

NEW SPECIES OF *CHLAMYDOPSIS* (HISTERIDAE: CHLAMYDOPSINAE), WITH A
REVIEW AND PHYLOGENETIC ANALYSIS OF ALL KNOWN SPECIES

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Forty new species of *Chlamydopsis* are described and the 29 previously described species are reviewed. One of the new species is the second known New Guinean *Chlamydopsis*. The remainder are Australian, with the highest diversity from Queensland. Six species groups are proposed and three species are left unplaced. A phylogenetic analysis of adult morphology provides support for several of these groups, and offers clues to the placement of the enigmatic species. This study revealed numerous species to be sexually dimorphic. The cladistic analysis indicates that some of these dimorphisms have arisen independently in several lineages. This study synonymises *C. excavata* Lea and *C. puncticollis* Oke with *C. reticulata* Lea, and *C. atra* Lea with *C. variolosa* Lea. The following new species are described: *C. rana* sp. nov., *C. antennata* sp. nov., *C. trichonota* sp. nov., *C. dimorpha* sp. nov., *C. monteithi* sp. nov., *C. setifera* sp. nov., *C. lawrencei* sp. nov., *C. convergens* sp. nov., *C. coronis* sp. nov., *C. erupta* sp. nov., *C. transversa* sp. nov., *C. kununurra* sp. nov., *C. acutricha* sp. nov., *C. myrmecophila* sp. nov., *C. mallee* sp. nov., *C. pecki* sp. nov., *C. degallieri* sp. nov., *C. jayawijaya* sp. nov., *C. lucifer* sp. nov., *C. bataviae* sp. nov., *C. burnetta* sp. nov., *C. zborowskii* sp. nov., *C. pluriseta* sp. nov., *C. contorta* sp. nov., *C. pilosipes* sp. nov., *C. nielseni* sp. nov., *C. australis* sp. nov., *C. lepida* sp. nov., *C. convexa* sp. nov., *C. dispersa* sp. nov., *C. weiri* sp. nov., *C. crowcrofti* sp. nov., *C. macmillani* sp. nov., *C. nullarbor* sp. nov., *C. rotunda* sp. nov., *C. carinota* sp. nov., *C. storeyi* sp. nov., *C. matthewsi* sp. nov., *C. mareeba* sp. nov., and *C. parallelus* sp. nov. □ *Coleoptera, Histeridae, Chlamydopsis, myrmecophily, tactile mimicry.*

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The Chlamydopsinae is a remarkable group of histerid beetles. They apparently all live in the colonies of social insects, mainly ants, and exhibit a tremendous diversity of morphological specialisations for this lifestyle. The group's distribution is centred in Australia, although several lineages have spread and diversified throughout southeastern Asia, reaching India in the west, Japan to the north, and Fiji to the east (Caterino, 2000; Dégallier, 1984; Nishikawa, 1995, 1996). Until recently the group has received little study. However, recent collecting efforts, particularly those incorporating flight interception traps, have revealed a wealth of unrecognised diversity. Here 40 new species are described, the taxonomic status of previously described species is reviewed, and the phylogenetic relationships among all known *Chlamydopsis* Westwood, are investigated. A recently discovered new species of *Chlamydopsis* from New Caledonia is not described here but is included in the phylogenetic analysis.

Something of a quandary is faced in presenting the species. While one of the goals of the phylogenetic analysis is to provide some framework

for an intrageneric classification, it is clear from the outset that complete phylogenetic resolution will not be obtained from existing data. Too many species are known from only a single sex or even a single specimen, and many important data are therefore missing. For the purposes of facilitating identification and placement of additional material, a series of species groups is established. Some of these appear likely to be monophyletic, whereas putative synapomorphies of others are clearly weak. The phylogenetic analysis presented below will provide some preliminary indications of the relative values of morphological characters in the group. However, establishing a solidly phylogenetic classification will require much additional material and study.

CONVENTIONS

All species accounts include diagnoses and type data. For groups of closely related species, generally only one is fully described, with the remainder diagnosed from the first. In each treatment of a previously described species type locality, type repository, whether or not the type has been examined by the author (where it has

been, label data are quoted), and additional records, with either a repository or literature reference for each record, are presented. Nontype records are listed by source to distinguish specimen records from unverified literature records. Host ant names are as given by original sources. See Table 1 for equivalents in current formicid nomenclature.

A number of body dimensions and proportions are useful for species recognition. Following histerid conventions, total body length (L) is measured from the anterior margin of the pronotum to the posterior margin of the elytra, while width (W) is taken at the widest point, invariably near the elytral humeri. Measurements were made of the holotype where possible, are grouped at the beginning of each description (or diagnosis if no description is presented) to facilitate comparisons, and are abbreviated as follows: L (mm – dorsal length along midline); W (mm – width across humeri); E/PnL (ratio – elytral length/pronotal length); E/PnW (ratio – elytral width/pronotal width); Pn W/L (ratio – pronotum width/length); E L/W (ratio – elytra length/width); Pr/Py (ratio – Propygidium length/pygidium length); Sterna – pro, meso, meta (mm – lengths along midline); Tibiae – pro, meso, meta (mm – straight line length from base to apex, ignoring curvature). Some measurements are missing due to inaccessibility of material or relevant body parts. Accepted terminology is lacking for many unique chlamydopsine features. Terms adopted in this paper seem largely self-explanatory with one exception. The depression surrounding the prothoracic leg is margined by a stria originating at the apex of the prosternal keel, curving obliquely toward the anterolateral prosternal corner, thence curving variously toward the posterolateral prosternal corner. Regardless significant variation in exact orientation and degree of impression (which may render it more carinalike than striate) this is termed the circumcoxal stria.

Repositories are abbreviated as follows: Australian Museum, Sydney (AMS); Australian National Insect Collection, Canberra (ANIC); Henry and Anne Howden Collection (HAHC); Queensland Department of Primary Industries, Mareeba (DPIM); Museum of Comparative Zoology, Harvard University (MCZ); Michael Caterino Collection (MSCC); Museum Victoria, Melbourne (MVM); The Natural History Museum, London (NHM); Queensland Museum, Brisbane (QMB); South Australian Museum,

TABLE 1. Several host names have changed since their chlamydopsine association was first reported. Although some ambiguities have been encountered, the following equivalences appear valid (following Shattuck & Barnett, 2001). Multiple valid names indicate that the original species has been split into several. Those potentially sympatric with the beetle(s) are listed. Names not listed apparently remain valid as originally given.

Published Name	Valid Current Name
<i>Chalcoponera metallica</i>	<i>Rhytidoponera metallica</i> (Smith)
<i>Ectatomma metallicum</i>	<i>Rhytidoponera metallica</i> (Smith)
<i>Rhytidoponera convexa</i> var. <i>violacea</i>	<i>R. violacea</i> (Forel)
<i>Euponera lutea</i>	<i>Pachycondyla lutea</i> (Mayr)
<i>Iridomyrmex detectus</i>	<i>I. purpureus</i> (Smith), <i>I. sanguineus</i> Forel, or <i>I. viridiaeneus</i> Viehmeyer
<i>Aphaenogaster longiceps</i>	<i>A. l. longiceps</i> (Smith)
<i>Notoncus foreli</i>	<i>N. ectatommoides</i> (Forel)
<i>Meranoplus hirsutus</i>	<i>M. minor</i> Forel [formerly <i>M. hirsutus minor</i>]

Adelaide (SAM); Staatliches Museum für Naturkunde, Stuttgart (SMNS); United States National Museum, Washington (USNM); Western Australian Museum, Perth (WAM). ‘QMT’ registration numbers are given for holotypes deposited in QMB.

Within material lists, holotype data are quoted exactly but for other material states and various geographical features are abbreviated as follows: Australian Capital Territory (ACT); Queensland (Qld); Northeastern Queensland (NEQ); Southeastern Queensland (SEQ); New South Wales (NSW); Victoria (Vic); South Australia (SA); Western Australia (WA); Northern Territory (NT); rainforest (RF). Collectors are abbreviated as follows: J. Brown (JB); A. Calder (AC); D.J. Cook (DC); S. De Faveri (SD); K. Halfpapp (KH); J. Hasenpusch (JH); H. Janetzki (HJ); J.F. Lawrence (JL); L. Miller (LM); G.B. Monteith (GM); E.S. Nielsen (EN); E. Schmidt (ES); S. Shattuck (SS); R. Storey (RS); G.I. Thompson (GT); L. Umbach (LU); M.S. Upton (MU); T. Weir (TW); P. Zborowski (PZ). Collection methods abbreviated as: Flight Interception trap (FIT); Malaise trap (MT); pitfall trap (PT). Collection dates are given as day.month.year, with month represented by lower case roman numerals (e.g., 1.vi.2002).

Chlamydopsis Westwood, 1869

Chlamydopsis Westwood, 1869: 317.

Byzenia King, 1869: 74 (type species: *Byzenia formicicola* King); Blackburn, 1891: 92.

TYPE SPECIES. *Chlamydopsis striatella* Westwood, 1869: 318; designated by Lewis, 1903: 428.

REMARKS. Species of *Chlamydopsis* are very diverse in morphology, and the genus cannot be defined at present by any definite synapomorphies. It may well prove to be paraphyletic with respect to at least one or two other genera. The species currently contained in *Chlamydopsis* all share a visible scutellum and an upturned anterior pronotal margin, at least above the antennal cavities, if not along the entire margin. None are entirely flattened dorsally (like *Ectatommiphila* Lea) and none have the strikingly elongate trichome setae seen in *Eucurtia* Mjöberg.

STRIATIPENNIS GROUP

The *striatipennis* group is founded primarily on trichome morphology. All share a well developed humeral trichome in which the outer and upper surface are continuously rounded, with the trichome open only mesally and along the lower anterior edge. The humeri are variously enlarged, often with the anterior corners broad and angular, apparently hollow within (the lateral surface being somewhat translucent), with a very short, inconspicuous anterior superficial stria, and lined along the inner, upper edge with a single longitudinal or oblique row of setae, which extends to near the anterior elytral margin. A protuberance arises from the elytral disk beneath the anteromesal corner of the trichome, which meets the dorsal fringe, or projects above it forming an erect, rounded lamina (Figs 1A-G, 28I). Generally a separate 'whorl' of setae can also be seen within the mesal opening of the trichome, just beneath the longitudinal fringe. The anterior prosternal margin is striate but ungrooved. The metatibiae are elongate and/or widened in many. The central portion of the anterior pronotal margin is usually separated by a notch from the anterolateral portions, with the notch continued behind the lateral portion by a stria or groove. The species *C. rana* sp. nov., *C. antennata* sp. nov., and *C. trichonota* sp. nov. are placed here somewhat tentatively, based on trichome structure. However, the prosternal marginal stria of these three is well impressed, and appears more groove-like than in the rest of the group. Whatever their relationships to the group, these three are all easily recognised as the only *Chlamydopsis* with lateral pronotal trichomes (Fig. 1E-G)

Chlamydopsis striatipennis Lea, 1919 (Figs 1A, 2A, 3, 28A, 29I)

Chlamydopsis striatipennis Lea, 1919: 177; Type locality: Vic: Lorne; repository: SAM; not examined.

RECORDS. NHM: Vic: Warburton, Fern Tree Gully. Lea (1925): Vic: Lakes Entrance, Oct., 'small black *Iridomyrmex*'; Vic: Beaconsfield, with *Ectatomma metallicum*. Oke (1923): Whittlesea; Warburton; Fern Tree Gully; Belgrave; Emerald [all Vic]. ANIC: ACT: 35.19S 148.51E, Wombat Ck., 6km NE of Piccadilly Circus, 750m, i.1985; NSW: Mt Keira, Wollongong, ii.1981; NSW: Lorie W.R. 3km N Lansdowne/Taree, 22.xi.1987, ex r/f margin, wet scler. forest FIT. DPIM: NSW: 3km N. Lansdowne via Taree, 25.1.1987, MT, rainforest margin. WAM: NSW: Wollongong, 1938.

DIAGNOSIS. L: 2.62; W: 0.87; E/Pn L: 2.0; E/Pn W: 1.62; Pn W/L: 1.50; E L/W: 0.82; Pr/Py: 1.18; Sterna: 0.69, 0.19, 0.93; Tibiae: 1.18, 1.25, 1.62. *Chlamydopsis striatipennis* appears to comprise one of the more distinctive, temperate offshoots of a varied complex of populations centred in the more tropical parts of eastern Australia. Thus far samples have not been sufficient to fully resolve species limits within this complex, though certainly more than one species is present. The populations which constitute *C. striatipennis* s. str. have the humeri strongly angular (produced laterally almost perpendicular to the pronotal margin), and have the elytra setose mainly on the anterior surface of the trichome and along the apical margin. They are also slightly larger in body size than average for the complex (among examined samples). However, humeral shape and pilosity vary tremendously across this complex, and it might eventually be desirable to define the species more broadly.

REMARKS. In addition to the records presented above (pertaining solely to *C. striatipennis* s. str.) specimens considered members of the '*striatipennis* complex' have been collected throughout Queensland, as far north as 12°S. Specimens from southeastern Queensland (27°20'S, 152°48'E, Stony Ck) are particularly close to 'typical' *striatipennis*. At the same time a few additional specimens from Vic (Bonang, Warburton) and NSW (Lansdowne; Wilson River Reserve) do not conform to the strict definition of *C. striatipennis*, as recognised here. A particularly distinctive form is known from several upper elevation localities (>1100m) in the vicinity of the Hugh Nelson Range (Qld: 17°27'S, 145°29'E). However, even among the few localities represented, there is variation that should be better represented before an additional

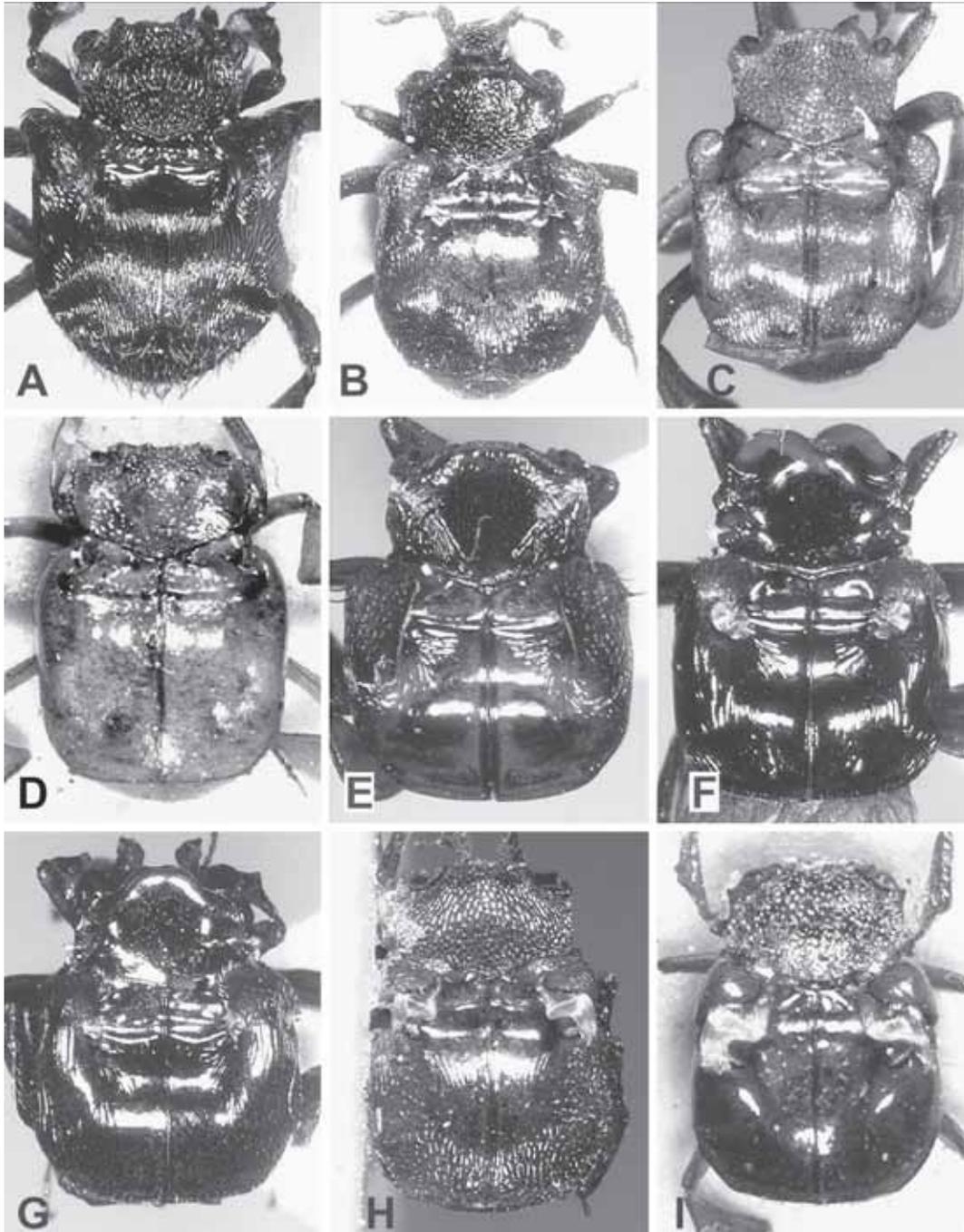


FIG. 1. Dorsal views of *Chlamydopsis* spp. A, *C. striatipennis*. B, *C. leai*. C, *C. compressipes*. D, *C. pallida*. E, *C. rana*. F, *C. antennata*. G, *C. trichonota*. H, *C. reticulata* (δ). I, *C. reticulata* (♀).

species is described. It is also possible that some of the remaining named species in this species group are derived from within the complex, particularly *C. leai* and *C. compressipes*.

***Chlamydopsis leai* Oke, 1923**
(Figs 1B, 2B, 3)

Chlamydopsis leai Oke, 1923: 155; Lectotype ♀, hereby designated: Belgrave, Vic., 13.12.1920, C. Oke/ *Chlamydopsis leai* Oke Type/ Presented by C.G. Oke/ 895 Type, MVM. Paralectotype: Belgrave, Vic., July 1921, C.Oke 2.7.21/ *Chlamydopsis leai*, Oke. Co-Type/ 896 Paratype; in MVM; examined, 2000.

DIAGNOSIS. This species is a not-very-distinctive member of the *striatipennis* complex. The most distinctive character is its fairly broad, arcuate meso- and metatibiae (shared with *C. compressipes*, below). The upper inner edge of the trichome is slightly more oblique than typical, incising the humeral elevation posteriorly, although this is true of *C. striatipennis* s. str. as well. The species needs to be included in any broader study of variation in this complex.

REMARKS. Reported from nests of *Iridomyrmex* sp. (Oke, 1923). This species is known only from the type series.

***Chlamydopsis compressipes* Lea, 1919**
(Figs 1C, 2C, 3)

Chlamydopsis compressipes Lea, 1919; Type ♀: *compressipes* [handwritten] Lea, Type, Mt Tambourine/ C/2086/ Type/ 10678, *Chlamydopsis compressipes* Lea, Queensland, QMB; examined, 2000.

RECORDS. QMB: SEQ: Mt Glorious, i-iii.1982 and ix-x.1990; CMN: Qld: Mt Glorious, 27°20'S, 152°49'E, 3-9.x.1998, N. Power, MT.

DIAGNOSIS. This species is most easily recognised by its longitudinal laminae projecting up above the inner edges of the humeral trichomes. This is seen to a much lesser degree as well. However, in the latter species the laminae are oblique and do not project above the elevated humeri in *C. pallida*. The humeri are also much narrower, and the mediobasal elytral depression thus broader.

DESCRIPTION. L: 1.99; W: 0.75; E/Pn L: 1.67; E/Pn W: 1.29; Pn W/L: 1.42; E L/W: 0.91; Pr/Py: 1.13; Sterna: 0.50, 0.12, 0.62; Tibiae: 0.87, 0.93, 1.18. Body elongate, orange, mostly glabrous. Frons about 1.2× as long as wide, sides weakly arcuate, disk reticulopunctate, with a few short, inconspicuous setae; labrum broad, apical margin weakly bilobed, with a few short setae; antennal scape angulate near middle, rounded at apex;

antennal club of female about two-thirds length of scape, that of male about 1.8× length of scape.

Pronotum about 1.5× as wide as long, sides margined, parallel in basal two-thirds, acutely widened and somewhat elevated anteriorly; lateral portions of anterior margin strongly elevated, arcuate, separated from lower central portion by stria which arcs behind base of lateral elevation, then curved posteriorly, meeting lateral pronotal margin at about the basal one-third; pronotal disk slightly depressed in anterior corners, with an acute, slightly transverse median tubercle, reticulopunctate throughout.

Prosternum with anterior margin sinuate, not grooved; prosternal keel transversely depressed at middle behind anterior margin, narrowed between procoxae, but widening slightly at apex, acutely emarginate, reticulopunctate throughout.

Elytra widest near humeri, humeri strongly though rather narrowly elevated, widened anteriorly, bluntly projecting forward at sides, the inner edges laminate, elevated above humeri from anterior edge to central trichome opening, lamina with a longitudinal setal fringe closely appressed to its outer surface, projecting very slightly above it, this fringe extending anteriorly to a short groove (probable homologue of 'superficial groove' of other species); central trichome opening mesal, small, circular, with a concealing fringe of downwardly directed setae; mediobasal elytral depression smooth, with low, blunt transverse carinae; elytral disks otherwise shallowly but uniformly reticulostrigose, with a few conspicuous setae near apex of humeri, otherwise glabrous; humeri of male, including inner lamina, generally less prominent.

Mesosternum about 4× as wide as long, projecting at middle, reticulopunctate; mesometasternal suture well impressed; median metasternal suture visible as a dark line, but not impressed, disk evenly, but very finely punctate; sternite 1 somewhat more coarsely punctate along basal margin and near metacoxae.

Legs more or less slender, slightly elongate; all tibiae of female with outer margins arcuate, their outer surfaces (and those of the femora less uniformly) densely but finely punctate, nearly alutaceous; protibia of male more nearly angulate near the base.

Propygidium weakly depressed along basal margin, otherwise evenly convex, shallowly reticulopunctate; pygidium convex, reticulopunctate in basal half, smooth apically.

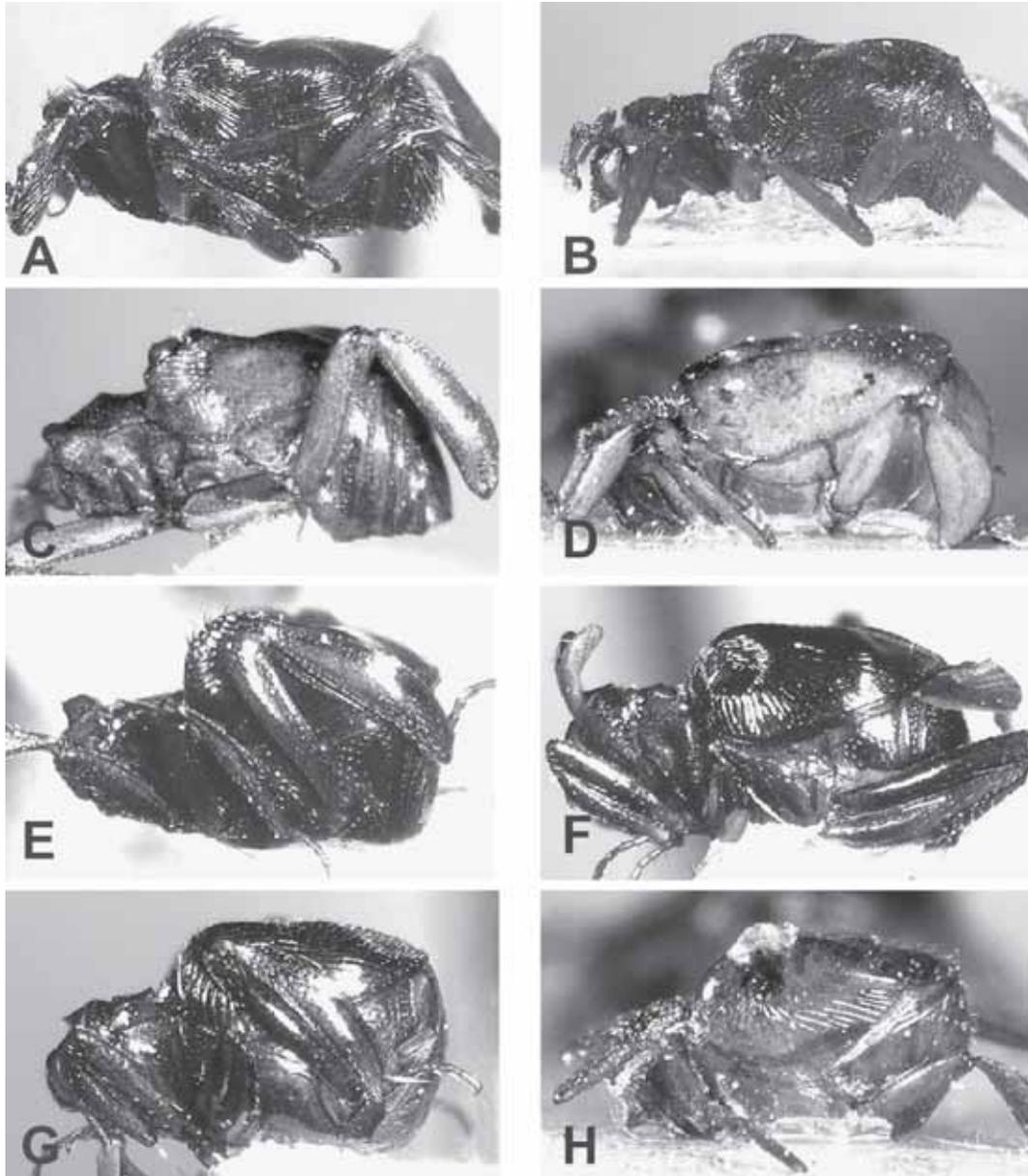


FIG. 2. Lateral views of *Chlamydopsis* spp. A, *C. striatipennis*. B, *C. leai*. C, *C. compressipes*. D, *C. pallida*. E, *C. rana*. F, *C. antennata*. G, *C. trichonota*. H, *C. reticulata* (♀).

REMARKS. The male and female specimens listed from Mt Glorious are slightly more elongate in body shape than the type of *C. compressipes*. However, with these three as all the known material of the species, they are considered to constitute a single variable species.

***Chlamydopsis pallida* Le, 1918**
(Figs 1D, 2D, 3)

Chlamydopsis pallida Le, 1918: 86; Lectotype, hereby designated: New South Wales, Sydney, SAM; examined, 2000; 2 paralectotypes: same data as type, BMNH.

DIAGNOSIS. L: 2.31; W: 0.75; E/Pn L: 2.08; E/Pn W: 1.34; Pn W/L: 1.58; E L/W: 0.98; Pr/Py: 1.58; Sterna: 0.40, 0.16, 0.59; Tibiae: 0.87, 0.93, 1.15. *Chlamydopsis pallida* has very distinctive humeral trichomes. They are narrow and close to the anterolateral corners of the elytra, enclosing very little subhumeral space. This species also possesses a small oblique lamina (oriented posterolaterally) on the inner edge of the humeral trichome, around which the lateral portion appears to be curved. The pronotum is also distinctive, having the sides strongly elevated and the anterolateral groove deeply impressed.

REMARKS. Reported from the nest of a 'small reddish ant', identified, apparently tentatively, as *Meranoplus hirsutus*. An ant mounted with the paratypes is a *Meranoplus*, but I cannot confidently determine the species identity. Assuming the reported species is accurate, this would refer to what is now called *M. minor* Forel (based on its range), formerly *M. hirsutus minor*. This species is only known from the type series.

***Chlamydopsis rana* sp. nov.**
(Figs 1E, 2E, 3, 30B)

MATERIAL. HOLOTYPE (QMT108574) ♂: Windsor Tableland via Mt Carbine, N Qld, 12.xi-26xii.1983. Storey & Walford-Huggins/MDPI Intercept Trap, Site No. 14a, in QMB. PARATYPES (12): 4 ♀: same data as type; 3 ♀ ♀, 1 ♂: same locality as type but 26.xii.1983-24.i.1984; 1 ♀: Windsor Tableland, N Qld., 27.xii.88-9.i.1989, ES & ANZSES Site 5, FIT; 1 ♀: N Qld, Windsor Tableland, 38km from main road, 28.xi-20.xii.1985, RS&JB/MDPI FIT site 14c; 1 ♂: NEQ: 15°48'S 145°17'E, Mt Finnigan, 1080m, 4.xii.1990-17.i.1991, QMB & ANZSES, FIT, Site 5; 1 ♀: NEQ. 15°52'S, 145°14'E, Mt Misery summit, 850m, 6.xii.1990-17.i.1991, QMB & ANZSES, FIT Site 3, in QMB, DPIM, MSCC.

DIAGNOSIS. This species is easily recognised by the combination of oblique, setose pronotal trichomes, and the broad, arcuate, elongate metatibiae. The only other *Chlamydopsis* which possess pronotal trichomes, *C. antennata* sp. nov. and *C. trichonota* sp. nov., have them restricted to the lateral margin, not forming an oblique setose depression. The metatibiae of these two species are also elongate, but not as broad as those of *C. rana*, at least in the known males.

DESCRIPTION. L: 2.06; W: 0.81; E/Pn L: 1.54; E/Pn W: 1.37; Pn W/L: 1.46; E L/W: 0.77; Pr/Py: 1.00; Sterna: 0.56, 0.12, 0.65; Tibiae: 0.87, 1.03, 1.34. Body dark, slightly rufescent brown, dorsally glabrous (except for trichomes), surfaces varied from smooth to coarsely strigose;

frons with sides weakly rounded, about $1.2 \times$ as long as wide, reticulopunctate, with a pair of prominent apical marginal setae; labrum wide, faintly bilobed; antennal scape widest about one-third from base, rounded at apex; antennal club of male about $2 \times$ as long as scape, somewhat compressed; antennal club of female slightly shorter than scape.

Prothorax with lateral margins interrupted near front by notch-like trichome, the fringe of which extends more sparsely posteromesally along an oblique depression; anterior pronotal margin elevated, with central and lateral portions more or less continuous, though a fine stria extends from the anterior margin along the upper edge of lateral portions; pronotal disk smooth at middle, strigose at sides and along anterior margin.

Prosternum finely grooved along anterior margin, this groove diverging slightly from the margin at sides; anterior margin arcuate, more prominent at sides than at middle; disk of prosternal keel uniformly coarsely reticulopunctate, narrowed posteriorly, emarginate at apex.

Elytra $1.5 \times$ as wide as pronotal base, humeri strongly elevated, rounded at apices; setae of inner longitudinal fringe of trichome short, decumbent posteriorly, fringe arched above central opening of trichome, extending around front into horizontal anterior groove; central opening of trichome nearly obscured by downward pointing fringe of setae; dorsal aspect of trichome with elongate coarse setae, elytral disk otherwise glabrous, strongly reticulopunctate on upper and lateral surfaces of humeri, with a few transverse reticulae between trichomes, disk becoming smooth posteromedially; elytral marginal stria nearly complete, interrupted only slightly in mediobasal depression, not abruptly divergent from margin above metafemora.

Mesosternum about $5 \times$ as wide as long, projecting at middle, coarsely punctate; meso-metasternal suture deeply impressed; metasternum with median longitudinal suture finely impressed, disk with only a few punctures in front of metacoxae; sternite 1 sparsely punctate at sides.

Femora slender, the metafemur about $1.3 \times$ length of pro- and mesofemur; protibia slender and angulate near basal one-third; mesotibia slightly broader, widest just beyond midpoint; metatibia elongate, broad, with outer margin more or less evenly rounded, dimorphic, with that of female about $1.3 \times$ as broad as that of male.

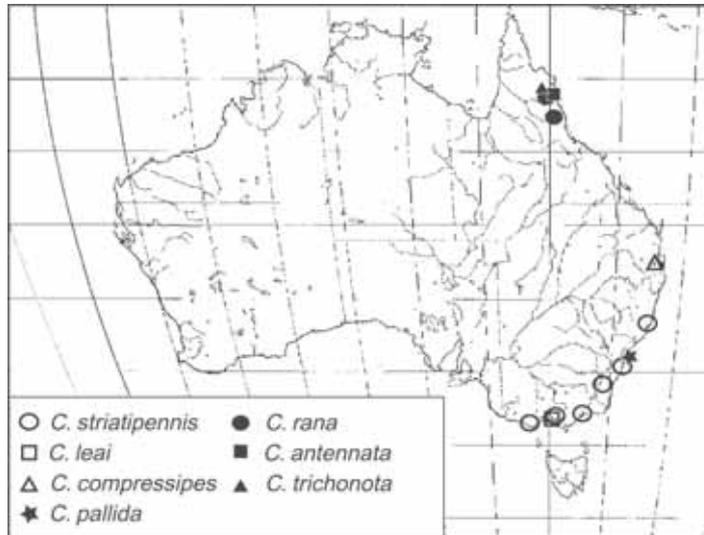


FIG. 3. Collecting records for species of *Chlamydopsis striatipennis* group.

Propygidium and pygidium faintly convex, both coarsely punctate, the pygidium becoming smooth and setose in apical one-third.

REMARKS: The name of this species refers the frog-like metathoracic legs, as well as its general appearance.

***Chlamydopsis antennata* sp. nov.**
(Figs 1F, 2F, 3)

MATERIAL. HOLOTYPE (QMT108575) ♂: Windsor Tableland, N Qld., 27Dec 88-8 Jan 1989, E.Schmidt & ANZSES, Site 6, flt.intercept, in QMB. PARATYPES: 2 ♂♂: same data as holotype, in QMB.

DIAGNOSIS. As above, only this species, *C. rana*, and *C. trichonota* possess pronotal trichomes. In this species and the following, these are formed by short arcuate outgrowths of the lateral margins which meet externally to enclose a setose opening at the anterolateral pronotal corner, whereas in *C. rana* an oblique setose dorsal depression leads to a simple anterolateral notch. *Chlamydopsis antennata* and *C. trichonota* are very similar, and obviously closely related. *Chlamydopsis antennata* appears (from limited material) to be slightly smaller and, more significantly, the setose inner edge of the humeral trichome incises the elevated humerus more deeply, forming a distinct mesal emargination (Fig. 1F vs 1G).

DESCRIPTION. L: 2.12; W: 0.75; E/Pn L: 1.83; E/Pn W: 1.42; Pn W/L: 1.58; E L/W: 0.81; Pr/Py:

1.06; Sterna: 0.50, 0.12, 0.65; Tibiae: 0.93, 1.06, 1.43. Body dark, faintly rufescent, almost entirely glabrous. Frons $1.3 \times$ as long as wide, sides rounded, widest at middle, glabrous, entirely reticulopunctate; labrum broad, apical margin only slightly arcuate, with a few inconspicuous setae; antennal scapes with outer margins almost evenly arcuate, widest near middle, reticulo-punctate; antennal club (of male) very large, about $3.5 \times$ as long as scape, apices projecting even when fully retracted, strongly compressed.

Prothorax about $1.5 \times$ as wide as median length; lateral margins with trichome, a small setose circular opening enclosed by anterior and posterior outgrowths of lateral margin, inflated base of posterior lobe with separate lateral setal fringe; anterior pronotal margin elevated, with central and lateral portions continuous, sinuate around large antennal cavities; pronotal disk glabrous, impunctate, shining.

Elytra with humeri strongly, rather narrowly, elevated in basal half, inner edge of each elevation emarginate, lined with continuous fringe of conspicuous setae concealing central opening of trichome, this fringe shorter anterior to emargination, extending anteriorly along inner edge around to anterolateral corner where it is longer, opposing posterolateral fringe of pronotum; mediobasal depression with strong transverse carinae; each elytron impunctate along suture, rather coarsely strigose at sides, the strigae converging (mesally and laterally) to apex of trichome; elytral marginal stria nearly complete, interrupted only slightly in mediobasal depression, not abruptly divergent from margin above metafemora.

Prosternum with anterior marginal stria deeply impressed, diverging from margin at sides, ending beneath anterior edge of pronotal trichome; prosternal disk shallowly reticulopunctate, narrowed posteriorly, keel depressed between procoxae, apex deeply and acutely emarginate.

Mesosternum short, about $6 \times$ as wide as long, projecting at middle, with a single row of

punctures; mesometasternal suture deeply impressed; metasternal disk impunctate; longitudinal metasternal suture faintly impressed; visible sternite 1 impunctate.

Legs all relatively slender, slightly elongate, the protibia and mesotibia about equal in length, outer margins angulate one-third from base, the metatibia $1.3 \times$ as long, with outer margin evenly arcuate.

Propygidium arcuately depressed along basal margin, otherwise convex, shallowly but evenly reticulopunctate; pygidium evenly convex, reticulopunctate in basal half, smooth and with a few setae at apex.

REMARKS. Only males of this and the following species are known. Given the sexual dimorphism in metatibial shape, and possibly color, in the preceding species, the females of these species may differ slightly from the descriptions. The name of this species refers to the enormous antennal club of the males.

***Chlamydopsis trichonota* sp. nov.**
(Figs 1G, 2G, 3)

MATERIAL. HOLOTYPE (QMT108576) ♂: Mt Lewis Rd, NEQld, 16km from Highway, 18 Dec 1989-13 Jan 1990, Monteith, Thompson, ANZSES, Site 2, 950m, Flt. Intercept. PARATYPE: 1 ♂: same data as type, in QMB.

DIAGNOSIS. L: 2.31; W: 0.81; E/Pn L: 1.85; E/Pn W: 1.45; Pn W/L: 1.54; E L/W: 0.83; Pr/Py: 1.13; Sterna: 0.62, 0.12, 0.72; Tibiae: 1.00, 1.06, 1.37. This species is very closely related to the preceding, and is therefore not fully described here. It differs most significantly in the form of the trichome. Its inner edge in this species is barely emarginate, the setal fringe arcuate posteriorly, but much closer to the typical straight line fringe of the *striatipennis* group. In addition, the elytra of this species are very sparsely, but evenly clothed with fine setae. *Chlamydopsis antennata* has at most a few decumbent hairs on the anterior surface of the trichome, but none elsewhere. Otherwise the two species appear virtually identical.

REMARKS: The name of this species refers to its pronotal trichomes.

STRIGICOLLIS GROUP

The *strigicollis* group contains seven apparently relatively generalised species. They are characterised by an anterior superficial humeral groove that extends more or less obliquely and horizontally from the humeral

elytral corner inward to the mesal base of the trichome. They are further restricted to those species in which anterior prosternal marginal stria does not depart from the margin to meet the circumcoxal stria. This marginal stria does not form a conspicuous groove in the first four species included here. But it does in the last three, which for that reason are included somewhat tentatively. The form of the trichome suggests relationships with the *pygidialis* group. However, the latter is so readily characterised that both are maintained as separate groups until a clearer phylogenetic picture emerges. The first three species of this group exhibit an oblique groove running behind the lateral portion of the anterior pronotal margin. This is identical in form to that of most of the *striatipennis* group, although this seems likely to be a symplesiomorphy.

***Chlamydopsis reticulata* Lea, 1910**
(Figs 1H-I, 2H-I, 6, 29D)

Chlamydopsis reticulata Lea, 1910: 199; Material. Holotype (unique): *reticulata* Lea, Type, N.S.W., on the underside of mounting card: *reticulata* Lea TYPE, from King's coll./*Chlamydopsis reticulata* Lea, Type, Australia; SAM, examined, 2000; these specimen data conflict with Lea's original citation of the type specimen: 'Australia (a single specimen, without locality label, from the late Rev. R. L. King's collection)'; it is thus unclear why 'N.S.W.' appears on the type label.

Chlamydopsis excavata Lea, 1910: 200; Type: Tasmania, near Hobart; SAM, not examined; New Synonymy.

Chlamydopsis puncticollis Oke, 1923: 156; Lectotype ♂, hereby designated: Ferntree Gully, 26.5.1920, C. Oke, Vic./*Chlamydopsis puncticollis* Oke Type/ Presented by C.G. Oke/ 897 Type; Paralectotype ♂: same locality, 20.6.20, 898 Paratype; MVM, examined, 2000; New Synonymy.

RECORDS. ANIC: ACT: 35.16S, 149.06E, Black Mt, 600m, x.1987. NHM: NSW: Sydney [as *C. excavata*, det. by A. Lea]. Lea (1919): NSW: Hunters Hill (nr Sydney), Oct., nest of *Ectatomma* [as *C. excavata*]; Vic: Fern Tree Gully, Dec. [as *C. excavata*]. Lea (1925): NSW: Como, *Ectatomma metallicum*. Oke (1923): NSW: National Park; Vic: Beaconsfield; Vic: Belgrave; Vic: Ferntree Gully [as *C. puncticollis*]. MCZ: Vic: Beaconsfield.

DIAGNOSIS. L: 2.15; W: 0.72; E/Pn L: 2.00; E/Pn W: 1.39; Pn W/L: 1.57; E L/W: 0.92; Pr/Py: 1.00; Sterna: 0.62, 0.12, 0.69; Tibiae: 0.81, 0.87, 1.00. This and the following species are very similar. Both exhibit sexual dimorphism in the sculpturing of the elytra, with the males being reticulostrigose everywhere outside the medio-basal depression, and the females appearing almost entirely impunctate. In both sexes the pronotal texture differs slightly between the two species, with the strigae of *C. reticulata* more consistently impressed from edge to middle. In

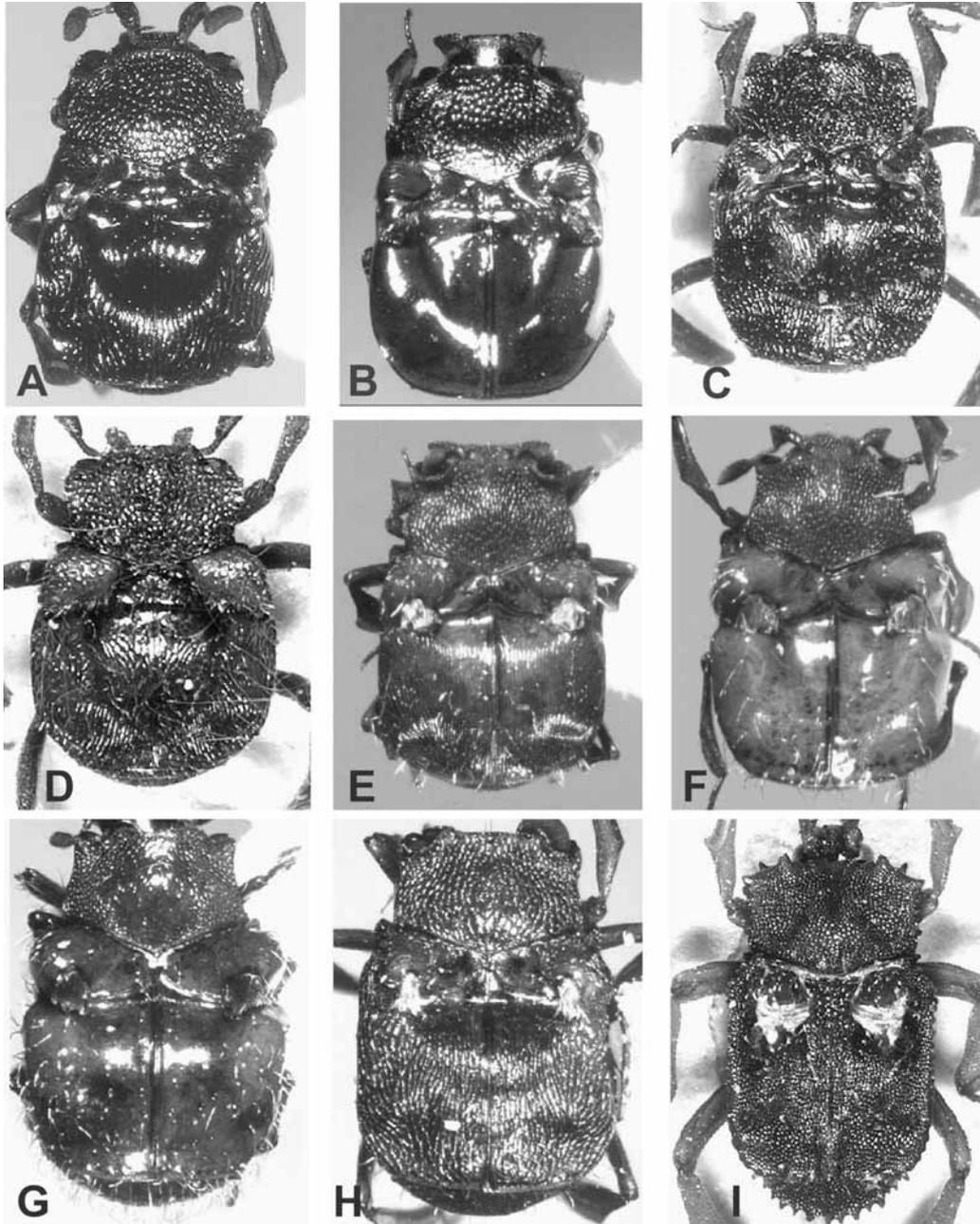


FIG. 4. Dorsal views of *Chlamydopsis* spp. A, *C. dimorpha* (δ). B, *C. dimorpha* (♀). C, *C. strigicollis*. D, *C. mormolyce*. E, *C. monteithi* (δ). F, *C. monteithi* (♀). G, *C. setifera* (♀). H, *C. lawrencei* (δ). I, *C. pygidialis*.

most specimens of *C. dimorpha* the strigae/punctures of the median portion of the pronotal disk are less deeply impressed, and it is often impunctate at the centre. While *C. reticulata* is consistently slightly larger than *C. dimorpha*, this is especially evident in the elytra

of the females, with those of *C. reticulata* much broader relative to the pronotum. Possibly the most consistent, though least substantial, difference is that the mediobasal depression of *C. dimorpha* always possesses a minute setigerous pustule at the sides near the trichome (occasionally more than one), whereas in all *C. reticulata* examined so far, the mediobasal depression is bare (except along the fine transverse carina).

REMARKS. The new synonymies proposed here are based partly on the sexual dimorphism discovered in this species. In fact Lea (1910) recognised the strong structural similarity between his *reticulata* and *excavata*, but had no reason to expect such a striking difference to be sexual. Oke (1923), however, seems to have been simply unfamiliar with *C. reticulata*, as it is not mentioned in his description of *C. puncticollis*.

***Chlamydopsis dimorpha* sp. nov.**
(Figs 4A-B, 5A, 6)

MATERIAL. HOLOTYPE (QMT108577) ♂ (dissected by the author): NEQ: 17°26'S, 145°42'E, Hughes Road, Topaz, 6 Dec 1993-25 Feb 1994, Monteith, Cook, Janetzki, RF Intercept, 650m. PARATYPES (20): 11 ♂, 1 ♀: same data as holotype; 1 ♀: SEQ: 27°20'S, 152°48'E, Stony Ck., via Samford, 22.x.94-2.ii.1995, HJ&GM, RF FIT; 1 ♀: same as preceding but 2.ii-8.iv.1995, open forest FIT; 1 ♂: NEQ: 17°24'S, 145°41'E, Westcott Rd, Topaz, 6.xii.93-25.ii.1994, GM,DC,HJ, RF FIT, 680m; 1 ♀: NEQ: 17°24'S, 145°41'E, PEI Rd, Topaz, 6.xii.93-25.ii.1994, GM,DC,HJ, RF FIT, 580m; 1 ♂: NEQ: Danbulla SF, 13km NE of Yungaburra, 20.xii.86-13.i.1987, RS&SD, MDPI FIT site 27; 1 ♂: Qld: 17.28S 145.29E, Longlands Gap BS1, 1150m 3.i-5.ii.1995, PZ, FIT; 1 ♀: SEQ: 25°40'S 151°25'E, Nipping Gully, Site 2, 9.x-18.xii.1998, GM&Gough, RF FIT, 200m, 7399; 1 ♂: Qld: 28°08'S 152°40'E, Black Rock Scrub, 350m, 2.xii.2000-13.v.2001, GM, RF FIT, 10162, in QMB, DPIM, ANIC, MSCC.

DIAGNOSIS. See diagnosis under *C. reticulata*, above.

DESCRIPTION. L: 1.99; W: 0.69; E/Pn L: 1.91; E/Pn W: 1.29; Pn W/L: 1.55; E L/W: 0.95; Pr/Py: 0.93; Sterna: 0.56, 0.12, 0.59; Tibiae: 0.75, 0.87, 0.87. Body dark reddish brown, subquadrate. Frons slightly wider than long, sides approximately parallel in apical 2/3, narrowed at antennal bases and at apex; with strongly developed reticulate sculpturing, the individual cells varied but most elongate oval or elongate polygonal; labrum semicircular, faintly rugose, with a few elongate setae. Antennal scapes with outer edges bluntly angulate, widest just apicad

of midpoint, reticulately sculptured as frons; antennal club of female oval, approximately equal in length to funicle; antennal club of male more elongate, about 1.5 × as long as funicle.

Pronotum almost 2 × as wide as long, margined laterally, sides very slightly arcuate, but more or less parallel, anterior margin tripartite, in lateral thirds (above antennal cavities) raised nearly perpendicular to disk, oblique and slightly inwardly arcuate to side, in middle third less strongly raised, the middle section separated from lateral oblique sections by a groove which continues posterolaterally along base of raised lateral margin, curving posteriorly near side where it merges with lateral pronotal margin; pronotal disk reticulately sculptured, the reticulae elongated and oblique anterolaterally, less strongly sculptured posteromedially, especially in female.

Prosternum with reticulately sculptured lobe and keel separated from smooth depressions for reception of legs by a strong carina extending from lateral sternal margin to base of keel; keel strongly narrowed posteriorly, acutely emarginate at base; keel set off from lobe by a weak transverse furrow at middle, reminiscent of (though probably not homologous with) the presternal suture of many histerids; anterior margin of prosternum simple (with weak marginal stria but not grooved) weakly arcuate at sides, transverse and faintly undulating at middle.

Each elytron about 2 × as long as wide, widest just behind middle; transversely depressed across middle at base, trichome with anterior and posterior portions strongly elevated; anterior elevation with anterior superficial groove strongly oblique from anterior elytral corner to near base of inner edge of trichome, bearing a dense continuous fringe of golden setae from this groove up inner edge of trichome to its apex, the setae apparently increasing in length towards apex, the apical-most setae extending over the gap between anterior and posterior elevations of trichome; gap between elevations incised nearly to their bases internally and externally, the external incision a narrow, inverted 'Y' shape, lacking setae, the inner incision broadly open, with anteriorly directed setae on posterior edge from near base to apex; sculpturing of elytral disk strongly sexually dimorphic: that of male with elongated reticulae everywhere except in depression between trichomes, that of female absolutely smooth except on epipleuron and anterior slope of trichome which are reticulate as in male; elytral disk of both sexes with few

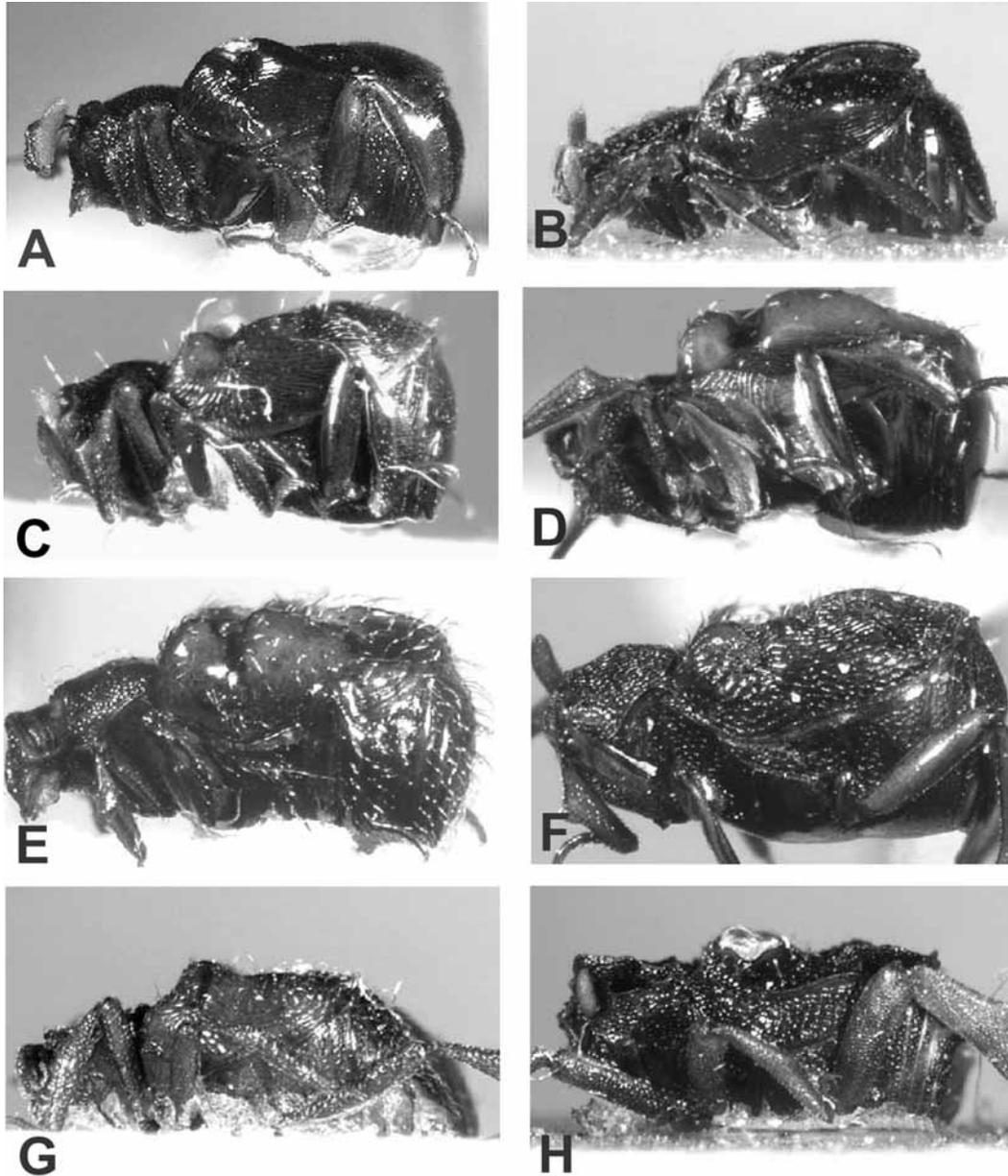


FIG. 5. Lateral views of *Chlamydopsis* spp. A, *C. dimorpha* (♂). B, *C. strigicollis*. C, *C. mormolyce*. D, *C. monteithi* (♂). E, *C. monteithi* (♀). F, *C. setifera* (♀). G, *C. lawrencei* (♂). H, *C. pygidialis*.

conspicuous setae along basal half of elytral suture, and a few at sides within the medial depression; marginal stria of elytron continuous along all edges except along base and medial suture near scutellum.

Mesosternum about 3× as wide as long, acutely projecting at middle, with complete anterior marginal stria, posterior margin sinuate, raised relative to anterior portion of metasternum, disk with scattered punctures and dense

intervening microsculpture. Metasternum smooth, without hint of microsculpture, with only a few weak punctures along anterior edge and scattered inconspicuous setae. First visible abdominal sternite similarly smooth and with faint anterior marginal punctures.

Prothoracic legs densely reticulate on exposed surfaces, tibia slender, with outer edge angulate one-third from base; meso- and metathoracic legs smoother, with only faint microsculpture along outer tibial margins; posterior tibiae slightly broader and more rounded than protibia, tibiae of female markedly broader and rounder, and with microsculpture confined to a discrete marginal band.

Propygidium shallowly depressed at middle of anterior margin, otherwise uniformly convex, densely reticulate throughout; pygidium weakly convex, with weakly developed reticulae in basal one-third, otherwise smooth.

REMARKS. The name of this species refers to the marked difference between the sexes.

***Chlamydopsis strigicollis* Oke, 1923**
(Figs 4C, 5B, 6)

Chlamydopsis strigicollis Oke, 1923: 157; Lectotype, hereby designated: Belgrave, V., 17.10.21, C.Oke/ *Chlamydopsis strigicollis* Oke, Type/ Presented by C.G. Oke/ 899.

MATERIAL. HOLOTYPE ♂; MVM, examined, 2000. Paralectotype: same data as lectotype; in MVM.

RECORDS. Oke (1923): Vic: Hurst's Bridge; Vic: Femtree Gully; Vic: Beaconsfield; Vic: Mooroolbark. WAM: Vic: Femtree Gully. ANIC: ACT: 35.19S, 148.51E, Wombat Ck, 6km NE Picadilly Circus, i.1984, 750m; Vic: Withers, 2-42; NSW: 32.08S, 151.27E, Allyn River, Chichester SF, 10-11.xi.1981. MCZ: Vic: Arthur's Seat, 900ft., 29.iv.1951, 'w/*Chalcoconera victoriae*'.

DIAGNOSIS. L: 1.93; W: 0.75; E/Pn L: 1.58; E/Pn W: 1.35; Pn W/L: 1.42; E L/W: 0.83; Pr/Py: 1.21; Sterna: 0.56, 0.12, 0.44; Tibiae: 0.69, 0.69, 0.69. Among members of this group, *C. strigicollis* is unique in having the anterior pronotal margin barely upturned relative to dorsum. It also lacks the oblique lateral groove behind the antennal cavities, present in *C. reticulata* and in *C. dimorpha*. The pronotal texture and setation are also unique; the disk is reticulostriate, with the strigae and the long, decumbent setae convergent anteromedially. Interestingly, *C. strigicollis* does not exhibit the elytral dimorphism shown by *C. reticulata* and in *C. dimorpha*; both sexes are uniformly reticulostriate.

REMARKS. Reported from nests of *Chalcoconera* sp. (Oke, 1923).

***Chlamydopsis mormolyce* Lea, 1925**
(Figs 4D, 5C, 6)

Chlamydopsis mormolyce Lea, 1925: 255; Lectotype, hereby designated: *Mormolyce*, Mundaring, Lea, Type/ *Chlamydopsis mormolyce* Lea Type, W. Australia, mounted with host ant; SAM; examined, 2000.

RECORDS. WAM: WA: Culham, xi.1960, nest of *Chalcoconera inornata*.

DIAGNOSIS. L: 2.18; W: 0.84; E/Pn L: 1.59; E/Pn W: 1.51; Pn W/L: 1.30; E L/W: 0.81; Pr/Py: 1.11; Sterna: 0.65, 0.16, 0.59; Tibiae: 1.00, 1.12, 1.21. While *C. mormolyce* shares the orientation of the anterior superficial humeral groove with the other members of this group, the actual form of the trichome differs somewhat from the others. Firstly its upper mesal edge, densely fringed with setae in the other species, is bare; the only trichome setae are within its opening, barely visible from above. The anterior surface of trichome is broad, slightly concave. There is also no lateral gap between the anterior and posterior humeral elevations. Although a conspicuous shallow groove marks the junction, they are solidly joined to their dorsal apices. A few additional distinguishing characters include: pronotal reticulae all more or less polygonal, none elongate; prosternum bearing setae; metasternum and sternite 1 faintly reticulate throughout, more conspicuously towards the anterior margin of each; elytral disks with elongate reticulation, and long, though sparse, setae; legs of female all elongate, slender and reticulate (posterior ones not smooth); inner apex of meso- and metatibiae with an acute, fixed denticle.

REMARKS. The numerous differences between this and the other species of the *strigicollis* group leave some doubt that it belongs here phylogenetically. Its relationships will require reassessment with more extensive samples.

***Chlamydopsis monteithi* sp. nov.**
(Figs 4E-F, 5D-E, 6, 28B)

MATERIAL. HOLOTYPE (QMT108578) ♂: C.Qld 26°57'S 148°02'E, Mt Moffatt NP, 1000m, Mahogany Forest, 26 Sept-26 Nov 1995, G. Monteith. Intercept. PARATYPES: 7 ♀♀, same data as type, in QMB, DPIM, MSCC.

DIAGNOSIS. This and the following two species exhibit unusual anterior prosternal margins. Its marginal stria does not diverge from the margin at

the sides to meet the circumcoxal stria (as it does in the preceding species), but it is conspicuously grooved, as in many *Chlamydopsis* outside of this group. While the prosternal strial configuration is likely a symplesiomorphy, the form of the superficial humeral groove of the trichome (strongly oblique, entering the trichome near its mesal base) is a more unusual character supporting their placement in the *strigicollis* group. The females of this species and *C. setifera* are particularly similar (though only the female of the latter is known), sharing smooth elytra bearing elongate sparse setae, and essentially identical trichome shape. The principal difference between them is that *C. setifera* bears elongate isolated setae on the propygidia and all ventrites as well as dorsally. The pygidia and venter of *C. monteithi* and *C. lawrencei* are generally similar, but the latter is smaller (2.37mm vs 2.31mm), less densely strigose, and has the humeral trichomes smaller and slightly more distant from the sides.

DESCRIPTION. L: 2.37; W: 0.84; E/Pn L: 1.81; E/Pn W: 1.31; Pn W/L: 1.56; E L/W: 0.89; Pr/Py: 0.95; Sterna: 0.75, 0.16, 0.72; Tibiae: 0.87, 0.87, 0.97. Body rufescent, bearing numerous elongate, single setae; frons slightly wider than long, sides strongly rounded, apical margin weakly rounded; frontal disk flat, densely reticulopunctate, bearing 1-2 elongate setae; labrum subacute at apex, faintly punctate, with short sparse setae at apex; antennal scapes bluntly angulate near middle, narrowed to base and more gradually to apex, densely reticulostriate.

Pronotum about 1.4 × as wide as long, sides unmarginated (though appearing submarginated in posterior half where carina delimiting proleg depression intrudes), widest near base, slightly sinuately narrowed to apex; anterior margin weakly elevated above antennal cavities (more distinctly so in male), medial portion shallowly inwardly arcuate; pronotal disk slightly depressed in anterior corners, convex posteriorly, densely reticulostriate, strigae converging to

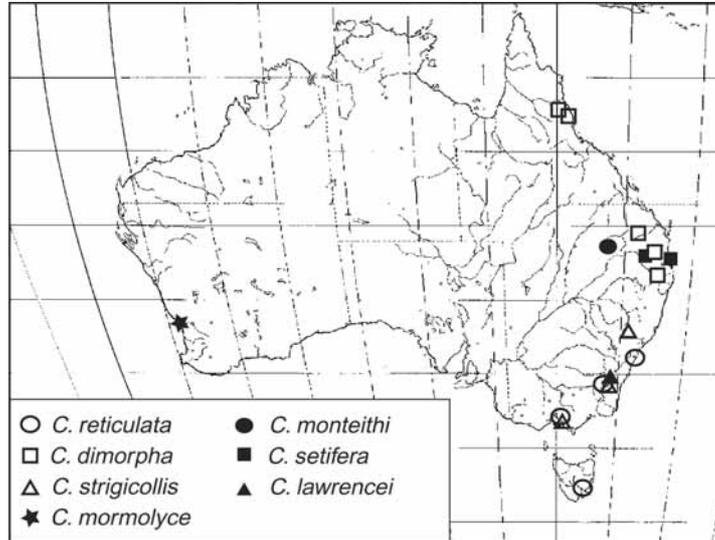


FIG. 6. Collecting records for species of *Chlamydopsis strigicollis* group.

scutellum, bearing a few (exactly 4 in most of type series) elongate setae, some of them 'bundles' from conspicuous punctures.

Prosternum with anterior margin finely but distinctly grooved, the groove only slightly diverging from margin at sides, not joining circumcoxal stria, but meeting the pronotal/prosternal marginal groove near the anterolateral pronotal corner; anterior prosternal margin slightly deflexed, sinuate, rounded at middle, without lateral projections; prosternal keel narrowed posteriorly, very shallowly emarginate at apex, with fine marginal stria along inner edge of leg depression, but not along apical margin of keel; prosternal disk fairly evenly punctate, more shallowly so along medial portion of anterior margin, glabrous.

Elytra about 1.3 × as wide as base of pronotum; widest close to base, sides parallel in basal two-thirds, rounded to apices; humeri strongly elevated (more so in females), anterior and posterior elevations divided by transverse furrow, this furrow deeper and broader mesally than laterally, densely setose on posterior and especially anterior mesal edges; anterior superficial humeral groove fine, oblique, nearly horizontal, entering mesal base of trichome opening; mediobasal depression occupying less than basal half of elytra, with fine transverse carinae from just behind scutellum curving posterolaterally to middle of trichome opening; dorsum of elytral disk of female smooth,

impunctate except for widely scattered setigerous punctures, each with elongate seta (few with multiple setae), these subserially arranged behind trichome and along posterior half of elytral suture; elytral disk of male finely, longitudinally reticulostriate in apical two-thirds, with similarly sparse setigerous punctures; epipleuron striate in both sexes, striae converging to trichome; posterior elytral margin not carinate; elytral marginal stria continuous around lateral and posterior margins, but entirely absent along suture.

Mesosternum about $3\times$ as wide as median length, weakly projecting at middle, disk densely punctate; mesometasternal suture finely but crenulately impressed, continuous at sides with postmesocoxal stria; median longitudinal metasternal suture not impressed, but visible; metasternal disk and 1st abdominal sternite impunctate, glabrous; legs short, slender, with short fine setae; profemur and tibia faintly punctate, meso- and metatibiae and femora impunctate; outer margin of protibia acutely angulate at basal one-third, meso- and metatibiae more bluntly angulate nearer their midpoints.

Propygidium convex, densely but very shallowly reticulopunctate in male, reticulae only barely visible in female; pygidium of male faintly reticulopunctate in basal half, impunctate apically, that of female impunctate; pygidia in both sexes glabrous.

REMARKS. This species is named in honor of Geoff Monteith, collector of this species' entire type series, whose field efforts have contributed enormously to chlamydopsine studies.

***Chlamydopsis setifera* sp. nov.**
(Figs 4G, 5F, 6)

MATERIAL. HOLOTYPE (QMT108579) ♀: SEQ: 26°53'S 152°09'E, Benarkin School, 14 Nov 1994-26 Jan 1995, G.B. Monteith, Intercept trap, open forest. PARATYPE ♀: Qld: 27°33'S 153°28'E, N. Stradbroke I., Enterprise Blackbutt #1, 90m, 8-22 Jan 2002, QM party pitfall trap 10343.

DESCRIPTION. L: 2.31; W: 0.81; E/Pn L: 1.85; E/Pn W: 1.53; Pn W/L: 1.46; E L/W: 0.83; Pr/Py: 0.95; Sterna: 0.69, 0.12, 0.72; Tibiae: 0.87, 0.81, 0.90. This species exhibits only a few differences from the females of the *C. monteithi*, described fully above. They differ primarily in distribution of setae. The elongate setae of this species are more evenly distributed on the body. The pronotum bears setae along the anterior and lateral margins, rather than just at middle; setae

of the elytra extend up the entire length of the suture (rather than being confined to its apical half); the pygidia, legs and ventrites all bear elongate setae completely lacking in the preceding species; pronotal reticulae faint at middle, obsolete in apical half. There is an additional possible difference in the form of the trichome. On the left side of the type (but not the right) the furrow between anterior and posterior elevations is more deeply and finely incised than in the preceding species. However, this may result from ant damage, as this is where ants are known to grasp the beetles in their mandibles.

REMARKS. Although males of this species are not yet known, it is likely that the species is dimorphic, and that the males will have the elytra densely reticulostriate, as in the preceding species.

***Chlamydopsis lawrencei* sp. nov.**
(Figs 4H, 5G, 6)

MATERIAL. HOLOTYPE ♂: 35.16S 149.06S [sic] ACT, Black Mtn. Canberra, 25 Oct. 1990, J.F. Lawrence, sweeping; in ANIC. PARATYPE: 1 ♂: ACT: 36.16S 149.05 ACT Black Mtn. W. slope, 5.xii.1989, T. Weir, Berlesate ANIC 1125, open forest litter; in ANIC.

DIAGNOSIS. As above, this species is unusual in having the anterior prosternal margin grooved but with the groove not diverging at the sides to meet the circumcoxal stria. This species, known only from the two males, is likely sexually dimorphic like the preceding two. This male differs from the male of *C. monteithi* in its smaller body size, shorter, more convex pronotum, and smaller, more narrowly separated humeral trichomes.

DESCRIPTION. L: 2.31; W: 0.81; E/Pn L: 1.85; E/Pn W: 1.43; Pn W/L: 1.42; E L/W: 0.91; Pr/Py: 0.80; Sterna: 0.69, 0.12, 0.72; Tibiae: 0.84, 0.87, 1.00. Body dark rufescent; frons about $1.2\times$ as wide as long, sides strongly rounded, margins elevated, mostly flat, faintly depressed between antennal bases; frontal disk reticulopunctate, with a few fine setae; labrum rounded, shallowly punctate; outer margin of antennal scapes bluntly angulate near midpoint, baso- and apicolateral margins straight, apex rounded; antennal club about $1.4\times$ as long as antennal scape.

Prothorax about $1.3\times$ as wide as median length, approximately equal in width basally and apically, slightly narrowed at middle, unmarginated in anterior half, outer edge of prosternal leg depression projecting beyond

margin in posterior half (such that it appears margined from above); lateral thirds of anterior margin strongly arcuate, elevated; median portion only very weakly elevated; pronotal disk shallowly depressed in anterior corners, otherwise convex, with subacute median tubercle.

Prosternum with anterior margin finely grooved, the groove only slightly diverging from margin at sides, not joining circumcoxal stria, but meeting the pronotal/prosternal marginal groove near the anterolateral pronotal corner; anterior margin slightly deflexed, uneven, not projecting at sides; prosternal keel narrowed posteriorly, shallowly emarginate at apex; prosternal disk reticulopunctate, glabrous.

Elytra about $1.3 \times$ as wide as base of pronotum, sides nearly straight, slightly convergent to front; humeri moderately elevated, not incised laterally, trichome a mesally open semicircle, with an uneven inner setal fringe, the posteriorly directed setae of the anterior edge overlaying those of the posterior edge; anterior superficial humeral groove fine, oblique, extending from the humeral corner medially along the anterior elytral margin for a short distance before curving back to enter the anteromesal base of the trichome opening; mediobasal depression short, confined to basal one-third, with low, obliquely transverse basal carinae; apical elytral margin weakly carinate; elytral disk reticulostriate; with scattered elongate setae throughout.

Mesosternum about $4 \times$ as wide as median length, weakly projecting anteriorly, disk densely punctate; mesometasternal suture finely impressed, continuous at sides with postmesocoxal stria; median longitudinal metasternal suture faintly impressed; metasternal disk with few fine punctures, glabrous, with faint alutaceous microsculpture; 1st abdominal sternite with row of fine punctures along anterior margin, with a few scattered punctures behind; legs short, slender, minutely setose; outer surfaces of profemur and tibia faintly punctate, meso- and metatibiae and femora impunctate; outer margin of protibia acutely angulate at basal one-third, meso- and metatibiae more bluntly angulate.

Propygidium shallowly reticulopunctate, with sparse elongate setae; pygidium very shallowly reticulopunctate in basal one-third, nearly smooth apically.

REMARKS. The female of this species is not known. Discovering that it shared the dimorphism in elytral texture with *C. monteithi*, above, would support its position in this group. The

species is named in honor its type's collector, coleopterist par excellence John Lawrence.

PYGIDIALIS GROUP

While a few of the species in this group are extremely distinctive and closely related, it is in fact a rather varied group, with only a few species showing the radical serrate and tuberculate surfaces seen in the nominate species. All of the species possess some form of frontal tubercles, usually in two longitudinal rows of three each, although 2 and 4 tubercles/row have also been seen. The humeral trichome is very consistent in shape (with the exception of *C. setipennis*; see below), forming a horizontal C-shaped arc originating nearly at the humeral corner. Its setal fringe (again with the exception of *C. setipennis*) extends along this arc, and is either continuous through the lateral notch (the posteriormost point of this arc) and along the anterior edge of the posterior trichome elevation, or is interrupted at the lateral notch. The anterior superficial humeral groove in these species is also continuous with this arc, extending from anteromesal base of the trichome to the humeral corner. Most species also exhibit the following characters: transverse propygidial carina, median pronotal tubercle present, often forming short transverse ridge (often also with longitudinal carina leading to anterior pronotal margin), lateral pronotal margins elevated, metatibiae often expanded. There is little question that the species included here are closely related. However, some characters suggest derivation of the *longipes* group from among them.

Chlamydopsis pygidialis Blackburn, 1900 (Figs 4I, 5H, 9)

Chlamydopsis pygidialis Blackburn, 1900: 206; Type: Australia; NHM, examined, 2000.

Chlamydopsis pygidialis var. *minor* Oke, 1923: 153; Mazur, 1984; Lectotype, hereby designated: Ferntree Gully, 16.5.1920, C.Oke, Vic./ *Chlamydopsis pygidialis* var. *minor* Type/ Presented by C. Oke/ 891 Type; MVM, examined, 2000.

RECORDS. NHM: Vic: nr. Melbourne, vi.1920; ACT: Canberra, Black Mt, vii.1974, under stones. WAM: Vic: Ferntree Gully. AMS: Vic: Millgrave. Lea (1925): Vic: nr Melbourne, May, with Iridomyrmex. Oke (1923): Beaconsfield; Belgrave; Healesville; Warburton; Yarra Junction; Emerald; Pakenham [all Vic].

DIAGNOSIS. *Chlamydopsis pygidialis* shares many characteristics with the following 3 species. All have the lateral and anterior pronotal margins strongly elevated, and the posterior margin of each elytron strongly carinate, with the

carina extending forward along the lateral margins (extending nearly to the elytral base in *C. pygidialis*, *C. serricollis*, and *C. carinicollis*). These last three also have a strong median longitudinal carina from the median pronotal tubercle extending forward to the margin. Of the four species, all but *C. carinicollis* have this carina at least slightly to strongly serrate. *Chlamydopsis setipennis* is easily separated from the remaining three by the humeral trichomes in which the anterior elevation is nearly or fully vertical, and separated from the posterior elevation by a broad notch lined by a long, unkempt setal fringe. *Chlamydopsis pygidialis* and *C. serricollis* are the most similar of the group, having pronotum, elytra and propygidium strongly serrately margined. The most distinctive character separating the two is the oblique apical margin of the metatibia, which in *pygidialis* departs about 75° from the long axis of the tibia. This angle is closer to 45-50° in *C. serricollis*. The metatibia is less strongly narrowed towards the base in *C. pygidialis*. Lea (1914b) cited the medial longitudinal carina of the pronotum as being more conspicuously serrate in *C. serricollis* than in *C. pygidialis*.

REMARKS. Blackburn (1891) reported that the type was 'obtained by beating dead branches and probably connected with some species of Hymenoptera inhabiting the dead wood'.

***Chlamydopsis carinicollis* Lea, 1919**
(Figs 7A, 8A, 9)

Chlamydopsis carinicollis Lea, 1919: 178; Type locality: Vic: Beaconsfield; SAM, not examined.

RECORDS. NHM: Vic, (Det. A. Lea); Oke (1923): Vic: Ferntree Gully; Vic: Upwey, *Chalcopterona* sp.

DIAGNOSIS. As above, this species shares the carinate apical elytral margin and the median longitudinal pronotal carina with *C. pygidialis* and *C. serricollis*. However, in *C. carinicollis* these carinae are not serrate as they are in the other two. The humeral trichome of this species is also relatively small, and does not incise the lateral aspect of the humeri.

REMARKS. The type was reported from a nest of the ant *Aphaenogaster longiceps* in July (Lea, 1919). Of currently recognised subspecies, only *A. l. longiceps* (Smith) occurs near the type locality of *C. carinicollis*.

***Chlamydopsis serricollis* Lea, 1914**
(Figs 7B, 8B, 9)

Chlamydopsis serricollis Lea, 1914b: 217; Type: *serricollis* Type Lea, Pt. Hacking/ *Chlamydopsis serricollis* Lea type, N. S. Wales; mounted with 1 ant, reportedly *Ectatomma metallicum* (Lea, 1914b); in SAM; examined. *Chlamydopsis serricornis*; Mazur, 1997: 4; misspelling.

RECORDS. NHM: NSW: Sydney. Lea (1925): NSW: nr Sydney, *Ectatomma metallicum*.

DIAGNOSIS. See the diagnosis under *C. pygidialis* above.

***Chlamydopsis setipennis* Oke, 1923**
(Figs 7C, 8C, 9)

Chlamydopsis setipennis Oke, 1923: 154; Lectotype, hereby designated: Evelyn.V., 5.6.22, C.Oke/ *Chlamydopsis setipennis* Oke Type/ Presented by C.Oke/ 893 Type, MVM, seen, 2000; Paralectotypes: Belgrave, Vic., 16.10.21, C.Oke/ *Chlamydopsis setipennis* Oke Co-Type/ 2149 Paratype/ F.E. Wilson Collection, MV; Belgrave, Vic., 3.7.21, C. Oke/ *Chlamydopsis setipennis* Oke Co-Type/ Presented by C. Oke/ 894 Paratype, MVM; Belgrave, Vic., C. Oke, AMS; Ferntree Gully, Vic., C. Oke, NHM; Victoria: Emerald, Sep 26, 1920, Oke, NHM.

DIAGNOSIS. *Chlamydopsis setipennis* is quite distinctive within the *pygidialis* group. The form of its humeral trichome is unique, having the anterior and posterior elevations quite broadly separated, with a large lateral notch between them. The setal fringe of each is also unique, with the setae of the anterior elevation being elongate, rather sparse, and nearly erect, while those of the posterior elevation, also unusually elongate, are clustered into two distinct, adjacent 'clumps'.

REMARKS. Described as inhabiting the nests of *Notoncus foreli* Andre var. *dentatus* Forel (Oke, 1923). This species is known only from the type series.

***Chlamydopsis convergens* sp. nov.**
(Figs 7D, 8D, 9)

MATERIAL. HOLOTYPE (QMT108580) ♂: NEQ: 17°26'S, 145°42'E, Hughes Rd, Topaz, 6 Dec 1993-25 Feb 1994, Monteith, Cook, Janetzki, RF Intercept, 650m. PARATYPES (11): 8 ex.: same data as holotype; 1 ex.: NEQ: 17°14'S 145°25'E, 3km W of Bones Knob, 10.xii.1995-9.ii.1996, GM,DC,GT, RF PT, 1140m; 1 ex.: Qld: 17.37S,145.34E 1000m, BS3 Massey Ck., 1.xii.1994-3.i.1995, PZ, FIT JCU (West); 1 ex.: Qld: 17.28S 145.29E, BS1 Longlands Gap, 2.x-1.xi.1995, LU, 1150m, FIT JCU, in QMB, DPIM, ANIC, MSCC.

DIAGNOSIS. The surface texture is unique among members of the *pygidialis* group. Both sexes have shiny, only very shallowly punctatostrigose elytra. In the females, apart from the humeri and epipleurae, the elytra may be entirely impunctate.

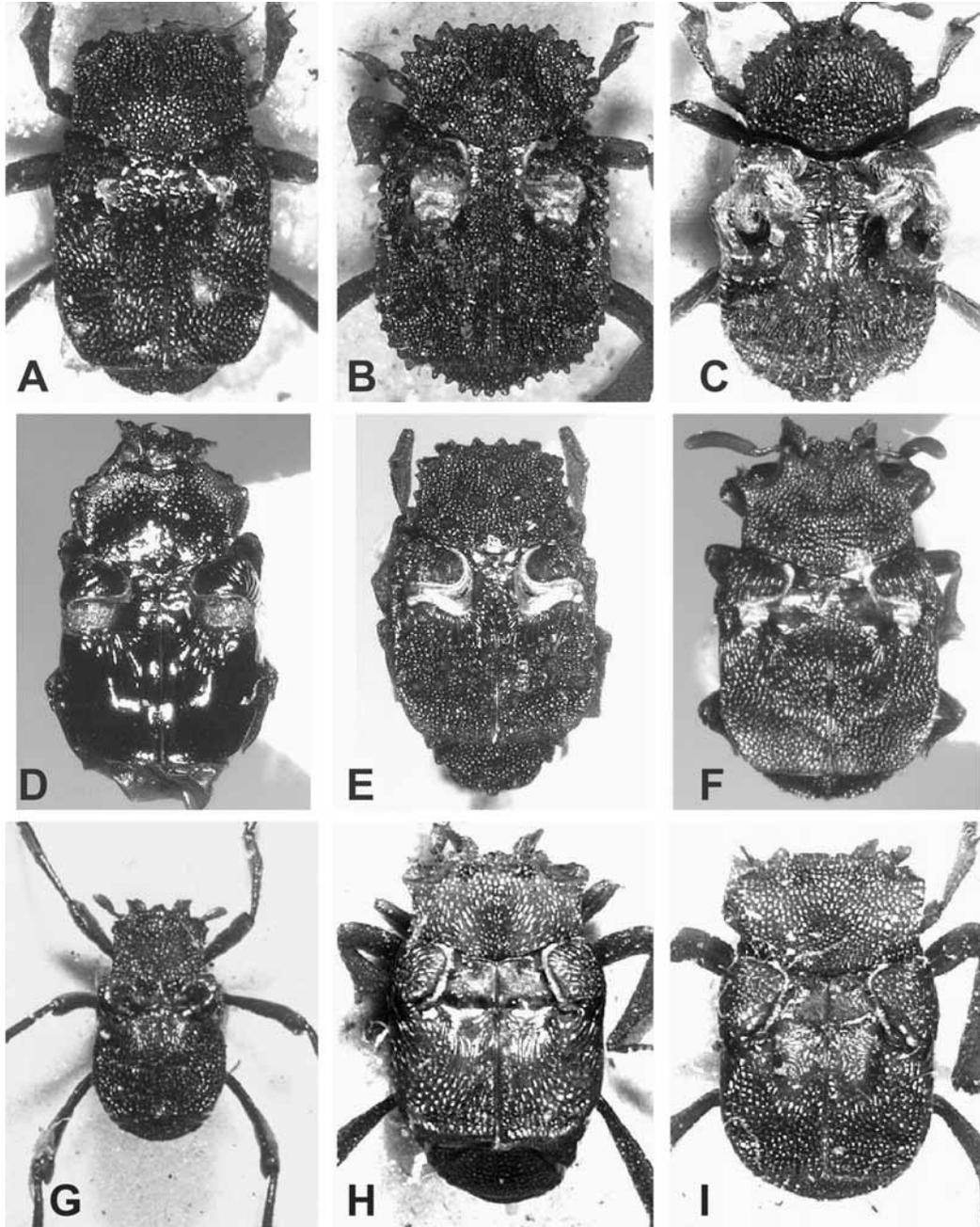


FIG. 7. Dorsal views of *Chlamydopsis* spp. A, *C. carinicollis*. B, *C. serricollis*. C, *C. setipennis*. D, *C. convergens*. E, *C. erupta*. F, *C. transversa*. G, *C. longipes*. H, *C. inaequalis*. I, *C. agilis*.

The males typically have sparse shallow punctures on the dorsal elytral apices as well. The pronotum may also be largely impunctate, although it is more variable in this regard than the elytra. An additional, almost unique feature is a secondary erect fringe of setae above the

decumbent fringe along the anterior inner edge of the trichome. This is seen in one of two individuals of *C. coronis* as well.

DESCRIPTION. L: 1.87; W: 0.69; E/Pn L: 1.73; E/Pn W: 1.10; Pn W/L: 1.77; E L/W: 0.88; Pr/Py: 1.14; Sterna: 0.59, 0.16, 0.53; Tibiae: 0.69, 0.75, 0.90. Body nearly black, faintly rufescent (especially extremities) parallel-sided. Frons as wide as long, sides rounded, disk with 6 prominent tubercles arranged in two vertical rows, the middle pair most prominent, the upper pair least, the anterior pair on the apical margin; frontal disk with slightly irregularly spaced rounded punctures; labrum rounded, with a few small punctures, about 6 inconspicuous setae on apical margin; antennal scapes arcuate, with outer margin somewhat undulating, obliquely truncate apically, anterior surface convex, subcarinate along the longitudinal axis.

Pronotum margined laterally, convex, with a small acute tubercle medially, concave behind upturned lateral and anterior margins; lateral margins outwardly arcuate and widening slightly towards the front, continuous with inwardly arcuate, oblique anterior margins; middle third of anterior margin somewhat separated from lateral oblique portions, its edge slightly interrupted at middle; median pronotal elevation extended anteriorly as a faint carina; pronotal disk densely punctate in anterior and lateral depressions, less so on medial convex area; posterior edge of pronotal disk with a fine, distinct marginal stria.

Prosternum with anterior margin faintly sinuate, not grooved, transversely depressed behind anterior margin, rising slightly to narrowed posterior apex of prosternal keel, which is faintly tuberculate at middle, acutely emarginate apically, with circumcoxal stria carinate; prosternal disk uniformly punctate, with strong microsculpture between punctures.

Mesosternum about 2× as wide as long, acutely projecting at middle, with complete anterior marginal stria, punctate as prosternum, raised slightly above anterior margin of metasternum; metasternal disk with coarse punctures along anterior margin, more finely but uniformly punctate elsewhere; abdominal sternite 1 similarly punctate anteriorly, but more finely behind.

Elytra with humeral trichomes well developed, strongly depressed between, coarsely rugose in anterior (except along elytral suture), smoother, with shallow punctures posteriorly (and extending faintly anteriorly along suture) in

male, more or less impunctate in most females; trichome basically a transverse incision between anterior and posterior elevations, with dense setal fringe extending inwardly and ventrally from apex, curving anteriorly along inner basal edge where it meets the inconspicuous, horizontal anterior superficial groove; each elytron with a poorly developed transverse carina in outer half, about one-third from apex; posterolateral marginal carina from elytral apex (well developed in, e.g., *C. transversa* sp. nov.) faint, confined to apical corner; epipleurae with shallow striae converging to apex of trichome.

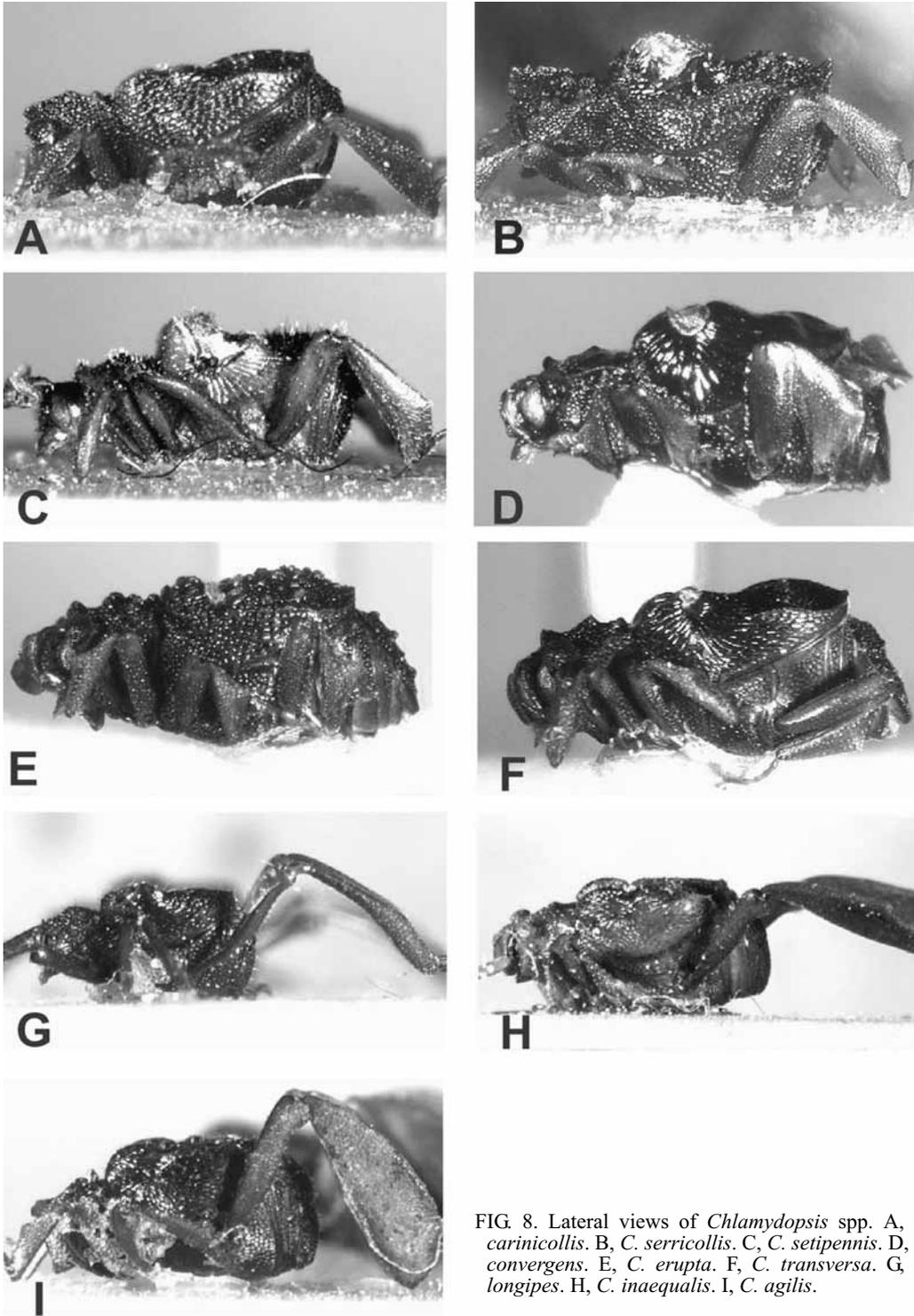
Outer surfaces of protibia and femur uniformly covered with shallow punctures, those of meso- and metathoracic legs with only very fine punctures; protibiae slender, angulate at middle of outer edge, with margins arcuate to angle; meso- and metatibiae much broader, though still more or less angulate, their inner edges with discrete band of microsculpture where they overlap the inner edge of femora; the tarsal grooves of meso- and metatibiae parallel to the apical half of lateral margin (rather than parallel to the longitudinal axis of the tibia).

Propygidium depressed along basal margin, but strongly transversely carinate along apical margin, this carina weakly interrupted at middle, with an additional median tubercle just anterior to the carina, uniformly punctate with punctures separated by slightly less than their widths; pygidium weakly convex at middle, flat to weakly depressed along apical margins, punctures smaller and more widely separated than those of propygidium, almost uniformly distributed, only slightly denser in anterior corners.

REMARKS. A single male specimen from Qld: 2km SE Mt Spurgeon (QMB) has a particularly well developed median pronotal tubercle, and conspicuous posterolateral pronotal tubercles, which are only faintly detectable in the type series of *C. convergens*. Its pronotal punctation is also distinctly coarser. This specimen is excluded from the type series. However, a subspecies designation might be appropriate if additional material from this area shares these differences. The name of this species refers to the convergently strigose sculpturing of its epipleurae.

***Chlamydopsis coronis* sp. nov.**
(Fig. 9)

MATERIAL. HOLOTYPE (QMT108581) ♀: 3km N. Lansdowne via Taree, N.S.W., 10 Feb. 1988, G. Williams, intercept trap; ex rainforest-wet scler. forest margin.



DESCRIPTION. L: 2.18; W: 0.78; E/Pn L: 1.80; E/Pn W: 1.30; Pn W/L: 1.60; E L/W: 0.87; Pr/Py: 1.13; Sterna: 0.65, 0.22, 0.62; Tibiae: 0.69, 0.84, 1.00. This species is extremely similar, and closely related, to the preceding species. Only the differences are described here. Pronotum with transverse row of 4 median tubercles, with a carina running from the base of the middle two to the anterior marginal ridge, with which it merges; with a pair of posterolateral tubercles on each side, and with a low but distinct pair of posteromedial tubercles immediately in front of scutellum; lateral pronotal margin slightly undulating, widening slightly towards front, entire pronotal disk densely and uniformly punctate. Elytra with trichome similar in shape, posterior transverse carina of elytron developed as a row of three tubercles, the middle the most prominent; row of tubercles present from elytral apex anteriorly along elytral suture, diminishing in prominence towards the front, detectable to about the elytral midpoint; apical margin of elytron carinate and prominent, particularly in about the middle third. Punctures of posterior portion of metasternum slightly larger than in *C. convergens*. Propygidium with apical transverse carina interrupted to form row of 5 tubercles, with an additional medial tubercle anterior to this row; pygidium with faintly developed medial tubercle at basal one-third.

REMARKS. A second specimen, probably of this species (ACT: Blundells Ck, 3km E of Piccadilly Circus; ANIC), is not included in the type series due to several differences. Most obviously the pronotal tubercles are much less prominent and the secondary, erect row of trichome setae is not present. Additional material from these and intervening (they are separated by about 700km) localities needs to be studied to determine the significance of these differences. The name of this species refers to the crown-like appearance of the anterior pronotal margin.

***Chlamydopsis erupta* sp. nov.**
(Figs 7E, 8E, 9)

MATERIAL. HOLOTYPE (QMT108582): NEQ: 17°26'S, 145°42'E, Hughes Road, Topaz, 6 Dec 1993-25 Feb 1994, Monteith, Cook, Janetzki, RF Intercept, 650m. PARATYPES (21): 4 ex.: same data as holotype; 1 ex.: NEQ, 19km NE of Mareeba, 20.xii.1984-7.i.1985, RS & Titmarsh/MDPI Site 26; 2 ex.: NEQ, Windsor Tableland, 28.ii-6.iii.1992, JH, FIT; 1 ex.: Qld, 17.28S 145.29E, BS1 Longlands Gap, 30.xi.1995-3.i.1996, LU, 1150m, FIT JCU; 1 ex.: NEQ, Hugh Nelson Range, 21km S Atherton, 1.xii.1983-9.i.1984, RS & JB/MDPI Site 17; 1 ex.: NEQ,

Millaa Millaa Falls, 13.iii-10.iv.1990, RS & KH, MDPI FIT Site 34; 2 ex.: same but 7.ii-13.iii.1990; 1 ex.: same but 4.v-6.vi.1990; 2 ex.: NEQ, Wongabel SF, 6km S Atherton, 26.vii-3.ix.1984, RS & JB/MDPI Site 18; 1 ex.: same but 3.ix-1.xi.1984; 2 ex.: NEQ, Charmillin Ck Xing, 950m, Tully Falls Rd, 8.xii.1989-5.i.1990, GM,GT,HJ, PT&FIT; 1 ex.: Qld, 17.06S 145.37E, Mt Edith GS2,1050m, 17.iii-6.iv.1995,PZ, FIT; 1 ex.: NEQ, 6km S Kuranda, 15.i-20.ii.1985, RS & KH, MDPI Site 22; 1 ex.: Qld, 17.33S 145.32E, BS2, Mt Fisher, 1150m, 3.x-2.xi.1995, LU, MT, in QMB, DPIM, ANIC, MSCC.

DIAGNOSIS. While this species shows a couple of obvious similarities to the preceding, in particular the transverse row of 4 median pronotal tubercles and the row of tubercles along the posterior half of the elytral suture, it is otherwise one of the most distinctive of all *Chlamydopsis*, with the entire dorsal surface tuberculate. Most tubercles on the elytra, especially those on the anterior surface of the humeral trichome, are without obvious homologues in any other species.

DESCRIPTION. L: 1.81; W: 0.69; E/Pn L: 1.64; E/Pn W: 1.35; Pn W/L: 1.41; E L/W: 0.86; Pr/Py: 1.08; Sterna: 0.50, 0.12, 0.44; Tibiae: 0.56, 0.65, 0.75. Body dark rufescent in color, with conspicuous tubercles on most dorsal surfaces, more or less reticulately punctate throughout. Frons slightly longer than wide, sides (below antennal insertions) nearly straight, slightly convergent to apex, surface with two longitudinal rows of 3 tubercles each (in most individuals; specimens with only 2 or as many as 4 tubercles in each row have been seen), the anteriormost pair at the apical margin, the uppermost row between the antennal insertions; frontal surface otherwise reticulately punctate; clypeolabral suture slightly incurved; labrum rounded, shallowly punctate; antennal scape arcuate, widest at middle, outer edge undulating, surface texture as on frons with from 2-3 tubercles in a longitudinal row; antennal club of male slightly longer than scape, that of female about 2/3 as long as scape.

Pronotum about twice as wide as long, sides margined, more or less inwardly arcuate, interrupted by subbasal and, usually, subapical tubercles; anterior margin strongly upturned, with lateral supra-antennal portions arcuate and separated from medial portion, the medial portion sinuate, often forming a continuous 'Y' with a longitudinal carina in the anterior third of disk, some individuals with anterior marginal carina isolated and only a medial anterior tubercle; medial portion of disk with numerous tubercles, somewhat varied in specific arrangement,

usually with a transverse arcuate row of 4 at middle, a pair on each side posterolateral to this row, and a prominent pair in front of the scutellum, in addition to those along the lateral margins; often also tubercles between scutellar pair and transverse median row; ground texture uniformly densely punctate; posterior margin of pronotum with fine marginal stria, this interrupted at a small prescutellar emargination.

Anterior margin of prosternum simple, middle third weakly outwardly arcuate, prosternal disk transversely depressed behind anterior margin, an isolated transverse stria visible in some individuals in this depression, prosternal keel with tubercle at middle, narrowed posteriorly, acutely emarginate at apex, with circumcoxal stria carinate, separating smooth leg cavities from reticulate prosternal disk.

Mesosternum slightly more than $2 \times$ as wide as long, acutely projecting anteriorly, without an obvious marginal stria, subcarinate along midline and raised in posterolateral corners, elsewhere depressed, coarsely punctured and microsculptured throughout; mesometasternal suture finely but distinctly impressed; metasternal disk coarsely punctured and microsculptured throughout, but punctures smaller and sparser at middle; 1st visible abdominal sternite with a continuous row of punctures along anterior margin, elsewhere more sparsely punctate, with conspicuous microsculpture throughout.

Elytra parallel sided, rather abruptly narrowed at base and apex, tuberculate throughout, most consistently along elytral suture (the anteriormost of these less prominent), at sides immediately behind trichomes, and on the dorsum of the anterior elevation of the trichome; humeral trichome well developed, though not as strongly elevated as in most species of this group, forming a sinuate transverse groove, widening at middle, curved anteriorly to base of elytron, continued anterolaterally by a fine, oblique anterior superficial groove; trichome densely lined on inner edges by inclinate golden setae which

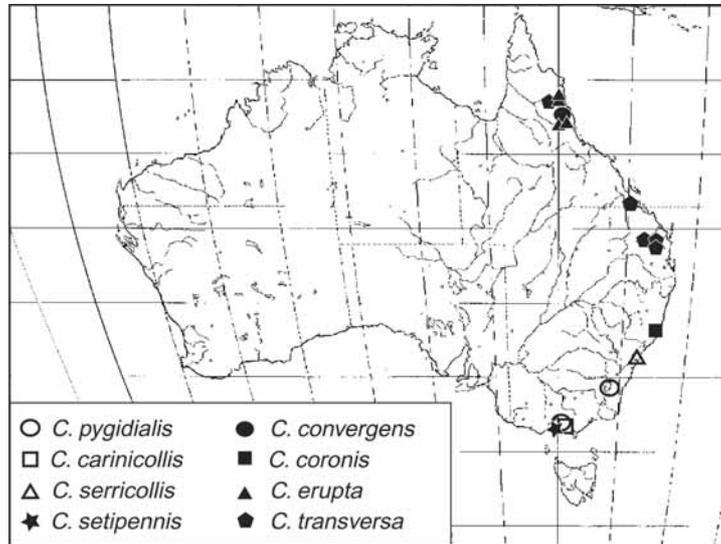


FIG. 9. Collecting records for species of *Chlamydopsis pygidialis* group.

completely obscure its opening; surface of elytra mostly reticulately punctate, with reticulae more elongate posteromedial to trichomes; posterior marginal carina well developed, and undulating, particularly at the centre, extending forward at side (where it diverges from the elytral margin) approximately one-fifth of the distance from apex.

Legs as in *C. convergens*, except outer surfaces of meso- and metathoracic legs slightly more densely punctate, though still less so than prothoracic legs.

Propygidium depressed along basal margin, elevated as a transverse row of tubercles along apical margin, with prominent medial, and less prominent lateral, tubercles in front of this row; pygidium slightly convex, with three prominent tubercles in an arcuate row near base, and with slightly elongate tubercles at middle of each lateral margin; propygidium and pygidium densely punctate throughout.

REMARKS: A single specimen from near Lansdowne (NSW: Lorien, 4.i.1987; CMN) is excluded from the type series. This locality is over 1000km from the next nearest site for the species. Although its dorsal tubercles clearly associate it with this species, differences in metasternal punctation and trichome shape leave its specific identity uncertain. The name of this species refers to the numerous tubercles on its body.

***Chlamydopsis transversa* sp. nov.**
(Figs 7F, 8F, 9)

MATERIAL. HOLOTYPE (QMT108582) ♂: AUSTRALIA: N Qld, Hann Tableland, 13km WNW of Mareeba, 9.xi-7.xii.1988, Storey & Dickinson/ MDPI Intercept Trap Site No. 31. PARATYPES (22): 3 ex.: same data as holotype; 3 ex.: same but 17.ii-20.iii.1989; 1 ex.: same but 13.x-9.xi.1988; 2 ex.: same but 1.iii-12.iv.1994; 2 ex.: same but 7.xii.1988-17.i.1989; 2 ex.: same but 13.i-1.iii.1994; 1 ex.: same but 13.vii-4.viii.1988; 1 ex.: same but 4.viii-9.ix.1988; 1 ex.: same but 20.vi-13.vii.1988; 1 ex.: SEQ: 26°16'S 151°25'E, Koy Property at Brigooda (Top site), 26.i-20.iv.1995, GM, FIT, vine scrub; 1 ex.: SEQ: 25°31'S 152°18'E, Fairlies Knob, 0.5km S, 21.vii-20.x.2000, 300m, DC, Wright, Vanderduys, vine scrub PT 9464; 1 ex.: SEQ: 25°08'S 151°59'E, Nangur SF, 2nd site, 24.xi.1995-3.ii.1996, GM, FIT, RF, 320m, 5853; 1 ex.: SEQ: 27°14'S 152°15'E, Mt Deongwar, 3km S, site 2, 30.xii.98-26.iii.1999, GM, RF PT, 460m, 7652; 1 ex.: SEQ: 25°40'S 151°26'E, Nipping Gully, site 2, 21.viii-9.x.1998, GM, RF FIT, 200m, 7258; 1 ex.: Qld, 23°37'S 150°28'E, Mt Gavial, 3km SSW, 18.xii.98-14.iii.1999, DC, vine forest FIT, 320m, 7492, in QMB, DPIM, ANIC, MSCC.

DIAGNOSIS. This species is easily recognised by the combination of well developed transverse medial and posterolateral pronotal carinae, well developed subapical elytral carinae (in lateral half of each elytron), absent or at most weak median longitudinal pronotal carina, slender metatibia acutely angulate at its midpoint, and elytra densely reticulopunctate (except in mediobasal depression) in both sexes.

DESCRIPTION. L: 1.90; W: 0.69; E/Pn L: 1.77; E/Pn W: 1.26; Pn W/L: 1.59; E L/W: 0.89; Pr/Py: 1.14; Sterna: 0.56, 0.16, 0.47; Tibiae: 0.75, 0.78, 0.97. Dark rufescent brown, elongate, parallel-sided, near entire dorsum densely reticulately punctured. Frons nearly as wide as long, sides rounded, disk deeply reticulately punctate, with 6 prominent, more or less acute, tubercles arranged in two vertical rows of 3, the middle pair the most prominent; frontal punctures as elsewhere (e.g., antennal scapes, pronotum); labrum arcuate, semicircular, with two long and several short setae; antennal scapes with outer edges irregularly arcuate, widest at middle, anterior surface convex and reticulately punctured; antennal club of male very elongate, approximately 1.25 × as long as scape.

Pronotum about 1.3 × as wide as long, margined laterally, sides more or less inwardly arcuate, but interrupted at basal one-third by a low acute tubercle; anterior pronotal margin strongly upturned, obliquely arcuate above antennal

cavities, these edges discontinuous from medial portion of margin, which is bilobate, the two halves meeting in a very shallow 'V'; pronotal disk with a strong transverse carina in medial one-third, rising about equally high as the upturned anterior pronotal margin, the dorsal edge of this carina weakly sinuate, and with additional lateral tubercles immediately posterolaterally, these adjacent to, but not continuous with those along the lateral pronotal margins; pronotal disk also with relatively small tubercles along posterior margin, immediately in front of and on each side of the scutellum.

Prosternum with anterior margin faintly sinuate, not grooved, transversely depressed behind anterior margin, rising slightly to narrowed posterior apex of prosternal keel; prosternal keel acutely emarginate apically, with circumcoxal stria carinate; prosternal disk densely punctate.

Elytra parallel-sided, with prominent humeral trichomes, the anterior elevations of which are strongly convex, with complete marginal fringe of conspicuous golden setae from inner base to apex, apparently continuous, through a shallow lateral groove, with the anteriorly directed setae of the apex of the posterior elevation; anterior superficial groove inconspicuous but entering the trichome horizontally at the inner base; each elytron with an isolated transverse carina in lateral half, one-fourth from the apex, and a lateral longitudinal carina, continuous with the posterior elytral margin, delimiting the epipleuron in the apical half; elytral disks reticulately strigose basally and laterally (especially on epipleuron), becoming more finely reticulate at middle and towards apex.

Mesosternum acutely projecting at middle, slightly raised at middle and along posterior margin, with complete anterior marginal stria, densely punctate and microsculptured; metasternal disk more finely and sparsely punctate than mesosternum, especially laterally; visible abdominal sternite 1 densely punctate along basal margin and at sides, less densely posteriorly.

Prothoracic legs slender, reticulately punctate, the protibia acutely angulate one-third from base; meso- and metathoracic legs slightly more elongate, and less conspicuously punctured, although with microsculpture, both posterior tibiae similarly angulate to protibia.

Propygidium depressed along basal margin, but strongly transversely carinate along apical margin, this carina weakly interrupted at middle,

with an additional median tubercle anterad; pygidium weakly convex at middle, weakly depressed along apical margins, and with a median tubercle one-third from basal margin; both propygidium and pygidium uniformly reticulately punctate.

REMARKS. The name of this species refers to the transverse pronotal carina.

LONGIPES GROUP

The *longipes* group is clearly monophyletic, with three known species. In addition to the extremely elongate metatibiae, the species all share: prominent pyramidal frontal protuberance, elongate arcuate labrum, curved humeral trichome with the anterior superficial stria entering at the mesal base, and clavate metafemora. Of these, all are probable synapomorphies except for the trichome character, which resembles the possibly related *pygidialis* and *striatipennis* groups.

Chlamydopsis longipes Lea, 1910 (Figs 7G, 8G, 12)

Chlamydopsis longipes Lea, 1910: 201; Type locality: Vic: Bannockburn; repository: SAM; not examined.

RECORDS. SAM: SA: Katarapko Game Res. 34°24'S, 140°34'E, pitfalls, 9-26 May, 1991. NHM: Vic: Melton, x.1920. WAM: Vic: Melton. Lea (1912): Vic: Ararat. Oke (1923): Vic: Melton; Vic: Bacchus Marsh.

DIAGNOSIS. Despite sharing the basic trichome plan with the other two species of this group, its actual shape in *C. longipes* is highly distinctive. The inner edge is deeply and broadly emarginate, the humerus consequently appearing as a thin, inwardly open arch. This species also has the most elongate meso- and metatibiae of the three, as well as a generally more elongate body, particularly noticeable in the form of the pronotum.

Chlamydopsis inaequalis Blackburn, 1891 (Figs 7H, 8H, 12, 29C)

Chlamydopsis inaequalis Blackburn, 1891: 94; Type: Australia, NHM; examined, 2000.

RECORDS. ANIC: ACT: 35.17S 149.07E, Black Mt, 4.i.1989, light trap (1); 4 others, same locality, all from light traps, Jan. (3), Feb. (1).

DIAGNOSIS. L: 2.93; W: 1.06; E/Pn L: 1.76; E/Pn W: 1.31; Pn W/L: 1.53; E L/W: 0.88; Pr/Py: 1.10; Sterna: 1.00, 0.19, 1.12; Tibiae: 1.25, 1.62, 2.49. This species and *C. agilis* are very similar in body form, both being much more quadrate than *C. longipes*, and their trichome shape is

essentially identical. The two may be separated by the form of the metatibia, which in *C. inaequalis* is much more slender, with the subapical angulation about one-third from the apex. In *C. agilis* the angulation is less prominent, and nearer one-sixth from the apex.

Chlamydopsis agilis Lea, 1914 (Figs 7I, 8I, 12)

Chlamydopsis agilis Lea, 1914b: 216; Type locality: NSW: Sydney; repository: SAM; not examined.

RECORDS. NHM: NSW: Sydney (Det. by Lea). Lea (1919): SA: Naime, nest of *Ectatomma metallicum*. Lea (1925): NSW: Como; NSW: Lane Cove.

DIAGNOSIS. See above under *C. inaequalis*.

REMARKS. The type was collected from a nest of *Ectatomma metallicum* (Lea, 1914b).

ECTATOMMAE GROUP

The *C. ectatommae* group is primarily defined by a short anterolateral pronotal groove that originates along the upper edge of the antennal cavity, extends posterolaterally, incising the lateral portion of the anterior pronotal margin, curves around the lateral pronotal margin (which in most of these species is poorly defined), and then merges with the lateralmost extent of the circumcoxal stria. In all but a couple of species this groove is very distinct. Where it appears only weakly impressed (*C. pecki* sp. nov., *C. mallea* sp. nov.), additional similarities leave little doubt as to their placement. The *bifovaecollis* subgroup is placed here with some uncertainty. These are unique in having a pronotal groove, originating at the same point behind the antennal cavities, that extends straight backward and ends in a conspicuous dorsolateral pit (Fig. 29A) In addition to this putatively homologous groove, the trichome shape is quite similar to that of several other unquestioned members of the *ectatommae* group. That said, trichome shape is rather varied across the entire *ectatommae* group. In most species the anterior and posterior elevations converge to a single apex, are uninterrupted laterally, and have a mesal emargination fringed with a simple arc of setae, concealing the trichome opening beneath. The anterior superficial groove of the trichome usually extends somewhat inwardly and obliquely from the humeral corner to the anteromesal origin of the setal fringe. The major variables are the height of the trichome and the size of the mesal emargination (and consequently the extent of the setal fringe.) One extreme is

found in *C. loculosa*, in which the trichome constitutes no more than a small humeral pit at the apex of the anterior superficial groove. Unlike species in the preceding groups, but like most of those that follow, the *ectatommae* group species have the anterior prosternal margin deeply grooved, with the groove diverging from the margin laterally to meet the circumcoxal stria.

This is a large group, containing more than 20 known species, ranging across temperate and tropical Australia, and with two members occurring in New Guinea (*C. papuae* Lewis and *C. jawawijaya* sp. nov.).

***Chlamydopsis ectatommae* Lea, 1912**
(Figs 10A, 11A, 12)

Chlamydopsis ectatommae Lea, 1912: 66; Lectotype, hereby designated: *ectatommae* Lea Type, Gladesville / cotype [on underside of same label]/ 14671, *Chlamydopsis ectatommae* Lea N. S. Wales, Type; SAM, examined 2002. It is uncertain whether syntypes of this species exist in other collections, as the 'cotype' label would imply. The 'cotype' written on the bottom of the main label is partially cut off, and may not have been intended to pertain to this specimen.

Chlamydopsis ectatommae var. *rufomaculatus* Oke, 1923: 153; Mazur, 1984; Type: Victoria; Melton; Bacchus Marsh, in nests of *Chalcoponera metallica*; SAM, not examined.

RECORDS. NHM: NSW: Como; NSW: Sydney (Det. A. Lea). WAM: NSW: Cooma, v.1935. ANIC: ACT: 35.16S 149.06E, Black Mt 600m, Mar. (sweeping), Oct. (FIT); SA: 34.21S, 139.31E, Brookfield Con.Pk, x-xi.1992, FIT (2). Lea (1918): NSW: Hunters Hill, 30.v.1917. Lea (1925): Vic: Lakes Entrance, October; SA: Mount Lofty Range, May. Oke (1923): Vic: Bacchus Marsh, *Chalcoponera metallica*.

DIAGNOSIS. L: 1.87; W: 0.75; E/Pn L: 1.50; E/Pn W: 1.31; Pn W/L: 1.33; E L/W: 0.86; Pr/Py: 1.00; Sterna: 0.56, 0.12, 0.56; Tibiae: 0.69, 0.69, 0.75. *Chlamydopsis ectatommae*, *C. kununurra* sp. nov., and *C. acutricha* sp. nov. are all very similar in the shape of their humeral trichome and are diagnosed together here. In all of these the apex of the trichome is subacute, projecting slightly above the middle of the inner setal fringe, and bears a few dorsally or mesally directed setae, which are separate from the inner arc. This projection and a small area around its base are distinctly smoother than the surrounding integument. (The only other known species that has a similar form of trichome is *C. myrmecophila* sp. nov., in which the apex is only barely or not at all projecting, and the lateral surface of the trichome is deeply vertically furrowed). *Chlamydopsis acutricha* is the smallest of these three (1.62mm), has a median

pronotal tubercle which is blunt rather than distinctly acute, has the elytra nearly smooth behind the trichomes rather than coarsely reticulopunctate throughout, and has the metasternal disk entirely impunctate. *Chlamydopsis ectatommae* and *C. kununurra* are more similar, differing primarily in pronotal shape. In *C. kununurra* the median pronotal tubercle is more strongly elevated and acute, the medial portion of the anterior pronotal margin is more distinctly elevated, shallow oblique furrows extend anterolaterally from the scutellum, and the pronotal reticulae, particularly along the anterior margin, are more distinctly elongate.

REMARKS. The type was reportedly collected in a nest of *Ectatomma metallicum* (Lea, 1912).

***Chlamydopsis kununurra* sp. nov.**
(Figs 10B, 11B, 12, 28D)

MATERIAL. HOLOTYPE (QMT108584) ♂: N WA, Kununurra, 22.XII.1991-5.I.1992, R.I. Storey.

DIAGNOSIS. See diagnosis above under *C. ectatommae*.

DESCRIPTION. L: 1.93; W: 0.72; E/Pn L: 1.70; E/Pn W: 1.31; Pn W/L: 1.52; E L/W: 0.85; Pr/Py: 0.94; Sterna: 0.56, 0.16, 0.56; Tibiae: 0.81, 0.75, 0.84. Body subquadrate, rufescent (the type is likely teneral), dorsal surfaces mostly reticulostribose; Frons with sides rounded, disk reticulopunctate, with sparse elongate setae; labrum rounded; antennal scape widest at basal one-third, abruptly narrowed to base, distal margin straight, narrowed to rounded apex, reticulate and setose as frons; antennal club of male $1.25 \times$ length of scape.

Prothorax $1.5 \times$ as wide as long, sides uneven, wide near base, bluntly projecting, narrowed in anterior half, wider, subacute in front of anterolateral groove; medial portion of anterior margin weakly elevated, notched at middle, separated from lateral portions; lateral portions more strongly elevated, arcuate, ending laterally where intersected by well developed anterolateral groove; pronotal disk depressed behind anterior margin, more broadly so at sides, elevated and acute at middle, posterolateral corners convex, separated from medial elevation by shallow, oblique antescutellar furrows; disk entirely reticulopunctate, reticulae varied in size, generally elongate, diverging around median tubercle.

Anterior prosternal margin grooved, sinuate, projecting on either side of middle; prosternal

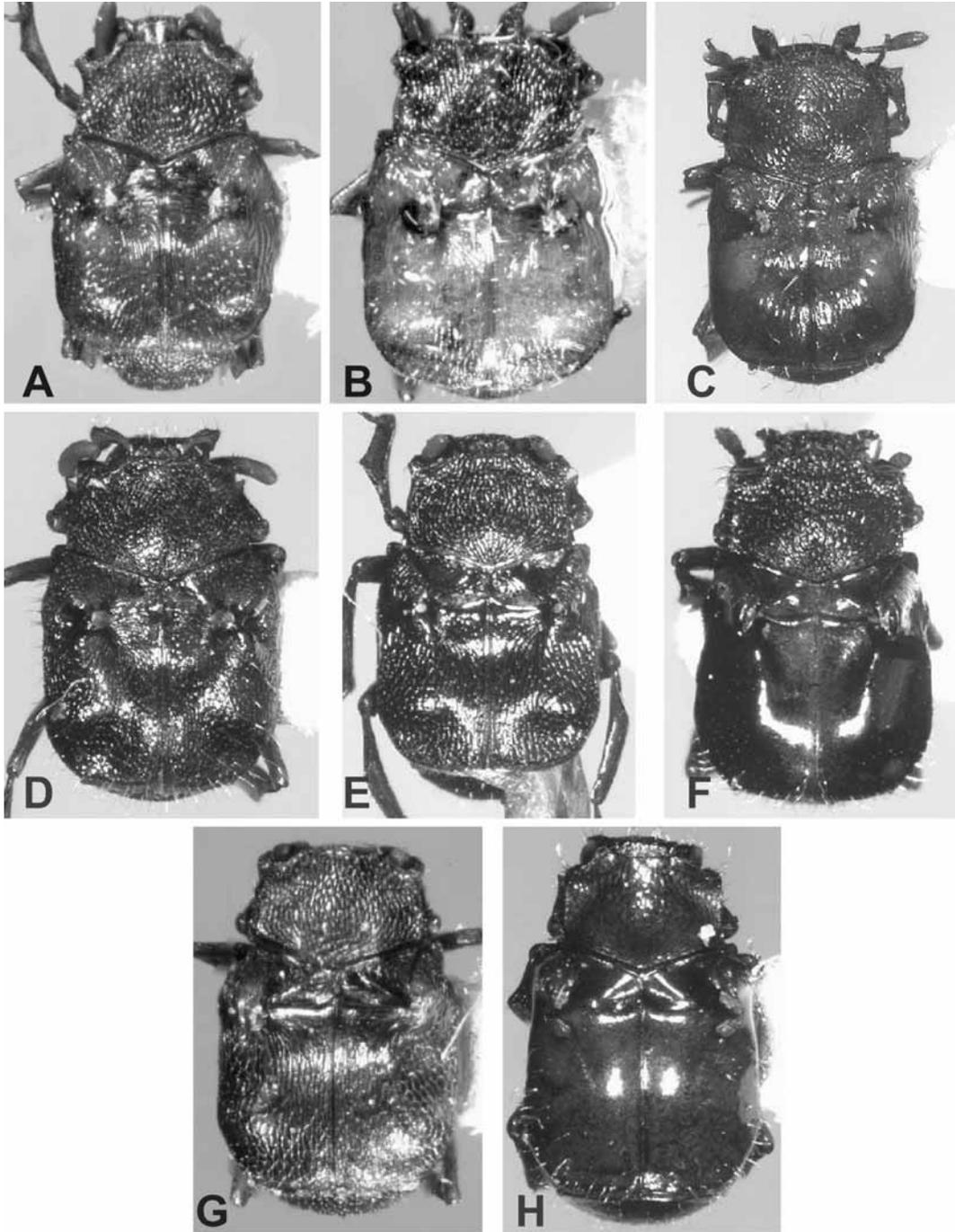


FIG. 10. Dorsal views of *Chlamydopsis* spp. A, *C. ectatommae*. B, *C. kununurra*. C, *C. acutricha*. D, *C. myrmecophila*. E, *C. variolosa* (♂). F, *C. variolosa* (♀). G, *C. mallee* (♂). H, *C. mallee* (♀).

disk slightly depressed behind anterior margin, entirely reticulopunctate, narrowed posteriorly, acutely emarginate at apex.

Elytra about one-fifth wider than pronotum, parallel-sided, narrowed to base and apex; humeral trichomes small, closed laterally, open mesally with an arc of mesoventrally directed setae, with an acute peak above, the inner surface of this peak with a separate cluster of mesally directed setae, its outer surface smooth; anterior superficial groove oblique, extending from humeral corner to inner base of opening of trichome; mediobasal depression with transverse, arcuate carinae; elytral disk reticulostrigose; apical elytral margin subcarinate, with elongate setae (some setae in 'bundles'); elytral disk otherwise very sparsely setose.

Mesosternum about 4× as wide as median length, projecting at middle, densely punctate, crenulately so along posterior margin; meso-metasternal suture impressed, metasternal disk with large punctures behind suture and at sides, with only few small punctures at middle; 1st visible abdominal sternite with continuous row of large punctures separated by about their widths along anterior margin and inner postcoxal stria, more sparsely punctate behind.

Legs generally slender, profemur and tibia punctate on outer surfaces, meso- and metafemora and tibiae less so; protibia acutely angulate one-third from base, meso- and metatibiae bluntly angulate.

REMARKS. The name of this species refers to the type locality.

***Chlamydopsis acutricha* sp. nov.**
(Figs 10C, 11C, 12)

MATERIAL. HOLOTYPE ♀: 12.40S 142.39E Qld, 3km W Batavia Downs, 23 Aug - 16 Sep 1992, Flight Intercept Trap, P.Zborowski & L.Miller; in ANIC.

DIAGNOSIS. See above under *C. ectatommae*.

DESCRIPTION. L: 1.62; W: 0.69; E/Pn L: 1.36; E/Pn W: 1.19; Pn W/L: 1.23; E L/W: 0.94; Pr/Py: 1.00; Sterna: 0.44, 0.09, 0.47; Tibiae: 0.56, 0.50, 0.62. Body rufescent, elongate, nearly parallel sided; frons about as wide as long, sides rounded, disk reticulate and with a few elongate setae; labrum short, rounded, reticulate; antennal scapes widest just beyond basal one-third, slightly narrowed to apex, more abruptly to base, surface reticulate and bearing 2-3 elongate setae; antennal club of female about three-fifths length of scape.

Prothorax about one-fourth wider than long; sides weakly margined near base; anterior margin distinctly but not strongly raised above antennal cavities, interrupted by a groove extending posterolaterally from edge of antennal fossa to circumcoxal stria; medial portion of anterior margin more or less flat; anterior and lateral margins with a few elongate setae; pronotal disk shallowly depressed in anterior corners, otherwise strongly and uniformly convex; disk rather shallowly reticulately punctured, with sparse mostly deeply bifid setae.

Prosternum with anterior margin sinuate, strongly grooved, this groove continuous with circumcoxal stria; prosternal keel narrowed posteriorly, emarginate at apex, prosternal disk mostly densely punctate, with small impunctate spaces medially.

Elytra about one-fifth wider than pronotum, parallel sided, narrowed to base and apex; convex in posterior two-thirds, depressed basally; humeral trichome small, shallowly furrowed laterally, open mesally with a fringe of ventrally directed setae, with an acute peak above, the inner surface of this peak with a separate cluster of mesally directed setae; superficial groove of anterior elevation curved, mostly horizontal, curving from anterior elytral corner to inner base of trichome opening; elytral disk shallowly reticulostrigose, mostly smooth in a longitudinal band behind trichome; apical elytral margin with elongate setae (some setae in 'bundles'), a few of these extending up the apical half of the elytral suture, elytral disk otherwise almost entirely glabrous.

Mesosternum acutely projecting anteriorly, punctate, elevated along mesometasternal suture; metasternal disk punctate along anterior margin, elsewhere entirely impunctate, very smooth; 1st visible abdominal sternite similarly punctate anteriorly (and with a few punctures laterally), impunctate behind.

Propygidium and pygidium of approximately equal length medially; propygidium flat along base, becoming strongly convex apically; pygidium weakly convex; both propygidium and pygidium with reticulate sculpture, that of pygidium fading in apical one-third.

REMARKS. The name of this species refers to the acute dorsal apex of the humeral trichome.

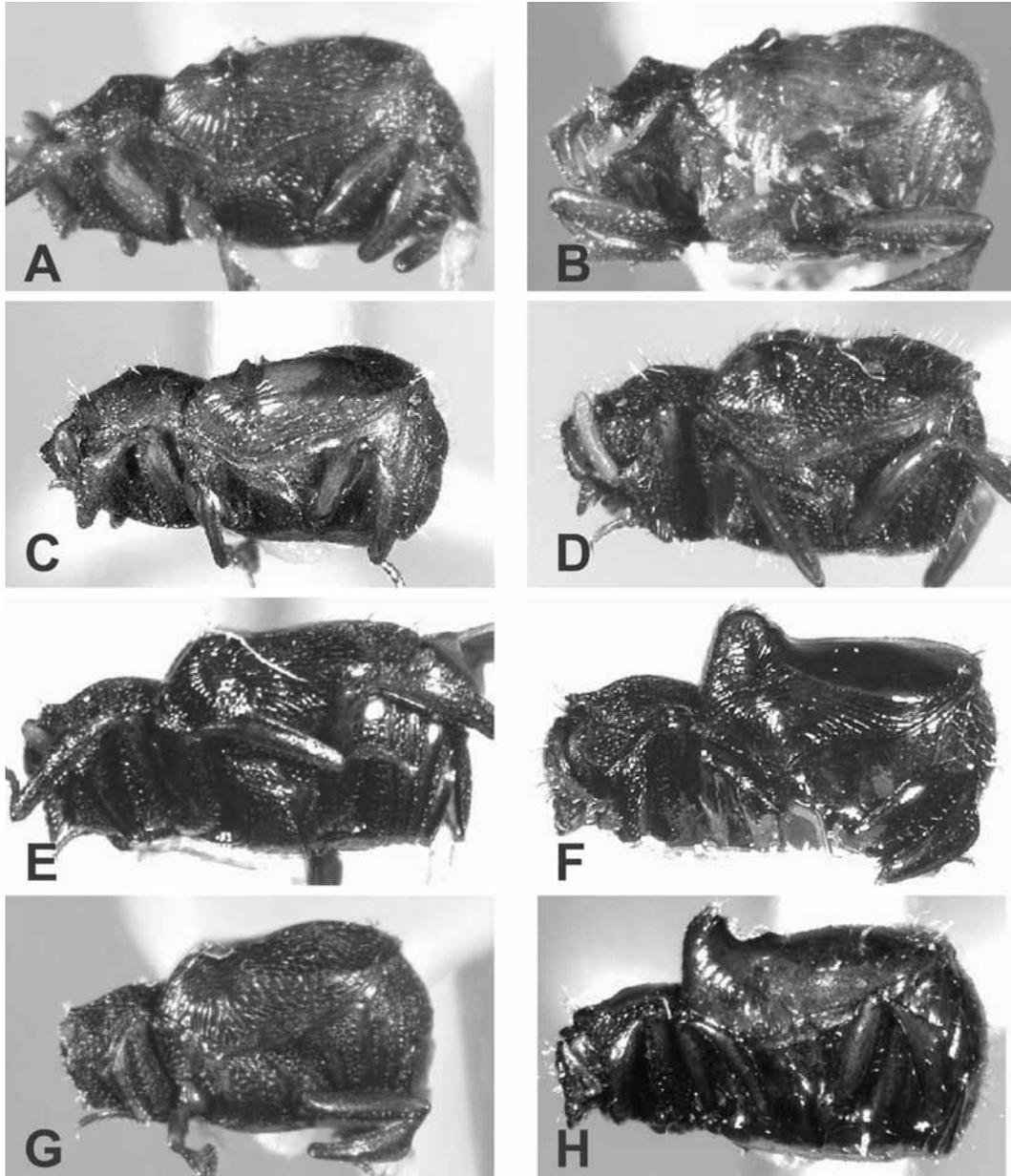


FIG. 11. Lateral views of *Chlamydopsis* spp. A, *C. ectatommae*. B, *C. kununurra*. C, *C. acutricha*. D, *C. myrmecophila*. E, *C. variolosa* (♂). F, *C. variolosa* (♀). G, *C. mallee* (♂). H, *C. mallee* (♀).

***Chlamydopsis myrmecophila* sp. nov.**
(Figs 10D, 11D, 12, 29B)

MATERIAL. HOLOTYPE (QMT108585) ♂: Australia: N Qld, Hann Tableland, 13km WNW of Mareeba, 8.XII.1993-13.I.1994, R.Storey & S.DeFaveri, MDPI

F.I.T.-site 31. PARATYPES (14): 4 ex.: same as holotype; 2 ex.: same but 13.i-1.iii.1994; 1 ex.: same but 5.xi-8.xii.1993; 1 ex.: same but 17.ii-20.iii.1989; 1 ex.: same but 9.xi-7.xii.1988; 2 ex.: same but 17.i-17.ii.1989; 2 ex.: NEQ: Evelyn, 21.xii.1965; 1 ex.: same locality 28.?.1967; in AMB, DPIM, ANIC, MSCC.

DIAGNOSIS. While this species is similar to the preceding three in that a separate setal bundle is present at the apex of the trichome above the mesal setal fringe, this setal bundle is not borne on a prominent elevated tubercle, as in the others. The lateral surface of its trichome is also unique in the *ectatommae* group, bearing a deep vertical furrow from the apex of the trichome nearly halfway down the epipleuron, expanding slightly ventrad. This is only an indentation, and not a lateral opening to the trichome. This species is uniquely setose, bearing rather sparse, but quite long setae on essentially all surfaces.

DESCRIPTION. L: 2.12; W: 0.81; E/Pn L: 1.62; E/Pn W: 1.29; Pn W/L: 1.46; E L/W: 0.86; Pr/Py: 1.06; Sterna: 0.62, 0.12, 0.59; Tibiae: 0.90, 0.87, 1.00. Body subquadrate, rufescent brown, the pronotum appearing very slightly darker than elytra, most surfaces reticulately sculptured, bearing sparse but conspicuous long setae.

Frons about as broad as long, sides and anterior margin slightly rounded, disk reticulate; labrum short, arcuate, reticulate, with 6-10 long setae; antennal scapes arcuate, about twice as long as median width, lateral margin abruptly expanded one-third from base, evenly arcuate distally, with a few long discal setae and a lateral fringe of shorter setae, surface reticulate; antennal club of female about 2/3 as long as scape, antennal club of male about 1.3 × as long as scape.

Pronotum 1.6 × as wide as long, sides margined, not raised, nearly straight and slightly convergent; anterior margin slightly inwardly arcuate at middle, oblique and inwardly arcuate laterally above antennal cavities, middle portion slightly reflexed, lateral portions more so; anterior pronotal margin with a continuous groove running laterally halfway along dorsal margin of antennal cavity, departing from margin posterolaterally, joining circumcoxal stria; pronotal disk uniformly convex, reticulately sculptured, bearing sparse conspicuous setae.

Prosternum about twice as wide as long; anterior margin slightly deflexed, sinuate, projecting on each side, deeply grooved, this groove departing from margin laterally, curving posteriorly and continuous carinate circumcoxal stria; prosternal keel narrowed posteriorly, acutely emarginate at apex; prosternal disk reticulately punctate and with elongate setae.

Elytra with sides nearly parallel, slightly sinuate beneath trichomes; trichomes strongly produced dorsally, appearing transversely 'pinched', anterior and posterior elevations

meeting narrowly at apex, deeply impressed laterally, mesally excavate and lined with ventromesally directed setae; anterior elevation of trichome with oblique superficial groove from anterolateral corner of elytron to inner apex of trichome; elytra broadly transversely depressed between trichomes; elytral disks mostly uniformly reticulate, the reticulae between the trichomes transverse; marginal stria of elytra complete except along basal half of elytral suture and on basal margin.

Mesosternum slightly more than twice as broad as long, acutely projecting anteromedially, reticulate, marginal stria not evident; meso-metasternal suture impressed; metasternal disk shallowly reticulopunctate in basal 1/5, laterally, and on lateral half of posterior margin between metacoxae, elsewhere smooth, with sparse elongate setae throughout; 1st abdominal sternite with row of shallow punctures along anterior margin, and sparsely scattered elsewhere.

All tibiae elongate, slender, angulate one-third from base; profemur and protibia shallowly reticulate, others smooth.

Propygidium 2/3 as long as wide, depressed along basal margin, convex elsewhere, uniformly reticulopunctate throughout; pygidium weakly convex, sparsely punctate in basal 1/3, otherwise smooth.

REMARKS. One of the paratypes offers a unique insight into the trichome functionality. It died in the death grip of an ant, presumably its host, with its mandibles eternally locked on the inner and outer furrows of the beetle's humeri. This ant (missing its gaster and one petiolar segment) appears to be an *Aphaenogaster*. Based on 'Australian Ants Online' (Shattuck & Barnett, 2001) two species of this genus are known to occur near the type locality of *C. myrmecophila*, *A. longiceps* Smith and *A. pythia* Forel. The former of these has previously been reported as host of *Chlamydopsis carinicornis* (Lea, 1919). The ant's position on the specimen tends to support Oke's (1923) contention that the humeral modifications were perhaps little more than handles for the hosts to carry the beetles around. The name of this species refers to its habits, this being one of the few new species where a host record confirms myrmecophily.

***Chlamydopsis variolosa* Lea, 1910**
(Figs 10E-F, 11E-F, 15)

Chlamydopsis variolosa Lea, 1910: 206; Type: [illegible if Dalby, as published]/ 14169, *Chlamydopsis variolosa* Lea,

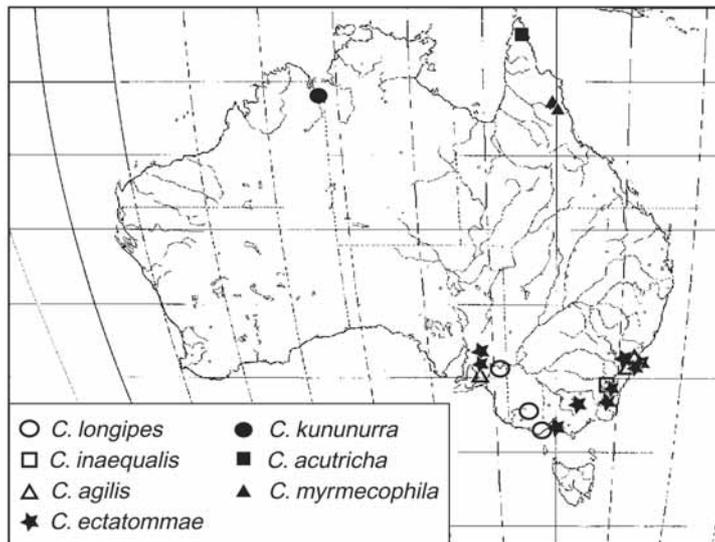


FIG. 12. Collecting records for species of *Chlamydopsis longipes* and *ectatommae* groups.

Queensland; SAM, examined, 2000; type locality: Dalby, Queensland [27°10'S, 151°15'E].

Chlamydopsis atra Lea, 1914a: 250; Lectotype ♂, hereby designated: *atra* Type Lea Mt Tambourine/ T.1300 *Chlamydopsis atra* Lea Queensland, Type [in red]; SAM, examined. Paralectotype ♂: same data as type; these two type specimens are mounted side by side on a single card. 'TY' had previously been written on the card behind the left-most specimen; this is the specimen designated here as the Lectotype. New Synonymy.

MATERIAL. QMB: SEQ: 26°53'S 152°09'E, Benarkin School, 14.xi.94-26.i.1995, GM, FIT, open forest [1 ♂, 1 ♀]; SEQ: 25°13'S 149°01'E, Expedition Ra. Nat. Pk, 5729, 'Amphitheatre' yards, 440m, 19.xii.97-4.iii.1998, DC & GM, open for. FIT. NHM: SEQ: Brisbane, Samford, 27.xii.1982. HARC: SEQ: 27°19'54"S, 152°45'29"E, Mt Glorious, 26.xi.1997, MT. CMN: AUST: Qld, Mt Glorious, 630m, 28.ii-9.iii.1984, L.Masner, MT. Although also reported from northern Queensland (Lea, 1914a), it seems likely that this record should refer to one of the other species from that area described here. The specimen so referred to has not been seen.

DIAGNOSIS. L: 2.09; W: 0.75; E/Pn L: 1.79; E/Pn W: 1.38; Pn W/L: 1.42; E L/W: 0.91; Pr/Py: 1.19; Sterna: 0.56, 0.12, 0.62; Tibiae: 0.81, 0.84, 1.00. *Chlamydopsis variolosa*, *C. pecki* sp. nov., and *C. mallee* sp. nov. are a closely related and morphologically similar trio of species. The most striking character uniting them is the strong dimorphism in the sculpturing of the elytra, pronotum, and in the degree of development of the humeral trichomes. The putative males of all three have most of the body reticulostrigose,

while the females are almost entirely smooth. The elytra and pygidia are the most distinct points of contrast between the sexes (and the frons and prosternum the least), but the difference is marked throughout. The trichomes of the females are more strongly elevated dorsally, and in *C. mallee*, have the inner edge of the trichome more broadly (and acutely) emarginate. The females also have the pronotum more distinctly margined laterally, resulting, in *C. pecki* and especially *C. mallee*, in the near total obliteration of the characteristic anterolateral pronotal groove. Features shared by both sexes include relatively small body size (<2.1mm), lack of median

pronotal tubercle, deeply incised anterior superficial humeral groove, transverse series of setal bundles originating at the apex of the humeral trichome continued for a varied distance down the lateral surface, and generally small trichome opening, the inner setal fringe of which originates from a short arc, but consists of elongate, ventrally directed setae, which largely conceal the inner opening of the trichome (except in female of *C. mallee*). Most also have prominent setae on the frons, and along the pronotal and elytral margins (except in male of *C. mallee*). *Chlamydopsis variolosa* may be separated from the other two species by the very restricted origin of the inner trichome fringe. The arc spans a longitudinal distance equivalent to about half the width of an antennal club. The setae themselves project mesoventrally for a very short distance, then bend ventrally, extending nearly to the floor of the mediobasal elytral depression. In the other two species the originating arc of this fringe is more extensive, equivalent in length to at least an antennal width or greater. In the female of *C. variolosa* the anterior elevation of the trichome is more strongly elevated, projecting well above the posterior elevation, and the pronotum is margined, although the anterolateral groove from the antennal cavity remains distinct.

REMARKS. Describing *C. atra*, Lea appears to have forgotten *C. variolosa* entirely. When diagnosing *atra* from similar species, *C. variolosa* is not even mentioned. The two type localities are separated by less than 200km in southeastern Queensland, and their synonymy appears clear. Lea (1914a) reported collecting the types of *C. atra* 'in January by means of the sweep net, used on low herbage, ferns, etc., late in the afternoon'.

The sexual dimorphism in this and the following two species requires additional study. Originally the putative females of *C. variolosa* and *C. pecki*, especially, had not even been considered members of this species group, due to the vague or absent anterolateral pronotal groove. At present, only single females are known for either of these two. Nonetheless, in all cases putative males and females have been collected at identical localities and trap dates, and no other candidates for conspecifics (morphospecies consisting of only a single sex) are known. It is also relatively clear (in 2 of 3 cases) that the males and females of each putative species share similarities, primarily in trichome morphology, that would place them closer to each other than to any other species. Finally it is worth pointing out that this same mode of dimorphism, with females showing smoother elytra, is the same as that found in the *strigicollis* and, to a lesser extent, *pygidialis* groups. This represents at least two, and possibly three separate origins.

***Chlamydopsis mallee* sp. nov.**
(Figs 10G-H, 11G-H, 15)

MATERIAL. HOLOTYPE ♂: 34.21S 139.31E SA, Brookfield Con. Pk., 31 Mar.-29Apr.1992, E.S.Nielsen F.I.T. #2/ F.I.T. ANIC 1233 mallee #2; in ANIC. PARATYPES (15): 8 males: same data as holotype; 1 ♂, 2 ♀♀: same but 28.v-5.viii.1992, FIT, ANIC 1260 mallee #2; 1 ♀: same but 7.x-7.xi.1992, FIT, ANIC 1266 mallee #2; 1 ♂: same but 20.v-1.v.1993, FIT, ANIC 1297, mallee #2; 1 ♂: SA: 34.19S 139.30E, Brookfield Con. Pk., 31.iii-29.iv.1992, EN, FIT, ANIC 1232 mallee with *Triodia* #1; 1 ♂ SA: 34.22S 139.27, Brookfield Con. Pk., 30.iii-3.iv.1992, Site 3, Berlaseate ANIC 1231, *Euc.largiflorens*, clay pan, litter; in ANIC, QMB, SAM, MSCC.

DIAGNOSIS. Both males and females of this species are very similar to those of *C. variolosa* and *C. pecki*, and are only diagnosed from these two here. See above to separate these three from other *Chlamydopsis*. First, the differences between the sexes of this species are more pronounced than in the above species, and they are diagnosed separately. Males are nearly

glabrous, lacking frontal and anterior marginal pronotal setae, and the originating arc of inner trichome setae is more extensive, forming a complete semicircle, rather than a short arc as in the preceding, while the humeral region as a whole is not strongly developed. The humeral trichomes of the females, on the other hand, are very strongly elevated, projecting well above the surrounding elytral surface, with the apex higher than the mesal opening. The inner trichome fringe is unique, forming a slightly rounded 'V', with only short setae projecting horizontally over the broadly exposed opening, not directed ventrally. As above, the female has conspicuous elongate setae on the frons and pronotal and elytral margins, but unlike the preceding species, has setae on the disk of the pronotum, as well as the margin.

DESCRIPTION. L: 1.93; W: 0.65; E/Pn L: 1.95; E/Pn W: 1.38; Pn W/L: 1.52; E L/W: 0.93; Pr/Py: 1.29; Sterna: 0.56, 0.12, 0.56; Tibiae: 0.72, 0.75, 0.87. Body subquadrate, rufescent brown; frons about as wide as long, sides rounded, disk reticulate, setose in female; clypeolabral suture present, labrum rounded, reticulate; antennal scapes widest near middle base, gradually narrowed to rounded apex; antennal club of male about 1.3 × length of scape, that of female about one-half as long as scape.

Prothorax about 1.3 × as wide as long; sides parallel, margined; anterior margin elevated, more so above antennal cavities than medially; anterior pronotal margin above antennae intersected by a groove extending postero-laterally from upper edge of antennal cavity to supracoxal carina in male, in female this groove is entirely obsolete; lateral and anterior pronotal margins bearing a few elongate setae; pronotal disk shallowly depressed in anterior corners, convex posteromedially, not tuberculate at middle; disk of male reticulostrigose, with strigosity longitudinally parallel anteriorly but convergent posteromedially, disk of female largely smooth, very shallowly reticulate along anterior margin.

Prosternum strongly grooved along anterior margin, this groove curving posteriorly at sides, meeting carinate circumcoxal stria; anterior margin sinuate; prosternal keel narrowed posteriorly, emarginate at apex; prosternal disk reticulate throughout, shallowly so in female.

Elytra parallel sided, convex in posterior two-thirds, depressed between humeral trichomes; humeri elevated, more strongly in

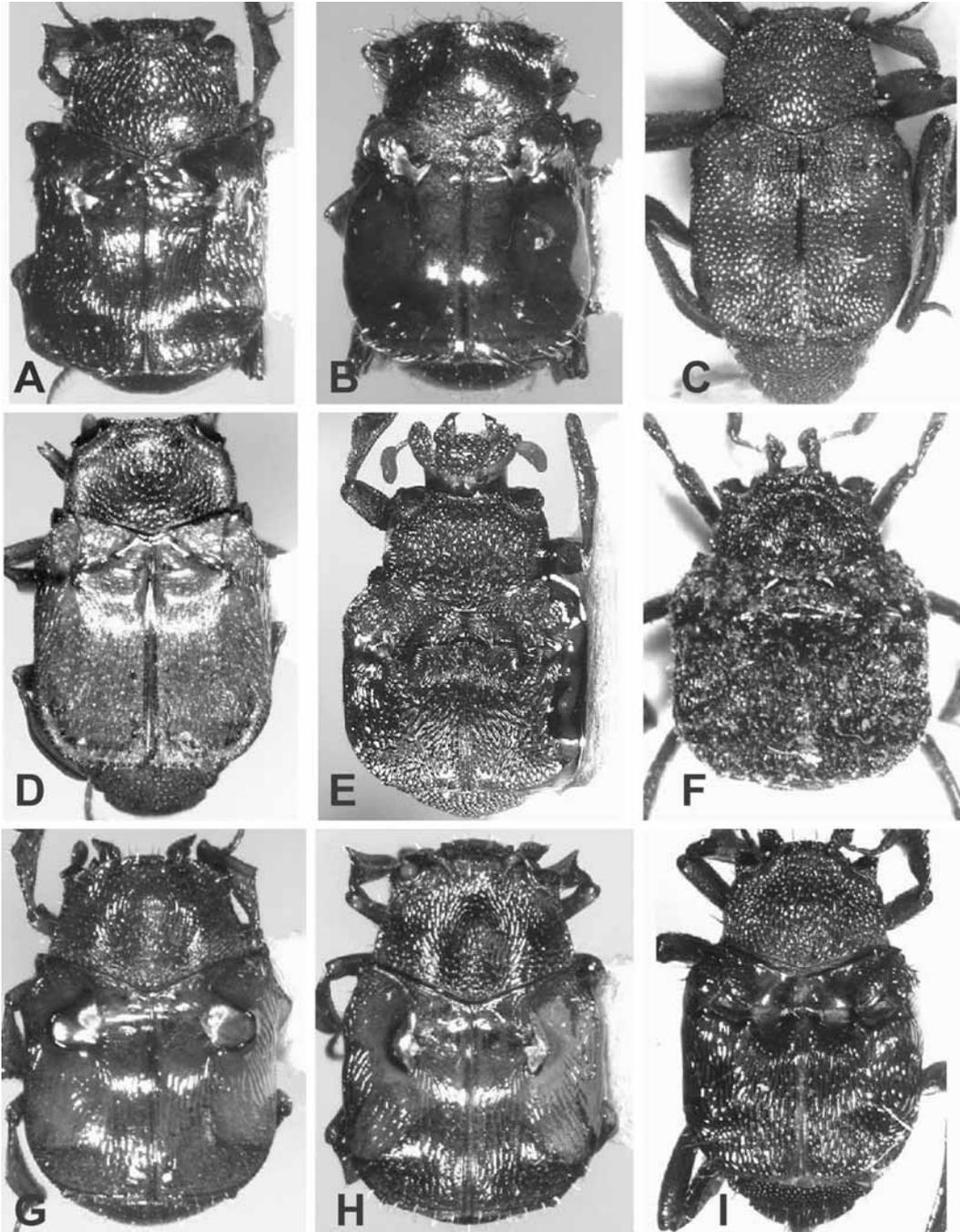


FIG. 13. Dorsal views of *Chlamydopsis* spp A, *C. pecki* (δ). B, *C. pecki* (♀). C, *C. loculosa*. D, *C. degallieri*. E, *C. papuae*. F, *C. jayawijaya*. G, *C. lucifer*. H, *C. bataviae*. I, *C. burnetta*.

female than in male; trichome of male semi-circular, with mesal fringe of ventromedially directed setae, that of female forming a mesally open 'V', with short horizontal setal fringe; anterior elevation of trichome with deep superficial groove extending from anterior elytral corner to inner apex of elevation, with a few additional erect setae at apex, these arranged in a subtransverse row of bundles; anterior half of basal elytral depression with low transverse, slightly oblique elevation; elytral disk and epipleurae reticulostriate throughout in male, smooth in female; apical half of elytra of female with numerous elongate setae, particularly along margin; elytra of male with setae only along apical margin and posterior one-fifth of elytral suture.

Mesosternum acutely projecting at middle, disk strongly strigose, depressed in anterior corners, carinate along mesometasternal suture; metasternal disk with punctures along edges, but broadly impunctate at middle; 1st visible abdominal sternite with punctures along basal margin, laterally, and, more faintly, along apical margin, but impunctate at middle; legs slender, moderately elongate, tibiae angulate at basal third, the protibia most acutely, the others less so.

Propygidium and pygidium approximately equal in length; propygidium depressed along extreme anterior margin, otherwise uniformly convex; pygidium slightly convex; propygidium and pygidium reticulately punctured and glabrous in male, smooth and bearing elongate setae in female.

REMARKS. The name of this species refers to the vegetation at the type locality, derived from the common growth form of the local *Eucalyptus*.

***Chlamydopsis pecki* sp. nov.**
(Figs 13A, 14A, 15)

MATERIAL. HOLOTYPE ♂: Walpole NP, Peaceful Bay WA, 17-26 Jun. 1980, S. & J. Peck, SBP58/ pan traps coastal sand heath; in ANIC. PARATYPES: 1 ♀: same data as type; in ANIC.

DIAGNOSIS. Both males and females of this species are very similar to those of *C. variolosa* and *C. mallee* sp. nov., above, and are only diagnosed from these two here. See above to separate these three species from other *Chlamydopsis*. The transverse series of outer humeral setae of this species is longer than in either of the other two, extending from the apex of the trichome down approximately one-third of the epipleural surface. The setae of the anterior

pronotal margin are also unusually elongate (especially in the female), while the pronotal disk is glabrous. The originating arc of the inner trichome fringe is short and only slightly curved, but about twice as long as in *C. variolosa*, approximately equivalent in length to the antennal club width in the male, and slightly longer in the female. In both sexes the setae of this inner fringe project almost directly ventrad, curving anteromesally just at their tips.

DESCRIPTION. L: 1.81; W: 0.62; E/Pn L: 1.90; E/Pn W: 1.33; Pn W/L: 1.50; E L/W: 0.95; Pr/Py: 1.07; Sterna: 0.50, 0.12, 0.50; Tibiae: 0.69, 0.75, 0.84. Points of difference from *C. mallee* sp. nov., described in full above, are noted in the diagnosis.

REMARKS. This species is named in honor of Stewart and Jarmila Peck, collectors of the types, whose worldwide work has furnished valuable material for countless beetle studies.

***Chlamydopsis loculosa* Lea, 1925**
(Figs 13C, 14C, 15)

Chlamydopsis loculosa Lea, 1925: 254; Lectotype ♀, hereby designated: Lea, Type, *loculosa*, Beverley / 15775 *Chlamydopsis loculosa* Lea, W. Australia Type; SAM, examined, 2002; paralectotype ♀: same data as type (mounted on the same card); these two type specimens are mounted side by side on a single card. 'TY' had previously been written on the card behind the left-most specimen; this is the specimen designated here as the Lectotype. An additional paralectotype has been designated in the AMS from the same locality. The type series originally included specimens from Swan River, WA; their current repository is unknown.

RECORDS. NHM: WA: Beverley; WAM: all WA: Beverley; Culham; Bejoording; New Norcia, Spencer's Brook, Midland, Murchison River. SAM: SA: Gammon Ra. NP, Weetootla Gorge, under stones, 16.ix.1990; ANIC: WA: Midland, 7.vi.48; NSW: 15km N of Coombah, 31.x.1975, on worker in *Rhytidoponera maniae* nest (#1438), P.S. Ward (1); NSW: Kinchega NP, 32.30S, 142.20E, iii.1986, red sand dune. McMillan (1950): all WA: Bunbury; Perth (King's Park); Guildford; West Midland; Spencer's Brook; Northam; Bolgart; Albany.

DIAGNOSIS. L: 2.52; W: 0.93; E/Pn L: 1.70; E/Pn W: 1.42; Pn W/L: 1.27; E L/W: 0.94; Pr/Py: 1.17; Sterna: 0.69, 0.31, 0.72; Tibiae: 1.25, 1.37, 1.71. *C. loculosa* can be easily distinguished from all other *Chlamydopsis* by its small nonsetose trichomes. The humeri are not elevated; a deep humeral groove extends from the anterolateral elytral corners into a simple deep pit, the diameter of which is only about 2 × the width of the humeral groove. The legs of *C. loculosa* are also unusually elongate, with nearly

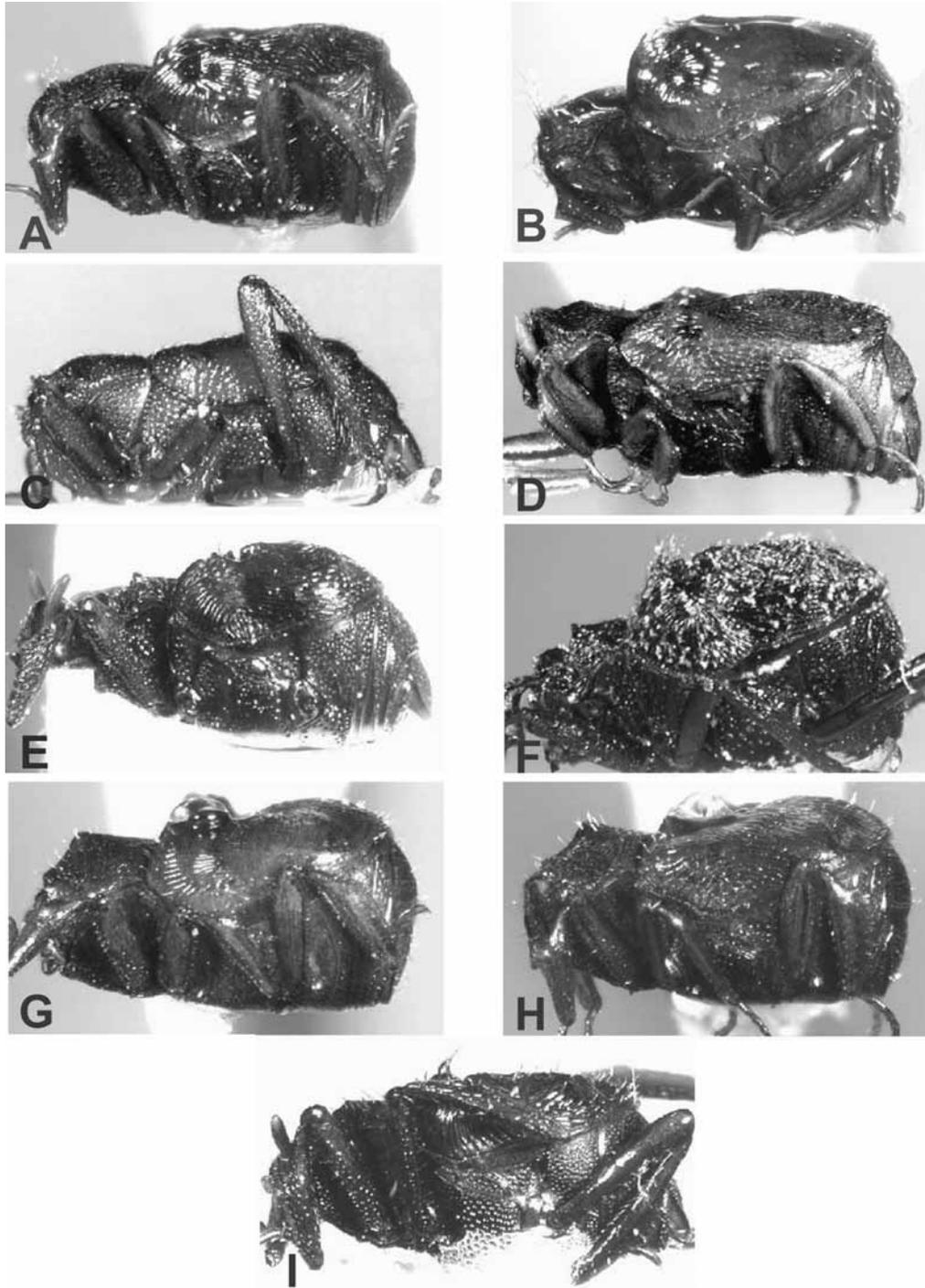


FIG. 14. Lateral views of *Chlamydopsis* spp. A, *C. pecki* (δ). B, *C. pecki* (♀). C, *C. loculosa*. D, *C. degallieri*. E, *C. papuae*. F, *C. jayawijaya*. G, *C. lucifer*. H, *C. bataviae*. I, *C. burnetta*.

one-fourth of the meso- and metafemora extending above the dorsal surface of the elytra when the legs are retracted; the outer marginal angulations of the meso- and metatibiae are also poorly developed.

REMARKS. McMillan (1950) published some interesting observations on the biology of *C. loculosa* (erroneously as *C. duboulayi* Westwood; McMillan, 1954). The very elongate legs are apparently not locomotory specialisations, as is commonly assumed, but facilitate phoresy, serving to grasp the thorax of their ponerine hosts (see Table 1).

***Chlamydopsis degallieri* sp. nov.**
(Figs 13D, 14D, 15)

MATERIAL. HOLOTYPE ♂: 20km E Norseman WA, 12-13 Jan. 1986, Reid, Gullan&Lewis, light trap in tall mallee/Melaleuca scrub; in ANIC. PARATYPES (6): 5 males: same data as holotype; 1 ♂: SA: ~15km SSE of Streaky Bay, 20-21.xii.1985, Reid, Gullan&Lewis, ex. light trap in mallee scrub; in ANIC, SAM, MSCC.

DIAGNOSIS. *Chlamydopsis degallieri* sp. nov. is a distinctive member of this group. While it bears a distinct anterolateral pronotal groove, this groove lies outside prominently elevated lateral pronotal margins, which are continuous with the more weakly elevated anterior pronotal margin. This is a unique configuration in *Chlamydopsis*. In general body form, and in its essentially unelevated humeral trichomes, it resembles *C. loculosa*, and the two may be related. However the trichome of *C. degallieri* bears conspicuous mesal setae, and its legs are not unusually elongate.

DESCRIPTION. L: 2.43; W: 0.78; E/Pn L: 2.12; E/Pn W: 1.37; Pn W/L: 1.52; E L/W: 1.02; Pr/Py: 1.13; Sterna: 0.62, 0.16, 0.81; Tibiae: 0.81, 0.93, 1.03. Body elongate, light rufescent brown, most surfaces nearly uniformly reticulately punctate, with conspicuous granulate microsculpture within punctures. Frons about as wide as long, sides rounded; clypeolabral suture straight to slightly outwardly arcuate; labrum short, rounded; antennal scape widest near middle, outer margin subacutely angulate, narrowed to rounded apex; antennal club of male about 1.2 × as long as scape.

Prothorax about 1.5 × as wide as long; sides margined, elevated, continuous with anterolateral portion of anterior margin, slightly narrowed to front; anterior pronotal margin somewhat interrupted between medial and

anterolateral portions; pronotal disk depressed along lateral and anterior margins, but convex medially.

Anterior margin of prosternum deeply grooved, sinuate, acutely projecting on either side; prosternal disk slightly transversely depressed behind anterior margin; prosternal keel narrowed posteriorly, elevated between coxae, emarginate at apex; prosternal disk uniformly punctate, punctures with granulate microsculpture within.

Elytra 1.5 × as wide as pronotum, parallel sided, narrowed in basal one-fifth and apical one-fourth; humeral trichomes weakly elevated, trichome opening small, mesal, with fringe of setae, some of which are erect and extend dorsally above subacute peak of trichome; elevation of trichome slightly furrowed laterally; humeral groove present, slightly arcuate, extending from anterolateral elytral corner to opening of trichome, meeting an oblique, blunt ridge extending from anterior margin next to scutellum; blunt, transverse tubercles present on each side behind scutellum; scutellum small.

Mesosternum about 2 × as wide as long, anterior margin projecting at middle; disk punctate as in prosternum; mesometasternal suture visible not strongly impressed; metasternal disk elevated, strongly convex in posterior three-fourths, moderately punctate in anterior one-fourth and at sides, punctures smaller and sparser along midline and posterior margin; 1st visible abdominal sternite uniformly moderately punctate; legs not elongate, all tibiae bluntly angulate about one-third from base.

Propygidium and pygidium about equally long medially; propygidium shallowly depressed along anterior margin, otherwise moderately convex; pygidium convex medially, faintly depressed along apical edges; propygidium uniformly reticulate/granulate, the pygidium reticulate only in basal half.

REMARKS. This species is named in honor of my valued chlamydopsine collaborator, Nicolas Dégallier.

***Chlamydopsis papuae* Lewis, 1913**
(Figs 13E, 14E, 15)

Chlamydopsis papuae Lewis, 1913: 86; MATERIAL. HOLOTYPE ♂: Laloki, Papua, F. Muir, 1910; NHM, examined, 2000.

DIAGNOSIS. *Chlamydopsis papuae* and the following species are closely related, and represent the only *Chlamydopsis* known from New Guinea.

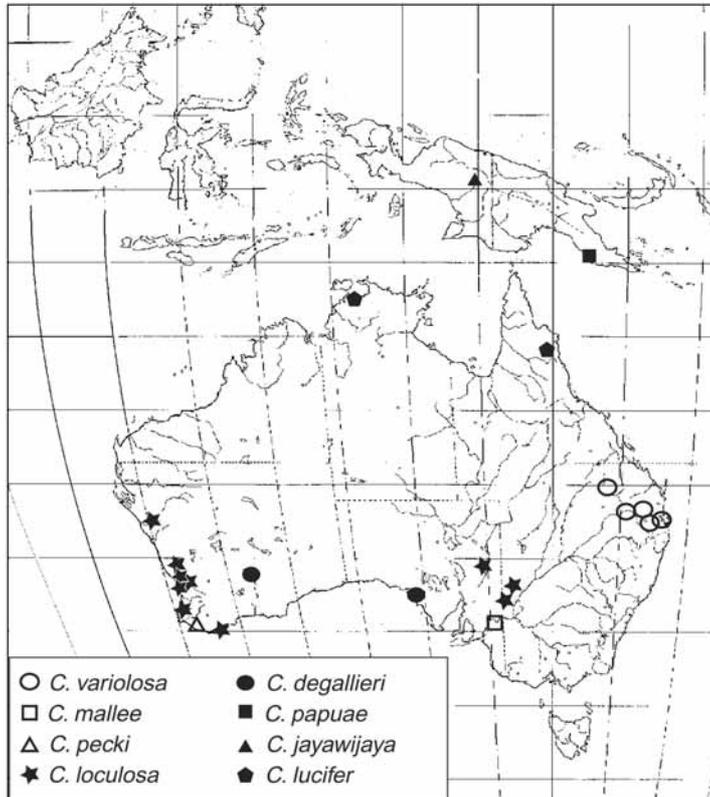


FIG. 15. Collecting records for species of *Chlamydopsis ectatommae* group.

Both have the anterolateral pronotal groove distinct and interrupting the lateral portion of the anterior pronotal margin. Both have a small but acute median pronotal tubercle. Although both species have the dorsal surfaces entirely reticulostriate, the sculpturing of *C. papuae* is generally less dense. The elytra of *C. papuae* exhibit some flat surface among the posterior strigosity, whereas the dense sculpture of the elytra of *C. jayawijaya* is uninterrupted. The pronotal punctation differs, with that of *C. papuae* more generally consisting of nearly polygonal punctures and that of *C. jayawijaya* entirely strigose. The epipleural sculpturing is also somewhat different with the strigosity of *C. papuae* arched, but largely continuous under the trichome, whereas that of *C. jayawijaya* converges to the trichome, with nearly all strigae discontinuous beneath it.

REMARKS. This species is known only from the type.

Chlamydopsis jayawijaya
sp. nov.
(Figs 13F, 14F, 15)

MATERIAL. HOLOTYPE ♂: Diuremna (nr. Nalca) [~4°22'S, 139°51'E], 1900-2100m, 9-11.XI.1992/ IRIAN JAYA, Jayawijaya Prov., leg. A. Riedel; in BMNH.

DIAGNOSIS. See above under *C. papuae*.

DESCRIPTION. L: 2.87; W: 1.00; E/Pn L: 1.88; E/Pn W: 1.50; Pn W/L: 1.63; E L/W: 0.77; Pr/Py: 1.00; Sterna: 0.87, 0.25, 0.97; Tibiae: 1.21, 1.34, 1.56. Body large, elytra broad, quadrate; pronotum narrower; nearly black, very slightly rufescent, strongly reticulostriate on all dorsal surfaces. Frons and antennal scapes strongly reticulated, sides of frons slightly rounded; labrum rounded, reticulate; antennal scape widest one-third from base, slightly tapered to rounded apex; antennal club of male about 1.25 × length of scape.

Prothorax about 2 × as wide as long, sides unmarginated, inwardly arcuate, slightly narrowed toward front but abruptly expanded around antennal cavities; anterior pronotal margin strongly elevated but interrupted in several places; an oblique groove extending posterolaterally from each antennal cavity to the supracoxal carina; transverse anteromedial portion of pronotal margin separated from nearly semicircular portion delimiting each antennal cavity; transverse medial portion also notched at middle; pronotal disk with acute median tubercle, and less conspicuous tubercles on each side near base; disk depressed behind anterior margin, elevated at middle, with small but deep medial depression in front of scutellum.

Prosternal anterior marginal groove continuous with circumcoxal stria; anterior prosternal margin sinuate, projecting on each side; prosternal keel narrowed between coxae, widening out slightly behind, acutely emarginate at apex, disk densely reticulopunctate.

Elytra parallel-sided, narrowed basally and apically, transversely elevated just behind middle, depressed basally between trichomes; anterior and posterior elevations of trichomes enclosing circular dorsal opening, nearly, but not quite meeting mesally, all inner and upper margins of elevations apparently lined with short setae; anterior elevation of trichome higher than posterior, nearly acute at apex, with a few dorsally and posteriorly directed setae near apex, with conspicuous, curved anterior groove from anterior elytral corner to inner apex; anterior half of basal depression differentiated from posterior, slightly elevated, punctate, and setose, elsewhere reticulostribose and more or less glabrous; elytral epipleurae reticulostribose, strigosity convergent to trichome; marginal stria of epipleuron delimiting a conspicuous smooth marginal bead.

Mesosternum projecting anteriorly, about 4 × as wide as median length, densely reticulopunctate; mesometasternal suture deeply and crenulately impressed; longitudinal metasternal suture shallowly impressed but visible, disk impunctate except near metepisternum; first visible abdominal sternite with punctures along anterior margin and at sides but impunctate at middle; legs slender, elongate; tarsal groove of tibiae straight, parallel to tibial axis; outer margin of tibiae angulate at apex of tarsal groove (near basal one-third).

Propygidium about two-thirds length of pygidium at middle, depressed along anterior margin and at sides, but convex medially; pygidium very slightly convex; propygidium and pygidium uniformly reticulopunctate, with sparse but conspicuous setae.

REMARKS. This species is named for the New Guinean province encompassing the type locality.

***Chlamydopsis lucifer* sp. nov.**
(Figs 13G, 14G, 15)

MATERIAL. HOLOTYPE (QMT108586) ♂: N.T., 6 km E of Humpty Doo [~12.6°S, 131.25°E], 6-19.x.1990, R.I. Storey at UV light. PARATYPE: 1 ♀: NEQ: Hann R. N of Laura [~15.6°S, 144.4°E], 20.iii-24.iv.1994, PZ, FIT.

DIAGNOSIS. This species and the following are similar and diagnosed together here. The two may be separated from other species of the *ectatommae* group by the combination of a very prominent, acute median pronotal tubercle, and a well delimited, outwardly arcuate trichome which is somewhat removed from the lateral elytral margin, with a distinct, horizontal 'shoulder' laterad. This mesal displacement also

results in the anterior superficial humeral groove extending more obliquely inward from the humeral corner, curving upward to the inner corner of the trichome's arcuate setal fringe. The trichomes of *C. lucifer* define a much deeper arc than do those of *C. bataviae* (compare Figs 13G and 13H). In both, the origins of the inner setal fringe are horizontally toward the centre of their arc. In *C. lucifer* the apices of these setae are curved ventrad, whereas in *C. bataviae* they curve dorsad.

DESCRIPTION. L: 1.93; W: 0.75; E/Pn L: 1.58; E/Pn W: 1.29; Pn W/L: 1.42; E L/W: 0.86; Pr/Py: 1.00; Sterna: 0.53, 0.12, 0.59; Tibiae: 0.62, 0.65, 0.75. Body rufescent, elytra light orange, pronotum darker, body reticulately punctate throughout (though with some variation in density); most surfaces with sparse short setae. Frons slightly wider than long, sides rounded, disk reticulopunctate, glabrous; labrum rounded; antennal scapes arcuate, widest at middle, narrowed slightly to rounded apex, surface punctate, microsculptured between punctures.

Pronotum one-fifth wider than long, sides margined, narrowed to front; anterior margin slightly elevated above antennal fossae, medial portion above head not elevated; anterolaterally with groove extending from edge of antennal fossa posterolaterally to supracoxal carina; pronotum raised at middle, with a single acute dorsal tubercle near the middle; entire pronotal disk, including tubercle, strongly reticulostribose, lateral strigosity tends to diverge around tubercle and converge both posteriorly and anteriorly.

Prosternum with anterior margin sinuate, grooved, this groove continuous with circumcoxal stria; prosternal keel narrowed posteriorly, emarginate at apex, prosternal disk mostly densely punctate, with interstices conspicuously microsculptured.

Elytra about one-third wider than pronotum, markedly lighter in color, parallel-sided, narrowed in basal and apical fifths; humeral trichomes, more or less shelf-like laterally, but with discrete, elevated bead at base of semi-circular setal fringe, with dense, inwardly directed fringe of convergent setae, curving ventrad at their apices, open beneath this fringe; anterior surface of trichome with oblique groove extending from anterolateral corner of elytron to leading edge of setal fringe; most of elytral disk reticulostribose, except upper one-third of lateral surface of trichome smooth; sparse but

conspicuous setae along apical margin of elytron and along apical half of elytral suture; few short setae on anterior elevation of trichome and in basal elytral depression.

Mesosternum projecting, densely punctate; mesometasternal suture impressed; metasternal disk with row of punctures along all edges but only sparsely punctate in middle of disk; 1st visible abdominal sternite sparsely punctate throughout, with punctures slightly denser along anterior margin; legs not elongate, moderately slender, the posterior (lower) surface of profemur densely punctate, the protibia and the meso- and metafemora and tibiae not conspicuously punctate but with distinct microsculpture and sparse setae.

Propygidium slightly longer than pygidium along midline; propygidium depressed just along anterior margin, otherwise strongly convex, densely reticulopunctate throughout, interstices microsculptured; pygidium flat to slightly convex, punctate in basal half, microsculptured throughout.

REMARKS. The single female from Queensland differs slightly as follows: opening of trichome slightly larger, particularly extended slightly forward along anterior edge; also base of trichome's upturned edge slightly constricted, such that there is a distinct 'shelf' surrounding it; elytra less strongly strigose, especially posterolaterally. Additional material is needed to determine whether these differences are individual, sexual, or geographic. The name of this species refers primarily to the fact that the type was collected at light, which is very unusual in histerids. Secondly, the setae of the trichome converge and recurve in a manner suggesting horns.

***Chlamydopsis bataviae* sp. nov.**
(Figs 13H, 14H, 18)

MATERIAL. HOLOTYPE (QMT108587) ♂: 12.43S 142.42E Qld, 7km S. of Batavia Downs, 19 Jun - 22 Jul 1992, Flight Intercept Trap, P.Zborowski & J.Cardale. PARATYPE: 1 ♂: same locality as type, 22.vi-23.vii.1992, PZ&EN, FIT; in DPIM.

DIAGNOSIS. See above where this species and the previous are diagnosed together.

DESCRIPTION. L: 1.96; W: 0.78; E/Pn L: 1.52; E/Pn W: 1.27; Pn W/L: 1.48; E L/W: 0.81; Pr/Py: 1.13; Sterna: 0.56, 0.12, 0.59; Tibiae: 0.78, 0.72, 0.84. This species is very similar to, and closely related to *C. lucifer* above, and a complete description is not given here. The form of the

humeral trichome is the primary distinguishing character. In *C. bataviae* the humerus is not as strongly elevated, and the mesal fringe is not borne on a distinctly elevated ring as it is in the preceding species. The mesal edge forms a blunt, obtuse, 'V', with the setal fringe curving upward and slightly outward, converging above opening, with just a few short inwardly and ventrally directed setae beneath the upper fringe. Lateral to the trichome there is a broad, nearly flat humeral 'shelf'. Elytral surface thoroughly reticulostrigose, but shallowly so, particularly posterolaterally.

REMARKS. This species takes its name from the type locality.

***Chlamydopsis burnetta* sp. nov.**
(Figs 13I, 14I, 18, 28C, 29E)

MATERIAL. HOLOTYPE (QMT108588) ♀, dissected by the author: SEQ: 25°40'S 151°26'E, Nipping Gully, Site 4, 9Oct-18Dec1998, Monteith&Gough, 200m, Open forest Intercept. 7502, in QMB. PARATYPE: 1 ♀: SEQ: 25°40'S 151°26'E, Nipping Gully, Site 4, 18.xii.98-26.i.1999, GM & Gough, 280m, O/For., FIT, 7570, in QMB.

DIAGNOSIS. This and the four species that follow form a very distinctive, and clearly monophyletic, subgroup within the *ectatommae* group. The most conspicuous characteristic of the group is the dense bundle of setae on the transverse carina of the mediobasal elytral depression. In *C. pilosipes* sp. nov. this bundle consists of only a few thin setae, but in all the others it forms a large patch of at least eight or more setae. The trichome structure of the group is somewhat varied, but is in all cases distinct from any others of the *ectatommae* group, never forming a simple mesal arc of setae. These five also share: relatively elongate narrow body; elongate legs; numerous pronotal, elytral, and pygidial discal setae (many of them small setal bundles); convex pronotal disk with weakly produced, short transverse median tubercle (except in *C. contorta*). Most are known from both sexes, and show no obvious dimorphisms. *Chlamydopsis burnetta*, *C. zborowskii* and *C. pluriseta* are particularly similar, with a humeral trichome that has a somewhat obliquely transverse, quadrate dorsal opening, filled with a very short but dense setal mat. In neither *C. burnetta* nor *C. pluriseta* does the setose region of the trichome reach the lateral edge of the elytra. A short smooth transverse furrow, approximately half the width of the setose area itself, incises the lateral aspect of the humeri. In *C. zborowskii* the setose patch is larger, its lateral

corner extending most of the way to the lateral humeral edge. The principal difference between *C. burnetta* and *C. pluriseta* is size, (2.8 v. 2.4mm PE length, respectively) along with the probably correlated longer legs of *C. burnetta*. Also in *C. burnetta*, the metasternal disk is densely and contiguously punctate throughout, while in *C. pluriseta* all specimens show some impunctate space, and are often entirely smooth at sides.

DESCRIPTION. L: 2.74; W: 1.03; E/Pn L: 1.67; E/Pn W: 1.43; Pn W/L: 1.39; E L/W: 0.83; Pr/Py: 1.11; Sterna: 0.75, 0.22, 0.90; Tibiae: 1.37, 1.50, 1.74. Body elongate, dark rufescent, mostly reticulate above, and with sparse elongate setae (a few bundles of setae) nearly throughout. Frons about as wide as long, sides rounded, anterior margin very slightly outwardly arcuate; disk deeply reticulate, with a few conspicuous setae; labrum rounded, reticulate; antennal scapes widest at middle, slightly narrowed to rounded apex, reticulate, setose; antennal club of female approximately as long as scape.

Prothorax about one-third wider than long, widest near base, sides margined, sinuate to front; anterior margin elevated, the anterolateral portions more so than medial portion; anterolateral portion of margin delimited laterally by a sinuate groove extending from above antennal fossa posterolaterally where it joins supracoxal groove; pronotal margins with approximately evenly spaced, prominent bundles of setae; pronotal disk depressed behind anterior margin and just in front of scutellum, otherwise strongly convex, acutely produced at middle, bearing scattered setal bundles.

Prosternum with deep anterior marginal groove, margin sinuate and acutely projecting on each side; prosternal keel narrowed posteriorly, emarginate at apex, convex; prosternal disk reticulate and with scattered setae.

Elytra about 1.5× as wide as pronotum, parallel sided, narrowed in basal one-sixth and apical one-fourth; elytra convex in most of apical two-thirds (depressed in posterolateral corners) transversely depressed in basal one-third, this basal depression with low transverse carina bearing large bundle of setae close to elytral suture; humeral trichomes prominent, anterior aspect nearly vertical (in lateral view); anterior and posterior elevations of trichome separated by shallow lateral furrow which is continuous with mesal opening of trichome; opening of trichome nearly rectangular, widest transversely but offset about 30° from horizontal (towards anterior

corners); mesal fringe of trichome dense and erect but very short; anterior elevation with nearly straight superficial groove, extending from anterior corners of elytra to anterior corners of rectangular trichome opening, and with several prominent setal bundles near apex; elytral disk reticulostrigose and with scattered setae except within basal depression.

Mesosternum 2.2× as wide as long; anterior margin acutely projecting at middle; disk deeply reticulate; mesometasternal suture deeply impressed; metasternal disk and 1st abdominal sternite uniformly densely punctate (though slightly less densely than mesosternum). Legs elongate, slender, about one-fifth of metafemoral length projecting above elytra when held vertically; femora slightly clavate; outer margins of tibiae angulate at about their midpoint.

Propygidium about as long as pygidium along midline, slightly depressed along basal margin, but otherwise strongly convex; pygidium convex; both propygidium and pygidium strongly reticulate, with sparse elongate setae.

REMARKS. This species takes its name from the watershed (Burnett River) encompassing the type locality.

***Chlamydopsis zborowskii* sp. nov.**
(Figs 16A, 17A, 18)

MATERIAL. HOLOTYPE (QMT108589) ♂: 12.40S 142.39E Qld, 3km W Batavia Downs, 24 Oct-23 Nov 1992, Flight Intercept Trap, P.Zborowski & A.Calder. PARATYPES (5): 1 ♂, 1 ♀: same locality as holotype but 16.ix-24.x.1992; 1 ♂, 1 ♀: same but 23.viii-16.ix.1992; 1 ♀: Qld: 12.40S, 143.00E, 13km E by S Weipa, 15.viii-12.ix.1993, FIT,PZ&SS, in QMB, DPIM, MSCC.

DESCRIPTION. L: 2.40; W: 0.90; E/Pn L: 1.66; E/Pn W: 1.41; Pn W/L: 1.41; E L/W: 0.83; Pr/Py: 1.06; Sterna: 0.72, 0.19, 0.81; Tibiae: 1.09, 1.15, 1.34. This species and the following are very similar to the preceding species and are only described to the extent that they differ from it. Setal patch of humeral trichome larger, extending laterally to the side of the humeral dorsum; inner apex of posterior elevation of trichome more protuberant dorsally and anteriorly, nearly closing the mesal opening above; strigosity of pronotum and elytra finer (narrower and more elongate), and on elytra less deeply impressed, some individuals (especially the females) almost impunctate behind trichomes; legs less elongate, metafemur barely projecting above elytra when held vertically; punctures of metasternum confined to middle portion of disk, sides

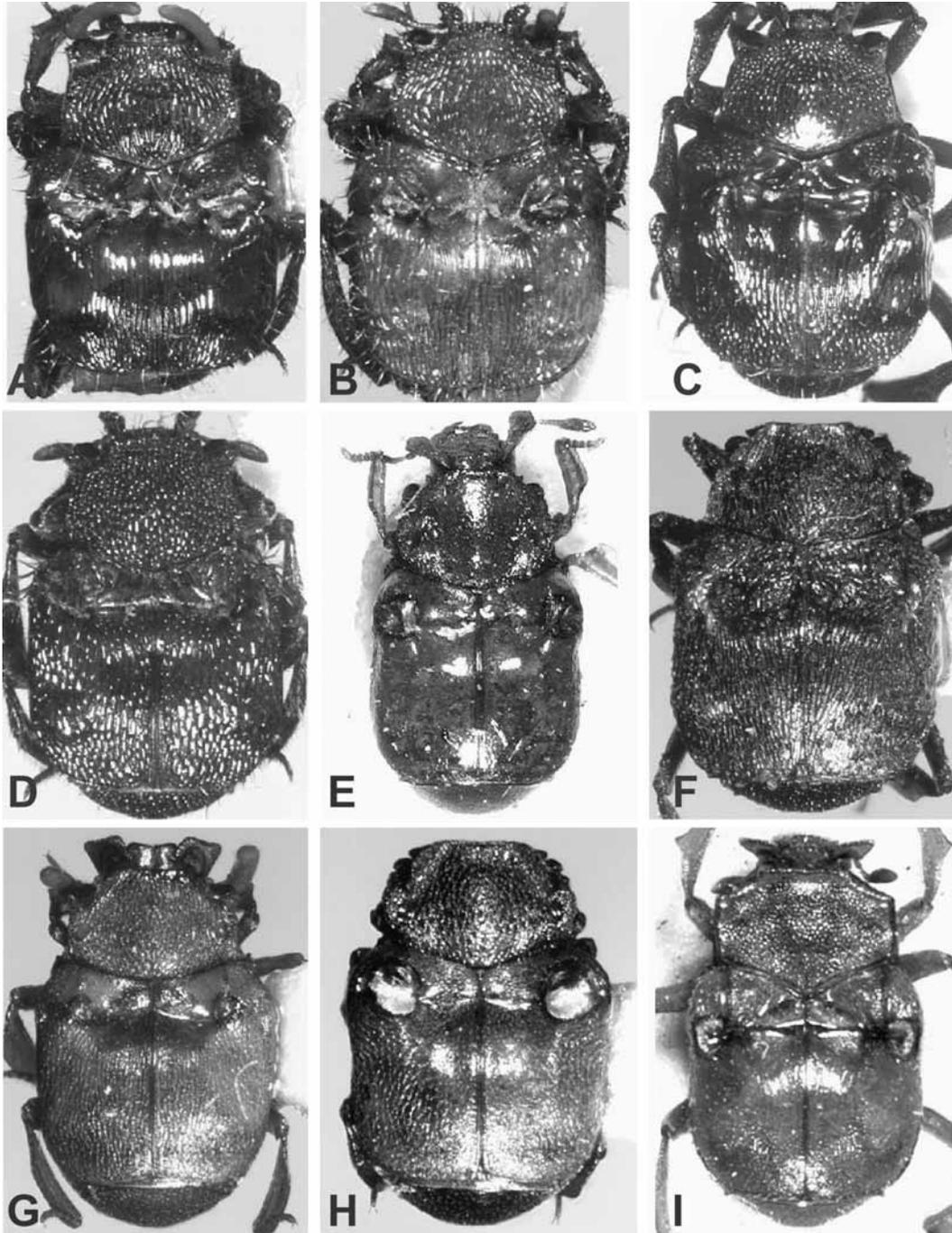


FIG. 16. Dorsal views of *Chlamydopsis* spp. A, *C. zborowskii*. B, *C. pluriseta*. C, *C. contorta*. D, *C. pilosipes*. E, *C. bifovaecollis*. F, *C. nielsenii*. G, *C. australis*. H, *C. lepida*. I, *C. epipleuralis*.

impunctate; lateral portion of 1st visible abdominal sternite also less punctate, with no punctures within postmetacoxal depression.

REMARKS. It is unusual to have two such similar and obviously related species as this and the following collected at the same locality, over several of the same trapping periods. Yet both forms are known from both sexes, and the differences between them are absolutely consistent among all specimens. It would be very interesting to know if they share hosts. This species is named in honor of Paul Zborowski, collector of this type, as well as many other interesting chlamydopsines.

Chlamydopsis pluriset sp. nov.
(Figs 16B, 17B, 18)

MATERIAL. HOLOTYPE (QMT108590) ♂: 12.39S 142.42E Qld, 4km NE Batavia Downs, 24 Oct-23 Nov, 1992, P. Zborowski & A. Calder. PARATYPES (11): 1 ♂, 1 ♀: same data as holotype; 1 ♂, 1 ♀: same but 23.xi-11.xii.1992; 4 ♂♂, 3 ♀♀: same but 16.ix-24.x.1992, in QMB, DPIM, ANIC, MSCC.

DESCRIPTION. L: 2.31; W: 0.87; E/Pn L: 1.64; E/Pn W: 1.32; Pn W/L: 1.46; E L/W: 0.85; Pr/Py: 1.00; Sterna: 0.69, 0.22, 0.81; Tibiae: 1.09, 1.12, 1.34. See *C. burnetta* above to separate this species and the preceding two from all other *Chlamydopsis*. This species differs from *C. burnetta* in only a few characters: size smaller, (2.4mm v. 2.8mm PE length); legs less elongate, tips of metafemora not or barely projecting above elytral dorsum when held vertically; inner edge of posterior elevation of trichome projecting further forward, nearly closing trichome opening mesally; metasternal disk with fewer punctures at sides, often entirely impunctate.

REMARKS. The name of this species refers to the conspicuous setae on most body surfaces (which it shares with most of this subgroup).

Chlamydopsis contorta sp. nov.
(Figs 16C, 17C, 18)

MATERIAL. HOLOTYPE (QMT108591) ♂: C. Qld: 22°02'S 148°03'E, Moranbah, 5km S. 240m, 20 Dec 97-26 Apr 1998, G. Monteith, Flt. Intercept, Bendee Scrub. 5799. PARATYPES: 3 males: same locality as holotype but 25.vi-20.xii.1997, GM&E. Kruck, FIT, Bendee Scrub, 5642, in QMB, MSCC.

DESCRIPTION (compared with *C. burnetta*, described in full above). L: 2.62; W: 0.97; E/Pn L: 1.71; E/Pn W: 1.39; Pn W/L: 1.48; E L/W: 0.83; Pr/Py: 1.17; Sterna: 0.75, 0.22, 0.87; Tibiae:

1.12, 1.21, 1.46. Body broader, reticulation generally less deeply impressed; body setae fewer and single (no bundles of setae, with one exception noted below); lateral margins of pronotum mostly straight, convergent to near apex, then expanded around antennal fossae, without lateral marginal setae; oblique groove between antennal fossa and circumcoxal stria absent (though a faint vestigial furrow can be seen); pronotal disk not as strongly convex, with slight indication of transverse medial carina in two of four specimens, with a few single setae near middle, but lacking prescutellar setae (seen in both *C. burnetta* and *C. pilosipes*); humeral trichomes not at all rectangular, almost 'V'-shaped in dorsal view (the bottom of the 'V' directed anteriorly), the outer arm of the 'V' continuous with a rather deep lateral furrow; anterior elevation of trichome divided by anterior superficial groove, the outer half more strongly produced, more or less acute in lateral view; bundle of setae along mediobasal transverse carina more extensive, occupying the entire apex of the carina; metasternum and 1st visible abdominal sternite almost entirely impunctate, each with only a few shallow punctures along anterior margin; legs not as elongate, angle of outer margin of tibiae nearer basal third than midpoint.

REMARKS. The name of this species refers to the sinuate contours of the humeral trichome.

Chlamydopsis pilosipes sp. nov.
(Figs 16D, 17D, 18)

MATERIAL. HOLOTYPE (QMT108592) ♀: SEQ: 25°13'S 149°01'E, Expedition Ra. Nat. Pk, 5729, 'Amphitheatre' yards. 440m, 19 Dec 97-4 Mar 1998. Cook & Monteith. open for intercept.

DIAGNOSIS. *Chlamydopsis pilosipes* is the most distinctive species of this subgroup. The opening of the humeral trichome is entirely different from the others, consisting mainly of a small, but quite deep dorsal pit, continuous anteriorly with the superficial humeral groove, and almost concealed above by an acute, leaflike, posteriorly directed projection from the inner edge of the anterior humeral elevation. Additionally the setal bundles of the mediobasal elytral carinae consist of only a few setae, and the legs are covered with fairly dense decumbent setae, whereas those of the other species have sparser, mostly erect setae.

DESCRIPTION. L: 2.43; W: 0.93; E/Pn L: 1.60; E/Pn W: 1.53; Pn W/L: 1.27; E L/W: 0.83; Pr/Py:

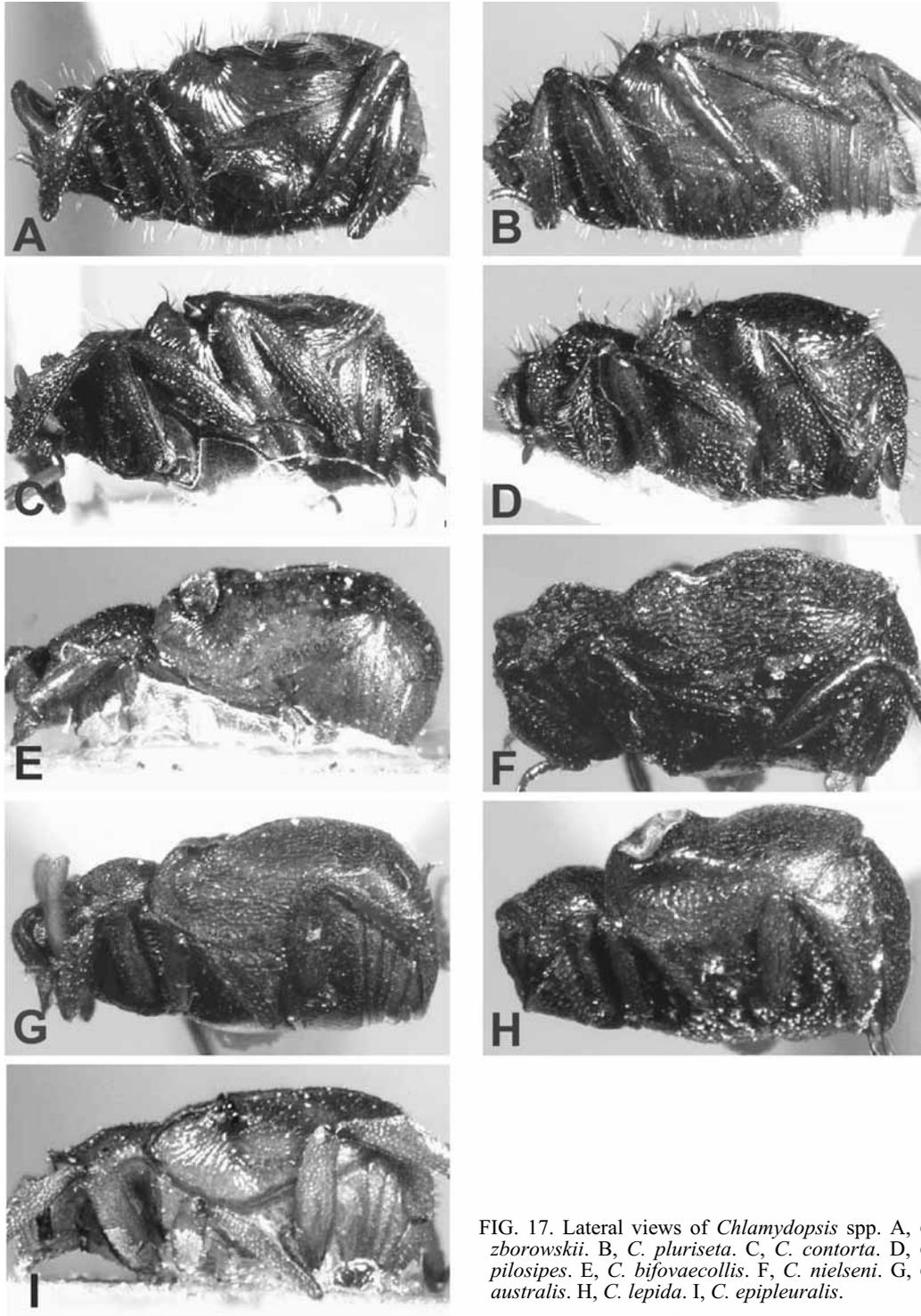


FIG. 17. Lateral views of *Chlamydopsis* spp. A, *C. zborowskii*. B, *C. pluriseta*. C, *C. contorta*. D, *C. pilosipes*. E, *C. bifovaecollis*. F, *C. nielseni*. G, *C. australis*. H, *C. lepida*. I, *C. epipleuralis*.

1.38; Sterna: 0.62, 0.22, 0.69; Tibiae: 1.06, 1.03, 1.15. Body elongate, subquadrate, rufescent, reticulostrigose throughout, most surfaces (except for posterior two-thirds of elytra) with long, prominent setae or bundles of setae; frons about as wide as long, sides rounded, anterior margin straight, with about 6 prominent setae; labrum rounded; mandibles bearing a couple setae on outer surfaces; antennal scape widest near middle, faintly tapered to rounded apex, with a few setae.

Prothorax about one-third wider than median length, sides unmarginated, sinuate, widest near base, narrowing anteriorly, then abruptly widened around antennal fossae; anterior margins of pronotum elevated, anterolateral portions strongly raised, rounded, interrupted by groove extending from edge of antennal fossa posterolaterally to supracoxal hypomerall groove; medial portion of anterior pronotal margin not as strongly elevated as anterolateral portions but more or less continuous with them; anterior and lateral pronotal margins with prominent bundles of setae; pronotal disk depressed behind anterior margin, otherwise strongly convex, subacutely produced at middle, prescutellar region slightly depressed; pronotal disk with numerous conspicuous setae, their arrangement not quite symmetrical; one especially prominent pair of setae just in front of scutellum.

Prosternum with anterior margin strongly grooved, sinuate, acutely projecting on either side; prosternal keel narrowed posteriorly, not elevated, reticulate and sparsely setose.

Elytra about $1.5 \times$ width of pronotum, sides more or less parallel, narrowed in apical one-third and basal one-fourth; transversely depressed in mediobasal one-third, with low, setose, transverse carinae within depression; humeral trichomes prominent, with conspicuous bundles of setae on anterior and lateral surfaces; anterior elevation of trichome divided by deep superficial groove, prominent and acutely produced on either side of this groove, the inner portion tapered, leaflike, extending posteriorly to cover much of dorsal opening of trichome, the small, depressed opening apparently lacking a marginal fringe of setae; posterior elevation of trichome as high as anterior ones, but merely convex above; elytral disk entirely reticulostrigose, but this texture less strongly developed at middle; apical elytral margin with fringe of conspicuous setae.

Mesosternum about $2.2 \times$ as wide as median

length, acutely projecting at middle, densely reticulopunctate and sparsely setose; mesometasternal suture finely impressed; metasternum densely punctate anteriorly and laterally but less so posteromedially, with punctures rounder, shallower and separated by about one-half their widths; 1st visible abdominal sternite almost uniformly punctate, the punctures separated by slightly less than their widths, those of the anterior and posterior margins more closely spaced; Legs elongate slender, the meso- and metafemora slightly clavate, outer margins of all tibiae angulate near middle; outer surfaces of meso- and metatibiae smooth near bases but increasingly strigose towards apices; all legs densely setose, most or all setae single (not in bundles).

Propygidium about one-fourth longer than pygidium, slightly depressed just along basal margin, but otherwise strongly convex; pygidium convex; both propygidium and pygidium strongly reticulate, with sparse elongate setae.

REMARKS. The name of this species refers to its conspicuously setose legs.

***Chlamydopsis bifovaecollis* (Oke, 1923)**
(Figs 16E, 17E, 18, 29A)

Orectoscelis bifovaecollis Oke, 1923: 159; New Combination; MATERIAL. HOLOTYPE prob. ♀: Natya, Vic. 29.9.1922, C. Oke/ *Orectoscelis bifovaecollis*, Oke. Type./ Presented by C.G. Oke/ 904 Type/ MATERIAL. HOLOTYPE. T. 904 *Orectoscelis bifovaecollis* Oke, 1923; MVM, examined, 2000.

DIAGNOSIS. This species and the following three represent a distinctive clade, which may or may not belong in the *ectatommae* group. They are highly distinctive, having an anterolateral pronotal groove extending from the posterior edge of the antennal cavity posteriorly to conspicuous pits on the pronotal dorsum (Fig. 29A). Placement of these species in the present group is based primarily on the (questionable) assumption of homology between these grooves and the oblique grooves of the other members of the *ectatommae* group. The shape of the humeral trichome is also similar to that of some other *ectatommae* group species (particularly *C. lucifer*). The anterior prosternal groove, on the other hand, would be somewhat unusual for this group. This marginal groove is well impressed, and divergent from the margin at the sides, but it does not curve directly back to meet the circumcoxal stria; it meets the pronotal/prosternal suture somewhat anteriorly to it. In appearance this condition is intermediate between the state

observed in *C. setifera* and *C. burnetta*, and that of the rest of the *ectatommae* group. *Chlamydopsis bifovaecollis* (known only from the female holotype) itself is unique among members of the group in having the elytral dorsum smooth rather than reticulopunctate. In body shape, and especially trichome shape, this species and *C. lepida* sp. nov. are otherwise quite similar.

REMARKS. This species was placed originally in *Orectoscelis* 'with some slight doubt' (Oke, 1923). However, despite some general similarity in body shape, this species lacks any of the characteristics of *Orectoscelis* or related genera. Most notably, the scutellum in *bifovaecollis* is fully exposed. The species was reported from near nests of *Euponera lutea* and a small black *Iridomyrmex*, under a log.

***Chlamydopsis nielseni* sp. nov.**
(Figs 16F, 17F, 18)

MATERIAL. HOLOTYPE ♂: 34.21S 139.31E SA, Brookfield Con. Pk., 31 Mar.-29 Apr. 1992, E.S.Nielsen F.I.T. #2; in ANIC.

DIAGNOSIS. This species is the most distinctive of the four placed in this subgroup. It is about 1.5× the size of any of the others, with the body darker and more coarsely sculptured. Its pronotal pits are deeper and located immediately behind the upturned pronotal margin. The humeral trichomes also differ somewhat, with a very limited mesal arc of setae, which themselves are quite elongate, extending downward and then posteriorly for a short distance along the elytral dorsum.

DESCRIPTION. L: 2.46; W: 0.87; E/Pn L: 1.82; E/Pn W: 1.36; Pn W/L: 1.57; E L/W: 0.85; Pr/Py: 1.05; Sterna: 0.75, 0.12, 0.81; Tibiae: 0.97, 1.03, 1.09. Body subquadrate, nearly black, very slightly rufescent, reticulostrigose throughout. Frons about as wide as long, sides rounded, surface reticulate, glabrous, apical margin slightly rounded; labrum arcuate; antennal

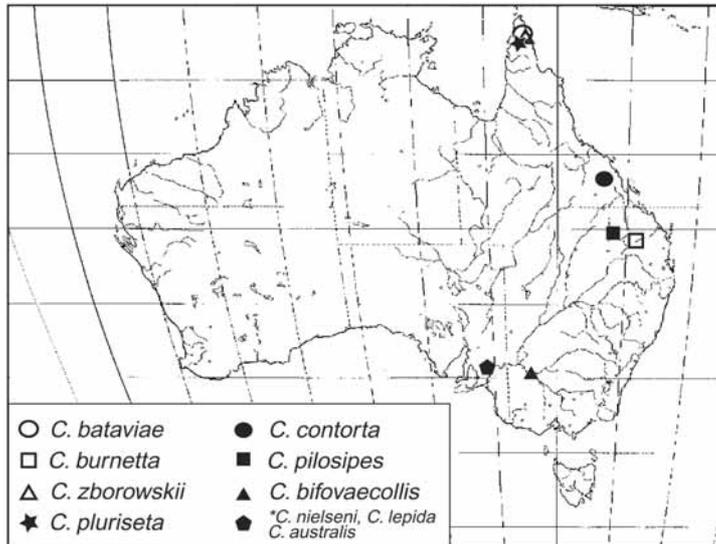


FIG. 18. Collecting records for species of *Chlamydopsis ectatommae* group. The species *C. nielseni*, *C. australis*, and *C. lepida* all share a type locality and are collectively represented by a single point.

scapes widest near middle, slightly narrowed to rounded apex, reticulate, glabrous; antennal club retracted (full length not visible).

Prothorax 1.7× as wide as median length; sides margined, sinuate, shorter, ending anteriorly where anterolateral margin is strongly elevated above antennal fossae; anterolateral margin oblique, arcuate, interrupted near sides by groove extending from edge of antennal fossa to a very conspicuous anterolateral pronotal pit, this pit about half the diameter of the exposed antennal fossa (in dorsal view), and immediately behind the raised anterolateral margin; medial portion of pronotal margin elevated less strongly than lateral portions, but not separated from them; pronotal disk depressed anteromedially and posteriorly from pits, otherwise broadly convex, subacute at middle.

Prosternum with anterior margin strongly grooved, sinuate, acutely projecting on either side, the anterior groove curving posteriorly at sides joining circumcoxal stria; prosternal keel narrowed and elevated posteriorly, emarginate at apex; entire disk finely reticulate.

Elytra about 1.5× pronotal width, parallel sided, narrowed to base and apex; convex in apical two-thirds, flat to slightly depressed in basal third between humeral trichomes; trichomes widely separated, only slightly elevated, subacute, with an apical bundle of

elongate setae which descend the posteromedial edge of elevation, then curving posteriorly where they meet the elytral surface; anterior aspect of trichome with fine superficial groove arising inward about one-eighth from lateral corner, extending to the apex of the trichome at the base of the setal bundle; elytral surface entirely reticulostriate, mostly glabrous with a few short setae near apex.

Mesosternum short (<1/8 median length of metasternum) with anterior margin projecting at middle, disk reticulate; mesometasternal suture strongly impressed at sides but not at middle; metasternal disk with single row of punctures along anterior and posterior margins, but disk otherwise impunctate, strongly convex ('raised' relative to metasternum and abdominal sternites); 1st visible abdominal sternite punctate along anterior margin, more sparsely so behind. Legs slender and moderately elongate; profemur shallowly punctate on lower surface, tibiae, and meso- and metafemora with distinct microsculpture but impunctate; outer margin of protibia angulate near basal one-third; meso- and metatibiae bluntly angulate.

Propygidium about one fourth longer than pygidium, slightly depressed along basal margin, but mostly strongly convex; pygidium flat at sides, weakly convex at middle; propygidium and pygidium uniformly reticulate, with sparse, short setae.

REMARKS. It must be noted that this and the following two closely related species were all collected at virtually the same locality, and some share sampling dates as well. This species and the following are both known from males only, while *C. lepida* sp. nov. is known only from females. It is conceivable that some of these should be paired up (*C. australis* sp. nov. and *C. lepida* are the most similar), but this cannot be determined with available material. The species is named in honour of the late Ebbe Nielsen, collector of the type, and noted lepidopterist and biodiversity advocate.

***Chlamydopsis australis* sp. nov.**
(Figs 16G, 17G, 18)

MATERIAL. HOLOTYPE ♂: 34.19S 139.30E SA, Brookfield Con. Pk., 20 Feb.-31 Mar. 1992, A. Calder, W. Dressler, F.I.T. #1; in ANIC.

DIAGNOSIS. This species' elytral striatosity is sufficient to distinguish it from *C. bifovaecollis*. The shape and size of the humeral trichome will separate it from *C. lepida* sp. nov., below. Those

of the present species are much smaller, in fact rather inconspicuous from above, while those of *C. lepida* are prominent, occupying much of the outer half of the anterior one-third of each elytron.

DESCRIPTION (compared to the preceding, fully described, species). L: 1.78; W: 0.62; E/Pn L: 1.85; E/Pn W: 1.39; Pn W/L: 1.55; E L/W: 0.86; Pr/Py: 1.23; Sterna: 0.50, 0.09, 0.59; Tibiae: 0.65, 0.65, 0.72. Body lighter, rufescent, more elongate, body more rounded, most surfaces with very fine sparse setae; antennal club visible, about 1.5 × length of scape; pronotum very different, groove from antennal fossa to pronotal pit well defined, delimiting rather than interrupting the anterolateral portion of pronotal margin; pronotal pit oblong, situated at middle of pronotal side, near margin (posterolaterally relative to that of *C. nielseni*), with lateral pronotal margin elevated and slightly curved around its outer edge; medial portion of anterior pronotal margin not elevated; pronotal disk depressed near posterior margin, but posterior margin itself raised, carinate, especially towards sides; middle of pronotal disk simply convex, not subacutely projecting. Prosternal keel not elevated relative to mesosternum, slightly depressed between procoxae; metasternum and 1st abdominal sternite distinctly microsculptured throughout. Elytra about one-third wider than pronotum, with sides slightly arcuate; humeral trichomes situated more medially, very weakly elevated, with semicircular dorsal opening, the mesal fringe of setae directed downward, partially obscuring cavity beneath; depression between trichomes with blunt postscutellar protuberance; elytral surface entirely reticulostriate, with uniform microsculpture. Legs shorter, broader; outer margins of tibiae angulate about one-fourth from base. Propygidium uniformly reticulate and with uniform microsculpture; pygidium reticulate only in basal one-fourth, microsculptured throughout.

REMARKS. The name of this species refers to the southerly position of the type locality.

***Chlamydopsis lepida* sp. nov.**
(Figs 16H, 17H, 18)

MATERIAL. HOLOTYPE ♀: 34.19S 139.30E SA, Brookfield Con. Pk., 3 Jun.-28 Aug. 1993, S. Williams, F.I.T. #1; in ANIC. PARATYPE ♀: SA: 34.21S 139.31E, Brookfield Con. Pk., 31.iii-29.iv.1992, EN, FIT; in ANIC.

DIAGNOSIS. See diagnoses for *C. bifovaecollis* and the preceding species.

DESCRIPTION. L: 1.68; W: 0.62; E/Pn L: 1.70; E/Pn W: 1.43; Pn W/L: 1.50; E L/W: 0.79; Pr/Py: 1.14; Sterna: 0.44, 0.09, 0.53; Tibiae: 0.53, 0.56, 0.62. As mentioned above, this species possibly represents the female of the preceding species. The two differ substantially in trichome shape, with those of *C. lepida* much larger (Figs 16G, H). The elytral discs are also less strongly strigose in the present species (a frequent sexual difference in *Chlamydopsis*), the setae of pronotum and elytra, although fine, are more conspicuously scale-like, and the overall body size is slightly smaller. Otherwise, the two are very similar. An additional feature worth noting is the antennal club. Its outer surfaces are largely sclerotised, with only the oblique apex and a smaller subapical patch tomentose.

REMARKS. The name of this species refers to its scale-like dorsal setae.

EPIPLEURALIS GROUP

The *epipleuralis* group is a rather heterogeneous group of mainly temperate species. The group is primarily characterised by trichome characters. The setal fringes of both anterior and posterior humeral elevations tend to have separate inner and outer origins. The inner and outer origins of the anterior elevation are divided at the entry point of the anterior humeral groove. In most species the inner apices of anterior and posterior humeral elevations nearly meet, with their respective setal fringes opposing and separating the mediobasal elytral depression from a dorsally open, rounded lateral cavity. The setal fringe of this lateral cavity may be continuous, interrupted at an epipleural incision, or, rarely, absent. All members of this group have a well developed anterior marginal prosternal groove that departs from the margin laterally to meet the circumcoxal stria. Most also have the anterior and lateral margins of the pronotum strongly elevated. This group contains several of the largest known *Chlamydopsis* species.

Chlamydopsis epipleuralis Lea, 1912 (Figs 16I 17I, 21, 30A)

Chlamydopsis epipleuralis Lea, 1912: 68; MATERIAL. HOLOTYPE: epipleuralis Lea Type, Hornsby/ 14673 *Chlamydopsis epipleuralis* N. S. Wales, Type; mounted with two host ants; SAM, examined.

Chlamydopsis epipleuralis var. *mastersi* Lea, 1912: 68; Mazur, 1984: 110.

RECORDS. NHM: NSW: Sydney; Vic: Ballarat; SA: Mt Lofty Rep. (mounted w. id'd *Iridomyrmex anceps*), SA: Adelaide. WAM: NSW: Sydney. QMB: NSW: Sydney. AMS: NSW: Sydney; NSW: Como, June. MCZ: WA:

Swan River [has two labels on pin (which has two specimens)] other says NSW: Sydney, more likely. Lea (1925): Vic: Sea Lake; WA: Perth 'a small species of *Iridomyrmex*'. Oke (1923): Vic: Whittlesea, with *Iridomyrmex gracilis*.

DIAGNOSIS. L: 2.43; W: 0.90; E/Pn L: 1.69; E/Pn W: 1.30; Pn W/L: 1.48; E L/W: 0.88; Pr/Py: 1.15; Sterna: 0.59, 0.22, 0.69; Tibiae: 1.03, 1.18, 1.31. *Chlamydopsis epipleuralis* is one of the most common and widespread species of the group. It is very closely related to *C. sculptus* Oke, and the two are difficult to separate. Together they are most easily recognised by the form of the humeral trichome. The anterior surface is nearly flat, and incised by a moderately deep, straight superficial groove. The inner anterior and posterior elevations of the trichomes nearly meet, and are pointed apically so as to meet at opposing, setose triangular faces. Lateral to these inner elevations is a nearly circular opening, setose on at least its anterior (and often the entire) edge. *Chlamydopsis convexa* is somewhat similar to these in its general trichome shape. But its anterior superficial humeral groove is displaced laterally, with the anterior trichome elevation strongly convex mesal to the groove, and the outer circular opening of the trichome lacks setae. *Chlamydopsis epipleuralis* and *C. sculptus* differ from each other mainly in pronotal sculpture, with the punctures of *epipleuralis* extremely shallowly impressed, those of *sculptus* being much more conspicuous, and even with intermingled finer punctures. The trichomes also differ slightly, most noticeably in the anterior superficial groove, which has its outer edge carinate and distinct in *epipleuralis*, but rounded, indistinct in *C. sculptus*.

REMARKS. Not all of the above specimens have been studied, and some may refer to *C. sculptus* (below), as several such misidentifications have been found. Oke's (1923) host record of *Iridomyrmex gracilis* refers to a valid species, but several subspecies are now recognised. The nominate subspecies, occurring in coastal Victoria, is likely the proper one.

Chlamydopsis sculptus Oke, 1923 (Fig. 21)

Chlamydopsis sculptus Oke, 1923: 158; Lectotype, hereby designated: Macedon, V[ictoria]., 23.4.21, C.Oke/ *Chlamydopsis sculptus*, Oke. Type/ Presented by C. G. Oke/ 902 Type; MVM, examined, 2000. Paralectotype, hereby designated: Bendigo, V., 1.10.21, C.Oke/ *Chlamydopsis sculptus*, Oke. Co-Type/ 903 Paratype; AMS. An additional specimen of this species was found bearing a type label Bendigo, 4.10.24 [Vic]. However, the

collection apparently postdates the description, and the type label should be disregarded.

RECORDS. SAM: SA: 13km E Marion Bay, Yorke Pen. 6.xi.1981, pitfall trap behind beach. WAM: Vic: Bendigo, Sept and Oct. QMB: SA. ANIC: SA. AMS: Vic: Ballarat, Vic: Maldon; SA: Adelaide. USNM: SA: Lucindale. Oke (1923): all Vic: Sea Lake; Daylesford; Ballarat; SA: Mount Lofty.

DIAGNOSIS. L: 2.55; W: 1.00; E/Pn L: 1.56; E/Pn W: 1.30; Pn W/L: 1.38; E L/W: 0.88; Pr/Py: 1.26; Sterna: 0.69, 0.19, 0.78; Tibiae: 1.0, 1.0, 1.12. See diagnosis under *C. epipleuralis*, above.

REMARKS. Reported from nests of *Iridomyrmex* sp. (Oke, 1923).

***Chlamydopsis convexa* sp. nov.**
(Figs 19A, 20A, 21)

MATERIAL. HOLOTYPE ♂: 34.21S 139.31E SA [South Australia] Brookfield Con. Pk. 7 Oct.-7 Nov. 1992, J. Stelman, S. Williams, FIT #2/ F.I.T, ANIC 1266, mallee #2; in ANIC. PARATYPES (4): 1 ♂: same data as holotype; 1 ♀: same but 2.xii.91-2.i.1992, FIT, ANIC 1224 mallee #2; 1 ♀: same but 7.xi-24.xi.1992, FIT, ANIC 1268 mallee #2; 1 ♂: SA: 34.19S 139.30E, 20.x-3.xi.1991, E. Edwards, SS, FIT, ANIC 1208 mallee with *Triodia* #1; in ANIC, MSSC.

DIAGNOSIS. This species is similar to the previous two in general body and trichome shape. The most pronounced difference is that the inner anterior elevation of this species' trichome is uniquely convex (rather than flat) and displaces the anterior superficial groove (and the reduced outer portion of the anterior elevation) laterally. Its body is also somewhat narrower overall. Other differences include: glabrous dorsum, weak to indistinct elytral strigosity, and lack of setae lining the outer opening of the trichome.

DESCRIPTION. L: 2.12; W: 0.78; E/Pn L: 1.72; E/Pn W: 1.23; Pn W/L: 1.60; E L/W: 0.88; Pr/Py: 1.29; Sterna: 0.56, 0.12, 0.65; Tibiae: 0.72, 0.75, 0.78. Body orangeish brown, appearing largely smooth and glabrous; punctures on many surfaces extremely shallow, appearing granulate within; frons about as wide as long, sides parallel at middle, narrowed to base and apex, anterior margin straight, disk nearly flat, glabrous, very sparsely and shallowly punctate; labrum rounded, impunctate with numerous short apical setae; antennal scape with outer margin forming a blunt 90° angle near basal one-third, apex rounded, disk microsculptured and finely setose; antennal club of male 1.2 × as long as scape; that of female 0.6 × as long as scape.

Pronotum about 1.7 × as wide as long, margined laterally, sides weakly outwardly arcuate, widest near middle, distinctly but not strongly elevated; anterior margin elevated, with medial and lateral portions continuous with each other and with elevated pronotal sides; disk convex at middle, with sparse, inconspicuous punctures, separated by slightly more than their widths.

Prosternum with anterior margin deflexed, deeply grooved, sinuate and acutely projecting on either side, marginal groove curving posteriorly at sides and merging with circumcoxal stria; prosternal disk depressed behind anterior margin, narrowed posteriorly; apex of keel shallowly emarginate; prosternal disk faintly punctate, without grooves along the proleg depressions.

Elytra about one-fifth wider than base of pronotum; humeral trichomes prominent; inner edges of anterior and posterior elevations broad, strongly convex, their opposing edges with dense fringes of very short setae, nearly meeting; outer edges of humeral elevations less prominent, displaced laterally, a thin outer wall between them closing the trichome laterally; trichome opening round, its cavity deeper than floor of mediobasal elytral depression; outer edge of rounded opening finely carinate, without setae; anterior humeral groove large, deep, extending from humeral corners to anterior edge of lateral trichome opening; mediobasal depression with setose, blunt, transverse tubercles; elytral disk flat to weakly convex posteriorly, with very fine setae throughout, a few shallow, elongate punctures posteriorly; posterior elytral margin finely carinate, this carina continuous with blunter ridge extending forward to outer edge of trichome; epipleuron strigose, strigae converging to trichome.

Mesosternum short, about 5 × as wide as median length, bluntly projecting at middle, more acutely projecting at sides, in front of mesocoxae; disk sparsely punctate and finely setose; mesometasternal suture impressed; median metasternal suture very finely elevated; metasternal disk sparsely and finely punctate; 1st abdominal sternite similar in texture. Legs short, rather broad, impunctate, with minute setae; outer surface of profemur with well developed oblique carina; meso- and especially metafemora with margins arcuate; tibiae angulate at basal one-third; tarsi laterally compressed.

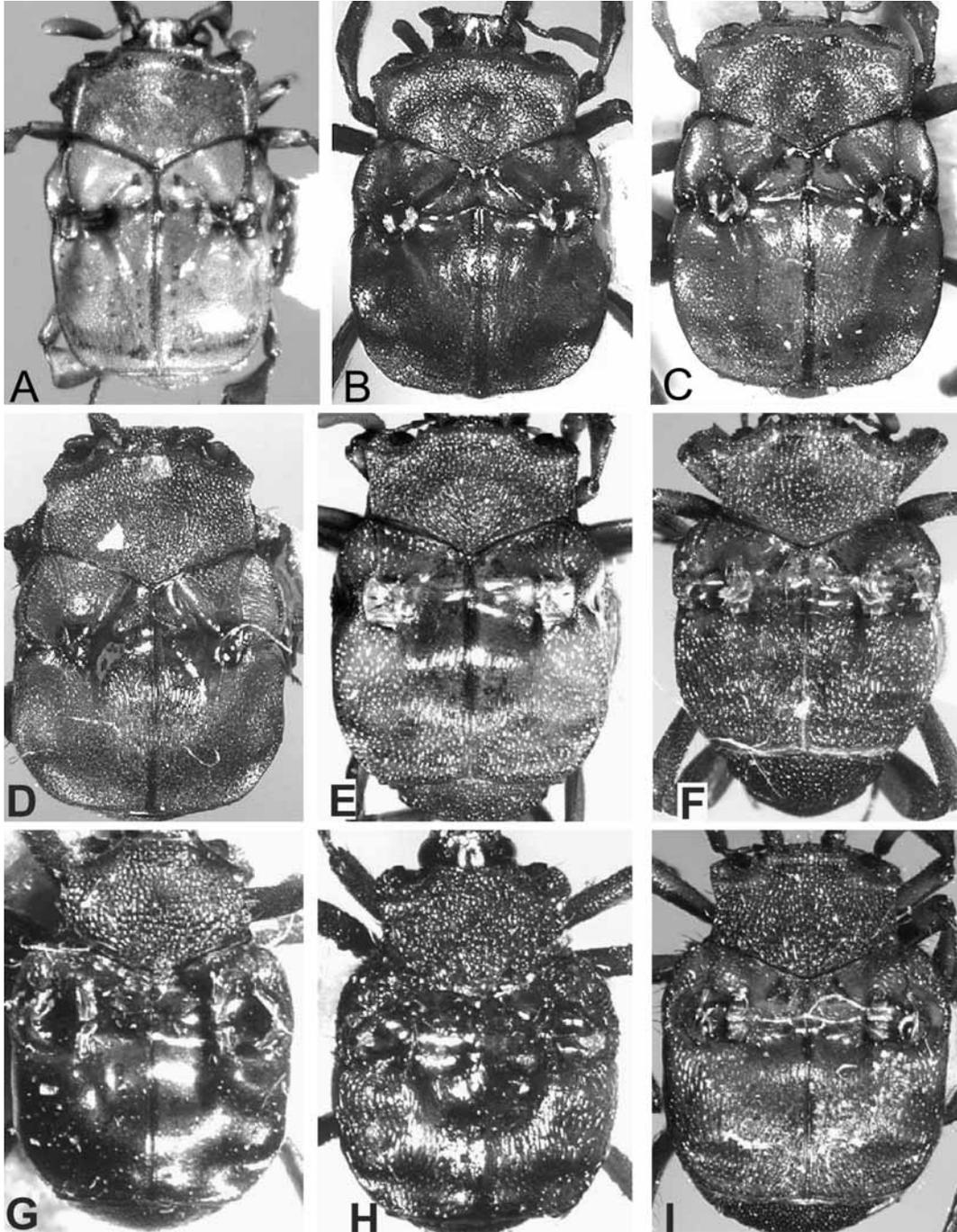


FIG. 19. Dorsal views of *Chlamydopsis* spp. A, *C. convexa*. B, *C. striatella*. C, *C. formicicola*. D, *C. dispersa*. E, *C. weiri*. F, *C. crowcrofti*. G, *C. latipes*. H, *C. macmillani*. I, *C. nullarbor*.

Propygidium about $1.2 \times$ as long as pygidium, shallowly depressed along anterior margin, otherwise evenly convex, with sparse, very shallow punctures, finely setose; pygidium nearly flat, weakly depressed posterolaterally, faintly punctate.

REMARKS. The name of this species refers to the anterior convexity of the humeri.

***Chlamydopsis striatella* Westwood, 1869**
(Figs 19B, 20B, 21)

Chlamydopsis striatella Westwood, 1869: 318; Type locality 'Swan River' [WA]; type specimen not located, sought at Oxford in 2001.

REMARKS. It is extremely unfortunate that the identity of this species, the type of the genus, seems terminally uncertain. Westwood's type specimen seems to be lost. Although the species was illustrated by Westwood, not all diagnostic characters are clearly visible. The only clues we have to the its identity come from a debate in the literature (Lea, 1912, responding to Lewis, 1910). Lewis removed *C. striatella* and *C. formicicola* King from synonymy, and offers characteristics for separating them from each other and from *C. inquilina* Lewis. Lea agreed with removing the two species from synonymy, but goes further to suggest that Lewis is incorrect concerning the identity of *C. striatella*. Lea cited specimens of *C. striatella* from only Western Australian localities (Swan River [1912], and Fremantle [1910]), and apparently bases his identification on the fact that Swan River is the published type locality of *C. striatella*. Lewis's *C. striatella*, on the other hand, has only been reported from the southeastern part of the continent. Geography would seem to favor Lea's concept. However, I have studied specimens from both authors' collections, and Lewis's determination (as a species close to *C. formicicola*) is a much better match to Westwood's figure than is Lea's determination; the Fremantle specimen cited above, housed at SAM, though lacking prothorax and head is identifiable as a member of the *ectatommae* species group, and shares no obvious similarities with Westwood's figure. Ultimately, as neither author makes reference to having studied a type of any kind, this identity may be unknowable. But for the present, Lewis's conception is considered more likely correct. That being said, I have been unable to discern any differences between Lewis's specimens of *C. striatella* and *C. formicicola* King (and cite his specimens under the latter species).

RECORDS (assuming the identity asserted above holds). WAM: NSW: Tahmoor.

***Chlamydopsis formicicola* (King, 1869)**
(Figs 19C, 20C, 21)

Chlamydopsis formicicola King, 1869: 74; Lectotype, hereby designated: *Byzenia formicicola* RLK, ants nests, Liverpool, NSW./ K26343; AMS, examined, 2001; 2 paralectotypes, same data as type; AMS.

Chlamydopsis formicicola var. *darwinensis* Lea, 1918: 85; Mazur, 1984: 110.

RECORDS. NHM: NSW: Glen Jones, 14.vii.1921; NSW: Sydney. AMS: NSW: Sydney; NSW: Liverpool. QMB: 23°32'S 147°18'E, Bogantungan, 13.5km N, 26.x-17.xii.2000, 880m, DC & GM, Ironbark woodland, FIT, 9825. Lea (1925): nests of *Camponotus aeneopilosus*, Brooklyn, Hawkesbury River [both NSW]. Oke (1923): Vic: Sea Lake; Vic: Bendigo.

DIAGNOSIS. L: 2.74; W: 1.00; E/Pn L: 1.75; E/Pn W: 1.13; Pn W/L: 1.66; E L/W: 0.93; Pr/Py: 1.10; Sterna: 0.69, 0.16, 0.75; Tibiae: 1.06, 1.21, 1.40. This species is similar and closely related to *C. dispersa* sp. nov., described in full below. The most diagnostic difference is in the shape of the humeral trichome. In *C. formicicola*, its dorsal opening is larger, occupying most of the apex of each elevation (rather than just the inner half). The anterior superficial groove is deeper, and the anterior surface of the elevation is flat on each side of this groove, and shallowly inclined toward it. A small tubercle present in this groove in *C. dispersa* is not evident in *C. formicicola*. In addition the pronotal disk of *formicicola* is less densely punctate, although the punctuation is still rather dense, and the apices of the elytra are fringed with setae. (In the Queensland specimen, much of the body is sparsely setose; other specimens are otherwise bare).

REMARKS. King (1869) originally described this species in the Byrrhidae. The reported host, *Camponotus aeneopilosus* remains a valid species, but with two subspecies, both apparently within the range of *C. formicicola*. There is some possibility that the following species represents the male of *C. formicicola*; see Remarks below.

***Chlamydopsis dispersa* sp. nov.**
(Figs 19D, 20D, 21, 29G)

MATERIAL. HOLOTYPE ♂: 12.48S, 132.42E, Nourlangie Ck, 8km N. of Mt Cahill, N.T., 19.xi.1972, M.S.Upton; in ANIC. PARATYPES (13): 1 ex.: same data as holotype; 1: same but 26.x.72, at light, E.B. Britton; 2 ex.: NT: 12.47S, 132.51E, 19km NE. by E. of Mt Cahill, 16.xi.1972, MU; 1: NEQ: 23km E. of Mareeba (Kanervo Rd), 29.i.1989, A. Howden, at light; 1 ex.: NEQ: Mt Spec, i.69; 2 ex.: NT: Tindal, 14.31 S 132.22E, 1-20.xii.1967,

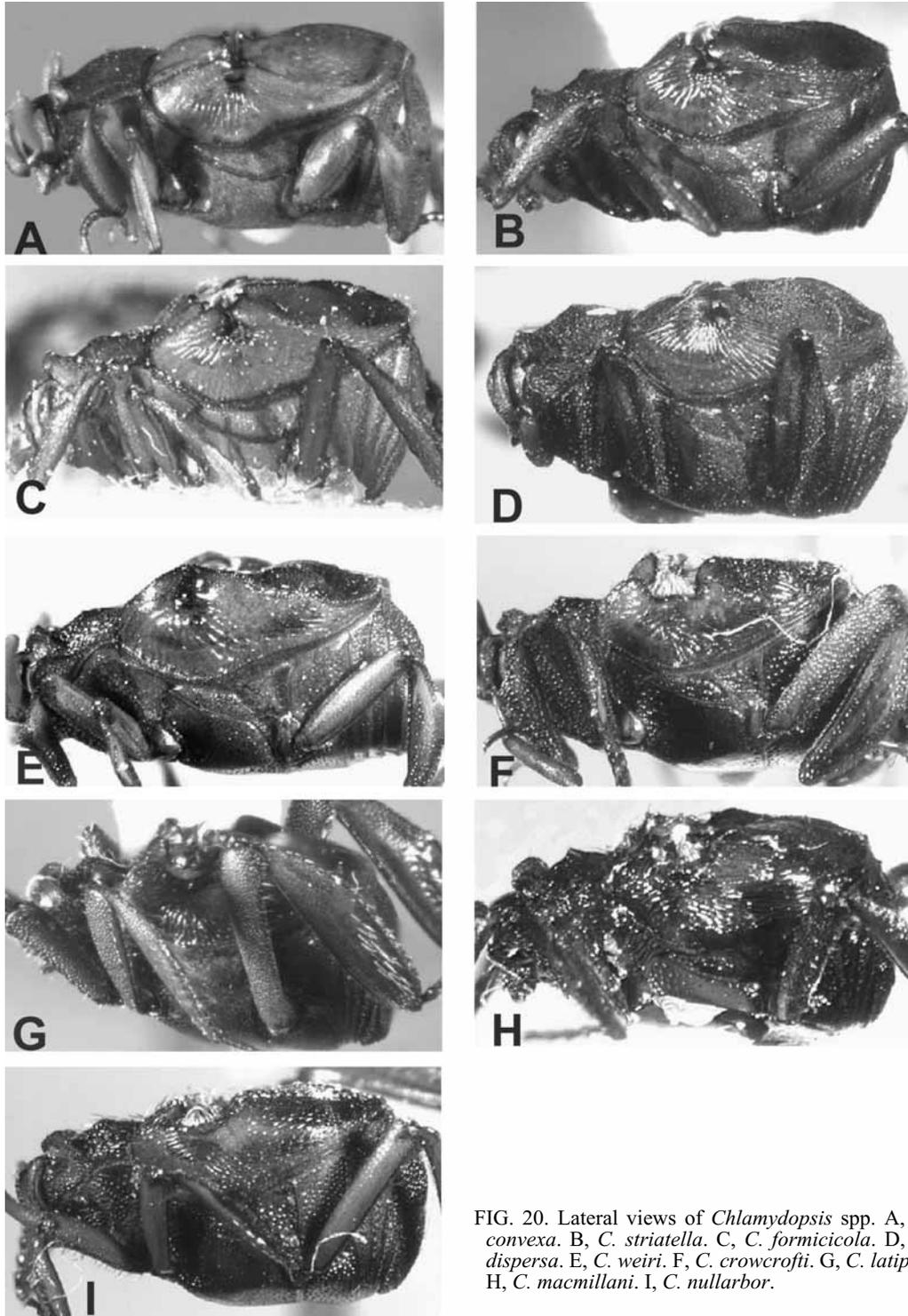


FIG. 20. Lateral views of *Chlamydopsis* spp. A, *C. convexa*. B, *C. striatella*. C, *C. formicicola*. D, *C. dispersa*. E, *C. weiri*. F, *C. crowcroftii*. G, *C. latipes*. H, *C. macmillani*. I, *C. nullarbor*.

light trap, W.J.M. Vestjens; 1 ex.: NT: 16.28S 136.09E, 46km SSW of Borroloola, 28.x.1975, MU; 1 ex.: NT: Muriella Park, Kakadu, 18.v.1987, Fay & KH, at UV light; 1 ex.: NT: Kakadu NP, S. Alligator R., Gungaree RF, 17.xii.1993, uv light, S&J Peck; 1 ex.: NT: Kakadu NP, North Point, RF FIT, 24.xii-7.i.1993, S&J Peck; 1 ex.: N. Qld: Edungalba, 14.xii.1988, H&A Howden; in ANIC, DPIM, QMB, CMN, MSCC.

DIAGNOSIS. See under *C. formicicola*, above.

DESCRIPTION. L: 2.68; W: 1.03; E/Pn L: 1.61; E/Pn W: 1.19; Pn W/L: 1.58; E L/W: 0.85; Pr/Py: 1.26; Sterna: 0.75, 0.16, 0.81; Tibiae: 1.03, 1.15, 1.31. Body dark rufescent, subquadrate; with dense microsculpture between punctures; frons about $1.2\times$ as long as wide, sides nearly straight, narrowed abruptly at antennal insertions and gradually to apex; clypeolabral suture straight; disk densely punctate, with both large and intermingled smaller punctures, ground texture between punctures somewhat granulate; labrum rounded; antennal scapes widest about one-third from base, abruptly narrowed to base, gradually narrowed to rounded apex; antennal club of male $1.5\times$ as long as scape.

Prothorax about $1.5\times$ as wide as long, sides margined, widening slightly towards front; anterior pronotal margin strongly elevated, tripartite, with the lateral portions angled back obliquely from transverse medial portion, lateral portions slightly arcuate; pronotal disk strongly depressed behind anterior margin, convex in posterior half, strongly elevated, subacute at middle; disk densely and uniformly punctate, the punctures somewhat convergent toward scutellum.

Prosternum with anterior margin strongly grooved, this groove curving posteriorly at sides and continuous with circumcoxal stria; anterior margin slightly deflexed, sinuate, acutely projecting on each side of middle; prosternal keel narrowed posteriorly, acutely emarginate at apex; prosternal disk densely punctate throughout.

Elytra together about as wide as long, sides rounded, widest behind middle; humeral trichomes prominent, occupying outer two-thirds of each elytron; anterior elevation broadly raised, anterior surface transversely concave, with oblique superficial groove from anterolateral corner; superficial groove with very small tubercle anterior to where the groove widens around mesal opening of trichome; mesal opening nearly circular, with setose fringe which continues straight down inner edges of anterior

and posterior elevations; trichome with conspicuous lateral notch as well, this (in lateral view) bent obliquely posterad; outer edge of posterior elevation continuous with low marginal carina which continuous around posterior elytral margin; elytral disk strongly depressed between trichomes, impunctate within depression, with low arcuate carina from elytral suture to base of trichome opening; disk elsewhere densely punctate (strigose near middle) and microsculptured in the intervening space, except smooth on trichome elevations, particular the anterior.

Mesosternum about $3\times$ as wide as median length, anterior margin sinuate, projecting medially; anterior and lateral margins subcarinate; disk raised along longitudinal midline, finely but densely punctate; mesometasternal suture impressed; metasternum convex, with small punctures separated by slightly more than their widths throughout, but denser along midline and posteriorly; 1st visible abdominal sternite densely punctate anteriorly, more sparsely so posteriorly, the more posterior punctures each bearing minute seta; legs slender, elongate; pro- and mesotibiae bluntly angulate about one-third from base; metatibial margin simply rounded; outer surfaces of all legs more or less uniformly covered with setigerous punctures, the tibiae more finely microsculptured toward outer margins.

Propygidium about one-third longer than pygidium along midline, weakly depressed along anterior margin, otherwise strongly convex; pygidium flat to slightly convex; propygidium and basal half of pygidium densely punctate and microsculptured, the apical half of pygidium very sparsely punctate.

REMARKS. The two Queensland specimens of this species are markedly broader than those from Northern Territories, but differ in no other obvious characters. The entire type series consists of males, while, where checked, the few *C. formicicola* specimens examined have all been females. Their known distributions nearly abut in central Queensland, prompting the possibility that the two species are sexes of the same species. However, the differences between them would not correspond to any other known *Chlamydopsis* dimorphisms. The name of this species alludes to its relatively broad distribution.

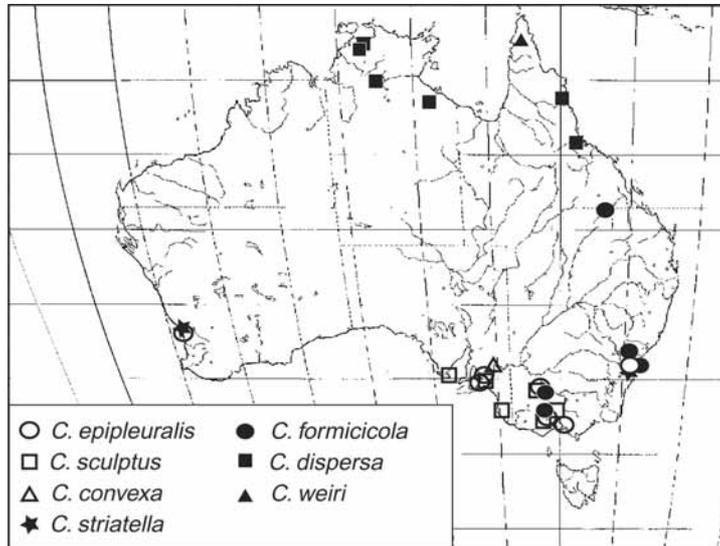


FIG. 21. Collecting records for species of *Chlamydopsis epipleuralis* group.

***Chlamydopsis weiri* sp. nov.**
(Figs 19E, 20E, 21)

MATERIAL. HOLOTYPE ♂: 12.39S142.42E Qld, 4km NE Batavia Dns. 16 Sept.-24 Oct. 1992, FIT, P. Zborowski & T. Weir; in ANIC.

DIAGNOSIS. This species is similar to the preceding two, sharing an upturned anterior (but not lateral) pronotal margin and fairly simple, rounded, mesally open trichomes, the anterior elevations of which are broad and more or less flat. The outer border of the trichome opening is subacutely elevated in the present species, and smooth on its outer surface, whereas in the preceding two, while the trichome is closed laterally, a shallow groove extends laterad from the trichome opening to a deep epipleural invagination.

DESCRIPTION. L: 2.62; W: 0.97; E/Pn L: 1.71; E/Pn W: 1.28; Pn W/L: 1.61; E L/W: 0.83; Pr/Py: 1.17; Sterna: 0.75, 0.16, 0.87; Tibiae: 0.97, 1.06, 1.18. Body rufescent brown; frons slightly wider than long, with sides broadly arcuate, slightly elevated relative to disk, acutely projecting near antennal insertions, disk coarsely reticulopunctate, glabrous; apical frontal margin shallowly emarginate; labrum rounded, shallowly punctate, with numerous very short setae along apical margin; antennal scapes strongly angulate one-third from base, basal portion of outer margin inwardly arcuate, apical portion mostly straight, narrowed

to rounded apex; antennal club of male about $1.5 \times$ as long as scape.

Pronotum $1.75 \times$ as wide as long, narrowest at base, widening slightly to intersection with lateral portions of anterior pronotal margin; sides margined, disk slightly depressed along margin; anterior margin strongly elevated, the medial portion interrupted by a notch at middle and at sides; lateral portions projecting forward slightly beyond medial portion, arcuate to sides; disk convex, with very short, faint transverse median carina densely punctatostrigose, with minute setae interspersed, the strigae converging toward scutellum.

Prosternum with anterior margin deflexed, deeply grooved, sinuate and bluntly projecting on either side of middle, the marginal groove curving posteriorly at sides and merging with circumcoxal stria; prosternal disk transversely depressed behind anterior margin, and somewhat longitudinally depressed between procoxae; edge of proleg depression strongly carinate, and with deep groove along inner margin of this carina from apex of keel around to sides; keel narrowest between procoxae, slightly widened to apex, emarginate apically; prosternal disk densely punctate throughout.

Elytra about $1.4 \times$ as wide as base of pronotum, sides more or less parallel, evenly narrowed to base and apex; humeri strongly elevated, particularly at sides, with lateral 'wall' slightly overhanging trichome opening; trichome open mesally, anterior and posterior edges parallel, outer edge more rounded, lined with nearly continuous fringe of setae (though anterior, lateral, and posterior fringes are interrupted underneath overhanging side), those of the inner anterior corner and outer edge longest; anterior humeral grooves, nearly straight, extending from humeral corner to anterolateral corner of trichome opening; mediobasal elytral depression occupying slightly less than basal half, smooth, with prominent, arcuate, transverse carinae; elytral disk outside of depression densely punctatostrigose, slightly elevated near posterolateral corners; apical elytral margin

carinate, carina diverging from margin at sides, and extending forward about one-fourth of elytral length.

Mesosternum about $4 \times$ as wide as long, raised along midline, depressed at sides, acutely projecting at middle, disk punctate; meso-metasternal suture strongly impressed, crenulate, continuous at sides with postmesocoxal line; longitudinal metasternal suture shallowly impressed, complete; metasternal disk uniformly but sparsely covered with small punctures, interstices microsculptured, faintly alutaceous; 1st abdominal sternite similarly sculptured, though punctures smaller. All legs short, slender; tibiae angulate near basal one-third; outer surfaces of profemur and tibia sparsely punctate, meso- and metafemora and tibiae with smaller punctures, most with minute setae.

Propygidium depressed along anterior margin, strongly convex along midline, depressed at sides, disk coarsely reticulopunctate; pygidium slightly convex, densely punctate in basal one-half, more sparsely apically.

REMARKS. This species is named in honour of Tom Weir, who collected the type and has offered considerable assistance during this study.

***Chlamydopsis crowcrofti* sp. nov.**
(Figs 19F, 20F, 24)

MATERIAL. HOLOTYPE ♂: 34.21S 139.31E SA, Brookfield Con. Pk., 12 Sept.-20 Oct. 1991, J.Stelman, S.Williams, F.I.T.#2/ F.I.T. ANIC 1206 mallee #2; in ANIC. PARATYPE: 1 ♂: same data as holotype but 7.x-7.xi.1992; in ANIC.

DIAGNOSIS. This and the following five species form a relatively distinctive grouping (referred to here informally as the '*latipes* subgroup'), united by humeral trichome shape. In all the inner edges of the anterior and posterior elevations of each trichome are well separated from each other, but have opposing bundles of setae which nearly or actually touch, while laterally the trichome is flat, broadly rounded, bearing an arc of marginal setae projecting mesally above an internal 'shelf', which variously conceals the opening of the trichome. In addition, all have the pronotum at least slightly acutely tuberculate, the anterior pronotal margin (but not the lateral) elevated, and metatibiae moderately to markedly elongate. The present species is distinguished from the others principally by the form of the anterior superficial groove of the trichome, which is slightly 'undercut' toward the outside, such that the outer

edge of the groove is strongly carinate, while its inner edge is nearly flat and noncarinate. The sparse dorsal setae are more conspicuous, particularly on the posterior portions of the elytra, than in any other species in this group.

DESCRIPTION. L: 2.71; W: 1.00; E/Pn L: 1.72; E/Pn W: 1.26; Pn W/L: 1.78; E L/W: 0.76; Pr/Py: 1.24; Sterna: 0.78, 0.28, 0.93; Tibiae: 1.21, 1.43, 1.74. Body rufescent, somewhat rounded, almost entirely densely reticulately punctate, with sparse, elongate setae throughout; frons about as long as wide; sides rounded, gradually narrowed to apex, abruptly narrowed at antennal bases; apical margin very slightly sinuate; frontal disk reticulate, bearing ~5 irregularly placed long setae; labrum rounded, nearly semicircular, reticulate, with anterior fringe of shorter setae; outer basal surfaces of mandibles reticulate; antennal scape with inner margin arcuate, outer margin angulate, widest about one-third from base, reticulate; antennal club of male $1.3 \times$ as long as scape.

Prothorax $1.5 \times$ as wide (at base) as median length; sides margined, parallel in basal two-thirds, abruptly widened in apical third, with sparse setal fringe; anterior pronotal margin strongly elevated, the lateral thirds arcuate, oblique to medial third and slightly projecting forward of it where they meet; median portion not quite as high as lateral, distinctly notched at middle; pronotal disk shallowly depressed behind anterior margin, convex posteriorly, weakly acutely produced at middle; disk entirely reticulopunctate, the posteromedial reticulae slightly more elongate, converging toward scutellum; disk with sparse elongate, though mainly decumbent, setae.

Prosternum with anterior margin deflexed, deeply grooved, sinuate and bluntly projecting on either side of middle, the marginal groove curving posteriorly at sides and merging with circumcoxal stria; prosternal disk transversely depressed behind anterior margin, convex posteriorly between procoxae; prosternal keel narrowed to between coxae, then slightly widened to apex, apex deeply emarginate; entire prosternal disk reticulate.

Elytra approximately $1.5 \times$ wider than base of prothorax; sides of elytra slightly sinuate, slightly wider anteriorly, rounded to apex; humeral trichomes prominent, their openings nearly circular, broadly open mesally (and beneath), with a lateral arc of dense, erect setae, and separate opposing dense bunches of setae on the

inner edges of the posterior and anterior elevations; shelf above opening where lateral trichomal setae are inserted open in lateral view; anterior elevation subacutely produced, with deep, almost straight superficial groove extending from anterolateral elytral corner to outer edge of trichome opening, this groove slightly undercut toward the outside such that its outer edge is overhanging; basal elytral depression with two arcuate carinae from elytral suture behind scutellum to anterior edge of opening of trichome; posterior half of elytra unevenly convex, surface undulated in posterolateral corners; posterior elytral margins carinate, these carinae diverging from margin at posterolateral corners and extending about one-fifth around the side before diminishing.

Mesosternum about $3\times$ as wide as median length; anterior margin sinuate, projecting at middle; mesosternal disk depressed in anterior corners, elevated at middle, uniformly reticulate; mesometasternal suture crenulately impressed; metasternum only very sparsely and finely punctate, with faint alutaceous microsculpture; postmesofemoral line ending short of metepisternum; 1st visible abdominal sternite with conspicuous row of small punctures along anterior margin, but more sparsely punctate behind; postmetafemoral line not well developed, ending behind coxa; femora widened to apex, exposed surfaces densely punctate, with setae along anterior and posterior margin; protibia slender, angulate about one-third from base, densely punctate on outer surface, approximately equal in length to profemur; meso- and especially metatibiae conspicuously (about one-sixth in the latter case) longer than their respective femora, widened, with dense punctures only along edges; mesotibia angulate one-third from base; metatibia rounded, only bluntly angulate near middle.

Propygidium $1.3\times$ longer than pygidium, slightly depressed along anterior margin, otherwise strongly convex, reticulopunctate, sparsely setose; pygidium convex, densely punctate in basal half, punctures slightly more widely spaced in most of apical half.

REMARKS. This species is named for renowned mammologist Peter Crowcroft, in recognition of his role in establishing Brookfield Conservation Park, type locality of this and several other *Chlamydopsis* species. Although his primary concern at the time was the southern hairy nosed

wombat (*Lasiorhinus latifrons*), numerous additional species benefit from his efforts.

***Chlamydopsis latipes* Lea, 1919**
(Figs 19G, 20G, 24)

Chlamydopsis latipes Lea, 1919: 176; HOLOTYPE ♀: *latipes* Lea Type, Mt Henry/ *Chlamydopsis latipes* Lea, W. Australia Type, 10675; mounted with 2 hosts, reportedly *Dolichoderus (Hypoclinea) scabridus* (Lea, 1919); SAM, examined, 2000.

MATERIAL. WAM: WA: Chidlow's Well [31°86'S, 116°26'E], 22.v.1953, in association with *Rhytidoponera convexa*, under stone very dull day, quiescent in gallery, East aspect. Lea (1925): WA: Armadale [32°09'E, 116°00'S], *Rhytidoponera convexa violacea*.

DIAGNOSIS. L: 3.61; W: 1.40; E/Pn L: 1.58; E/Pn W: 1.59; Pn W/L: 1.29; E L/W: 0.77; Pr/Py: 1.19; Sterna: 0.93, 0.37, 1.21; Tibiae: 1.74, 2.12, 2.55. See above to diagnose the *latipes* subgroup. Within this group *C. latipes* itself is unique in having the elytra behind the trichomes virtually impunctate. While faint strigosity is detectable, it is inconspicuous at lower magnifications. However, apart from this character and its larger body size, *C. latipes* is very similar to the following, and there is a chance that they are sexes of the same species. There is precedent for this sort of dimorphism within *Chlamydopsis* (see *strigicollis* group above). But the two are known from no identical localities, and from too few specimens to be able to do more than suggest their identity.

REMARKS. As currently delimited, the ant *Dolichoderus scabridus* does not occur in Western Australia. This host record may refer to what is now called *D. ypsilon ypsilon*, a Western Australian species with *D. scabridus ypsilon* as a synonym. Interestingly this species and the hosts of the nontype records are in different formicid subfamilies.

***Chlamydopsis macmillani* sp. nov.**
(Figs 19H, 20H, 24)

MATERIAL. HOLOTYPE ♂: Perth, John Forrest National Park, Darling Range, Western Australia, Sept. 1974, G.H. Lowe/ in nest of *Rhytidoponera violaceum* – in midst of ants/ Western Australian Museum Entomology Reg no. 27236/ *Chlamydopsis*, is close to *C. latipes*, Det. R.P. McMillan; in WAM.

DIAGNOSIS. See above for group diagnosis of the *latipes* subgroup. This species is distinguished by having the lateral portion of the humeral trichome broadly rounded, and with relatively inconspicuous internal shelf, such that

nearly the entire lumen of the trichome is visible from above. The smaller size and reticulostrigose elytra of *C. macmillani* distinguish it from *C. latipes*. Its evenly impressed superficial humeral groove, and glabrous pygidium and posterior elytral disks distinguish it from *C. crowcrofti*.

DESCRIPTION. L: 2.83; W: 1.06; E/Pn L: 1.68; E/Pn W: 1.47; Pn W/L: 1.50; E L/W: 0.76; Pr/Py: 1.09; Sterna: 0.78, 0.28, 1.00; Tibiae: 1.37, 1.46, 1.81. As for *C. crowcrofti*, above, except: dorsum with few setae on pronotal disk, lateral pronotal margins, and on anterior surfaces of humeri, otherwise glabrous; sides of pronotum inwardly arcuate, nearly as wide at apex as at base. Humeral trichomes with openings C-shaped, open mesally, with opposing dense bundles of short setae closing the 'C', outer fringe of setae occupying most of lateral arc, with arcuate groove above and lateral to fringe, and short, inconspicuous inner shelf beneath it; floor of trichome lumen smooth, glabrous, continuous between trichomes; superficial humeral groove of humeral trichome evenly incised, with inner and outer edges carinate. Metasternal disk with sparse but conspicuous small punctures, these denser along posterior half of longitudinal metasternal suture; punctures of 1st visible abdominal sternite not appreciably concentrated along anterior margin, but fairly evenly distributed, separated by 1-2 × their widths; meso- and metatibiae not longer than their respective femora, outer meso- and metatibial punctures largely confined to basal one-third of their lateral margins. Propygidium and pygidium glabrous.

REMARKS. This species is named in honor of Peter McMillan, a long-time chlamydopsine collector and enthusiast, who recognised that this species was undescribed.

***Chlamydopsis nullarbor* sp. nov.**
(Figs 19I, 20I, 24, 29F)

MATERIAL. HOLOTYPE ♂: 32.08S 126.18E, 23km ESE of Cocklebidy WA, 25.x.1977, J.F.Lawrence/berlesed from leaf litter; in ANIC.

DIAGNOSIS. This member of the *latipes* subgroup is most easily distinguished by characters of the humeral trichome. The lateral arc of setae arises in a discrete single row, with conspicuous flat, impunctate shelves both mesal and lateral to it. Approximately the outer half of the lumen of the trichome is obscured by this inner shelf, but no carina arises from the

transverse elytral depression to close the lumen medially (as is the case in the following two species). The most similar known species is *C. latipes*, which may be immediately distinguished by its impunctate elytra.

DESCRIPTION. L: 3.18; W: 1.15; E/Pn L: 1.76; E/Pn W: 1.52; Pn W/L: 1.51; E L/W: 0.76; Pr/Py: 1.19; Sterna: 0.93, 0.34, 1.18; Tibiae: 1.50, 1.65, 2.02. As for *C. crowcrofti*, above, except: Posterior half of elytra, and propygidium and pygidium lacking setae; pronotum barely notched at middle; most setae of pronotum actually bundles of two setae; humeral trichome broadly rounded, slightly narrowed mesally, with anterior and posterior bundles of mesal setae meeting; outer arc of setae projecting inward above curved shelf, concealing slightly more than outer half of lumen of trichome; also with impunctate shelf outside of outer setal arc, delimited laterally by an elevated outer margin; transverse basal elytral depression glabrous across middle, with a few punctures beneath inner edge of trichome opening; posterior half of elytral disk reticulostrigose; metasternal disk evenly punctate along anterior and posterior margins, and along median longitudinal suture, lateral portions of disk much more sparsely and finely punctate; 1st visible abdominal sternite sparsely punctate at middle, more densely so towards metacoxae; pygidial punctures smaller but no less dense toward apex.

REMARKS. This species name is the region of the type locality. Latin reference to the lack of tall trees in the area.

***Chlamydopsis rotunda* sp. nov.**
(Figs 22A, 23A, 24)

MATERIAL. HOLOTYPE (QMT108593) ♀: 12.40S 142.39E Qld, 3km W Batavia Downs, 16 Sep - 24 Oct 1992, Flight Intercept Trap, P.Zborowski & T.Weir, in QMB.

DIAGNOSIS. This species and the following can be separated from the remainder of the *latipes* subgroup (see above) by the transverse basal elytral depression between the trichomes. In both of these it rises from the middle to the sides, ending, beneath the inner edges of each trichome, as a short longitudinal carina which almost meets an impunctate shelf extending inward from beneath the outer setal arc of the trichome. The lumen of the trichome is thus only visible as a short notch between these, though it is more broadly open beneath. In other species in this subgroup the basal elytral depression is

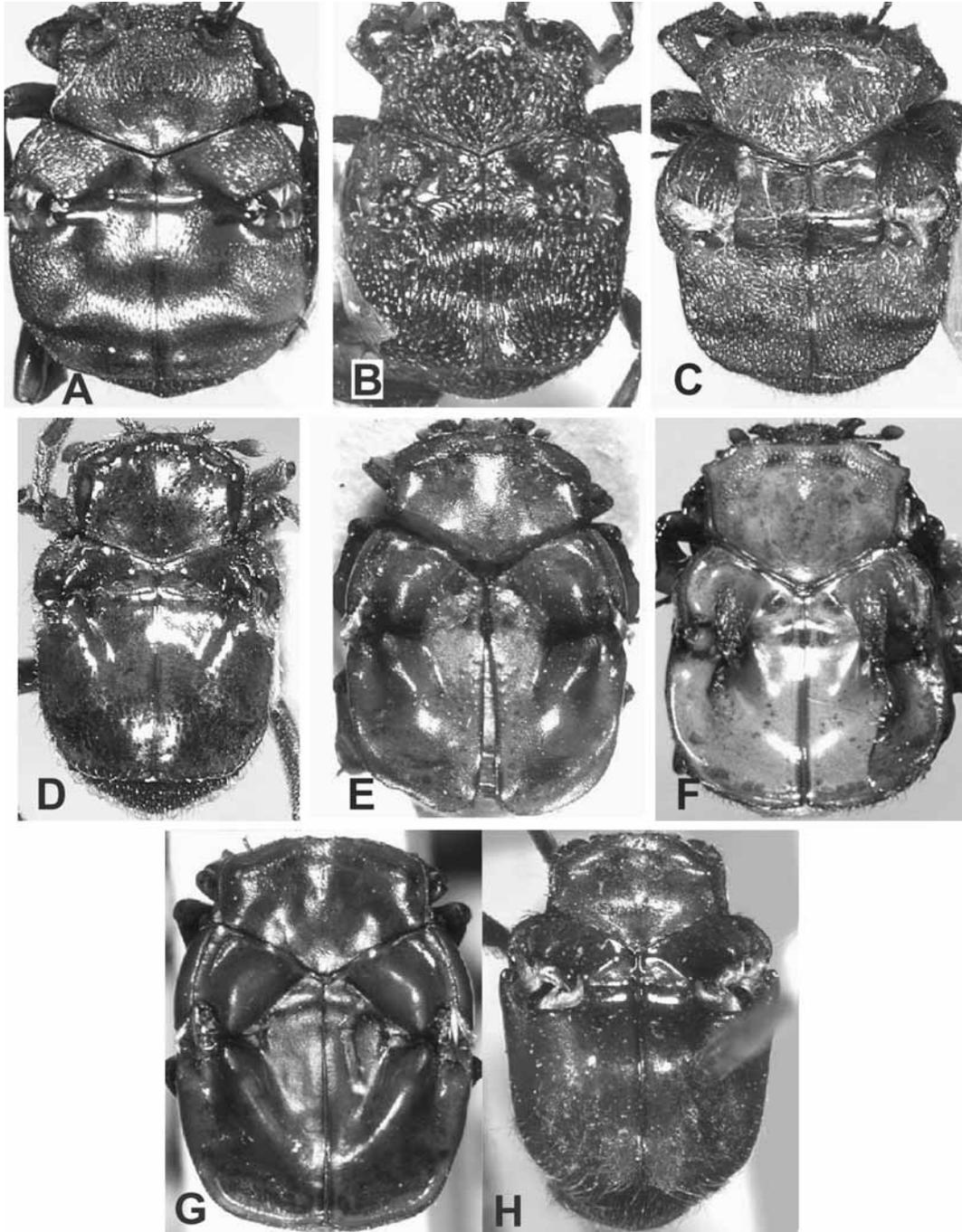


FIG. 22. Dorsal views of *Chlamydopsis* spp. A, *C. rotunda*. B, *C. latipennis*. C, *C. carinota*. D, *C. inquilina*. E, *C. detecti*. F, *C. storeyi*. G, *C. matthewsi*. H, *C. cavicollis*.

continuous with the trichome lumen, and not separated from it by a carina. The meso- and metatibiae of these two species are also not as distinctly widened as those of any of the above species. *Chlamydopsis rotunda* is distinguished from *C. latipennis* by the former's: lack of strigosity in the posteromedial half of the pronotum, more lightly strigose elytra, lack of propygidial and pygidial discal setae, and densely granulose (rather than reticulopunctate) pygidia.

DESCRIPTION. L: 3.55; W: 1.25; E/Pn L: 1.85; E/Pn W: 1.41; Pn W/L: 1.65; E L/W: 0.80; Pr/Py: 1.20; Sterna: 0.93, 0.34, 1.21; Tibiae: 1.37, 1.56, 1.84. Body dark rufescent, broadly subquadrate; sculpture varied from shallowly and finely strigose (elytra) to coarsely reticulostriate (anterior half of pronotum); frons as wide as long, sides rounded, deeply reticulopunctate, with two prominent setae near anterior margin (number may vary in other individuals); labrum rounded, punctate; antennal scape arcuate, outer margin sinuate, widest just before middle; antennal club of female two-thirds length of scape.

Prothorax $1.6 \times$ wider than median length, sides margined, very slightly narrowed anteriorly; anterior pronotal margin elevated, the inner half of supra-antennal portions most strongly, less so at middle and at sides; pronotal disk depressed behind anterior margin, particularly strongly behind junction of median and lateral portions of margin, acutely projecting at middle and faintly convex behind middle; disk deeply reticulostriate in anterior half, more shallowly so posteriorly, nearly smooth in much of posterior half.

Prosternum with anterior margin deeply grooved, this groove curved posteriorly and joining circumcoxal stria at sides; margin acutely projecting on either side of middle; prosternal keel narrowed posteriorly, acutely emarginate at apex; carina separating disk from protibial depressions prominent; disk densely and coarsely punctate.

Elytra $1.3 \times$ as wide as pronotum, sides parallel, approximately equally rounded to base and apex; humeral trichomes low, transversely ovoid, close to lateral margins, the opening itself limited to a short longitudinal notch, largely concealed; trichome with setose fringe around outer half of edge, this fringe nearly meeting elytral margin; inner edges of trichome elevations with small bundles of obliquely opposing setae (which do not meet in type); basal

elytral depression broad, with transverse carina connecting anterior elevations of both trichomes; elytral disk undulated in posterolateral corners, coarsely strigose in anterolateral corners, much more finely strigose elsewhere; posterior margins of elytra not carinate.

Mesosternum projecting at middle, elevated along midline, anterior and lateral edges raised, otherwise depressed, coarsely punctate; meso-metasternal suture crenulately impressed; metasternum mostly smooth, very finely and sparsely punctate, with faintly alutaceous microsculpture, mesofemoral line complete to metepisternum; 1st visible abdominal sternite similar in texture to metasternum, metafemoral line ending behind coxa; legs slender, not unusually elongate; outer surfaces of all femora impunctate; protibia angulate at basal third, punctate along outer margin; meso- and metatibiae moderately broad, bluntly angulate, margins rounded, with faint setigerous punctures along outer margin, otherwise impunctate.

Propygidium $1.25 \times$ length of pygidium, shallowly depressed along anterior margin, otherwise strongly convex; pygidium flat along posterior margins, but convex at middle; both propygidium and pygidium unusually textured, rather granulately rugose, the median apical third of the pygidium slightly smoother, both with fine erect setae.

REMARKS. The name of this species refers to its rotund body shape.

***Chlamydopsis latipennis* Lea, 1912**
(Figs 22B, 23B, 24)

Chlamydopsis latipennis Lea, 1912: 67; Lectotype, hereby designated: NW Austr/ On permanent loan from Macleay Museum University of Sydney/ *Chlamydopsis latipennis* Lea, Type, N.W. Australia, ANIC; examined, 2000.

RECORDS. ANIC: SA: Brookfield Con. Pk., 3-12.ix.1991, site 1 JL,TW&Dressler, pitfalls. This ♂ specimen is about $1.5 \times$ the size of the type, but is otherwise very similar.

DIAGNOSIS. L: 3.40; W: 1.25; E/Pn L: 1.73; E/Pn W: 1.48; Pn W/L: 1.53; E L/W: 0.77; Pr/Py: 1.28; Sterna: 0.93, 0.34, 1.12; Tibiae: 1.50, 1.62, 1.93. See diagnosis under the preceding species.

***Chlamydopsis carinota* sp. nov.**
(Figs 22C, 23C, 24)

MATERIAL. HOLOTYPE (QMT108594) ♂: 12.40S 142.39E Qld, 3km W Batavia Downs, 16 Sep - 24 Oct 1992, Flight Intercept Trap, P. Zborowski & T. Weir.

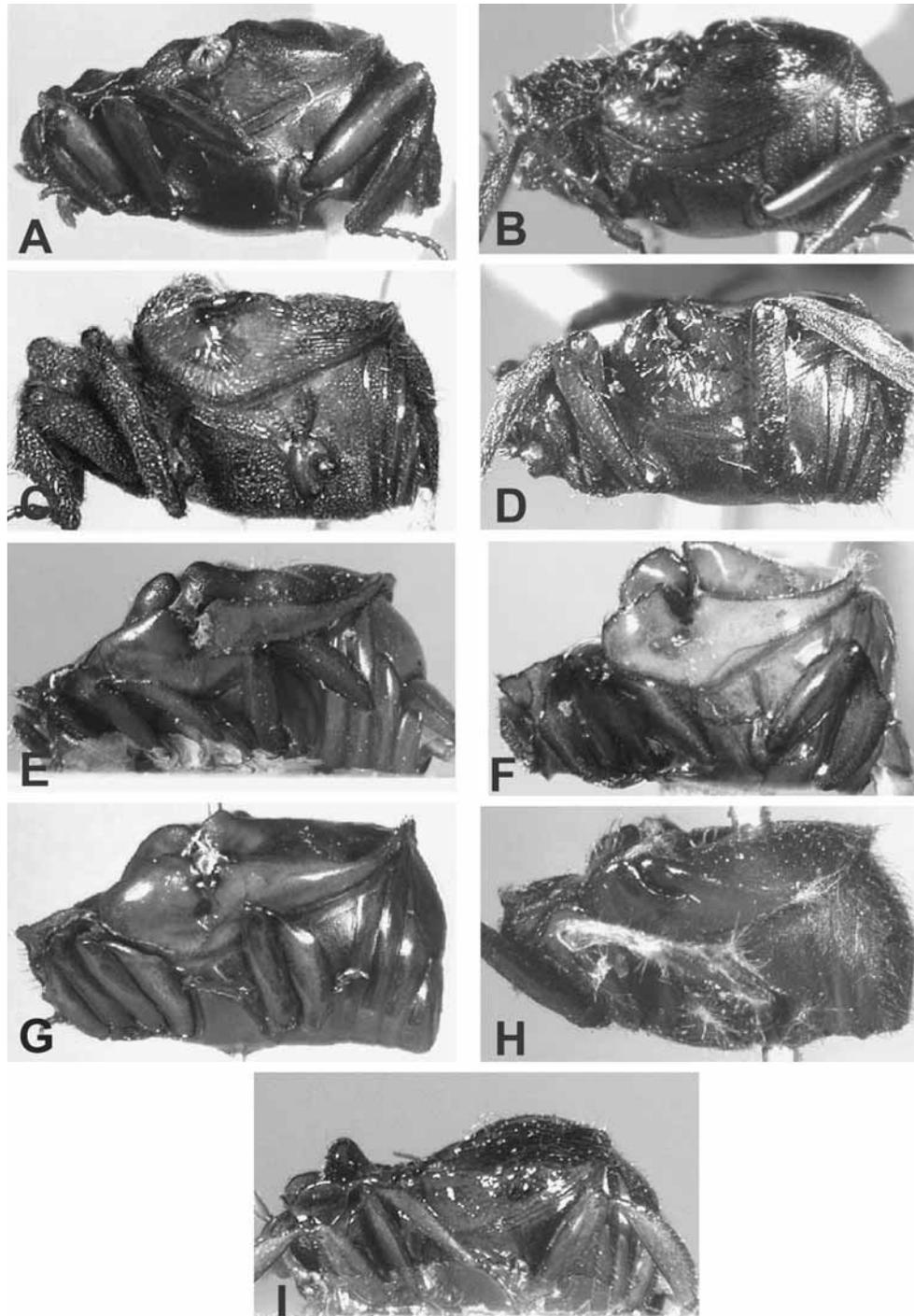


FIG. 23. Lateral views of *Chlamydopsis* spp. A, *C. rotunda*. B, *C. latipennis*. C, *C. carinota*. D, *C. inquilina*. E, *C. detecti*. F, *C. storeyi*. G, *C. matthewsi*. H, *C. cavicollis*. I, *C. tuberculata*.

DIAGNOSIS. This species is easily distinguished by the strongly upturned anterior pronotal margin, ubiquitous setae, punctatorugose metasternal disk, and prominent trichomes, which at their apices project laterally beyond the epipleuron.

DESCRIPTION. L: 2.80; W: 1.06; E/Pn L: 1.65; E/Pn W: 1.39; Pn W/L: 1.65; E L/W: 0.72; Pr/Py: 1.20; Sterna: 0.84, 0.25, 0.90; Tibiae: 1.31, 1.50, [metatibia missing]. Body light rufescent brown, all surfaces conspicuously and relatively densely setose; frons as long as wide, sides rounded, their edges slightly projecting, narrowed to base and apex; disk deeply reticulopunctate, setose; anterior frontal margin slightly rounded; labrum broad, anterior margin sinuate, projecting at middle, setose; outer bases of mandibles punctate, setose; antennal scapes arcuate, widest about one-third from base, narrowed to rounded apex, reticulopunctate and setose; antennal club of male $1.5 \times$ length of scape.

Prothorax $1.6 \times$ as wide as median length, sides rising from base, continuous with the strongly elevated anterior margin, the upper edges finely crenulate and setose; pronotal disk depressed behind anterior margin and at sides, convex along midline, more broadly so posteriorly, depressed mediobasally, with a small prescutellar tubercle; disk more or less evenly covered with setiferous punctures separated by about $3 \times$ their widths, the punctures larger and less widely separated in anterior corners.

Prosternum with anterior margin strongly grooved, deflexed, sinuate, projecting on each side; marginal groove curving away from margin at sides and joining circumcoxal stria; prosternal disk depressed behind anterior margin, slightly elevated between procoxae, narrowed posteriorly, acutely emarginate at apex, densely reticulopunctate and with sparse decumbent setae.

Elytra widest at humeri, with prominent, rounded humeral trichomes; opening of trichome oval, slightly oblique, transverse, open mesally, lined with fringe of setae; superficial groove of anterior elevation close to margin, with outer edge prominent, slightly undercut, inner edge poorly defined; trichome closed laterally, with outer edge folded over, projecting laterally beyond epipleuron; basal elytral depression broad, confined to less than basal half, low transverse carinae within; posterior half unevenly convex, undulating at sides, densely reticulostrigose and setose; posterior elytral margin finely carinate, slightly elevated.

Mesosternum $3 \times$ wider than median length, anterior margin sinuate, projecting at middle, disk more or less flat, reticulopunctate, setose; mesometasternal suture finely impressed, largely obscured by punctures; metasternal disk rather convex, densely punctate; mesofemoral line complete to, and continued on, metepisternum; 1st visible abdominal sternite entirely densely punctate, metafemoral line ending just behind metacoxa, not reaching side; legs all apparently elongate, rather slender (both metathoracic legs missing in unique type), densely punctate and clothed with long setae on outer surfaces; tibiae thickened along longitudinal axis, but abruptly thinner towards outer edge on exposed side (closely mirroring the tarsal groove on the concealed side).

Propygidium slightly longer than pygidium, depressed along basal margin but convex elsewhere.

REMARKS. The name of this species refers to its prominent, upturned anterior pronotal margin.

***Chlamydopsis inquilina* Lewis, 1885**
(Figs 22D, 23D, 27)

Chlamydopsis inquilina Lewis, 1885: 472; ?Type: Labelled: 'Liverpool N.S. Wales (ants' nests)'. The type locality cited here is from a specimen labelled as Lewis' type in the NHM. However the original description noted only 'Australia (Duboulay)' as a type locality. Lea (1919) notes that a later citation of the type from NSW (Lea, 1912) is likely in error, and that F.H. du Boulay's specimens all originated from Western Australia. Thus it is not certain that the NHM specimen labelled as type was in fact part of the original type series.

RECORDS. NHM: WA: Swan River; WA: Mt Lawley. WAM: Cannington, in nest of *Iridomyrmex conifera*, 15.x.1952. AMS: WA: Swan River. MCZ: WA: Swan River. Lea (1919): WA: Swan River, *Iridomyrmex conifera*.

DIAGNOSIS. L: 3.05; W: 1.18; E/Pn L: 1.58; E/Pn W: 1.35; Pn W/L: 1.37; E L/W: 0.86; Pr/Py: 1.35; Sterna: 0.78, 0.25, 0.87; Tibiae: 1.46, 1.53, 1.74. Several characters distinguish this isolated species: The pronotal and elytral disks lack impressed punctures, but the conspicuously alutaceous ground texture is peppered with small, round, untextured 'pseudopunctures'; the lateral pronotal margin appears 'doubled' by an unusually prominent, carinate circumcoxal stria; the outer wall of the humeral trichome is deeply incised and lacking a dense setal fringe; the medial portions of the pronotal and elytral disks are glabrous (except on the humeral trichomes) but bear long golden setae around their margins; the dense setae of the propygidium and pygidium

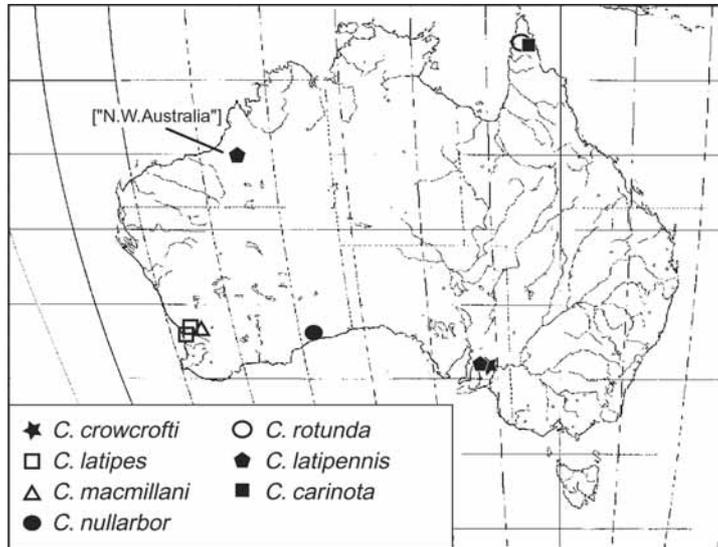


FIG. 24. Collecting records for species of *Chlamydopsis epipleuralis* group.

are much more conspicuous in this than any other species of the *epipleuralis* group.

REMARKS. Only one definite male of this species has been studied. At least that specimen was unusual among *Chlamydopsis* in lacking an elongate antennal club. It would be very interesting to determine whether this otherwise ubiquitous chlamydopsine dimorphism is truly lacking in this species. This male also possessed small dentiform metasternal processes near the posterior midline not observed in any other *Chlamydopsis*.

***Chlamydopsis detecti* Lea, 1914**
(Figs 22E, 23E, 27)

Chlamydopsis detecti Lea, 1914b: 215; Type: *detecti* Type Lea, Dawson R./ *Chlamydopsis detecti* Lea Queensland Type, 15575; SAM, examined, 2000.

DIAGNOSIS. *Chlamydopsis detecti* and the following two new species form a distinctive and closely related group. All are larger than average for the genus, and share several characters: strongly and continuously upturned anterior and lateral pronotal margins bearing conspicuous marginal setae; carinate and elevated posterior elytral margins which continue anteriorly along the lateral margin (in *C. storeyi* sp. nov. all the way to the trichome); humeral trichomes very prominent, dominated by rather narrow, strongly elevated inner edges, which meet at a vertical mesal cleft; mediobasal elytral depression large,

extending beyond middle of elytra. *Chlamydopsis matthewsi* sp. nov. is the most distinctive of these, being deep red in color and entirely glabrous dorsally (except along elytral and pronotal margins). *Chlamydopsis detecti* and *C. storeyi* are easily separated from each other by the shape of the pronotum (Fig. 22E vs 22F), which in the former is proportionally shorter, and rounded (rather than angulate) where the lateral and anterior margins meet. *Chlamydopsis storeyi* also bears prominent setae on the inner anterior elevation of the humeral trichome which are entirely lacking in *C. detecti*. However, it should be noted that *C. storeyi* is quite sexually dimorphic in surface setation

and sculpture, while *C. detecti* is known from only one (undetermined) sex.

DESCRIPTION. A few additional characters of this species are noteworthy. Body rufescent, not yellow; frons granulose, without reticulate sculpture, with scattered setae; antennal scape with few setae (or small setal bundles); pronotal margins elevated, the anterior margin mostly evenly rounded but shallowly notched at middle; pronotal and elytral surfaces granulate; humeral trichomes bare on anterior surface of inner elevation; anterior and posterior inner elevations rather broad, leaning slightly toward the outside (in anterior view), arcuate around mediobasal depression; outer elevations laterally carinate, with 'V'-shaped setose incision; anterior superficial humeral groove very deeply impressed, close to lateral margin, edges bare; mediobasal depression large, with rounded, setose basal tubercles; elytra with setae along posterior half of suture; posterior elytral margin strongly carinate, the carina continuous forward along posterior one-fourth of lateral margin.

REMARKS. The type specimen was collected from a nest of '*Iridomyrmex detectus*', which has since been split into several species, three of which (*I. purpureus* (Smith), *I. sanguineus* Forel, and *I. viridaeneus* Viehmeyer) apparently occur in the range of *C. detecti*. This species is known only from the holotype.

***Chlamydopsis storeyi* sp. nov.**
(Figs 22F, 23F, 27)

MATERIAL. HOLOTYPE (QMT108595) ♂: Australia: N WA, Kununurra, 22.XII.1991-5.I.1992, R. I. Storey, in QMB. PARATYPE ♀: same data as type.

DIAGNOSIS. See diagnosis above under *C. detecti*.

DESCRIPTION. L: 3.36; W: 1.34; E/Pn L: 1.51; E/Pn W: 1.37; Pn W/L: 1.40; E L/W: 0.79; Pr/Py: 1.39; Sterna: 0.87, 0.22, 0.84; Tibiae: 1.25, 1.34, 1.37. Body light yellow-orange, with legs, trichome apices, and most major carinae darker, rufescent; most normal body striae exaggerated, carinate; female with pronotum and elytral disks largely glabrous, with setae only around margins and toward apices of trichomes; male with pronotum and elytral disks sparsely but evenly setose; frons slightly wider than long, sides rounded, narrowed gradually to apex and abruptly at base, anterior margin slightly rounded; disk convex, slightly projecting at bases of antennae, irregularly reticulopunctate and with sparse, elongate setae; labrum semicircular, with several setae; outer bases of mandibles reticulopunctate and setose; antennal scapes arcuate, widest about one-third from base, but only slightly narrowed to rounded apex, disk coarsely punctate on outer edges, but only faintly punctured, micro-sculptured medially; antennal club of both male and female $0.6 \times$ length of scape.

Prothorax $1.3 \times$ as wide as median length, sides margined, widening towards the front; lateral and anterior margins continuously and strongly elevated, the lateral posteriorly diminishing in height, joining posterior margin which is finely carinate; anterior margin sinuate, notched at middle, subacute on either side of notch; pronotal disk strongly depressed behind margins, convex in posterior medial half, shallowly punctate on inner surfaces of marginal elevations as well as along anterior one-third of midline, elsewhere smooth; pronotum of female glabrous except for a few setae along lateral and anterior margins, that of male with sparse but conspicuous setae on entire disk, most of them curled over, forming a loop at their apices.

Prosternum with anterior margin deflexed, very deeply grooved, the groove joining circumcoxal stria at sides; lower edge of marginal groove projecting on either side of middle; circumcoxal stria strongly carinate, these becoming doubled by keel carinae in posterior half; keel narrowed posteriorly, acutely

emarginate at apex; prosternal disk sparsely punctate along anterior margin, elsewhere impunctate.

Elytra slightly wider than pronotum basally, wider towards apex; humeral trichomes very large; inner edges of anterior and posterior elevations rising vertically nearly as high as the body is deep, their opposing edges separate basally, converging, then slightly separated at apices, setose on inner margins and, less densely, on outer surfaces; outer edges of anterior and posterior trichome elevations rising only about one-third as high as inner edges, separated from them by longitudinal furrow, and at middle by nearly circular opening; outer edge of anterior superficial groove of trichome setose, prominent, forming arcuate lateral margin from basal elytral corner to trichome, inner edge of this groove well developed and setose near base, but diminishing before reaching opening of trichome; lateral margin of trichome with broad, V-shaped notch; epipleurae tuberculate and faintly punctate beneath this notch, otherwise smooth; dorsum of elytra smooth, sparsely setose in male, glabrous (except along lateral and, especially, posterior margins) in female.

Mesosternum about $4 \times$ wider than median length; margins carinate; anterior mesosternal margin projecting at middle; mesosternal disk depressed, rugose in anterior half (depression's posterior edge parallel to sinuate anterior margin), elevated and smooth in posterior half; mesometasternal suture deeply impressed; metasternum short, about $4 \times$ length of mesosternum along midline, disk smooth, with only very fine, sparse punctures; median longitudinal metasternal suture visible but not impressed; mesofemoral lines strongly carinate, complete to, and continued on, metepisternum; 1st visible abdominal sternite smooth; metafemoral lines strongly carinate, complete; legs fairly short, profemur and protibia sparsely punctate on lower surfaces, meso- and metafemora and tibiae smooth; all tibiae fairly broad, with outer margins angulate about one-third from base.

Propygidium $1.3 \times$ median length of pygidium, both nearly flat, vertical, only very slightly convex, with inconspicuous fine setae.

REMARKS. The dimorphism in setation of the pronotum and elytra in this species is unique among *Chlamydopsis*, although the preceding and the following species are closely related, and may be found to share it when both sexes of these

are known. This species is named in honor of Ross Storey, who collected and provided a substantial fraction of the material for this study.

***Chlamydopsis matthewsi* sp. nov.**
(Figs 22G, 23G, 27, 29H, 30C)

MATERIAL. HOLOTYPE ♀: Australia N.S.W., Sturt Nat. Pk., 21km W Fortville, P.J.M.Greenslade, 22/11/79, sand dune, in SAM.

DIAGNOSIS. See diagnosis under *C. detecti*, above. This is the largest species of *Chlamydopsis* known. Its size and its deep red color are highly distinctive. The preceding species is closely related and generally similar, but in addition to the color difference, it possesses epipleural tubercles and setae near the apices of the inner upper edges of the humeral trichomes, which *C. matthewsi* lacks completely (at least in the female).

DESCRIPTION. L: 4.36; W: 1.56; E/Pn L: 1.80; E/Pn W: 1.38; Pn W/L: 1.54; E L/W: 0.85; Pr/Py: 1.47; Sterna: 1.06, 0.31, 1.03; Tibiae: 1.46, 1.62, 1.65. Body dark red, large; frons 1.4X as wide as long, sides broadly rounded, gradually narrowed to apex, abruptly narrowed at antennal bases; frons acutely projecting on each side medial to antennal insertions, shallowly depressed at sides, and elevated along anterior margin; disk sparsely punctate, slightly rugose at sides, with sparse, elongate setae; labrum rounded, glabrous; outer bases of mandibles finely punctate, glabrous; antennal scapes arcuate, widest near middle, faintly punctate, bearing scattered conspicuous setae, outer margin bluntly angulate; antennal club retracted and barely visible in type.

Prothorax 1.4 × as wide as long, lateral and anterior margins strongly and continuously elevated; anterior margin somewhat uneven, shallowly notched at middle, bearing sparse fringe of curled setae; outer edge of supracoxal groove visible from above outside of dorsal lateral margin; pronotal disk strongly depressed at sides, convex along midline, slightly more prominently so posteriorly; disk finely and shallowly punctate, with a few larger punctures towards the front.

Prosternum as in the preceding species.

Elytra 1.8 × as long as pronotum along midline, widest at shoulders, faintly sinuate and slightly tapering posteriorly, apical margins nearly transverse; humeral trichomes very prominent, the inner edges of anterior and posterior elevations strongly raised, almost

meeting at their apices, with vertical fringes of opposing setae; lateral to these, the trichome opening is rounded, with an outer fringe of longer erect setae; lateral edge of anterior elevation delimited by the outer edge of the anterior superficial groove, which is very deeply impressed, somewhat undercut toward outside; inner edge of this groove only defined in anterior two-thirds; trichome with relatively narrow, V-shaped notch in lateral view; epipleuron lacking the suprafemoral tubercle of the preceding species; elytral disk impressed in an approximate diamond shaped area in basal two-thirds between trichomes; posterior elytral margin elevated and strongly carinate, this carina bearing setae at middle, curved anteriorly at sides but diminishing one-sixth from apex.

Mesosternum about 4 × as wide as median length, anterior margin sinuate, roundly projecting at middle, grooved along anterior, lateral and posterior margins, the groove broad in anterolateral corners; mesosternal disk very finely punctate; central part of metasternum delimited on all edges by fine, continuous groove, the mesofemoral lines defining the anterolateral boundary; mesofemoral lines reaching metepisternum, but continued on it only by low, blunt ridge; median longitudinal metasternal suture complete but not strongly impressed; metasternal disk finely punctate; 1st visible abdominal sternite with fine, but deeply impressed anterior marginal groove, this groove continuous at sides with metafemoral lines, nearly reaching epipleuron; legs as in the preceding species.

Propygidium 1.3 × as wide as long, 1.4 × as long as pygidium along midline, both nearly vertical; propygidial disk slightly flat along basal margin, otherwise slightly convex, finely punctate and faintly rugose in basal half; pygidium slightly concave at sides, finely punctate, and slightly rugose throughout.

REMARKS. This species is named in honor of Eric Matthews, who has provided valuable material and information throughout the course of this study.

***Chlamydopsis cavicollis* Lea, 1912**
(Figs 22H, 23H, 27)

Chlamydopsis cavicollis Lea, 1912: 65; Lectotype, hereby designated: Sydney [NSW]/ On permanent loan from Macleay Museum University of Sydney/ *Chlamydopsis cavicollis* Lea, N.S.Wales; ANIC, seen, 2000.

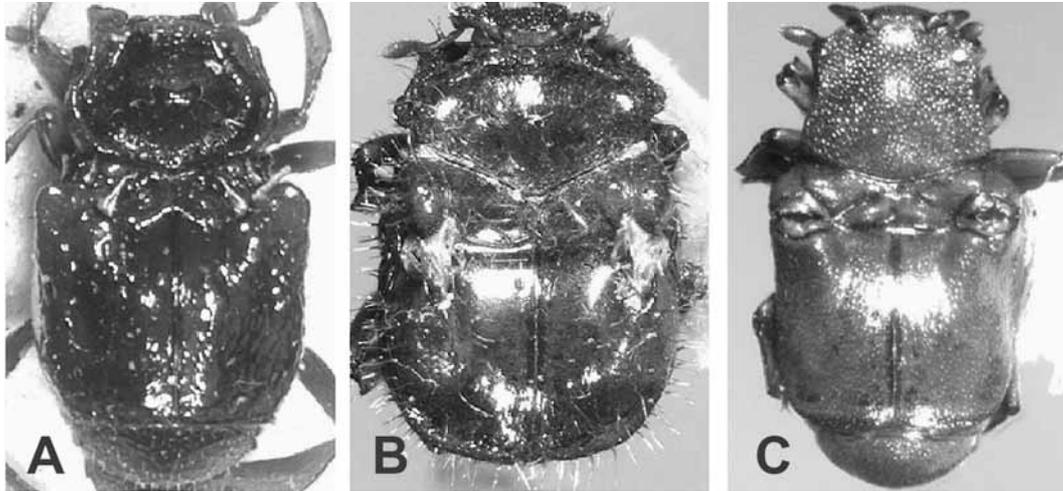


FIG. 25. Dorsal views of *Chlamydopsis* spp. A, *C. tuberculata*. B, *C. mareeba*. C, *C. parallelus*.

DIAGNOSIS. While its continuous, elevated lateral and anterior pronotal margins ally it with the preceding three species, this species is very distinctive. The body shape (Fig. 22H) is unusual, with the pronotum very small relative to the elytra, and the elytra narrowing from the humeri to the apex. The epipleural cleft of the trichome is unique, forming a long, narrow, posteriorly curving incision. Additional unusual characters include: anterior and lateral pronotal margins lined with prominent setal bundles; anterior and posterior elevations of humeral trichomes each with two separate bundles of setae; posteromedial elevation of trichome only weakly elevated; inner edge of anterior humeral groove not well developed, the outer prominent, scooplike; marginal epipleural carina not arcuate over metathoracic leg; legs elongate and very slender; elytral dorsum and pygidia with numerous discal setae.

REMARKS. This species is known only from the holotype, which has suffered some dermestid damage, and is missing most of its legs.

INCERTAE SEDIS

The following three species are not obviously related to any of the preceding species groups and are left unaffiliated.

***Chlamydopsis tuberculata* Lea, 1912** (Figs 23I, 25A, 27)

Chlamydopsis tuberculata Lea, 1912: 54; Type (♀):
tuberculata Lea Type, Ballarat/ 14670, *Chlamydopsis*
tuberculata Lea, Victoria, mounted with separate card,

originally with two host individuals, only part of one individual remaining; SAM; seen 2000.

MATERIAL. MCZ: Vic: Lorne, x.1918. Lea (1919): Vic: Lorne, 'with a small black species of *Iridomyrmex*'. Oke (1923): Vic: Grampians; Vic: Macedon.

DIAGNOSIS. *Chlamydopsis tuberculata* is easily separated from all other *Chlamydopsis* by the pronotum. It not only bears a prominent, blunt, transverse tubercle, but is more strongly and continuously elevated along anterior and lateral margins than any other species. The shape of the pronotum, widening posteriorly (in dorsal view), is also distinctive. Additional distinguishing characters include the position of the humeral trichomes, situated very close to the anterolateral elytral corners, the very shallow, indistinct reticulation of the elytra, and the rather slender but marginally rounded tibiae.

REMARKS. With regards to this species' phylogenetic affinities, one of the more significant characters is the lack of marginal prosternal groove (plesiomorphy), which excludes it from the *epipleuralis* and *ectatommae* groups. There is some similarity in trichome with species in the *striatipennis* group. However, subtle differences have prevented the recognition of these as potential synapomorphies. No genitalia have been examined due to the rarity of specimens. The ovipositor will likely reveal additional clues as to the relationships of the species.

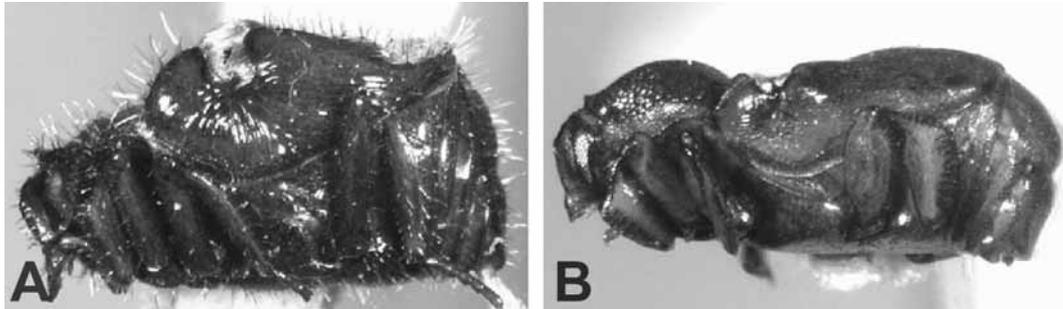


FIG. 26. Lateral views of *Chlamydopsis* spp. A, *C. mareeba*. B, *C. parallelus*.

***Chlamydopsis mareeba* sp. nov.**
(Figs 25B, 26A, 27)

MATERIAL. HOLOTYPE (QMT108596) ♀: 6km SE of Mareeba, Qld., 16.xii-20.i.1991, S.DeFaveri, F.I.T. site 36.

DIAGNOSIS. This species, although difficult to place phylogenetically, is very distinctive. The combination of prosternal marginal groove, deeply transversely incised humeral trichome bearing near continuous setal fringe, and impunctate, plurisetose elytra are sufficient to separate it from other known species. It should be noted, however, that the unknown male may not conform to this diagnosis.

DESCRIPTION. L: 2.55; W: 0.93; E/Pn L: 1.73; E/Pn W: 1.18; Pn W/L: 1.63; E L/W: 0.90; Pr/Py: 1.16; Sterna: 0.65, 0.19, 0.69; Tibiae: 0.87, 1.00, 1.03. Body rufescent, quadrate, dorsal surface mostly impunctate, with numerous elongate setal bundles; frons about as long as wide, sides rounded, disk uniformly convex, with broad shallow punctures slightly separated by faintly microsculptured areas, with a couple small setal bundles; labrum rounded, weakly punctate, glabrous; antennal scape bluntly angulate near its outer midpoint, abruptly narrowed to base, more gradually to apex; surface of scape with elongate, shallowly impressed punctures, a few setal bundles; antennal club of female about two-thirds length of scape.

Pronotum 1.5× as wide as median length; sides margined, widened and slightly elevated towards front; anterior margin elevated, median and lateral portions continuous, and continuous with lateral margins; disk depressed behind anterior margin, convex posteriorly, nearly smooth at middle, very faintly reticulopunctate at sides and front; anterior and lateral margins, and to a lesser extent the disk with conspicuous punctures bearing bundles of elongate setae.

Prosternum with anterior margin deeply grooved, sinuate and acutely projecting on either side, marginal groove curving posteriorly at sides and merging with circumcoxal stria; prosternal keel narrowed posteriorly, widening slightly behind procoxae, apex bluntly emarginate, with

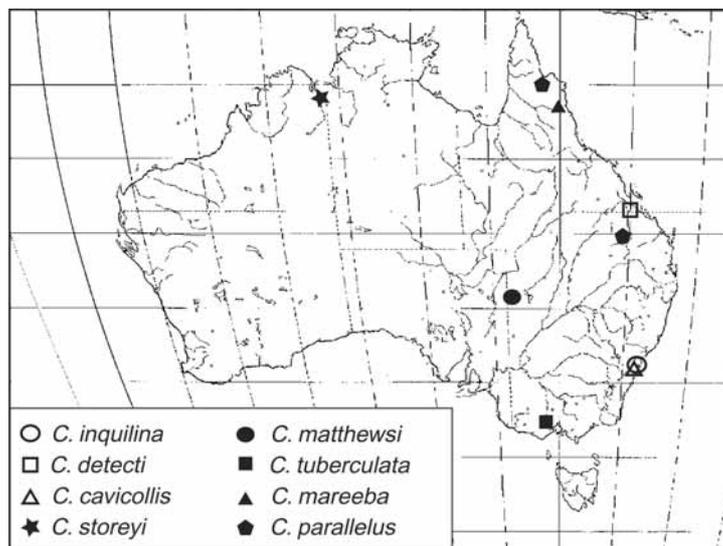


FIG. 27. Collecting records for species of *Chlamydopsis epipleuralis* group and unplaced species.

deeply impressed marginal stria along edges of leg depressions and posterior margin of keel; prosternal disk with shallow punctures separated by about their widths, faintly alutaceous between, with sparse, irregularly scattered bundles of setae.

Elytra together about $1.2 \times$ as wide as base of pronotum, more or less parallel-sided, narrowed more gradually to apex than to base; humeri strongly, narrowly elevated, the posterior elevation extending back about two-thirds from the elytral base; elevations deeply incised transversely by trichome opening, setal fringe consisting of anteriorly and posteriorly directed tufts from inner edges of opening, these barely discontinuous with outer fringe, which extends from apices of elevations continuously around lateral incision; apices of anterior and posterior elevations both emarginate above opening, with the setal fringe following emargination; anterior elevation strongly convex, its anterior surface nearly vertical, anterior superficial groove rather shallowly impressed, extending from humeral corner slightly inwardly to apical emargination of anterior elevation; mediobasal depression large, with transverse carinae, from suture arching posteriorly to beneath trichome; dorsal portion of elytral disk almost entirely impunctate, with only faint punctures posteriorly, with numerous elongate setae, most in bundles of 2-4 setae; epipleuron strigose, with strigae converging to trichome opening.

Mesosternum about $4 \times$ as wide as median length; slightly elevated along midline, depressed at anterior corners; texture like that of prosternum; mesometasternal suture deeply impressed, continuous with postmesocoxal groove; longitudinal metasternal stria not impressed, barely detectable; metasternal disk with alutaceous microsculpture, with sparse, deep setigerous punctures, otherwise impunctate; 1st abdominal sternite with denser, but smaller, punctures than metasternum, most setae single; legs short, slender with sparse, elongate punctures interspersed with smaller setigerous ones, most setae in bundles; pro- and mesotibiae acutely angulate near basal one-third, metatibia more rounded.

Propygidium convex, with slightly elongate punctures separated by about their widths interspersed with sparser deeper punctures bearing bundles of setae; pygidium similarly textured in basal half, punctures fewer in apical half.

REMARKS. Although superficially similar to the females of *C. monteithi* and *C. setifera* in the

strigicollis group above, the vertical superficial humeral groove and deeply grooved anterior prosternal margin of this species argue against a close relationship. Discovery of the male would be very helpful in placing it. Its name refers to the Queensland town close to the type locality.

***Chlamydopsis parallelus* sp. nov.**
(Figs 25C, 26B, 27)

MATERIAL. HOLOTYPE (QMT108597): 15.11S 143.52E Hann River Qld 15 Sep - 20 Oct 1993 Flight Intercept Trap P.Zborowski & D.Rentz. PARATYPE ♀: SEQ: 25°13'S 149°01'E, Expedition Ra. Nat. Pk., 5729 Amphitheatre yards, 440m 19.xii.97-4.iii.1998, DC&GM, open for. FIT.

DIAGNOSIS. The elongate body form is very distinctive. Its body length is slightly over twice its width across the humeri, and the median pronotal length is just about equal to its basal width. In characters of phylogenetic significance, however, the species is not particularly remarkable. The anterior marginal prosternal groove is well developed, diverging to meet the circumcoxal stria at the sides. The humeral trichomes are moderately well developed, with laterally discontinuous, otherwise nearly circular setal fringe. The carinae of the mediobasal depression are unusual, forming laminate transverse peaks, rising steeply from along the elytral suture behind the scutellum, but extending only about two-thirds of the way to the humeral trichome.

DESCRIPTION. L: 1.84; W: .065; E/Pn L: 1.81; E/Pn W: 1.25; Pn W/L: 1.14; E L/W: 1.27; Pr/Py: 1.36; Sterna: 0.50, 0.12, 0.44; Tibiae: 0.47, 0.50, 0.53. Body narrow, elongate, light rufescent brown; frons about as wide as long, weakly convex, sides rounded, disk shallowly punctate, the punctures larger and more conspicuous nearer the anterior frontal margin, appearing granulate within each puncture; anterior frontal margin slightly outwardly arcuate, labrum rounded, with a few small punctures; outer margin of antennal scape bluntly angulate just basad of midpoint, abruptly narrowed basally, more gradually to apex, surface microsculptured but impunctate, very finely setose; antennal club of female two-thirds length of scape, sclerotised over much of its surface, with only a couple small tomentose patches on outer surface near apex.

Pronotal median length equal to basal width, sides unmarginated, inwardly arcuate, similar in width basally and apically, narrowest about one-third from front; anterior margin weakly elevated, very shallowly emarginate across

middle, more deeply so above antennal cavities; disk depressed in anterior corners, strongly convex along midline, somewhat transversely elevated in posterolateral corners; disk shallowly, but more or less evenly punctate, the punctures toward the sides slightly elongated.

Prosternum with anterior margin deeply grooved, sinuate and acutely projecting on either side, marginal groove curving posteriorly at sides and merging with circumcoxal stria; prosternal keel narrowed posteriorly, widening slightly behind procoxae, apex weakly emarginate, with fine marginal stria; prosternal disk with shallow punctures separated by slightly less than their widths, with very fine interspersed setae.

Elytra $1.2\times$ as wide as pronotum, with sides approximately parallel, though slightly sinuate at middle; humeral trichomes moderately elevated, close to humeral corners, trichome broadly open dorsally, nearly circular, slightly wider than long, fringed with short, dense setae which do not completely obscure the opening, this fringe briefly interrupted at sides, and, weakly, at the junction with the anterior superficial humeral groove; humeral groove well impressed, its edges rounded, extending from humeri to inner apex of trichome; mediobasal elytral depression confined to basal one-third, with prominent, slightly oblique transverse basal carinae, these bluntly triangular, laminate; elytral disk evenly convex in apical half, apical margin not carinate; disk shallowly and sparsely strigose, with scattered fine setae.

Mesosternum about $3\times$ as wide as median length, anteriorly weakly projecting, with faintly impressed lateral and anterior marginal stria, disk with large shallow punctures, and smaller ones interspersed; mesometasternal stria shallowly impressed; longitudinal metasternal suture very fine, barely visible; metasternal disk finely and sparsely punctate, with scattered minute setae; 1st abdominal sternite similarly textured to metasternum. Legs short, broad; meso- and metatibiae nearly half as wide as long; protibia bluntly angulate just beyond basal one-third; outer margins of posterior tibiae, only faintly angulate, very nearly rounded; all legs impunctate, with fine setae; tarsi laterally compressed.

Propygidium strongly convex, faintly alutaceous, with sparse, shallow punctures, fine setae; pygidium weakly convex, faintly alutaceous, with weak punctures only in basal one-third.

REMARKS. One specimen from Western Australia '14.26S, 126.38E, CALM Site 13/4

12km S of Kalumburu Mission' [ANIC] is closely related to this species, and possibly the same. However, its body is broader and less elongate. Given the geographic distance, it seems likely that this difference will be bridged by intervening forms. Its status will need to be reassessed when additional material can be studied. The name of this species refers to its elongate, nearly parallel-sided body form.

SUMMARY OF KNOWN SPECIES AND SPECIES GROUPS OF *CHLAMYDOPSIS*

striatipennis group

1. *C. striatipennis* Lea
2. *C. leai* Oke
3. *C. compressipes* Lea
4. *C. pallida* Lea
5. *C. rana* sp. nov.
6. *C. antennata* sp. nov.
7. *C. trichonota* sp. nov.

strigicollis group

8. *C. reticulata* Lea
9. *C. dimorpha* sp. nov.
10. *C. strigicollis* Oke
11. *C. mormolyce* Lea
12. *C. monteithi* sp. nov.
13. *C. setifera* sp. nov.
14. *C. lawrencei* sp. nov.

pygidialis group

15. *C. pygidialis* Blackburn
16. *C. carinicornis* Lea
17. *C. serricornis* Lea
18. *C. setipennis* Oke
19. *C. convergens* sp. nov.
20. *C. coronis* sp. nov.
21. *C. erupta* sp. nov.
22. *C. transversa* sp. nov.

longipes group

23. *C. longipes* Lea
24. *C. inaequalis* Blackburn
25. *C. agilis* Lea

ectatommae group

26. *C. ectatommae* Lea
27. *C. kununurra* sp. nov.
28. *C. acutricha* sp. nov.
29. *C. myrmecophila* sp. nov.
30. *C. variolosa* Lea
31. *C. mallee* sp. nov.
32. *C. pecki* sp. nov.
33. *C. loculosa* Lea
34. *C. degallieri* sp. nov.
35. *C. papuae* Lewis
36. *C. jayawijaya* sp. nov.
37. *C. lucifer* sp. nov.
38. *C. bataviae* sp. nov.

39. *C. burnetta* sp. nov.
 40. *C. zborowskii* sp. nov.
 41. *C. pluriseta* sp. nov.
 42. *C. contorta* sp. nov.
 43. *C. pilosipes* sp. nov.
 44. *C. bifovaecollis* (Oke)
 45. *C. nielseni* sp. nov.
 46. *C. australis* sp. nov.
 47. *C. lepida* sp. nov.
epipleuralis group
 48. *C. epipleuralis* Lea
 49. *C. sculptus* Oke
 50. *C. convexa* sp. nov.
 51. *C. striatella* Westwood
 52. *C. formicicola* (King)
 53. *C. dispersa* sp. nov.
 54. *C. weiri* sp. nov.
 55. *C. crowcrofti* sp. nov.
 56. *C. latipes* Lea
 57. *C. macmillani* sp. nov.
 58. *C. nullarbor* sp. nov.
 59. *C. rotunda* sp. nov.
 60. *C. latipennis* Lea
 61. *C. carinota* sp. nov.
 62. *C. inquilina* Lewis
 63. *C. detecti* Lea
 64. *C. storeyi* sp. nov.
 65. *C. matthewsi* sp. nov.
 66. *C. cavicollis* Lea
incertae sedis
 67. *C. tuberculata* Lea
 68. *C. mareeba* sp. nov.
 69. *C. parallelus* sp. nov.

PHYLOGENY

This analysis is based on external morphological variation as well as some characters of the ovipositor. While some variation in male genitalia has been observed (primarily in setal patterns and apical curvature), insufficient dissectable males were available to include any male characters in this study. The matrix of female genitalic characters does contain substantial missing data, but the states were much more distinctive and obviously informative. This analysis includes all known species of *Chlamydopsis*, including one recently discovered New Caledonian species, to be formally described elsewhere. The outgroups represent a broad selection of other Chlamydopsinae, as well as three non-chlamydopsine histerids. These are: *Stictostix frontalis* Lea (Tribalinae), a new Malaysian genus near *Peploglyptus* (Onthophilinae; description in preparation), *Onthophilus flohri* Lewis (Onthophilinae) and the chlamydopsines

Pheidoliphila minuta Lea, *Orectoscelis dumogae* Caterino, *Orectoscelis obliquus* Caterino, *Ceratohister* sp., *Eucurtia comata* (Blackburn), *Ectatomphila opaca* (Lea), representatives of two undescribed genera close to *Orectoscelis*, and a representative of one undescribed genus of obscure affinities. The complete data set contains 82 taxa and 46 characters.

CHARACTERS.

1. Frons: *1.* without prominent tubercles; *2.* with single broad protuberance; *3.* with multiple (usually 6) protuberances.
2. Labrum, apical margin: *1.* evenly rounded, nearly semicircular; *2.* broader, nearly straight for some distance at middle.
3. Antennal insertion: *1.* at the middle of the frons; *2.* at the top of the frons near the top of the eye. This character is generally considered the defining synapomorphy of Chlamydopsinae.
4. Antennal club: *1.* identical in length in both sexes, generally less than twice as long as wide; *2.* more elongate in ♂, usually three or more times as long as wide. The strongly dimorphic antennal club, with that of the ♂ extremely elongated, is nearly ubiquitous in Chlamydopsinae. However, in one species, a ♂ with a short antennal club has been seen. The small number of specimens examined leaves some doubt that this represents more than an aberration.
5. Medial portion of anterior pronotal margin: *1.* flat, neither thickened nor elevated; *2.* distinctly elevated, with some anteriorly exposed surface below margin.
6. Anterior pronotal margin: *1.* median transverse and lateral oblique portions continuous; *2.* interrupted between median and lateral portions, either by notch or by a carina. State two encompasses considerable diversity that could perhaps be more finely divided. In some of these species the median segment of the anterior pronotal margin (that portion above the vertex of the head) is elevated separately from the lateral portions (those above the antennal cavities). In others the median and lateral portions meet, but the inner apex of the lateral portion extends for a very short distance anteriorly beyond the median portion. Grouping these conditions together as a state suggests that the origin of discontinuity, in whatever form, was the significant change, with diversity arising after.
7. Pronotum: *1.* without a stria behind elevated lateral portion of anterior margin; *2.* with an oblique stria extending along posterior base of lateral portion of (usually) elevated anterior margin. This stria, when present, extends from the lateral pronotal margin, behind lateral portion of anterior margin, to the anterior margin between its lateral and median portions.
8. Anterior pronotal margin, median portion: *1.* even at middle, whether elevated or not; *2.* notched at middle.
9. Pronotum: *1.* pronotum margined laterally; *2.* pronotum without lateral margin.
10. Pronotum: *1.* lateral margins flat, not elevated; *2.* lateral margins elevated, angulately continuous with lateral portions of anterior margin; *3.* lateral and anterior margins indistinguishable, forming a single oblique carina from anterior midpoint to each posterolateral pronotal corners. State three applies only to single unusual species from New Guinea (new genus³). The relationships of this species are unclear but it appears to be outside of *Chlamydopsis*.

11. Pronotal trichomes: *1.* absent; *2.* present (Figs 1E-G). Pronotal trichomes occur in only a few *Chlamydopsis*, and, although somewhat similar, they are not identical in form in those species possessing them. Nonetheless, due to their rarity, they are considered potentially homologous where they occur.
12. Anterior marginal or near marginal processes of pronotal disk: *1.* absent; *2.* present as two distinct swellings (or single bifid process) at or near anterior margin. This character as scored mainly separates *Chlamydopsis* from chlamydopsine outgroups, most of which possess some form of paired marginal pronotal processes.
13. Single median pronotal tubercle: *1.* absent; *2.* present. This character had previously been combined with the preceding character. However, although not observed it appears possible for anterior marginal and median processes to co-occur.
14. Median pronotal tubercle: *1.* absent; *2.* simple; *3.* expanded laterally to form transverse carina. This character is dependent on the presence of a pronotal tubercle in the preceding character.
15. Pronotum: *1.* without longitudinal carina; *2.* with longitudinal carina along midline in anterior half (sometimes also with posterolateral extensions).
16. Anterolateral groove from antennal cavity to pronotum; *1.* absent; *2.* present, simple, merging with prosternal circumcoxal stria at side (Fig. 28D). *3.* present and leading to dorsal pronotal pit (Fig. 29A). State 2 indicates a groove running from the upper edge of the antennal cavity upward, intersecting the lateral portion of the anterior pronotal margin, thence extending posterolaterally to the lateral pronotal margin below which it meets the circumcoxal stria. The groove exhibited in state 3 is potentially homologous with this one (although this is not asserted by the present coding scheme). However, in those taxa exhibiting state 3 the groove extends straight back from the antennal cavity and terminates in conspicuous dorsal pronotal pits. This state is diagnostic of the *bifovaecollis* subgroup of the *ectatommae* group.
17. Prosternal disk: *1.* length anterior to profemoral carina less than that posterior to carina; *2.* length anterior to carina equal to or greater than length posterior to carina. State 2 is characteristic of a large section of non-*Chlamydopsis* chlamydopsines.
18. Anterior marginal stria of prosternal lobe: *1.* not deeply grooved (Fig. 28A); *2.* deeply grooved, the groove running along margin all the way to side, not continuous with the circumcoxal stria (Fig. 28B); *3.* deeply grooved, departing from margin at sides and curving posteriorly to meet the circumcoxal stria (Fig. 28C). This character has proven one of the most useful for sorting out preliminary affinities within *Chlamydopsis*. These grooves would appear to constitute some kind of conduit system on the beetles' surface. In several species these grooves meet elytral grooves to form a continuous series extending all the way to the humeral elytral trichomes. Perhaps these serve to disperse recognition substances from a site of origin to elsewhere on the body.
19. Prosternal disk: *1.* without transverse stria behind anterior margin; *2.* Prosternum with transverse stria just behind anterior margin. This stria, when present, is reminiscent of the 'presternal stria' of many non-chlamydopsine Histeridae, and may conceivably be homologous, it being present in a couple of the outgroups.

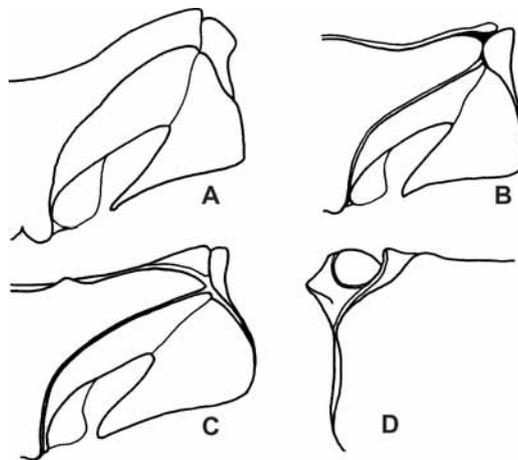


FIG. 28. A-C, Ventral view of left half of prosternum of *Chlamydopsis* spp. A, *C. striatipennis*. B, *C. monteithi*. C, *C. burnetta*. D, Dorsal view of left half of pronotum of *C. kununurra*, showing anterolateral groove.

20. Scutellum: *1.* visible dorsally; *2.* hidden. This character is informative only with respect to outgroups.
21. Humeral elytral trichome: *1.* absent; *2.* present. This and the following several characters refer to the structure of the humeral trichome, or 'epaulette' of most previous authors. This structure is extremely varied, and unquestionably informative at some levels. However, it is very difficult to determine homologies among the various components. Some of the characters below are admittedly interdependent, and other scoring schemes could be justified, but no wholly satisfactory schemes have yet been found.
22. Position of humeral trichome: *1.* absent; *2.* behind humeri; *3.* limited to humeri; *4.* trichome largely posthumeral, but extending forward mesally to anterior elytral margin or even to humerus. The position of the trichome is primarily informative with respect to non-*Chlamydopsis* outgroups. However, in a few *Chlamydopsis* the degree to which the trichome extends forward toward the anterior elytral margin may be informative.
23. Anterior superficial groove of trichome: *1.* with anterior groove up the middle of the anterior elevation, approximately evenly dividing it into inner and outer prominences (Figs 29A-B, E-G); *2.* with anterior groove oblique or horizontal, entering the lumen of the trichome at its mesal base (Figs 29C-D); *3.* without any visible groove on anterior elevation of trichome (Fig. 29I); *4.* with anterior groove displaced laterally, forming a lateral margin of the anterior elytral corner (Fig. 29H). This groove, nearly always present in *Chlamydopsis*, is quite varied in form. Its absence in a few species is almost certainly due to loss, as in most cases it can be seen in apparent relatives. The orientation of this groove, when present, varies considerably. It may appear almost perfectly longitudinal, forming a marginal groove and entering the trichome laterally (e.g. *C. detecti* and relatives). Or it may take the opposite extreme, being directed strongly medially, in some cases

lying nearly parallel to the anterior elytral margin (e.g. *C. mormolyce* and other members of the *strigicollis* and *pygidialis* groups), entering the opening of the trichome from its inner side. These changes of position may be viewed as the results of differential development on either side of a (putatively) symmetric plesiomorphic state (state 1).

24. Setal fringe of humeral trichome: *1.* as a single continuous marginal fringe, usually encircling fairly simple trichome opening (e.g. *C. bifovaecollis*; Figs 29A-C); *2.* with anterior marginal and posterior marginal fringes, discontinuous laterally and mesally (Figs 29D-E); *3.* with three distinct origins, semicircular fringe along outer edge separated from anterior and posterior inner bunches of setae (Fig. 29F-H); *4.* trichome setae arising from two origins, one in an elongate (usually sinuate) fringe along the inner edge of the dorsal 'roof' of the trichome, and one within the small mesal opening of the trichome, mostly hidden by the dorsal fringe (Fig. 29I; inner fringe not visible in figure); *5.* with a single small setal origin on the mesal surface of incurved anterolateral trichome elevation (e.g. *C. pallida*); *6.* trichome absent, character inapplicable. Although this character focuses on the origin points of the trichome setae, it in fact captures much of the variation in overall shape of the trichome itself.
25. Inner edges of anterior and posterior trichome elevations: *1.* well developed but not meeting, the lumen of the trichome open to mediobasal depression (Figs 29A-D, I); *2.* well developed and nearly or fully meeting, closing trichome mesally (full closure may be achieved by setal fringes on their opposing surfaces; Figs 29E-H); *3.* inner edges joined by a thin lamina, closing trichome mesally (e.g. *C. pallida*); *4.* trichome unelevated or absent, character inapplicable.
26. Outer edges of anterior and posterior trichome elevations: *1.* not closing the trichome laterally; *2.* meeting, closing trichome laterally (a notch may be present as long as it is not continuous with trichome lumen as in, e.g. *C. myrmecophila*); *3.* trichome unelevated or absent, character inapplicable. Sexual dimorphism is responsible for the one scored polymorphism in this character (in *C. mallee*). Other species, once both sexes are discovered, may need to be rescored for this character.
27. Trichome lumen: *1.* lumen (central cavity) broadly open dorsally; *2.* lumen covered dorsally, with only a small mesal opening leading to internal cavity (detectable via a 'window' of thin cuticle on trichome's lateral surface; see, e.g. *C. striatipennis*; Figs 29C, I); *3.* trichome absent, character inapplicable.
28. Carinae of midbasal elytral depression: *1.* absent, depression flat (or not depressed); *2.* with transverse (in some slightly arcuate) transverse carinae.

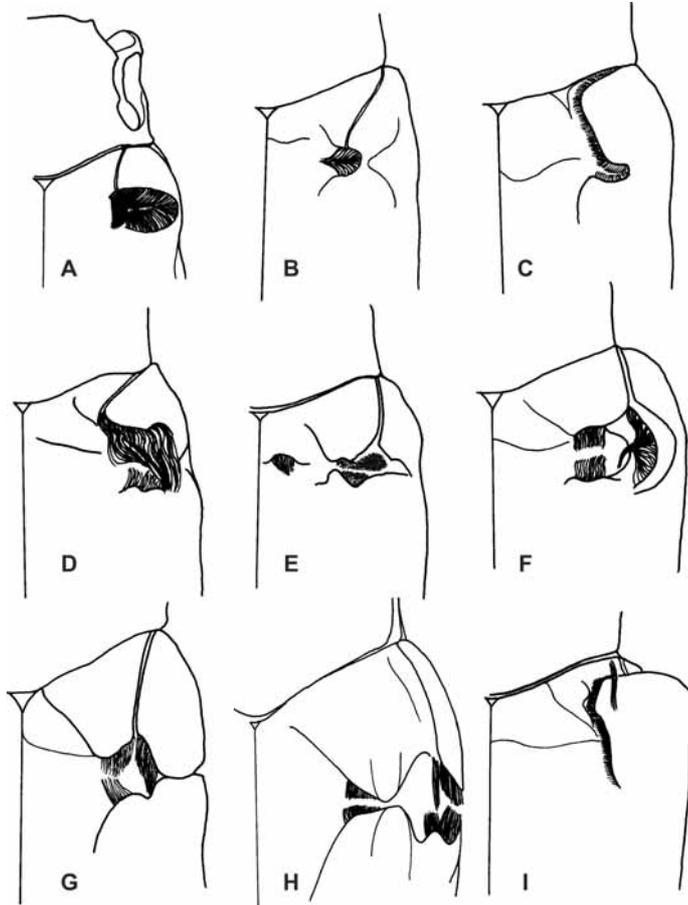


FIG. 29. Humeral trichomes of right elytron of *Chlamydopsis* spp. A, *C. bifovaecollis*, also showing pronotal pit. B, *C. myrmecophila*. C, *C. inaequalis*. D, *C. reticulata*. E, *C. burnetta*. F, *C. nullarbor*. G, *C. dispersa*. H, *C. matthewsi*. I, *C. sp. nr. striatipennis*.

29. Carinae of midbasal elytral depression: *1.* absent; *2.* bare or sparsely setose; *3.* bearing dense bundles of setae (Fig. 29E). This character refers to a specialisation of the preceding.
30. Elytral marginal stria: *1.* continuous along elytral suture; *2.* absent at least along suture.
31. Elytron: *1.* apical margin flat; *2.* with apical marginal carina (which is separate from marginal stria); *3.* with apical marginal carina extending forward along lateral edge to humeral trichome.
32. Elytra of ♂ and ♀: *1.* identical in surface texture; *2.* differing substantially in texture such that females are smooth and males are reticulostriate.
33. Prosternal/mesosternal junction: *1.* mesosternum projecting, prosternum emarginate; *2.* prosternum posteriorly truncate to rounded, projecting over anterior margin of mesosternum.

34. Meso- and metatibiae: *1.* without grooves for retraction of tarsi; *2.* with grooves for retraction of tarsi. This character is only informative with respect to outgroups.
35. Ventral cavities for retraction of legs: *1.* poorly developed, not margined all the way around; *2.* well developed, completely delimited by carinae (femoral lines). This character is related to character 38, below, in that elongate legs tend to be accompanied by loss of well-defined cavities.
36. Mesofemur: *1.* not clavate, less than twice as thick at apex as at base; *2.* clavate, twice as thick or more at apex than base. This and the following character, as defined, pertain mainly to the *longipes* group, although there is a tendency towards the femora becoming clavate with increasing length throughout the group.
37. Metafemur: *1.* not clavate, less than twice as thick at apex as at base; *2.* clavate, twice as thick or more at apex than base.
38. Metatibia: *1.* short, slender, outer margin angulate; *2.* short, broad, outer margin angulate; *3.* short, broad, outer margin rounded; *4.* elongate (in practical terms, extending above epipleuron when held vertically); *5.* short, slender, outer margins even.
39. Metatibia, if elongate: *1.* not elongate; *2.* broad, angulate; *3.* broad, rounded; *4.* slender
40. Tarsal claws: *1.* evenly curving to apex (particularly note inner edge); *2.* inner edge straight for approximately basal two-thirds, then curved just at apex; *3.* short, nearly perpendicularly bent at base, then straight in apical two-thirds; *4.* long, thin, nearly straight throughout.
41. Propygidium: *1.* flat to convex, at least in ♂; *2.* with transverse carina or series of protuberances in both sexes.
42. Body setae: *1.* simple; *2.* scale-like; *3.* absent; *4.* simple, in bundles. There is considerably more variation in setal types in chlamydopsine outgroups. Within *Chlamydopsis* this character is mainly informative with respect to whether the simple setae are borne singly or in 'bundles' of multiple setae.
43. Gonocoxite of ovipositor: *1.* less than half as long as valvifer (Figs 30A, C); *2.* coxite half or more as long as valvifer (Fig. 30B).
44. Gonocoxite of ovipositor: *1.* apex bidentate (Figs 30A-B); *2.* apex untoothed, simple, scooplike (Fig. 30C).
45. Gonostyle of ovipositor: *1.* small, linear, not projecting beyond apex of coxite (Fig. 30A,C); *2.* elongate, frequently clavate, projecting beyond apex of coxite (Fig. 30B).
46. Struts of ♀ 9th sternite: *1.* divergent towards base; *2.* convergent towards base.

PHYLOGENETIC METHODS. Analysis of this large dataset relied heavily on heuristic parsimony approaches. PAUP* (Swofford, 1998) was used for all tree searches, with characters treated as unordered throughout. An initial search saved no more than 50 shortest trees for each of 500 random taxon addition replicates. Restricting tree number and increasing addition replicates allowed a substantial amount of treespace to be explored preliminarily. This restricted search resulted in 800 trees (i.e. 16 of the 500 replicates

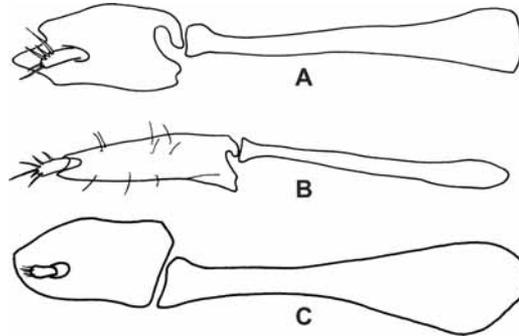


FIG. 30. Valvifers and gonocoxites of *Chlamydopsis* spp. A, *C. epipleuralis*. B, *C. rana*. C, *C. matthewsi*.

found trees of equal, shortest length), which were then used as the basis of unrestricted branch-swapping. This unrestricted search was allowed to proceed for several hours, but was terminated due to memory restrictions when trees in memory hit 76,000, with nearly 20,000 trees still to swap. No trees shorter than the initial 800 were found.

The smaller set of 800 trees was used as the basis for character reweighting, according to character rescaled consistency indices. A single reweighted search was carried out, with the restriction of 50 trees described above implemented. Although for both equally weighted and reweighted searches additional equally parsimonious arrangements might lead to a slight reduction in resolution of the consensus trees presented here, this search strategy should ensure that no shorter trees will be found. Decay indices were calculated (with all characters weighted equally) using the program TreeRot (Sorenson, 1999).

RESULTS. Two trees are presented from these analyses, the strict consensus of 76,000 trees resulting from the equally weighted, unrestricted search (C.I. = 0.2906, R.I. = 0.7593; Fig. 31), and the strict consensus of 10762 trees resulting from the reweighted, unrestricted search (Fig. 32). These two trees offer a relatively consistent picture of the broadest relationships in *Chlamydopsis*. At the basalmost levels of the tree, monophyly of Chlamydopsinae is strongly supported (6 decay steps). Within Chlamydopsinae a clade comprising *Chlamydopsis*, *Eucurtia*, and *Ectatommiphila* is supported by 2 decay steps, with an unusual, as yet undescribed, species from New Guinea as its sister group. Monophyly of *Chlamydopsis* itself is supported by a single decay step, with *Ectatommiphila* as its sister group. Relationships within *Chlamydopsis* are mostly supported by

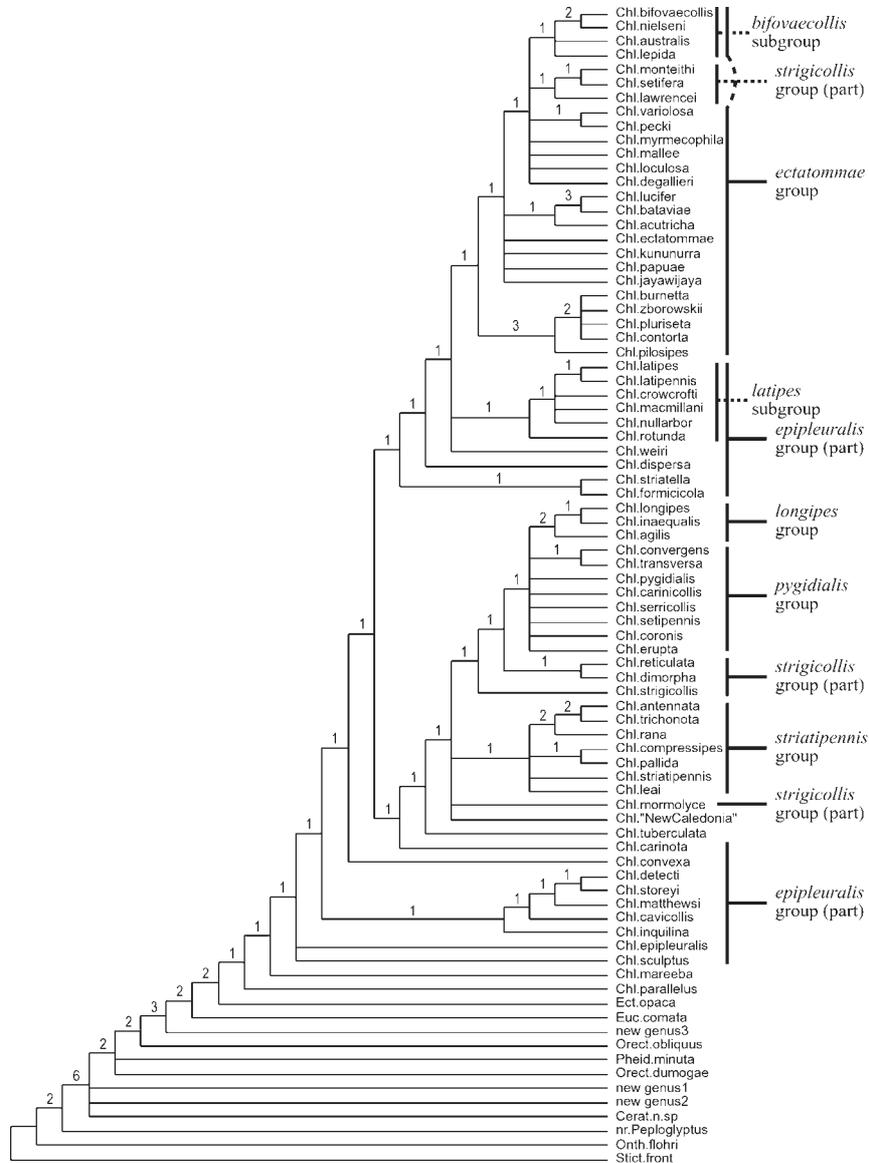


FIG. 31. Strict consensus of 76,000 equally parsimonious trees based on equally weighted analysis.

single decay steps, with a few species pairs and trios supported more strongly.

The species groups of *Chlamydopsis* proposed above are only roughly recovered. The *striatipennis* group is recovered in the equally weighted analysis, but in the reweighted analysis, the invariably monophyletic *longipes* group appears within it. In the equally weighted analysis the *longipes* group arises from within a

mixed *strigicollis* group (partial) + *pygidialis* group clade. These two groups resolve together in both trees, with the *pygidialis* group constituting a distinct clade only in the reweighted analysis. Three species tentatively suggested as related to the *strigicollis* group (*C. monteithi*, *C. setifera*, and *C. lawrencei*) do not resolve with this group in either analysis, but instead appear within the *ectatommae* group, in

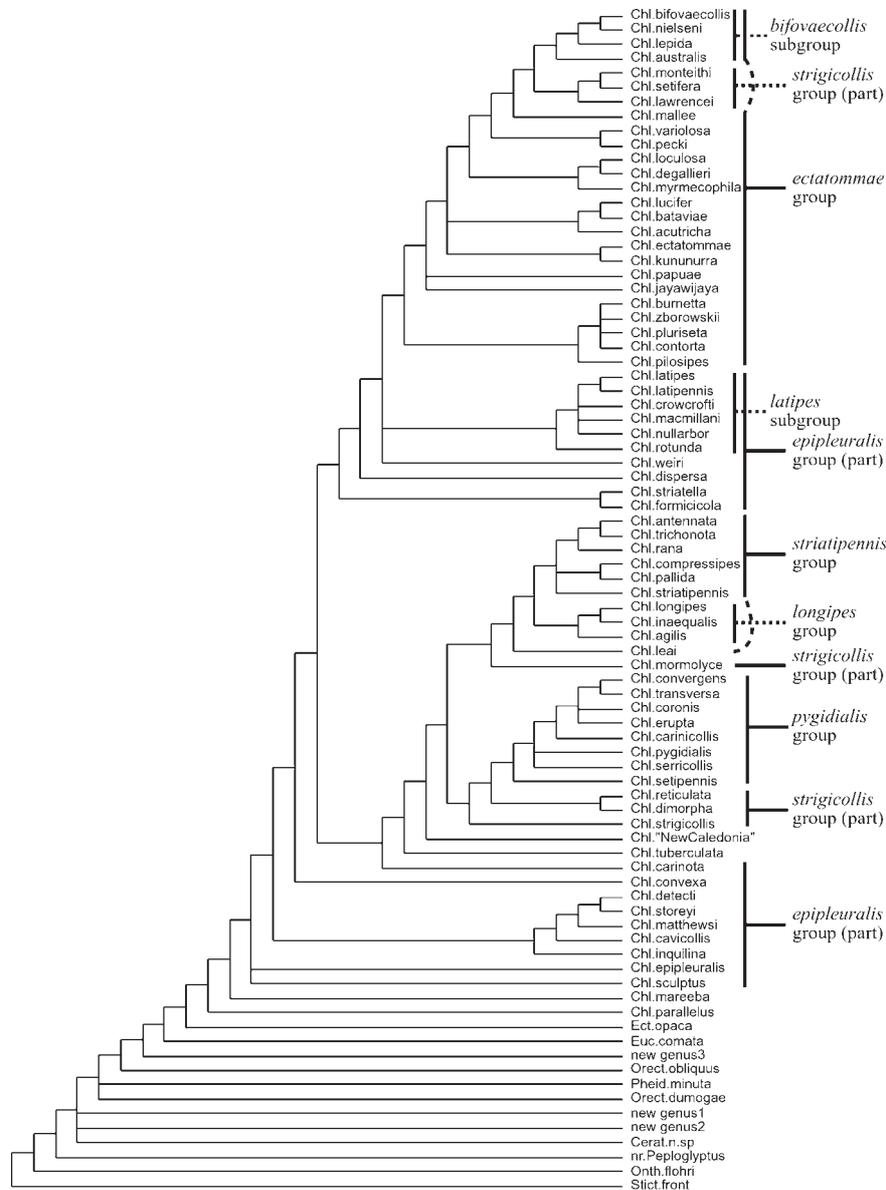


FIG. 32. Strict consensus of 10,762 equally parsimonious trees based on reweighted analysis.

the reweighted analysis as sister group to the four species of the *bifovaecollis* clade. While this alternative obviously merits closer investigation, it does require the loss of some significant features on the branch leading to these three, notably the divergent prosternal groove and the anterolateral pronotal groove. The *ectatommae* group itself appears as a coherent lineage in both

equally weighted and reweighted trees (apart from, in both, the inclusion of the three *strigicollis* group species mentioned above). It is also worth noting that this clade includes the *bifovaecollis* subgroup (the inclusion of which here was suggested with some reservation).

A large clade, comprising most members of the *strigicollis* group, and the *striatipennis*, *longipes*,

and *pygidialis* groups, is recovered in both analyses, with several unplaced and *epipleuralis* group species at its base. The species designated as *epipleuralis* group are not recovered as a clade in either analysis. This group is scattered, with the *latipes* subgroup and a few others as a grade basal to the *ectatommae* group, and the remainder as a grade basal to nearly all other *Chlamydopsis*. Of the species not placed in groups above, no relationships to other particular groups are strongly supported. *Chlamydopsis parallelus* and *C. mareeba* are resolved (sequentially) at the very base of *Chlamydopsis*, while *C. tuberculata* and the New Caledonian species appear near the base of the (*strigicollis* + *pygidialis* + *longipes* + *striatipennis* group) clade.

DISCUSSION

The forty new species of *Chlamydopsis* described in this treatment more than double the known species diversity, and greatly increase the known morphological and geographical range of the group. There are now 69 described species of *Chlamydopsis*, with representatives from every Australian state and both Papuan and Irian New Guinea (and New Caledonia). The species diversity in Queensland has emerged as clearly exceeding any other region, whereas species from near the populated areas of Victoria and New South Wales previously predominated. It is important to note, however, that while Queensland harbours the bulk of species diversity, phylogenetic diversity is more evenly distributed, with several species groups occurring primarily elsewhere (e.g. *longipes* group, *bifovaecollis* subgroup, *latipes* subgroup).

The previously unappreciated sexual dimorphism in *Chlamydopsis* is very interesting. Obvious sexual dimorphisms are generally rare in Histeridae. Those that have been documented have been primarily attributed to courtship (Caterino, 2002). The antennal club dimorphism (male antennal club twice or more the length of the female's — apparently first noted by Oke, 1923), nearly ubiquitous in Chlamydopsinae, obviously must have some olfactory significance. But it is impossible to say whether this relates to mate location, ant nest location (and perhaps differing dispersal tendencies between males and females), or some other factor. The significance of elytral and other textural dimorphisms is even more obscure. Body texture in myrmecophiles is often attributed to Wasmannian mimicry (Wasmann, 1889), in which guests' surface sculpturing (and, in some, shape

and color) mimics that of the host, presumably a tactile disguise. Accepting that the underlying causes of this similarity have been controversial (Wilson, 1971), it is nonetheless observed in many species of Chlamydopsinae. Regardless whether this mimicry is directed at the hosts or at potential predators (McIver, 1987), the fact that intersexual morphological differences are observed in some Chlamydopsinae suggests that some differences in host relationships or activity patterns exist between them.

Outlines of the phylogeny of *Chlamydopsis* have begun to emerge from this study. Several apparently monophyletic groups of species have been identified, and although relationships among them need additional study, relationships within them are relatively consistent across analyses. Outgroup relationships to *Chlamydopsis* are in greatest need of additional analysis. The exact relationships of *Chlamydopsis* to *Eucurtia* and *Ectatommiphila*, in particular, are unclear. It was considered initially likely that *Chlamydopsis* would prove paraphyletic with respect to these other two genera. However, with existing data, the monophyly of *Chlamydopsis* is supported. The relationships among more distant outgroups yield additional uncertainty with respect to relationships within *Chlamydopsis*. Apart from the New Guinean species ('new genus3'), all of the chlamydopsine outgroups here almost certainly constitute a clade (lacking a dorsally visible scutellum, and having a substantially elongated prothorax). It is unclear why these were not resolved as such in either analysis, and what effect this might have on resolutions elsewhere in the tree.

While the phylogenetic results obtained here do not justify a great deal of evolutionary exploration, one character reconstruction, especially, merits some discussion. These trees agree in reconstructing a deep prosternal groove, which departs from the margin laterally, as basal within *Chlamydopsis*. This groove is then subsequently weakened and lost in various other groups. This well developed and divergent groove is one of the most distinctive and unusual characters in *Chlamydopsis*, primarily of the *epipleuralis* group, and its evolution according to this scenario would be very surprising. This single result casts a shadow of doubt over much of the basal resolution in these trees.

One of the primary impediments to resolving relationships here has been the representation of so many species by only a single sex (or in some

TABLE 3. Published host records for species of *Chlamydopsis*. Only valid host species names are listed. See Table 1 for equivalence with originally published host names. Letters refer to literature cited: a = Lea, 1910; b = Lea, 1912; c = Lea, 1914b; d = Lea, 1918; e = Lea, 1919; f = Lea, 1925; g = Oke, 1923; h = King, 1869; i = this study. ¹The previously reported host has been split into these three species potentially sympatric with the beetle. ²Lea reports that this species was collected in the vicinity of three species of ant; it was not possible to determine which was the host: *Myrmecia pyriformis*, *Ectatomma metallicum*, *Pheidole conflicta*. ³These records were reported for the now synonymised *C. excavata* Lea.

Valid host species	Ponerinae					Dolichoderinae					Formicinae		Myrmecinae				
	<i>Rhytidoponera metallica</i>	<i>Rhytidoponera</i> sp.	<i>Rhytidoponera violacea</i>	<i>Rhytidoponera punctatata</i>	<i>Pachycondyla lutea</i>	<i>Iridomyrmex gracilis gracilis</i>	<i>Iridomyrmex rufoniger</i> ssp.	<i>I. purpureus</i> <i>I. sanguineus</i> <i>I. foreli</i> ¹	<i>Iridomyrmex conifer</i>	<i>Iridomyrmex</i> sp.	<i>Dolichoderus ypsilon ypsilon</i>	<i>Notoncus ectatommoides</i>	<i>Camponotus aeneopilosus</i> ssp.	<i>Crematogaster</i> sp.	<i>Meranoplus minor</i>	<i>Aphaenogaster longiceps longiceps</i>	<i>Aphaenogaster</i> sp.
<i>C. striatipennis</i>	f,g					g				e,f,g							
<i>C. leai</i>										g							
<i>C. pallida</i>														d			
<i>C. reticulata</i> ²	f	e ³ ,g ³															
<i>C. strigicollis</i>		g															
<i>C. mormolyce</i>				f													
<i>C. pygidialis</i>		g							f								
<i>C. carnicollis</i>		g													e		
<i>C. serricollis</i>	c																
<i>C. setipennis</i>											g						
<i>C. longipes</i>	a,b,g																
<i>C. agilis</i>	c,e,f																
<i>C. ectatommae</i>	b,d,g																
<i>C. myrmecophila</i>																	i
<i>C. loculosa</i>			f										f				
<i>C. bifovaecollis</i>					g				g								
<i>C. epipleuralis</i>						g			b,f								
<i>C. sculptus</i>									g								
<i>C. formicicola</i>											h,b,f						
<i>C. latipes</i>			f							e							
<i>C. inquilina</i>								e									
<i>C. detecti</i>							c										
<i>C. tuberculata</i>							b,g		e								

cases, perhaps, the inability to associate males with females). The sexual dimorphism in integumental texture, and, in some, trichome morphology, may prove to be important phylogenetic markers. But at present too many species have had to be scored as ‘unknown’ for them to have had much positive effect. Ovipositor morphology, likewise, shows interesting variation, but is missing in too many taxa to be as informative as it might. The fact that many species remain known only from types

(which I have rarely risked to dissect) contributes further ambiguity to the dataset and results.

A summary of known host associations is presented in Table 3. These represent a broad phylogenetic range of ants, with hosts from four different subfamilies. Hosts in the Ponerinae predominate (13 species of *Chlamydopsis*), with Dolichoderinae a close second (9 species). It is perhaps surprising to note that several beetles use multiple hosts, even hosts in different subfamilies (e.g., *C. striatipennis* with *Rhytidoponera* and

Iridomyrmex; *C. latipes* with *Rhytidoponera* and *Dolichoderus*; *C. carinicollis* with *Rhytidoponera* and *Aphaenogaster*). Some of this may reflect local differentiation, and the host identifications given in the literature, for the most part, cannot be verified, but it appears that host specificity may be low for some species. This would have obvious implications in terms of chemical and behavioural integrating mechanisms. Similarly, little in the way of phylogenetic structure is evident with respect to host use, with apparently closely related species (e.g., *C. striatipennis*, *C. leai*, *C. pallida*) ranging across multiple host species and subfamilies. One possible phylogenetic distinction worth noting is the lack of host records for the ant *Pheidole*. Species of this ant genus are the preferred hosts for several species of *Pheidoliphila*, and this may represent a deep divergence between these two, broadly sympatric chlamydopsine genera.

While more large scale surveys will undoubtedly turn up additional interesting species of *Chlamydopsis*, the most pressing need at this stage is for more specific collecting. Locating these species in their natural environments will allow identification of hosts (known now for only a small fraction of species), facilitate association of sexes, and allow preservation of specimens for molecular work. At present only a single specimen of Chlamydopsinae adequate for DNA study has been obtained. It is unlikely that full phylogenetic resolution for the group will be achieved without combining morphological and molecular data. These ambiguities and limitations notwithstanding, the study of Chlamydopsinae is advancing rapidly. This is a fascinating and wonderful group of insects, and undoubtedly their continued study will yield many evolutionary insights.

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