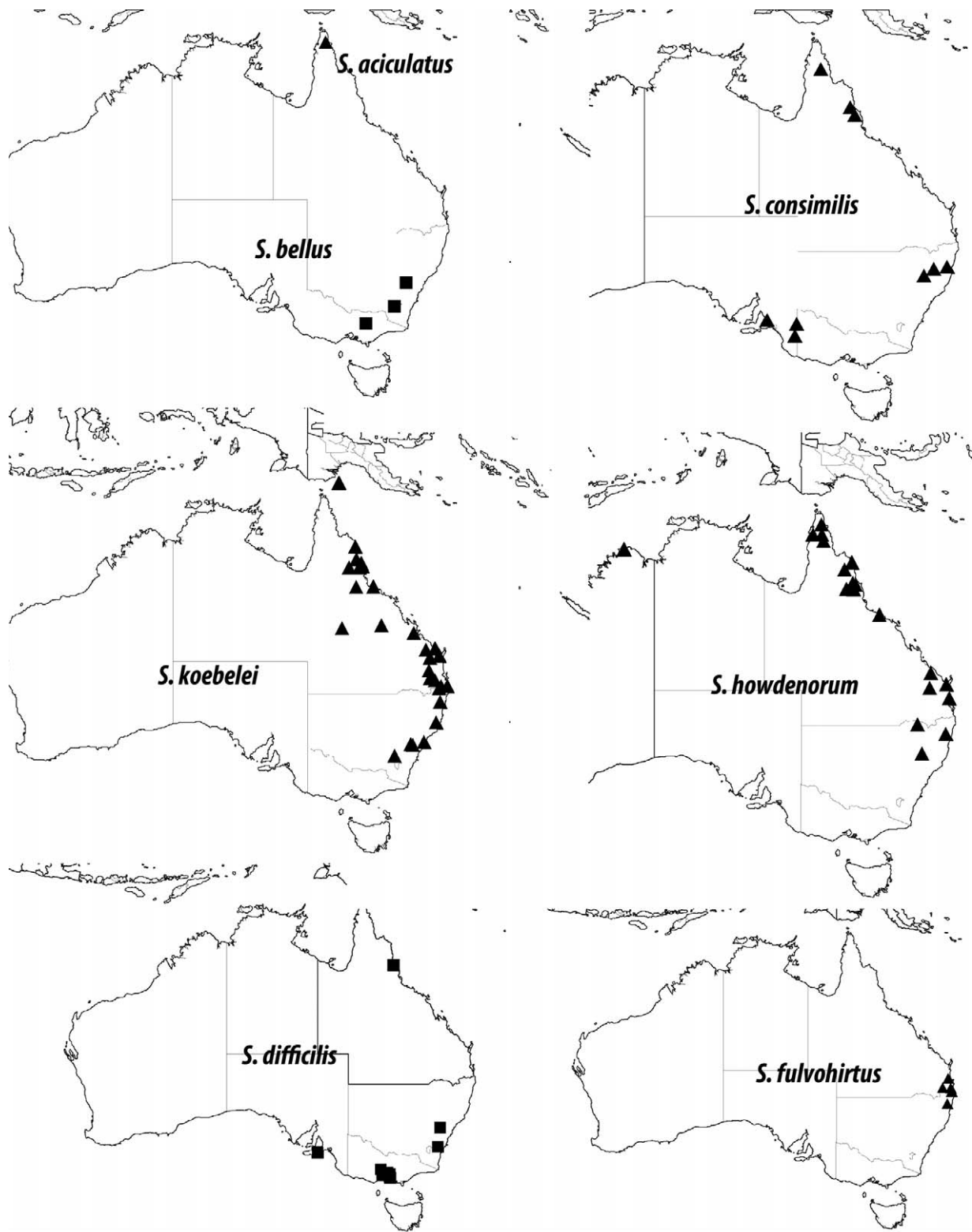
Description. Length: 3.00–3.50 mm.

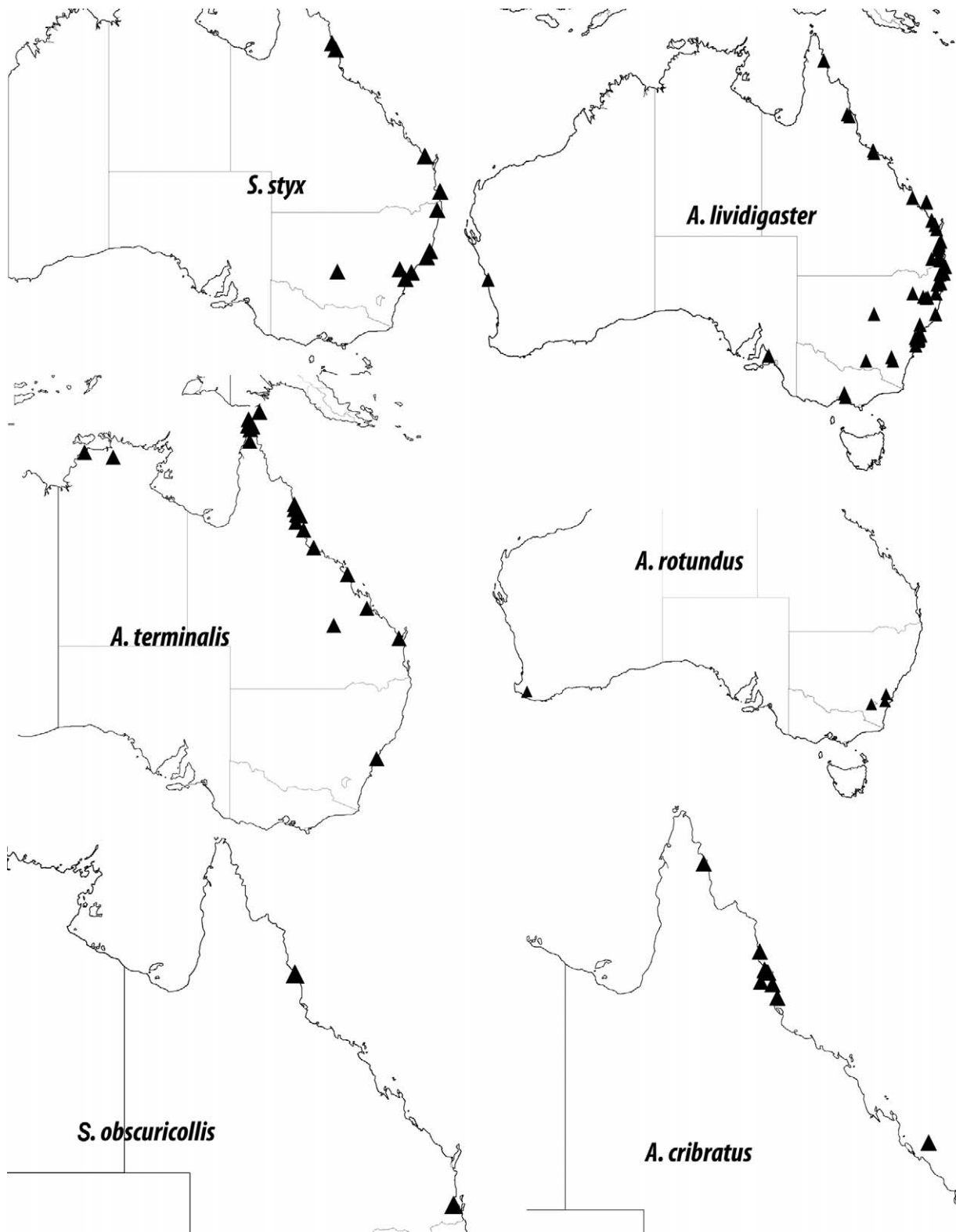
Male. Form (Fig. 18) broad oval, strongly convex. Head yellow. Pronotum completely yellow or anterolateral flanks more or less completely yellow with a median black / fuscous marking or only basal margin with a small black patch. Elytra black with reddish-yellowish apices.

Head with clypeal margin subtruncate; evenly punctate, punctures widely separated. Pronotum without a clear swollen area just below anterolateral corners, at best indicated by slight convexity; punctation on disc even, slightly becoming coarser towards sides, punctures in anterolateral corners larger than those on disc, but never as coarse and close as in the other Australian species of *S. koebelei* group. Elytra laterally emarginate a little before middle, punctation very distinctive with discal area having clear dual punctation, punctures progressively coarser towards sides and apex, a few irregular, deeply impressed, very large punctures present between humeral callus and lateral emargination of elytra giving a corrugated appearance, coarse punctures continuing more or less in a single row up to elytral apex, a very narrow strip adjacent to lateral margins of elytra finely punctate. Abdominal postcoxal line complete, broadly boat-shaped, touching posterior margin only for a short distance apically before turning off to join anterior corner in an obtuse angle. Male genitalia (Figs 72–73) with penis guide apically symmetrical, with a short, tubular projection (Fig. 72), penis (Fig. 73) as illustrated.

Female very similar to male; genitalia (Fig. 89) as illustrated; bursa without infundibulum.

Types. Holotype male: **Papua New Guinea**, Mt. Hagen area, 4000' Baiyer Riv. Sanct. 6–11.VII.1974, H. Howden (CNC). Paratypes: NE. Wau, Bulolo R., 900–1100 m, 25.ix.1965, J. Sedlacek (1, BPBM); Wau, 4000 ft., 24–30.vi.1974, H.F. Howden, Brit. Mus. 1987-171 (1, BMNH); NE, Eliptamin Valley, 1665–2530 m, 23–30. vi.1959 W.W. Brandt (1, BPBM); 1350–1665m, 23–30.vi. 1959, W.W. Brandt (1, BPBM); Kalalo, 750 m, 20–30.vii. 1966, Mena & G.A. Samuelson (1, BPBM); NE. Swart Val.: Karubaka, 1400 m, 6.xi.1958, J.L. Gressitt (1, BPBM); Bisianumu Sta., 40 km NNW Port Moresby, 28.iv.60, C.W. O' Brien (1, CNC); Morobe Dist. Aseki, 1200 m, 3.xii.1974, Reni Sakomdaro (1, ANIC); Garaina, 700–750m, 13–15.vii.1969, J.L. Gressitt (1, BPBM);

Figure 117. Distribution maps of Australian *Scymnodes*.

Figure 118. Distribution maps of Australian *Scymnodes* and *Apolinus*.

Toem, 1–20.iii.1945, D.B. Vogtman (1, USNM); Brown R., 20 km N., Port Moresby, 27.iv.1960, C.W. O'Brien (1, ANIC); Okapa, Okasa, 1400–1600 m, 17.i.1966, J. Sedlacek (1, BPBM); Normanby I., Wakaiuna, Sewa Bay, 21–31.xii.1956, W.W. Brandt (1, BPBM); same data except 1–10.xii.1956 (1, BPBM); Mt. Lamington, 1300 to 1500 feet, C.T. McNamara (1, SAM); Wop River, 6000–4000' N side Star Mts, moss forest, river banks, 9.v.1964, T.A. Hayllar (1, SAM); Sattelberg, Huon-Golf, Biro, 1899 (2 males, TMB).

Distribution. New Guinea.

Scymnodes metallicus sp. nov.
(Figs 19, 74, 75, 86)

Etymology. The specific epithet is in reference to the metallic bluish, iridescent elytra.

Diagnosis. This species can be differentiated by the metallic elytra with bluish-aeueous iridescence, the deeply emarginated clypeus and the male genitalia.

Description. Length: 3.00–3.50 mm; TL/TW: 1.24–1.31; PL/PW: 0.43–0.46; EL/EW: 1.02–1.07.

Male. Form (Fig. 19) oval-ellipsoidal, broadest around middle of elytra and tapering towards apices, convex with dense silvery white pubescence. Head black, clypeal margin narrowly testaceous. Pronotum black except anterolateral corners above swollen area much lighter, yellowish testaceous. Elytra black with a dark bluish to aeneous tint. Ventral side dark pitchy brown to black, except antennae, mouthparts, tarsi of all legs, and ventrites III–VI of abdomen yellowish-testaceous, fore femora and tibiae slightly lighter than other pairs.

Head with clypeal margin distinctly deeply emarginate, punctures progressively, but only slightly, larger from lower margin of eyes, those on frons larger than eye facets, separated by 1–3 diameters, punctures denser and more closely placed near innerocular margins. Pronotum with a very conspicuous swollen area near anterolateral corners, punctures on disc and sides more or less uniform, separated by 1–4 diameters, coarser punctures more or less confined to swollen anterolateral areas, separated by much less than one diameter. Elytra with punctures on disk only slightly larger than those on pronotum, separated by 1–3 diameters, denser and more closely placed on anterior margins and apices, slightly coarser towards lateral sides, without forming any characteristic pattern. Prosternal hypomeron with an oblique groove, prosternal carinae subparallel and anteriorly weakly convergent, without a distinct stem. Metasternum medially shallowly emarginate. Elytral epipleura with a weak declivity on level with hind legs. Abdominal postcoxal line semicircular and complete, somewhat obliterated near its junction with anterior corner and appearing to

be incomplete, running close to, but not touching posterior margin of ventrite I; punctures inside area bound by postcoxal lines small, irregular. Ventrites V and VI medially shallowly emarginate. Male genitalia (Figs 74, 75) with penis guide much longer than parameres in ventral view (Fig 74), penis (Fig. 75) as illustrated.

Female similar to male. Spermatheca (Fig. 86) as illustrated, with a swollen ramus.

Types. Holotype male: New Guinea/ NE/ Mt. Wilhelm, Keglsugl, 10–14.VIII.1969/ No. NGMt-U.6./leg. Dr. J. Balogh, 1 male (TMB). Paratypes: New Guinea: N. Guinea, Bulldog Rd., 2600 m, 25.ix.1973/ J.L. Gressitt Coll'r. Wau Ecology Inst. (1 female, BPBM); NE New Guinea, Bulldog Rd. c14km S. Edie Ck, 2405 m, 4–10.vii.1966, A. Samuelson (1 female, BPBM); NE: Daulo Pass, 2380–2480 m, 29.vii.1982, G.A. Samuelson, (1, ANIC); Mt. Missim, 2400 m, 22–30.iv.1968, J.L. Gressitt, R.C.A. Rice, J. Sedlacek, Malaise trap (1, BPBM).

Distribution. New Guinea.

Scymnodes aciculatus sp. nov.
(Figs 10, 36, 69–71, 117)

Etymology. The species name is in allusion to the long, needle-like apex of the penis of male genitalia.

Diagnosis. *S. aciculatus* can be separated from the other species by its large size, dorsal color pattern, and broad, incomplete abdominal postcoxal lines. The male genitalia (Figs 69–71) with very long parameres and the elongate, needle-like penis apex, are diagnostic.

Description. Length: 4.50–5.00 mm; TL/TW: 1.24–1.34; PL/PW: 0.48–0.53; EL/EW: 1.00–1.05.

Male. Form (Fig. 10) elongate oval, strongly convex. Head yellowish-testaceous. Pronotum yellowish with a large median subtrapezoidal black marking, usually reaching anterior margin. Scutellum black. Elytra black, apical one-sixth yellowish-testaceous. Ventral side dark reddish brown except antennae, mouthparts, pronotal hypomera, prosternum, fore legs, mid- and hind tibiae and tarsi, abdominal ventrites III–VI yellowish brown to testaceous, abdominal ventrites I–II dark brown.

Head with anterior clypeal margin very shallowly emarginate, frons densely and evenly punctate, punctures subequal to or smaller than eye facets, separated by 0.5–2.0 diameters. Pronotum with punctures on disc noticeably finer on anterior half than posterior half, shallowly impressed and separated by 2–6 diameters, larger towards lateral sides, anterolateral corners lacking a well marked swollen area. Elytra shallowly emarginate on lateral side on level with hind legs, discal area with dual punctation, coarse punctures separated by 3–6 diameters, finer punctures between coarse punctures widely separated, coarse punctures

forming a conspicuous strip between humeral callus and elytral emargination on lateral side, area between this strip and lateral margin of elytra finely punctate.

Pronotal hypomeron with an oblique groove on either side near its junction with anterior corner of prosternum, anterior inner corners of hypomera apparently foveolate below these grooves. Prosternal intercoxal process covered with long silvery white pubescence, carinae subparallel, anteriorly weakly convergent and somewhat obliterated, posteriorly divergent. Mesoventrite anteriorly shallowly emarginate. All legs with tibiae externally strongly angulate in anterior half. Abdominal postcoxal line (Fig. 36) incomplete, shallowly semicircular, touching posterior margin of ventrite I for a short distance, but not joining anterior corner; area bound by postcoxal line sparsely and evenly punctate. Posterior margin of ventrite V deeply and ventrite VI broadly and shallowly, emarginate. Male genitalia (Figs 69–71) as illustrated, parameres only slightly shorter than penis guide, very broad and lanceolate in posterior half, apices with very short hairs; penis (Fig. 71) apically very long and aciculate.

Female similar to male, but slightly stouter; coloration more or less similar except head dark brown, pronotum with a larger, trapezoidal, median black marking, all pairs of legs lighter and yellowish brown, prosternal intercoxal process dark brown. Abdominal postcoxal lines broadly boat-shaped, touching posterior margin of ventrite I a long way, apically slightly to distinctly incomplete. Ventrite V medially deeply emarginate, ventrite VI obtriangular to arcuate, posteriorly more shallowly emarginate than ventrite V with a median truncation.

Types. Holotype, male: **Australia:** Queensland. 12 km SSE Heathlands (11.51S 142.38E), 26.i.–1.iii.1992, Malaise#3 & #4, closed forest, P. Feehney (1, ANIC).

Paratypes: **Australia:** same data as the holotype but 26.i.–29.ii.1992 (1, ANIC). **Papua New Guinea:** New Britain, Gazelle Pen., Upper Warangoi, Marinaga, 300 m, 7.xii.1962, J. Sedlacek (1, BPBM); New Britain, Gazelle Pen., Upper Warangoi, Illugi, 230 m, 12–15.xii.1962, J. Sedlacek (1 female, BPBM). **Irian Jaya:** New Guinea (Neth.). Wisselmeren, 1700 m Waghete, Tigi L., 6.viii.1955/ J.L. Gressitt (1 male, BPBM); 5 km westl. Fakfak, 8.vii.1996, leg. Schüle & Stüben (1 male, NHMS).

Distribution. Australia and New Guinea.

Scymnodes laticollis (Weise), comb. nov.

(Figs 20, 88)

Rhizobius laticollis Weise, 1913: 118 (Lectotype female, ZMB; Type locality: Dutch New Guinea).

Diagnosis. This species is externally similar to the other larger species of *Scymnodes* from New Guinea, but can be differentiated by its distinctly elongate,

oblong-oval body outline and the dual punctation on elytra comprising irregular, very deeply impressed coarse punctures and much finer punctures in interstices.

Description. Length: 4.0 mm. TL/TW: 1.32; PL/PW: 0.50–0.55; EL/EW: 1.02.

Female. Form (Fig. 20) elongate oblong-oval, strongly convex, dorsum covered with whitish pubescence. Head yellowish. Pronotum black, anterolateral corners testaceous (narrowly so in the lectotype). Elytra black, apices testaceous. Ventral side with antennae, mouthparts, fore legs, and abdominal ventrites 3–5 yellowish, anterolateral corners of pronotal hypomera testaceous, mid- and hind femora dark brown except apices lighter, testaceous; abdominal ventrites 1 and 2 darker, reddish testaceous; elytral epipleura posteriorly darker testaceous.

Head with anterior clypeal margin very shallowly emarginate; eyes widely separated, interocular distance 2.7× as wide as an eye, more or less punctate throughout, punctures on inner margins of eyes distinctly denser and closer, separated by less than 1 diameter, more widely spaced towards middle and anterior margin, 2–4 diameters apart; interspaces smooth, shiny. Pronotum with outer border anterolaterally not broadened, anterolateral and posterolateral corners deeply grooved below margins, dorsally convex; finely and densely punctate, punctures separated by 1–3 diameters on disc, slightly more closely placed on anterior margin, coarser towards lateral sides, anterolateral corners with a distinct convex area with coarse, deeply and closely set punctures. Elytra laterally shallowly emarginate around middle; punctation distinctly dual, with very coarse, deeply impressed punctures, irregular but mostly widely separated by 1–7 diameters; a narrow strip with very conspicuous, coarse, crater-like, deeply pitted punctures extending posteriorly from humeral callus to ¾ of elytral length, interspaces smooth.

Pronotal hypomera with oblique grooves running backward from anterolateral corners of prosternum to about third of pronotum. Prosternal intercoxal process with carinae reaching beyond ¾th of prosternum, slightly divergent towards posterior. Mesoventrite with anterior margin somewhat thickened, very shallowly emarginate. Legs with mid- and hind femora, particularly the latter, noticeably shorter and more enlarged than fore femora; tarsal claws appendiculate. Abdominal postcoxal line complete, broadly boat-shaped / trapezoidal, not closely approaching posterior margin of ventrite; ventrite V subequal to distinctly longer than III and IV combined, trapezoidal, posteriorly truncate, posterior margin of ventrite VI arcuate. Spermatheca (Fig. 88) as illustrated; bursa without infundibulum.

Male unknown.

Type. Lectotype female (**here designated**): “Nova Guinea (grey, hand written label)/ *Rhizobius laticollis*

m. (in Weise's hand writing/ ex. Coll. J. Weise/ SYNTYPUS *Rhizobius laticollis* Weise, 1913, labeled by MNHUB, 2006 (red label)" (ZMB).

Other specimens examined. Irian Jaya. Toem DNG, 1–10.iii.1945, D.B. Vogtman (1 female, USNM).

Distribution. New Guinea. Irian Jaya.

Scymnodes magnus sp. nov.
(Figs 17, 85)

Etymology. The species epithet refers to the large size of this species.

Diagnosis. This species is similar to *S. aciculatus*, but is much larger with distinctly metallic bluish elytra with somewhat more deeply impressed finer punctures. The postcoxal lines are broadly boat-shaped, posteriorly touching posterior margin of abdominal ventrite I, apically incomplete or obliterated and much deeper than those in *S. aciculatus*.

Description. Female. Length: 6.50 mm; TL/TW: 1.37; PL/PW: 0.53; EL/EW: 1.08. Form (Fig. 17) elongate oval, broadest before middle of elytra, thereafter gradually narrowed towards apices; dorsum strongly convex. Head reddish testaceous. Pronotum testaceous with a large, triangular, black median marking on posterior margin. Elytra black with metallic bluish violet reflections, testaceous for apical $\frac{1}{5}$ th of their length. Ventral side black except antennae, mouthparts, pronotal hypomera, posterior margin of abdominal ventrite II and ventrites III–VI testaceous.

Head with clypeal margin very shallowly emarginate, more or less punctate throughout, slightly denser and more closely placed on either side of eyes than middle, separated by 1–3 diameters. Pronotum with an anterolateral and a corresponding, more prominent posterolateral inner groove, anterolateral corners lacking a distinct swollen area, but set with coarse, closely placed punctures; punctation on disc uniform, fine and very shallowly impressed, separated by 4–6 diameters, coarser on lateral margins and anterolateral corners, separated by much less than their own diameters. Elytra with distinct dual punctures on disc, fine punctures predominant, widely separated and moderately deeply impressed, larger punctures much fewer, very widely separated by 4–9 diameters, elytral apices more or less finely punctate with very few larger punctures; lateral margins with very coarse, deeply set punctures to about a little after lateral emargination, area adjacent to lateral margins distinctly finely punctate, a narrow lateral strip from around humeral callus to about $\frac{3}{4}$ th length of elytra set with several larger punctures, more closely placed than on discal area.

Pronotal hypomera with distinct, deep grooves near their junction with anterolateral corners of pronotum,

appearing to be foveolate. Prosternal intercoxal process with carinae reaching a little beyond middle, subparallel. Mesoventrite with anterior margin tumid, medially very shallowly emarginate. Metaventrite with a series of punctures and striations. Fore tibiae a little more angulate anteriorly compared to mid- and hind tibiae. Abdominal postcoxal lines complete, broadly boat-shaped, area enclosed densely and evenly punctate. Ventrite V as long as ventrites 3 and 4, posterior margin medially shallowly emarginate; ventrite VI broadly conical, posteriorly subtruncate. Spermatheca (Fig. 85) as illustrated; bursa with a very prominent infundibulum.

Male unknown.

Type. Holotype, female: West New Guinea: Star Mts., Sibil Val., 1245 m, 18.X.–8.XI.61/ S. Quate & L. Quate Collectors (BPBM).

Distribution. Papua New Guinea.

Scymnodes riedeli sp. nov.
(Figs 16, 76, 77)

Etymology. The specific epithet is a noun in the genitive case (singular), in honour of Dr. Alexander Riedel (Karlsruhe Museum), who collected many specimens examined in this study.

Diagnosis. Externally this species is similar to *S. hirtus* sp. nov. in general colour scheme and in having very deep, crater-like coarse punctures on the lateral sides of the elytra. But the head with deeply emarginate clypeal margin and close-set punctation, and the male genitalia are very similar to that in *S. consimilis*.

Description. Length: 4.00 mm; TL/TW: 1.20–1.25; PL/PW: 0.46–0.49; EL/EW: 0.94–1.00.

Male. Form (Fig. 16) broad oval, widest around or a little before middle of elytra, dorsum covered with silvery white pubescence. Head reddish-testaceous, pronotum black with anterior and lateral margins narrowly testaceous, elytra black with apical one-fifth reddish-testaceous. Ventral side with antennae, mouthparts, prosternum, fore legs, femoral apices, tibiae and tarsi of mid- and hind legs, abdominal ventrites (except middle of 1 a little darker) reddish brown-testaceous, remaining areas darker reddish brown.

Head with clypeal margin deeply emarginate, eyes widely separated, interocular distance ca. 2.6× as wide as an eye, inner margins posteriorly divergent; densely punctate throughout, punctures 1–3 diameters apart, slightly closer on either side of eyes, larger and more widely spaced towards anterior. Pronotum more or less uniform, fine punctation on disc, 3–5 diameters apart, coarser and more closely spaced on lateral sides, anterolateral corners with a slightly raised area set with coarse punctures separated by less than their own

diameter, inner border of anterolateral margins not visibly produced into a groove. Elytra barely emarginate laterally, with discal area having dual punctures, large ones 3–5 diameters apart, interstices with finer punctures, interspaces between punctures smooth, a wide strip on lateral sides from around basal margin / humeral callus to a little before apices set with very coarse, deep, crater-like punctures arranged in irregular rows, punctation somewhat finer, but dual, towards apices.

Pronotal hypomera with distinct deep grooves running outward from their junction with anterolateral corners of prosternum. Prosternal intercoxal process wide, with a pair of carinae on lateral edges, subparallel, reaching up to middle. Mesoventrite medially shallowly and broadly emarginate. Epipleura with a moderately deep declivity on level with hind legs. All tibiae strongly angulate externally in anterior half. Abdominal postcoxal lines complete, semicircular, not touching posterior margin. Posterior margin of ventrite V very shallowly, and VI a more deeply, emarginate. Male genitalia (Figs 76, 77) with penis guide only a little longer than parameres in ventral view (Fig. 76), penis (Fig. 77) as illustrated.

Female similar to male with coarser punctures on lateral margins of elytra apparently a little more prominent.

Type. Holotype, male: **Irian Jaya:** Jayawijaya, Anggruk 1200–1500 m, 23.9.1992, leg. A. Riedel (NHMS); Paratype, female: Wandemmen Bay, Wondiwoi Mts., Wasior, 300–850m, 5.1.2001, leg. A. Riedel (ANIC).

Distribution. Irian Jaya.

Apolinus Pope et Lawrence

Platyomus Mulsant, 1853: 285 (junior homonym, preoccupied by Schönherr, 1833).-Chapuis, 1876: 211, 215; Blackburn, 1889: 187; 1895: 241 (as senior synonym of *Scymnodes*); Weise, 1918: 222; Korschefsky, 1931: 85 (as senior synonym of *Scymnodes*, but unavailable through homonymy). Type species: *Platyomus lividigaster* Mulsant, 1853, designated by Pope & Lawrence, 1990: 242.

Scymnodes (*Apolinus*) Pope et Lawrence, 1990: 243 (replacement name).

Apolinus: Ślipiński, 2007: 99 (generic status).

Description. Length 2.0–3.5 mm. Form (Figs 21–28) elongate to broad oval, dorsum densely pubescent; species from New Guinea and Irian Jaya often with brilliantly metallic elytra. Anterior clypeal margin of head always truncate between lateral projections. Eyes finely faceted; apparently glabrous, but with very short, sparse hairs visible only at very high magnifications, shallowly emarginate near antennal insertions; always broadly separated by more than twice the eye width. Antennae 11-segmented, antennal club more distinct than in *Scymnodes*, loose, 3-segmented, ter-

minial antennomere subquadrate, apically truncate. Terminal maxillary palpomere always transverse, broadly securiform. Pronotum with simple, reflexed lateral borders, lacking anterolateral grooves. Lateral margins of elytra distinctly carinate. Pronotal hypomera more or less smooth, never with grooves near their junction with anterolateral corners of prosternum. Mesoventrite with or without discrimen. Mid- and hind tibiae with a pair of apical spurs. Abdominal postcoxal lines complete, more or less evenly curved or semicircular, not closely approaching posterior margin of ventrite I, area enclosed usually punctate only in anterior half. Number of visible abdominal sternites six in both sexes. Male genitalia with phallobase and parameres symmetrical; parameres strongly reduced, fully fused with penis guide, visible only as two groups of setae arising at about middle or a third from penis guide in most species, rarely parameres fused to penis guide anteriorly, posteriorly free with long apical hairs. Female genital plates (Fig. 114) triangular, with very short apical styli; apex of bursa (Fig. 115) with a fleshy, lightly sclerotized lobe with sperm duct originating at its base; spermatheca (Fig. 116) worm-like, without well defined ramus or nodulus; spermathecal accessory gland adjacent to sperm duct.

Discussion. *Apolinus* is very similar to *Scymnodes*, *Cryptolaemus* Mulsant and *Rhynchortalia* Crotch in general appearance. It has complete postcoxal lines and sexually dimorphic tarsal claws as in *Cryptolaemus* and *Scymnodes*, but differs from all these genera by its unique male genitalia with the parameres usually fully or, rarely anteriorly, fused with the penis guide. In some species from New Guinea and Irian Jaya, all tarsal claws in males are apparently bifid as in *Rhynchortalia* and some undescribed species of *Cryptolaemus*. Two Australian species of *Scymnus* examined, namely, *S. varipes* (Blackburn) and *S. ambulans* Blackburn, also have all-bifid tarsal claws in males and look very similar to *Apolinus* except for their distinctly densely pubescent eyes and small size.

Many species of *Apolinus* resemble the former *Amidellus* Weise (= *Diomus* Mulsant), sharing similar size and colouration (Ślipiński, 2007). Some Australian species, particularly, *A. lividigaster* and *A. cribratus*, are often confused with *Diomus* (= *Amidellus*) *ementitor* (Blackburn, 1895), which is similar in size and external appearance. *Amidellus* can be differentiated from *Apolinus* by its much larger, less widely separated, and densely pubescent eyes, distinctly shorter and more transverse mesoventrite, and the incomplete, *Diomus*-type abdominal postcoxal plates.

Distribution. Australia and New Guinea; *A. lividigaster* has been introduced successfully in New Zealand, Melanesia and Hawaii.

Biology. The only species of *Apolinus* for which details of biology are known is *A. lividigaster*. It is mainly aphidophagous and also found in association with coccids. Data labels indicate similar feeding habits for *A. longicornis* (Weise) (Pope & Lawrence, 1990).

Key to the species of *Apolinus* Pope et Lawrence

1. Male genitalia with parameres fully fused with penis guide, not visible except for apical hairs . . . **2**
- . Male genitalia with parameres apparently only anteriorly fused with penis guide, apices distinctly free with long hairs **6**
2. Dark area of pronotum confined to a median-basal region that is sometimes prolonged forward into a point (Fig. 22). Elytral punctures distinctly dual. Male genitalia (Figs 101–103) as illustrated. Australia *cribratus* (Blackburn)
- . Darker area of pronotum large, usually extending into, or almost to anterior border. Elytral punctures dual or not. Male genitalia not as above **3**
3. Mesoventrite with a distinct discrimen, often short, not reaching beyond middle **4**
- . Mesoventrite without a discrimen **5**
4. Elytra black, with more or less uniform, fine to moderate, widely separated punctures. Male genitalia (Figs 95–97) as illustrated. Australia, introduced in New Zealand, Pacific Islands and Hawaii *lividigaster lividigaster* (Mulsant)
- . Elytra with a distinct metallic bluish or aeneous sheen, punctures distinctly dual, coarser and closer on lateral sides. Male genitalia (Figs 95–97) as illustrated. New Guinea *lividigaster wallacii* (Crotch)
5. Elytral colour variable, black with narrowly pale reddish testaceous apices (Fig. 23) or brownish with three dark, longitudinal sutural and discal stripes (Fig. 24). Male genitalia (Figs 92–94) as illustrated. Australia, New Guinea, Irian Jaya *terminalis* (Blackburn)
- . Elytra black with narrowly testaceous apices (Fig. 26). Male genitalia (Figs 104–106) as illustrated. New Guinea *longicornis* (Weise)
6. Very small (1.75–2.00 mm), dorsum dark pitchy brown, pronotum with a median black or fuscous marking (Fig. 25). Male genitalia (Figs 98–100) as illustrated, parameres very short and apparently free, with very long apical hairs. Australia *rotundus* (Blackburn)
- . Larger, at least 3.0 mm, dorsal colour pattern and male genitalia not as above. New Guinea **7**
7. Elytra metallic violet to green (Fig. 27). Male genitalia (Figs 111–113) as illustrated. New Guinea and Irian Jaya *irian* sp. nov.

- . Elytra black with yellowish-testaceous apices (Fig. 28). Male genitalia (Figs 107–110) as illustrated. Irian Jaya *jaya* sp. nov.

Review of species of *Apolinus* Pope et Lawrence

Apolinus lividigaster lividigaster (Mulsant) (Figs 21, 37, 95–97, 116, 118)

Platymus lividigaster Mulsant, 1853: 286.

Scymnodes lividigaster: Blackburn, 1895: 245. Korschefsky, 1931: 85.

Scymnodes chapuisi Weise, 1923: 141 (replacement name for *Scymnodes lividigaster* Chapuis, 1876: 216, not Mulsant). Pope & Lawrence, 1990: 244. Ślipiński, 2007: 101 (as *Apolinus chapuisi*). **New synonym.**

Apolinus lividigaster: Ślipiński, 2007.

Diagnosis. *A. lividigaster* can be identified by the yellow (male) or black head (female), bright yellow pronotum with a median black marking and completely black elytra with more or less uniform, fine to moderate, widely separated punctures. The male genitalia (Figs 95–97) are diagnostic. *A. lividigaster* is very similar to *A. cribratus* among other Australian species, from which it can be separated by its more or less uniform, fine to moderate, more widely separated elytral punctures, though occasionally smaller specimens of both sexes have unusually larger punctures on elytra and the male genitalia need to be studied. Besides, *A. cribratus* is widest around middle of elytra whereas *A. lividigaster* is anteriorly broadest.

Description. Length: 2.50–4.00 mm; TL/TW: 1.26–1.28; PL/PW: 0.39–0.46; EL/EW: 0.99.

Male. Form (Fig. 21) elongate oval, convex, with dense silvery white pubescence. Head bright lemon yellow, posterior half up to lower margin of eyes black. Pronotum bright yellow with a median black marking, occasionally apically narrowed. Scutellum and elytra black. Ventral side with antennae, mouthparts, pronotal hypomera, fore legs and abdomen yellowish, tibiae and tarsi of middle and hind legs light testaceous, outer edges of fore femora, pro-, meso- and metaventrites, middle and hind legs and epipleura dark pitchy brown to black.

Head with clypeal margin entire, punctures on either side of eyes and posterior half small and closely placed, separated by 1–2 diameters, larger and more widely placed towards middle and clypeal margin, separated by 3–6 diameters. Eyes with very sparse, short erect setae difficult to observe at low magnifications. Pronotum with regular, fine and shallowly impressed punctures, widely separated by 3–6 diameters, more or less uniform on disc and lateral sides, anterior and

posterior margins narrowly bordered. Elytra laterally very shallowly emarginate on level with hind legs; punctation more or less uniform in size and regular, with a mixture of apparently deeply and shallowly impressed punctures, widely separated by 3–5 diameters, coarser punctures very few, only slightly larger than regular punctures, interspaces between punctures smooth and shiny; often punctures much larger and apparently coarser, particularly on lateral sides, though widely separated.

Prosternal intercoxal process with carinae anteriorly convergent, gradually divergent towards posterior. Mesoventrite with a shallow triangular emargination on anterior margin; median carina present, often short, not reaching beyond middle. Epipleura with a shallow declivity on level with hind legs. Abdominal postcoxal lines (Fig. 37) complete, shallowly semicircular, area enclosed by postcoxal line uniformly punctate only in anterior half; posterior margin of ventrite V broadly and shallowly, and ventrite VI deeply, emarginate. Male genitalia (Figs 95–97) as illustrated, apical hairs of parameres hardly visible in lateral view (Fig. 95).

Female similar to male, except head fully black, fore legs slightly darker brown, tibiae and tarsi yellowish-testaceous; middle and hind legs dark brown with lighter brown tarsi. Spermatheca (Fig. 116) as illustrated.

Types. Lectotype of *S. chapuisi* Weise: "Honolulu, Sept. 1908/ chapuisi m. (in Weise's handwriting)/ 289 80/ Scymnodes lividigaster (Muls.) R.D. Pope det. 1980" (NRM). **Here designated.**

Other specimens examined. AUSTRALIA: Nov. Holl./ 104, 1 male (NRM); **South Australia:** Mitcham SA, A 2879, 16.ix.1988, R.V. Southwest on mandarin twig (1, SAM); **Victoria:** Carrum S., Melbourne on *Leptospermum* and *Banksia*, 8.ix.85, C. Rojowski (1 male, 1 female, SAM); Melbourne, 10.i.1994, S. Chandler, on rose petals (1, male, VAIC); **New South Wales:** Sydney (5 males, 1 female, SAM); Somersby, 12.xii.1984, G.A.C. Beattie (1, DARI); Sydney, 24.iii.1989, Aola Richards, V.F. Eastop with *Aphis eugeniae* Glochidion V.F.E. 18.435 (1 female, BMNH); Duranbah TR, 29.x.1956, B.M. Braithwaite, ant aphid exp. Bananas at H. Mayes (1, DARI); Dorrigo, (1 female, SAM); "Lorien" W.R. 3 km N. Lansdowne/ Taree NSW 6–13.xii.1987, G. Williams, ex. R/f margin, Malaise trap (3, ANIC); Harrington 3–5.iii.1989, H. & A. Howden (2 males, 1 female, CMN); 4 km W. Lansdowne, Lorien, 5–6.xii.1986, H. & A. Howden (2 males, CMN); Yuragir NP, Station Creek, 20.xi.1982, J. & E. Doyen (1 female, ANIC); Erina, 3.XII.70, E1731, M.J. Beeston (4 females, 4 males); Killara, 1.xi.70, M.J. Beeston (1 male, 1 female, ANIC); 5 km N. Harrington, 14.ix.1983, G. Williams *Acacia-Banksia* assoc. (1 male, AM); Orara river, H. Davidson (1 male, ANIC); Murwillumbah, 5.xi.1957, B.M. Braithwaite (1female, DARI); Kangaroo

Park, Manly, 24.xi.1986, D.S. Horning, Jr., on foliage of *Acacia longifolia* (1female, AM); Olford (34°13'0"S 151°00'30"E), 70 m, 25.xi.1995, A. Sundholm & A. Scott, on *Acmena smithi* flowers (1 female, AM); Church Point, 13.x.70, D.P. Sands (1 male, ANIC); Somersby, 15.x.70, D.P. Sands (1 female, ANIC); Bantry Bay, Sydney 20.ii.1984, Richard Bejsak (1, AM); Terrigal, i.1972, W.J.M. Vestjens (1, ANIC); 19 km S. Casino, 5.vi.1992, C. Reid, flowering *Acacia* (1 female, ANIC); Kenthurst, 23.v.73, 73/324/F, W.M. Milne Lemon (1, ANIC); Gosford, 29.iv.1964, R.G. Lukins, Valencia Orange at Narara Expt. Station (5, DARI); Oxford falls, 7.vii.70, M.J. Beeston (3, ANIC); Cowper, N.S.W., 14.vii.70, E1570, D.P. Sands, 1 ex; NSW Nielsen Park Sydney, 14 November 1984 Richard Bejsak (1, AM); Illawarra, N.S. Wales, H. Petersen (1, USNM); Rydalmere, 19:3.1976, C.E. Chadwick, on citrus, 1 ex. (1, AM); 0.5 km SE of Lansdowne ex. Riverine rf 1–3 January 1993, G.&T. Williams (1, AM); 3 km NE Harrington 3.i.1991, On *Alphitonia excelsa* blossoms, rainforest, G. A. Williams (1, AM); Sydney, A. Koebele collector (1, USNM); Manly, 14.iv.1892, Froggatt, W.W. Froggatt Collection, 2 females; Macleay R., 11.28, H.J.C., 1 female (ANIC); Greta, 1951, J. Sedlacek, (BPBM). **Queensland:** Noosa, 12.1.33, J.G. Brooks Bequest, 1976 (1 male, ANIC); Mary River, 27.XII.1986, H.&A. Howden, 1 male (CMN); 9 km SE of Yeppoon, Q., 20–30.x.1975, I.F.B. Common (ANIC); 3 km ENE of Mt. Tozer (12.44S 143.14E), 28.vi–4.vii.1986, T. Weir & A. Calder (1, ANIC); 2 Km NE Mt. Coonowrin, 6.vi.1992, C. Reid, beating *Acacia* flowers (1, ANIC); Heron Island, Great Barrier Reef, 10.xi.67, H. Heatwole (ANIC); Dunedin Rock nr. Nambour, 24.viii.80, W. Aven (ANIC); Bundaberg, 15.iii.72, in wet grass on river bank, H. Frauca (ANIC); Jimboomba, ix–7.x.1990, W. Dressler, from bushes (ANIC); 2 mi. SW of Mt. Inkerman, Q. (19.45S 147.30E), 11.xii.1968, S. Misko (ANIC); Pine Ck. nr. Bundaberg, 3–7.xi.1975, H. Frauca (ANIC); Bundaberg, 1–8.viii.71, H. Frauca (ANIC); Adyce, iii.49, Chatswood, 1 male (ANIC); Microphyll Vine Forest Mulgowie, S.E. Qld, 29:iii:1984, 7:xi:83, 16:xi:83, 3:vi:82, 18:v:82, 20:x:83, 29:vi:1984, M.D. Peart (UQIC); Southedge R.S. Mareeba, V. Hansen, June 1992, On *Buckinghamia celissma*, 1 female (QDPIM); Mareeba, 19–28.xii.1988, H. & A. Howden, (1, CMN); Brisbane: St. Lucia, 27 Oct. 1987, G.V. Maynard on *Eucalyptus curtisii* (UQIC); Brisbane, McGregor/ E.W. Ferguson collection (ANIC); McAfee Brisbane Forest Park, 100–200m, 8.viii.2004, M. Wanat, sclerophyll & rainforest (ANIC); North Shore, E.W.Ferguson collection (ANIC); Wamuran, on soursop flowers with aphids, 10.iii.1996, M.A. Williams (ANIC); Woombye, nr. Nambour, 16.x.65, D.H. Colless (ANIC); Heron I., 84 km SW by W. of Gladstone, 15–19.ix.1983, D.C.F. & B.G.F. Rentz, Stop 32 (ANIC). **Western Australia:** Port Denison, Thorey (1, NRM); ACT: 35.24S 149.06E Monash, ACT, 6 June 1995, W. Dressler

(ANIC). **Cook Islands:** Rarotonga, 1–7 June 1985, S. & S.G. Hunter, 2 ex (DARI); Rarotonga, Titikaveka, 0–100m, xiii.1977, N.L.H. Krauss (BPBM). **New Caledonia:** Ouen Toro, 13.x.1978, J.C. Watt, beating at night (NZAC); Noumea, 0–50 m, iii.1978 (BPBM); Yahoue, 100–200m, xii.1983, N.L.H. Krauss Coll (NZAC); Robinson, nr. Noumea, 20–100m, 11.xii.1983 (BPBM); Plum, 0–100m, 13.ii.1976 (BPBM). **Samoa:** Tutuila, Pago Pago, ii.1960, N.L.H. Krauss Collector (BPBM). **Society Islands:** **Tahiti:** Papete, 1–100m, viii.1969, N.L.H. Krauss, 8 females, 13 males (BPBM). **Austral Is.:** (Tubuai Is.) Rurutu I., Moerai, 0–150 m, XII.1977, N.L.H. Krauss coll., 8 males, 5 females (BPBM). **USA, Hawaii:** Honolulu, Silvestri (USNM); Coll. Kirkaldy/ Hibiscus ♀ ♂ cop./ chapuisi Ws (1, NRM).

Distribution. **Australia:** ACT, Queensland, New South Wales, South Australia, Victoria, Western Australia. It has been introduced by human activities to New Zealand, New Caledonia, Cook Islands, French Polynesia (Austral Islands = Tubuai Islands, Society Islands, Tahiti, Tuamotu Archipelago), Samoa, Hawaii (Swezey, 1923; Illingworth, 1927; Leeper, 1976). Introduced to Puerto Rico in 1990, but probably not established.

Notes. *Scymnodes chapuisi* Weise (1923), a replacement name for *S. lividigaster* Chapuis (1876) given by Weise (1923), is synonymised with *A. lividigaster*. A specimen from Honolulu (Hawaii) identified, as *S. chapuisi* by Weise (NRM) is *A. lividigaster* and also labeled so by R.D. Pope during his studies. This specimen is designated as the lectotype of *S. chapuisi* (**lectotype designation**).

Some specimens from the French Polynesia have elytra with narrowly testaceous apices.

Biology. Richards (1980) and Pope (1979) studied the morphology, behaviour and defensive adaptations of the larva of *A. lividigaster*. Ślipiński (2007) described and illustrated the larva in detail. Anderson (1981a,b; 1982) studied its biology, distribution and population dynamics in Australia in detail and listed the plants with which it was associated. It is more or less aphidophagous or mostly associated with aphids (Anderson, 1981a,b; 1982; Pope & Lawrence, 1990), and to some extent, scales. The recorded insect hosts are as follows: **Hemiptera: Aphididae:** *Aphis eugeniae* van der Goot (Anderson, 1982); *A. craccivora* Koch, *A. gossypii* Glover, *Myzus persicae* (Sulzer), *Toxoptera citricida* (Kirkaldy), *T. aurantii* (Boyer de Fonscolombe). **Coccidae:** *Ceroplastes destructor* Newstead, *C. sinensis* Del Guercio (Anonymous, 2006; Carver 1978, 2000; Waterhouse & Sands, 2001).

Apolinus lividigaster wallacii (Crotch)
comb. et stat. nov.

Ortalia wallacii Crotch, 1874: 276 (Lectotype female, UCCC; type locality: Aru Island).

Rhynchortalia wallacii: Weise, 1901: 285. -Korschefsky, 1931: 109.
Scymnodes (Scymnodes) wallacei: Pope and Lawrence, 1990: 243.

Diagnosis. This subspecies can be identified by the elytra having a distinct bluish-violet metallic sheen and testaceous apices with dual and deeply impressed punctures. The male genitalia are very similar to those of *A. lividigaster lividigaster*, but slightly differ in having the apical setae of parameres slightly longer and more prominent and the penis guide somewhat more broadened before tapering to a conical apex. In both, the mesoventrite is carinate and the postcoxal lines are shallowly semicircular. It is externally difficult to differentiate from the other species of New Guinea and Irian Jaya, most of which have similar coloration and appearance.

Description. Length: 3.50–4.00 mm; TL/TW: 1.23–1.30; PL/PW: 0.47–0.50; EL/EW: 0.98–1.02. Form elongate oval, broadest a little before middle of elytra, elytra subparallel up to middle, thereafter gradually narrowed towards apex. Head yellow. Pronotum yellowish with a transverse median black marking on posterior margin, variable, large and subtrapezoidal or shorter and acutely pointed in middle or reduced to a very narrow stripe. Elytra dark brown to black with metallic reflections, apical $1/6^{\text{th}}$ to $1/7^{\text{th}}$ testaceous, occasionally very narrowly extended laterally up to middle of elytra, rarely lateral margins very narrowly testaceous. Ventral side dark reddish brown to black except antennae, mouthparts, pronotal hypomera, lateral arms of prosternum, fore legs, tibiae and tarsi of mid- and hind legs, and abdominal ventrites (except middle of ventrite I dark brown) yellowish-testaceous.

Head with eyes apparently glabrous but with very short, sparse hairs, broadly separated by a distance 2.7 times as wide as an eye; surfaces uniformly punctate throughout, punctures dense, separated by 1–2 diameters on either side of eyes and on posterior half, slightly more widely separated in middle, interspaces more or less smooth. Pronotum with uniform punctures, finer than those on head, separated by 1–3 diameters, very slightly larger on lateral sides, interspaces smooth and shiny. Elytra laterally emarginate a little before middle, with dual punctures, large punctures somewhat irregular on disc, separated by less than their own to 4 diameters, mostly widely separated, finer punctures in interstices, coarser, deeply impressed on lateral margins of elytra up to a little beyond lateral emargination, elytral apices with punctation slightly weaker, more shallowly impressed; interspaces smooth and shiny.

Prosternal carinae anteriorly fused, divergent posteriorly. Mesoventrite with anterior margin broadly triangularly emarginate in middle with a weak longitudinal carina reaching a little beyond middle of ventrite. Abdominal postcoxal lines complete, usually shallowly, and occasionally slightly more deeply, semicircular;

area enclosed uniformly punctate only in anterior half. Posterior margin of ventrite V broadly and shallowly emarginate, ventrite VI slightly more deeply emarginated posteriorly.

Male genitalia similar to those of nominate form (Figs 95–97), with penis guide a little broader.

Type. Lectotype female: Type/ Type wallacii Ari I/ Lectotype designated by R. Gordon 1987 (UCCC).

Other specimens examined. New Guinea: Mt. Lamington Dist., Northern Division, Papua, July 1927, C.T. McNamara, *Rhynchoortalia wallacei* Crotch, var. R.D. Pope det. 1957 (1 male, ANIC); Mt. Lamington, N.E. Papua, 1300 to 1500 feet, C.T. McNamara (SAM); SE, Kokoda, 400 m, 15–20.xi.1965, J. & M. Sedlacek, light trap (1 male, BPBM); Western District, Rouku, Morehead River, 19.iii.–28.v.1962, W.W. Brandt (1 male, ANIC); PNG: New Guinea SE, Eilogo Ck: nr Sirinumu 5.ix.1982 (ANIC); Wau 4000 feet 19–22.IV.1972 R.H. Carcasson (USNM); Wareo, Rev. L. Wagner (SAM); Torecella M., Sea Falls near Afua, 1700 ft, 1939, P.G. Moore, B.M. 1939–479 (BMNH); New Guinea: NE, Wau, 1100–1300 m, 1966/ J. Sedlacek (BPBM); Bisiatabu, Port Moresby, W.N. Lock (SAM). Irian Jaya: Japana Serui nr Ambeidinu, 1000 m, 5.viii.1996, Schule & Stuben (NHMS).

Distribution. New Guinea, Irian Jaya.

Notes. *Rhynchoortalia wallacii* Crotch (1874) belongs to *Apolinus* as the lectotype female of this species (University of Cambridge, Crotch Collections (UCCC), examined) possesses a non-rostrate head, prominent prosternal intercoxal process with carinae, complete abdominal postcoxal lines and appendiculate tarsal claws characteristic of *Apolinus* (**new combination**). Due to a shortage of material and time we were not able to resolve the status of many Papuan species of the “*lividigaster* group” satisfactorily as there is a lot of external variation with relatively stable form of male and female genitalia. We treat *A. wallacii* as a separate subspecies because it is geographically isolated from the Australian populations and possesses very distinct morphological features. Its taxonomic status however remains to be solved in more comprehensive treatment of the Papuan species.

Biology. It has been reported (as *Rhynchoortalia wallacii*), perhaps erroneously, as a pest of citrus in Karimui (French, 2008).

Apolinus cribratus (Blackburn)

(Figs 22, 38, 101–103, 118)

Platylomus cribratus Blackburn, 1895: 242 (Holotype female, BMNH); Type locality: Queensland, near Cairns).

Scymnoderes cribratus: Weise, 1923: 138. -Korschefsky, 1931: 85.

Scymnoderes (Apolinus) cribratus: Pope & Lawrence, 1990: 244.

Apolinus cribratus: Ślipiński, 2007: 101 (change of combination).

Diagnosis. This species is very similar to *A. lividigaster* in general appearance and coloration and

can be separated by its distinctly dual elytral punctures comprising close and deeply set large punctures with finer punctures in interstices. In the nominate form of *A. lividigaster*, elytral punctation is more regular and coarse punctures are not much larger than finer ones and not as deeply impressed, but occasionally some specimens have much reduced pronotal marking and the elytral punctation also is a bit coarser, which may lead to some confusion. The male genitalia (Figs 101–103) are, however, diagnostic.

Description. Length: 2.50–3.50 mm; TL/TW: 1.23–1.27; PL/PW: 0.48; EL/EW: 1.00. Male form (Fig. 22) elongate oval, convex, dorsum covered with silvery white pubescence. Head yellow with a basal black marking, medially broadly v-shaped, reaching a little beyond lower margin of eyes; pronotum bright luteous yellow with a transverse black marking on posterior margin, sometimes extended into a subtriangular or pointed apex, rarely with only a small black basal marking or more or less completely yellow with a median fuscous spot; scutellum and elytra black. Ventral side more or less completely dark brown to black, antennae and mouthparts, pronotal hypomera (except posterior inner corners brown), abdominal ventrites 3–VI yellowish brown, fore femora, tibiae and all tarsi lighter testaceous, rest of ventral side including middle of ventrites 1 and 2 dark brown to black.

Head with punctures regular, separated by 2–4 diameters, slightly larger and more widely separated in middle than at base and innerocular margins. Pronotum with regular and even punctures on disc, separated by 2–4 diameters, finer, more shallowly impressed and widely separated by 3–6 diameters towards sides and anterior margin, interspaces between punctures smooth and shiny. Elytra with a shallow emargination on lateral side, punctation on disc clearly dual, large punctures close, separated by less than their own to 2 diameters, very deeply impressed, ca. 3–4× as large as finer ones, interstices with finer punctures, more or less similar on all sides. Prosternal carinae anteriorly confluent with a short stem, broadly divergent towards posterior. Mesoventrite with a longitudinal carina, anterior margin medially triangularly emarginate. Elytral epipleura with a shallow declivity on level with hind legs. Abdominal postcoxal lines (Fig. 38) broadly semicircular and complete, evenly punctate only in anterior half. Posterior margin of ventrite V broadly and shallowly, and ventrite VI deeply, emarginate. Male genitalia (Figs 101–103) very distinctive, penis guide elongate, gradually tapering towards apex, apical hairs of parameres long, visible about midlength in lateral view (Fig. 101), in ventral view more or less cylindrical for $\frac{2}{3}$ of its length and later narrowed to a tubular apex (Fig. 102); penis with a large, bulbous capsule (Fig. 103).

Female similar to male, except head completely black and all pairs of legs darker.

Type. Holotype male with the following data: "TYPE (red bordered circular label)/ 5903 N. Qu. T. (in red)/ Blackburn coll. 1910-236/ *Platyomus cribratus*, Blackb. (BMNH).

Other specimens examined. AUSTRALIA: Australia, Koebele, 1 female (BPBM); Queensland: Cairns, E.W. Ferguson collection (ANIC); Cairns, vii–viii.1904, R.C.L. Perkins, 1942–95 (BMNH); Cairns, Koebele (BPBM); Cairns (SAM); 23.26S 151.55E Heron I., 84 km SW by W. of Gladstone, 15–19.vii.1983, D.C.F. & B.G.F. Rentz, Stop 32 (ANIC); Redlynch, 14.viii.1938, G.H. Dieke Coll'n 1965 (USNM); Kuranda, R.C.L. Perkins, B.M. 1942-95 (BMNH); Clump Point, 1947, J.D. Campbell (MVM); Kuranda, 21.ix.34, J.G. Brooks (ANIC); Kuranda, Aug. 10.04, Coll. Koebele, (BPBM); Edge Hill (QDPIM); Atherton, 6.ii.1975, H.&A. Howden (CNC); Kuranda, 14.i.1999, A. Podlussány (TMB); Cape Tribulation (Crane) 16.06S X 145.27E, FIT canopy 2, 23.x.–6.xi.2000, Alt < 50m, Cermak / Stork C215 (ANIC); 9 km ENE of Mt. Tozer, 12.43S 143.17E, 5–10.vi.1986, T. Weir & A. Calder (ANIC); Babinda, H.K. Williams, iv.8–16.19 (BPBM).

Distribution: Australia: Queensland.

Apolinus terminalis (Blackburn)
(Figs 23, 24, 39, 92–94, 118)

Platyomus terminalis Blackburn, 1895: 245 (Holotype female, BMNH; Type locality: Queensland, near Cairns).

Scymnodes terminalis: Weise, 1923: 138.

Scymnodes (Apolinus) terminalis: Pope and Lawrence, 1990: 244.

Apolinus terminalis: Ślipiński, 2007: 101 (change of combination).

Scymnodes spilotus QUOTE "Weise, 1923" Weise, 1923: 139 (Lectotype male, NRM; Type locality: Queensland, Malanda, Yarrabah).- Ślipiński, 2007: 101 (as *Apolinus spilotus*). **New synonym.**

Scymnodes papuanus Weise, 1918: 222 (Lectotype male; NRM; Type locality: Kei Is.). **New synonym.**

Scymnodes (Apolinus) papuanus: Pope and Lawrence, 1990: 244.

Scymnodes punctiger Weise, 1918: 222 (Lectotype female, NRM; Type locality: Torricelli Geb., New Guinea). **New synonym.**

Scymnodes (Apolinus) punctiger: Pope and Lawrence, 1990: 244.

Diagnosis. This species can be identified by the dark reddish brown to black elytra with reddish brown to testaceous apices (Fig. 23) and dense, close, but never distinctly dual punctation; in some Australian examples, elytra are reddish brown with three black / dark brown stripes – two dorsolateral and one sutural – which are apically confluent, and testaceous apices (Fig. 24); occasionally elytral stripes are obliterated, leaving the elytra dark brown with testaceous apices and lateral margins, with or without a paler area on either side of suture.

Description. Length: 2.50–4.00 mm; TL/TW: 1.10–1.20; PL/PW: 0.46; EL/EW: 0.90–0.92.

Male: Form (Figs 23, 24) broad oval, convex, elytra broader than long, widest a little before middle, dorsum with silvery white pubescence. Head yellowish brown to testaceous, pronotum testaceous with a black, subtrapezoidal median marking on posterior margin; scutellum black; elytra dark reddish brown to black with reddish brown or testaceous apices (Fig. 23), in some Australian examples, dark reddish brown with three dark brown to black stripes – two broad and dorsolateral and one sutural and much less wide except in anterior fourth, stripes apically confluent leaving apices and lateral margins testaceous (Fig. 24), occasionally elytral stripes somewhat obliterated with dorsolateral areas broadly black, middle of elytra dark reddish brown; in older specimens ground colour yellowish with dull brown elytral stripes (*spilotus*-type). Ventral side more or less uniform testaceous, except meso-, meta- and middle abdominal ventrites 1 and 2 darker brown.

Head with punctures on either side of eye margins and base closely punctate, separated by 2–3 diameters, slightly larger and more widely spaced towards middle and clypeal margin, interspaces smooth and shiny. Pronotum with punctures very shallowly impressed, separated by 2–4 diameters on disc, slightly more widely separated by 3–6 diameters towards anterior and lateral sides, interspaces smooth and shiny. Elytra very shallowly emarginate on lateral side on level with hind legs, punctures on disc uniformly dense, more deeply impressed than those on pronotum, separated by < 1 to 3 diameters, slightly larger and less widely separated towards sides, never very distinctly dual with very large coarse punctures, finer and widely separated around elytral apices, interspaces smooth and shiny.

Prosternal carinae anteriorly confluent with a short stem, gradually and broadly divergent in posterior half. Mesoventrite without a longitudinal carina, middle of anterior margin broadly and shallowly emarginate. Abdominal postcoxal line (Fig. 39) complete, semicircular. Epipleura with shallow declivity on level with hind legs. Posterior margin of ventrite V broadly and shallowly, and VI deeply, emarginate. Male genitalia (Figs 92–94) with penis guide in lateral view with apical hairs of parameres visible at about $\frac{3}{5}$ th of its length (Fig. 92), more than half as long as remaining length of penis guide; in dorsal view, apically conical (Fig. 93); penis (Fig. 94) as illustrated.

Female. Similar to male, but head sometimes darker, brownish or fuscous. Ventral side more or less uniform testaceous, posterior margin of ventrite V broadly and very shallowly emarginate, ventrite VI arcuate.

Types. Holotype female of *A. terminalis* on card point pasted on another, with the following data: "TYPE (red bordered circular label)/ 5909 N. Qu./ Blackburn coll. 1910-236/ *Platyomus terminalis*, Blackb." (BMNH).

Lectotype and two paralectotypes of *S. spilotus* (**here designated**), labeled by R.D. Pope as follows: Lectotype (circular, violet bordered label)/ Yarrabah/ Queensl., Mjoberg/ ♂/ 275 80/ Lectotype *Scymnoderes spilotus* Wse. R.D. Pope det. 1980 (NHRMS); Paralectotype (circular, blue bordered label)/ Yarrabah/ Queensl. Mjoberg/ spilotus m./ 274 80/ Paralectotype *Scymnoderes spilotus* Wse., R.D. Pope det. 1980; Paralectotype (circular, blue bordered label)/ Malanda/ Queensl. Mjoberg/ Type/ spilotus m./ 273 80/ Paralectotype *Scymnoderes spilotus* Wse., R.D. Pope det. 1980 (NHRMS).

S. papuanus. Lectotype, male (**here designated**) with the following data: “Key Ins. Hauser (hand written grey label)/ Ins. Key Hauser/ papuanus m./ Typus (red label)/ *Scymnoderes papuanus* Weise det. A.S. Ślipiński” (NRM). Three paralectotypes (**here designated**) of *Scymnoderes papuanus* Weise with the following data: “Key Ins. Staud./ ex. Coll. J. Weise (light blue label)/ SYNTYPUS *Scymnoderes papuanus* Weise 1917 labelled by MNHUB 2006 (red label)”, one male (genitalia dissected and pinned on to the specimen), one female; one male with same data, labeled “*Rhizobius papuanus* m.” (in Weise’s hand writing)/ *Scymnoderes* det. A.S. Ślipiński (ZMB).

Lectotype female of *Scymnoderes punctiger* Weise (**here designated**): “Torricelli Geb. Staud. (hand written grey label)/ W/ punctiger m. (in Weise’s hand writing)/ Typus (printed red label)/ *Scymnoderes punctiger*, det. A.S. Ślipiński” (NRM).

Other specimens examined. AUSTRALIA: Nov. Holl./ *Scymnoderes terminalis* Blb. R.D. Pope det. 1982 (1 male, NRM); Queensland: Cape York, Thorey (1, NRM); Cape York, 14.iii.56, J.L. Gressitt (1, BPBM); 6 km SW of Cairns, 30m, 5.vi.1966, Beating & sweeping, G.A. & S.L. Samuelson (2, BPBM); Cairns, Koebele (2, BPBM); Cairns, 19.vii.72, A.&M. Walford Huggins (BMNH); Cairns, E. Allen (12, SAM); Cairns, 22.ii.97, H. & A. Howden, in *Hibiscus tiliaceus* fls. (1, CMN); Redlynch, 14.xiii.1938, G.H. Dieke Coll’n (3, USNM); Cairns, vii–viii.1904, R.C.L. Perkins (4, BMNH); Cairns, ii.1950 NLH Krauss (1, USNM); Junction of Goldmine & Davies Cks., Kuranda-Mareeba Rd, 3.v.1967, D.H. Colless (ANIC); Mary River, 27.xii.1986, H. & A. Howden (CMN); Thursday Isl, 3.ix.1983, J.F. Donaldson (QDPIB); Bamaga (10.53S 142.24E) 5–12.xii.1986, Houston & Sadler (QDPIB); Hammond Island, 4–8.vii.1974, Sweep of grass nr beach, H. Heatwole (AM); Mabulag Is., Torres strait, 20.viii.1999, J.F. Grimshaw, *Ipomoea carnea* (NAQS); St. Pauls Mission, Moa Is., 4.iv.1984, J.W. Turner (NAQS); Heathlands (11.45S 142.35E), 24–28.ii.1993, P. Zborowski (QDPIM); 15 km WNW of South Johnstone, light trap, 9.xi.1985, Fay & Halpapp (QDPIM); Mission Beach, 12.ix.1990, G. O’ Reilly (AM); Port Douglas, 3 m. 23.ii.1984, L. Masner, coastal thicket sand dunes

(CMN); Kuranda, Koebele (BPBM); Moa I., Torres Straits, C.T. McNamara (SAM); Cockatoo Creek (11.39S 142.27E), 07.xii.1992–07.ii.1993, Malaise trap, P. Zborowski (ANIC); Bucasia, 15.iv.2005, Ken J. Sandery (ANIC); Cape Tribulation (Crane) (16.06S X 145.27E), FIT canopy 2, 5–19.xi.2001, Cermak & Stork (ANIC); Rockhampton, A.M. Lea (SAM). Magnetic Is., 1.v.1981, D.P. Caine, on foliage (ANIC). **New South Wales:** Sydney, R.C.L. Perkins, 1942–95 (BMNH). **Northern Territory:** Baroalba Creek, nr. Source rainforest (12.47S 132.51E), 19 km NE by E. of Mt. Cahill, 29.x.72, by sweeping, D. Colless (ANIC); Larrakeyah (12.28S 130.50E), 3.viii.1991, M.S. Upton (ANIC). **New Guinea:** Stephansort, Astrolabe Bai, Biro, 1900 (TMB); NW Nabire, S. Geelvink Bay, 10–15 m. 1–5.ix.1962, J. Sedlacek (BPBM); Owe’s Corner, Kokoda, 12–14.vii.1981, leg. G. Hangay (TMB); Dimisisi, 25.v.1993, J.F. Grimshaw, x. Aibeka J.F.G. 1828c (NAQS); Daru, 2.vi.1995, J.F. Grimshaw, JFG 2650 ex. Snake bean, (NAQS); Samaria, New Guinea, Compere, 1 ex. (USNM); Key Ins., without other data (TMB, ZMB).

Distribution. Australia, Queensland; New South Wales; Northern Territory; Hammond Island (Torres Strait); New Guinea; Kai (Kei) Islands (Fig. 118).

Notes. Weise (1923) described the dark reddish brown form of *A. terminalis* with three-striped elytra as *S. spilotus*. The male genitalia and other characters of a series of specimens of *S. spilotus* and *S. terminalis* examined were found to be identical in all respects. The type female of *S. terminalis* (BMNH, examined) is dark reddish brown, similar to the forms of *S. spilotus* with obliterated elytral stripes and the elytral punctuation also is more or less identical. The three syntypes of *A. spilotus* (NRM) are designated as lectotype and paralectotypes.

Two species described by Weise (1918) from New Guinea, *S. papuanus* and *S. punctiger*, are also synonymised with *A. terminalis*. Examination of four syntypes of *S. papuanus* and several other examples from New Guinea indicates it is conspecific with *A. terminalis*. The syntypes agree with the specimens from Australia in all respects. The male genitalia are identical, except that the penis apex is a little less curved and the penis guide appears to be slightly longer and more slender in the New Guinea examples. In several specimens from New Guinea, the median marking on pronotum is also much reduced, short and transverse. The syntype from NRM is hereby designated as lectotype as Weise described the species from material collected in Key Islands from Hauser collection. The syntypes from Berlin are obviously from Staudinger’s collection as indicated in the labels and Weise, who had the habit of replacing the original locality labels with his own, might have made a mistake while relabelling the *S. papuanus* types (Bernd Jäger, ZMB, *in litt.*).

The single female syntype of *S. punctiger* is also conspecific with *A. terminalis*. The lectotype of *S. punctiger* is distinctly larger and has a broader outline than *S. papuanus*, but is otherwise identical.

Apolinus rotundus (Blackburn)
(Figs 25, 40, 98–100, 118)

Eupalea (?) *rotunda* Blackburn, 1889: 188 (BMNH; Type locality: Port Lincoln, South Australia).

Apolinus rotundus: Ślipiński, 2007: 101.

Diagnosis. This is the smallest *Apolinus* in Australia and due to the very small size, may not be easily recognized as such without a good look at the generic characters. The male genitalia (Figs 98–100) are diagnostic, with very small and reduced parameres with long apical hairs, apparently free and not fused with the penis guide.

Description. Length: 1.75–2.00 mm. TL/TW: 1.26–1.35; EL/EW: 0.96–0.98; PL/PW: 0.43–0.46.

Male. Form (Fig. 25) elongate to short oval, convex, covered with silvery white pubescence. Head reddish brown to testaceous, pronotum testaceous with a median fuscous or blackish marking not quite reaching anterior margin, scutellum black, elytra dark brown to black with lateral margins and apices much lighter testaceous. Ventral side reddish-testaceous, except meso- and metaventrites, epipleura and middle of ventrites 1 and 2 dark brown to black.

Head with eyes broadly separated, widely divergent in lower half, interocular distance 3–3.25× as wide as an eye, punctation on disc regular and even, punctures separated by 2–4 diameters, smaller and more closely placed below lower margins of eyes. Pronotum finely punctate on disc, separated by 3–6 diameters, slightly more widely spaced on lateral sides. Elytra with fine punctures on disc, scarcely larger and more deeply impressed than those on pronotum, separated by 4–6 diameters, slightly larger and more closely placed on lateral sides, separated by 3–4 diameters, interspaces between punctures smooth and shiny.

Prosternal carinae anteriorly confluent with anterior margin of prosternum, divergent in posterior half. Mesoventrite transverse, anterior margin medially shallowly emarginate, without a median longitudinal carina. Epipleura with a shallow declivity on level with hind legs. Abdominal postcoxal lines (Fig. 40) complete, deeply semicircular, area enclosed very sparsely and diffusely punctate in anterior half, posterior margin of ventrite V very shallowly, and VI deeply, emarginate. Male genitalia (Figs 98–100) very unusual, with parameres very short, about $\frac{1}{6}$ th as long as penis guide, apparently free in lateral view (Fig. 99), apical hairs >2× as long as parameres, reaching a little beyond middle of penis guide; in ventral view (Fig. 98),

parameres appear to be fused with penis guide, penis guide subparallel in anterior half, apically triangular; penis (Fig. 100) as illustrated.

Female similar to male, but slightly larger in size, ventral side more or less testaceous except metaventrite and middle of abdominal ventrite I and 2 dark brown to black. Posterior margin of ventrite V truncate, ventrite VI arcuate.

Types. Lectotype: 1090 T/ Type/ Blackburn Coll. BM 1910-236/ *Eupalea rotunda* Blackb. (BMNH, **here designated**); Paralectotype: Port Lincoln Blackburn/ *Eupalea rotunda*, Blackb. co-type (SAM, **here designated**, partially cleared and mounted in resin).

Other specimens examined. AUSTRALIA: ACT: Piccadilly Circus (35.22S 148.48E), 1240 m, x.84, J. Lawrence, T. Weir, M.L. Johnson, flight intercept window, trough trap (1 female, ANIC). New South Wales: Belanglo State Forest (34°31'S 150°13'E) 18.viii.1990, Tom Gush, on flowering shrub (ANIC); 5 km NE Nerri-ga, 19.i.–4.ii.1984, L. Masner, dry sclerophyll *Eucalyptus* forest, 600m (CMN). Western Australia: 6 mi. SW of Manjimup, 5.x.1970, D.H. Colless (ANIC).

Distribution. Australia: ACT, New South Wales and Western Australia.

Note. When Blackburn (1889) described *Eupalea rotunda*, he placed it in *Eupalea* Mulsant with much reservation by his own admission. Almeida and Gordon (1990) removed it from *Eupalea* without further discussion. Both syntypes are damaged without antennae or tarsi. Ślipiński (2007) provisionally placed it under *Apolinus* and this placement is confirmed here. Two dissected females (from New South Wales) were found to be conspecific with partially cleared and dissected female syntype (SAM). There is no doubt that the species described by Blackburn is an *Apolinus*, though the size is quite small and appearance *Scymnus*-like. All the specimens examined are elongate oval and do not have a circular outline as described by Blackburn, though the elytra are broadened around the base in the syntype. These specimens otherwise fit his description, particularly the fine elytral punctation.

Apolinus longicornis (Weise) comb. nov.
(Figs 26, 104–106)

Scymnodes longicornis Weise, 1918: 221 (Lectotype male: NRM; Type locality: North New Guinea).-Korschefsky, 1931: 85.

Scymnodes (Apolinus) longicornis: Pope and Lawrence, 1990: 244.

Diagnosis. This species is externally very similar to the other species of *Apolinus* occurring in New Guinea and can be reliably separated mainly by the male genitalia (Figs 104–106). The male genitalia are very similar to that of *A. cribratus*, with the following differences: in lateral view, apical hairs of parameres are seen around middle in *A. cribratus*, but much

further down the penis guide (around $\frac{3}{4}$ length of elytra) in *A. longicornis*; in ventral view, penis guide appears to much narrower anteriorly in *A. longicornis* than in *A. cribratus*; and the penis capsule is somewhat swollen or bulbous in *A. cribratus*. The elytra have dual punctation in both with distinct dual punctures, the coarser punctures being much closer in *A. cribratus* than in *A. longicornis*. The mesoventrite has a median carina in both, short or nearly reaching the apex.

Description. Length: 3.50–4.00 mm; TL/TW: 1.21–1.25; PL/PW: 0.45–0.50; EL/EW: 0.96–1.00. Form (Fig. 26) elongate, broad oval, elytra slightly broader than long or as broad as long, subparallel to a little after mid-length, thereafter narrowed towards apex; dorsum strongly convex, covered with whitish pubescence. Head yellowish to testaceous, with or without a transverse, medially emarginate black marking in posterior half, reaching a little beyond lower margin of eyes. Pronotum yellowish-testaceous, with a median transverse black marking on posterior margin, large and subtrapezoidal or much reduced, short. Elytra dark pitchy brown to black with metallic, dark aeneous reflections; apices testaceous. Ventral side more or less yellowish brown to testaceous, except prosternal intercoxal process, meso- and metaventrites, mid- and hind femora, and middle of abdominal ventrite I dark brown to black, elytral epipleura dark brown with testaceous apices or fully black.

Head with anterior clypeal margin truncate between lateral projections; punctures on either side of eyes and posterior half dense, close, separated by <1-1 diameter, slightly larger and 1–4 diameters apart in middle and towards anterior margin, interspaces smooth, shiny. Pronotum with fine, dense punctures on disc, 1–4 diameters apart, slightly larger and more widely spaced on lateral sides; posterior margin double-bordered. Elytra shallowly emarginate laterally before middle, punctation dual, large punctures separated by 1–4 diameters on disc, more widely spaced on lateral sides, irregular, coarser and much more deeply impressed on lateral margins, finer punctures in interstices, punctation weaker towards apices; interspaces shiny, more or less smooth. Prosternal carinae convergent near anterior margin, subparallel anteriorly, strongly divergent in posterior half. Mesoventrite with a longitudinal carina, reaching up to middle or beyond, anterior margin with a broad, triangular emargination. Epipleura shallowly descending on level with hind legs. Abdominal postcoxal lines semicircular, complete; posterior margin of ventrite V broadly and shallowly, ventrite VI deeply, emarginate. Male genitalia (Figs 104–106) as illustrated, apical hairs of parameres visible around $\frac{3}{4}$ length of penis guide in lateral view (Fig. 104); in ventral view (Fig. 105) penis guide narrow, subparallel to about $\frac{3}{5}$ length, broadened

around $\frac{4}{5}$ length, apically narrowly and conically produced; penis (Fig. 106) as illustrated.

Types. Lectotype male (**designated here**) with the following data: Njao, ???/ longicornis m./ Paratypus (red label)/ *Scymnodes longicornis* det. A.S. Ślipiński (NRM); Paralectotype: Njao bin? Sekofro/ W/ *Scymnodes longicornis* det. A.S. Ślipiński, one male (NRM) **designated here**.

Other specimens examined. New Guinea: Pongondetta Dist., Sangara, 22.iii.1956, E.S. Brown, B.M. 1957–201 (1 male, BMNH); Dutch New Guinea: Cyclops Mt., Sabron, 930 ft., v–vi.1936, L.E. Cheesman, B.M. 1936–271 (1, male, BMNH); Papua New Guinea: 5 km NW Matukar, c. 40 km N. Madang, 17.v.1989, P. Gullan & R. Buckley in rainforest (ANIC); Finsch Haven, New Guinea, L. Wagner (1 male, SAM); **Irian Jaya:** Testega, Meydoudga, 1100 m, 4.iv.1993, A. Riedel, 1 male (NRM).

Distribution. New Guinea, Irian Jaya.

Apolinus irian sp. nov.
(Figs 27, 111–113)

Etymology. The specific epithet is a noun in apposition, in reference to the type locality.

Diagnosis. It can be identified by the yellow or black pronotum with narrowly yellowish anterolateral corners and the brilliant metallic green to purplish elytra and the male genitalia (Figs 111–113), which have posteriorly free parameres. Examples from the New Guinea are more brightly coloured, with metallic violet to bluish green elytra, with broadly yellowish-testaceous apices.

Description. Length: 2.90–3.50 mm; TL/TW: 1.28–1.42; PL/PW: 0.47–0.52; EL/EW: 0.98–1.05.

Male. Form (Fig. 27) elongate oval, convex. Head yellow, posterior half with or without a transverse black marking reaching up to middle of eyes, or completely black except for two yellowish-testaceous spots on either side of antennal insertions; pronotum black except anterolateral corners yellowish-testaceous (examples from Irian Jaya) or yellow with a median dark brown to black, subtrapezoidal marking on posterior margin, lateral margins narrowly dark brown in posterior half (examples from New Guinea); elytra brilliant dark metallic green or purple with greenish and coppery iridescence, rarely blackish with metallic iridescence (Irian Jaya) or bright metallic violet to purple, apical $\frac{1}{5}$ yellowish to testaceous (Papua New Guinea). Ventral side dark brown to black, except antennae, mouthparts, pronotal hypomera, fore and middle legs reddish brown, abdominal ventrites 3–VI and lateral sides of ventrites 1 and 2 yellowish brown to testaceous, scape and club of antennae darker, brownish.

Head with eyes apparently glabrous, widely separated, interocular distance ca. $2.7\times$ as wide as an eye,

densely punctate on either side of eyes and posterior margin, separated by 1–2 diameters, sparser and more widely spaced below clypeal margin. Pronotum with punctures fine, very shallowly impressed, discal area more densely and closely punctate than lateral sides, punctures separated by 1–3 diameters on disc and by 3–6 diameters on lateral sides. Elytra with disc with distinct dual punctures, more deeply impressed than those on pronotum, somewhat irregular, large punctures separated by 1–5 diameters, with finer punctures in interspaces, closer and denser on lateral sides, slightly finer towards apices.

Prosternal intercoxal process with carinae convergent on or near anterior margin of prosternum, widely divergent in posterior half. Mesoventrite with anterior margin broadly, shallowly emarginate; without a median longitudinal carina. Epipleura shallowly descending on level with hind legs. Abdominal postcoxal lines complete, semicircular, enclosing even punctures only in anterior half; ventrite V broadly and shallowly, VI slightly more deeply, emarginate. All tarsal claws bifid.

Male genitalia (Figs 111–113) unusual, parameres in lateral view (Fig. 111) appear to be free and not fused with penis guide, anteriorly much wider and narrowed towards posterior, reaching up to a little before mid-length of penis guide, apical hairs about half as long as parameres; penis (Fig. 113) as illustrated.

Female similar to male, except head fully black, all pairs of legs dark brown. Posterior margin of abdominal ventrite V very shallowly emarginate, VI arcuate. Tarsal claws appendiculate.

Types. Holotype male: **Irian Jaya:** Jayawijaya: Bime, 1600[m], 11.9.1993, leg. A. Riedel (NHMS). Paratypes: **Irian Jaya:** Jayawijaya: Larye (pr. Langda), 26.8.1992, 2200–2600 m, leg. A. Riedel, 1 male, 1 female (NHMS); Diuremna, 9.–11.9.1992, 1900–2100m, leg. A. Riedel, 1 male (NHMS); Langda, 2100–2300 m, 27.–28.8.1992, leg. A. Riedel, 1 male; Okloma, 30.9.–1.10.1993, 1650–1800m, leg. A. Riedel, 1 male (NHMS); Eipomek, 1800–2300m, 5.9.1992, leg. A. Riedel, 1 male (ANIC); Bommela, 30.8.–1.9.1992, ca. 750 m, leg. A. Riedel, 1 male, 4 females (NHMS, BMNH); Wamena, Pronggoli, 17–19.9.1991, 2000–2400m, leg. A. Riedel, 1 male (NHMS); Baliem Dist., Pass-Valley, 15.–16.9.1990, leg. A. Riedel, 4 females, 2 males (NHMS); Baliem Dist., Kangime, 3.9.1990, 1500–1600 m, leg. A. Riedel, 1 male (NHMS). **New Guinea:** NG Centr. Baliem Tal, 1700 m March 1992, leg. J?r? Kolibáč, 1 female, 1 male (NHMB); Hudewa, New Guinea, Rev. L. Wagner, 1 male, 1 female (SAM).

Distribution. New Guinea, Irian Jaya.

Notes. The specimens from Irian Jaya and Papua New Guinea vary in terms of pronotal and elytral coloration, though the male genitalia are more or less similar. Specimens from Irian Jaya have a black

pronotum with narrowly yellowish anterolateral corners and fully metallic green / purplish elytra while those from PNG are slightly smaller, mostly with bluish green or violet elytra with broadly yellowish or testaceous apices and the pronotum is yellow with a median blackish marking.

Apolinus jaya sp. nov.
(Figs 28, 107–110)

Etymology. The specific epithet is a noun in apposition, in reference to the type locality.

Diagnosis. *A. jaya* is very similar to *A. irian* sp. nov. in external appearance except for the black elytra with narrowly testaceous apices and the carinate mesonotum. Both have similar male genitalia, particularly the parameres are apically free in both, but the penis is different (Fig. 109).

Description. Length: 3.50 mm; TL/TW: 1.30; PL/PW: 0.45–0.48; EL/EW: 1.02–1.05. Male. Form (Fig. 28) elongate oval, widest around middle before tapering towards apex in posterior half. Head yellow, with a transverse median black marking reaching up to middle of eyes. Pronotum yellow with a median subtrapezoidal black marking. Elytra black, apices narrowly testaceous. Ventral side dark pitchy brown to black, except antennae, mouthparts, pronotal hypomera, lateral arms of prosternum, fore legs (except femora), and abdominal ventrites (except middle of first) yellowish testaceous.

Head with eyes apparently glabrous but with very sparse, short hairs; broadly separated, interocular distance ca. 2.6× as wide as an eye; punctation dense but uniform in posterior half and on either side of eyes, separated by 1–2 diameters, slightly larger, more widely separated towards middle and anterior margin. Pronotum with punctures more or less uniform, shallowly impressed, separated by 2–5 diameters. Elytra laterally shallowly emarginate before middle; punctures on disc dual, large ones irregular, separated by 1–6 diameters, coarser and more deeply impressed on lateral sides up to lateral emargination, finer punctures in interstices, lateral margins of elytra with a few irregular deeply impressed coarser punctures; punctures weaker and indistinct towards elytral apices; interspaces smooth.

Prosternal carinae anteriorly confluent, divergent towards posterior. Mesoventrite with anterior margin medially broadly triangular, carinate. Abdominal postcoxal lines shallowly semicircular, complete. Posterior margin of ventrite V broadly shallowly and VI slightly more deeply emarginate. Male genitalia (Figs 107–110) as illustrated, parameres anteriorly fused to penis guide, free in posterior half, apical hairs reaching up to $\frac{3}{4}$ th length; in ventral view (Fig. 107,

108) penis guide cylindrical, subparallel up to $\frac{3}{4}$ th of its length, apically narrowly conical; penis (Fig. 109) as illustrated.

Types. Holotype: Irian Jaya: Jayawijaya, Bime 1600–2000 m, 10.9.1993, leg. A. Riedel (NHMS); **Paratype:** Prov. Jayawijaya, Djuremna, 9.–11.9.1992, 1900–2100 m, leg. A. Riedel, 1 male (NHMS).

Distribution: Irian Jaya.

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