

REVIEW OF THE *Thalycrodes* COMPLEX OF GENERA (COLEOPTERA: NITIDULIDAE) ENDEMIC TO THE AUSTRALIAN REGION

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Abstract

The *Thalycrodes* complex includes the genera *Thalycrodes* Blackburn, *Rixerodes* gen.n. and *Australycra* gen.n., all of which are endemic to Australia. The following new species and new combination are proposed: *Thalycrodes alutaceum* sp.n., *T. annae* sp.n., *T. mixtum* sp.n., *T. calvatum* sp.n., *Rixerodes cornutus* sp.n., *R. cunninghami* sp.n. and *Australycra obscura* (Blackburn), comb.n.

Introduction

Representatives of the *Thalycrodes* complex of the subfamily Nitidulinae are fairly common throughout Australia, but only "*Lasiodactylus*" *obscurus* and 3 species of *Thalycrodes* Blackburn have been previously described (Blackburn 1891). The relatively recent accumulation of large series of specimens, particularly of *Thalycrodes* species, is partly due to the utilisation of a wider variety of collecting devices and techniques, including flight-intercept traps, Malaise traps and pitfalls (both unbaited and dung-baited). The present work attempts to revise the 3 genera involved, to discuss the phylogenetic position of the group, and, for *Thalycrodes* species, to comment on their presumed biology and the structure and possible function of their peculiar antennal vesicles.

The terminology used generally follows that of Kirejtshuk and Lawrence (1990) and other papers by Kirejtshuk. As in many nitidulids, the elytral punctation is dual, with smaller micropunctures and much larger, shallow, flat-bottomed megapunctures; the latter contain a deep pore near the anterior end and both have setae at the anterior edge. The male genital capsule consists of an externally visible tergite 8, a membranous and concealed 8th sternite, the ventral plate (a remnant of segment 9) and the spiculum gastrale, an anteriorly projecting, median strut attached to sternite 9. In the female, the median, anterior strut of sternite 8 is called the spiculum ventrale.

In citing specimen data for previously described species, an asterisk is used for series of 30 or more specimens.

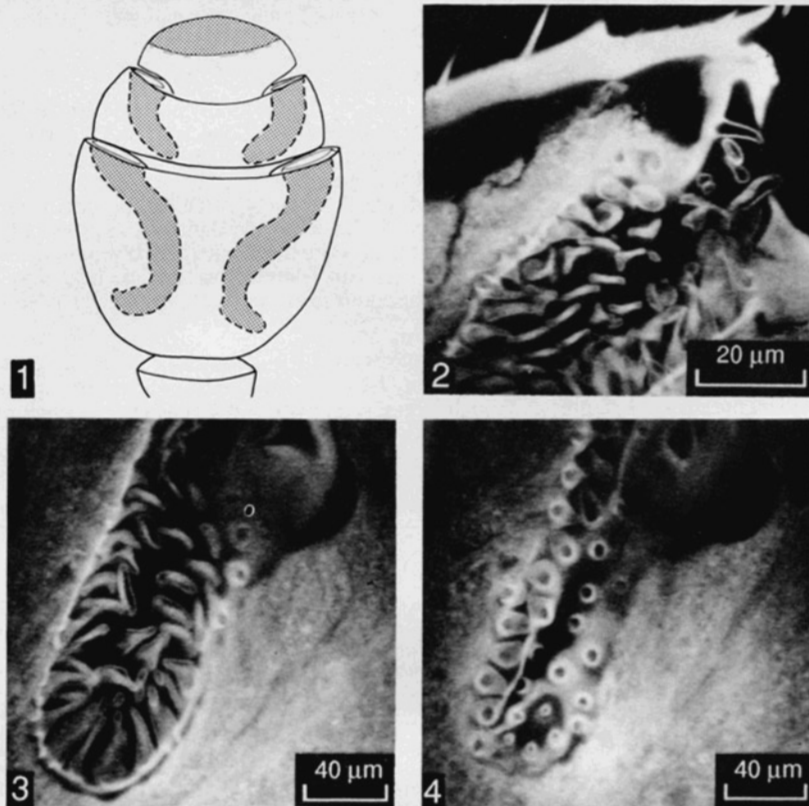
Images of the antennal vesicles in *Thalycrodes* were produced by optically sectioning a cleared and bleached antennal club with the aid of a confocal laser scanning microscope.

Abbreviations: ANIC, Australian National Insect Collection, Canberra; AMS, Australian Museum, Sydney; AWH, A. Walford-Huggins collection; BCRI, Biological and Chemical Research Institute, Rydalmere; BMNH, The Natural History Museum (formerly British Museum (Natural History)), London, U.K.; DFO, Queensland Forestry Service, Indooroopilly; FMNH, Field Museum of Natural History, Chicago, U.S.A.; MACL, Macleay Museum, University of Sydney, Sydney; MNHU, Museum für Naturkunde an der Humboldt-Universität, Berlin, Germany; MVM, Museum of Victoria, Melbourne; QDPI, Queensland Department of Primary Industries, Indooroopilly; QDPM, Queensland Department of Primary Industries, Mareeba; QMB, Queensland Museum, Brisbane; SAM, South Australian Museum, Adelaide; VRB, V. R. Bejsak collection; WAM, Western Australian Museum, Perth; ZINL, Zoological Institute, Academy of Sciences, Leningrad, U.S.S.R.; ZMU, Zoological Museum, Manchester University, Manchester, U.K.

The *Thalycrodes* Complex

The 3 genera *Thalycrodes* Blackburn, *Rixerodes* gen.n. and *Australycra* gen.n. are regarded as a monophyletic group endemic to the Australian region and sharing the following features: (1) body slightly to distinctly elongate, relatively convex above and below (slightly flattened in *Rixerodes*); (2) punctation and pubescence distinct; (3) sides of pronotum and elytra ciliate; (4) elytral punctation dual, with micropunctures and megapunctures forming distinct, alternating rows, and both bearing hairs which usually differ in length and slope (Figs 8-10); (5) elytra often appearing slightly furrowed, due to slightly elevated intervals and subconfluent megapunctures forming continuous grooves (not as evident in *Australycra*); (6) sutural

striae visible on distal portion of elytra; (7) all pairs of coxae moderately and more or less equally approximate (the hind pair slightly more distant); (8) pronotal intercoxal process with triangular apex extending behind coxae and vertically abrupt; (9) hind edge of metasternum between coxae more or less emarginate (Fig. 6); (10) coxal lines on metasternum strongly diverging to beyond middle of metepisternum, forming relatively large axillary space (Fig. 6); (11) coxal lines on ventrite 1 usually distinctly diverging from hind edges of coxae (Fig. 16) (almost undiverging in *Australycra*); (12) male genitalia of a similar type.

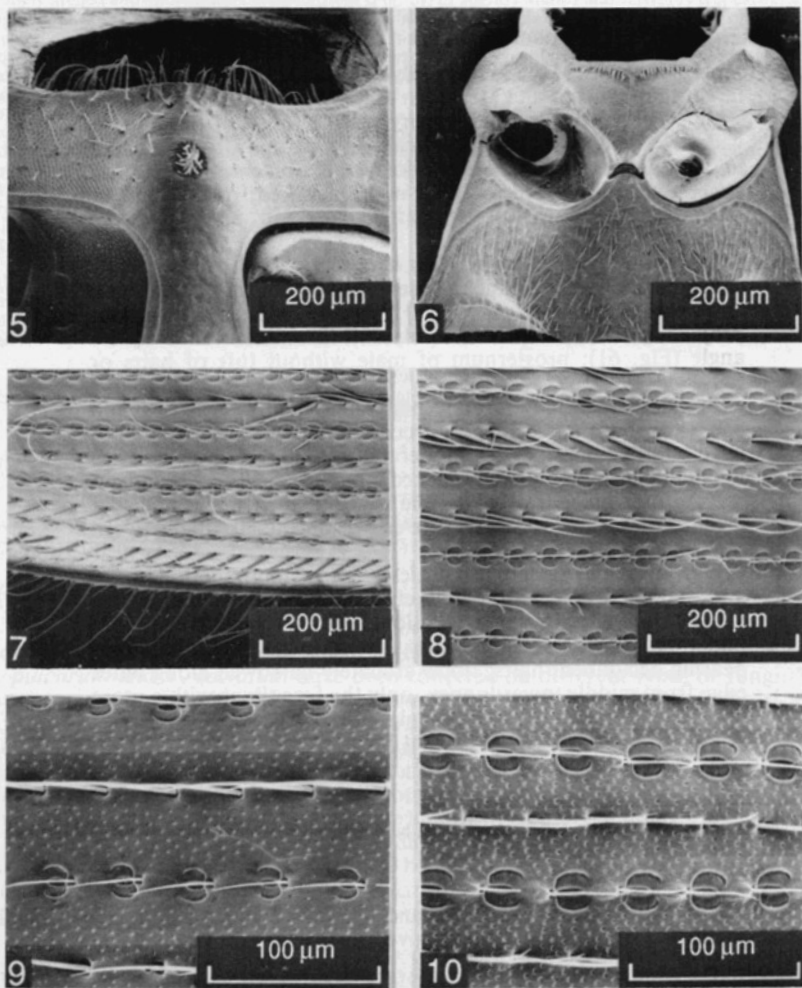


FIGS 1-4—*Thalycrodes pulchrum*, antennal club: (1) outline showing extent of vesicles on first two club segments; (2-4) details of antennal vesicle, showing flattened, basally enlarged and apically tapered, sensilla.

This group undoubtedly belongs to the *Pocadius* lineage of the Nitidulinae, as defined by Audisio and Kirejtshuk (1983), based on the type of pubescence and elytral punctation, approximate hind coxae, and peculiarities of tibial structure and genitalia of both sexes. It differs from other members of that lineage in the more or less elongate body shape, moderately convex above and below, medially carinate mesosternum, arcuately convergent antennal grooves, large triangular axillary space formed by the coxal lines of the metasternum, distinctly but not strongly bilobed tarsomeres 1-3 on all tarsi, and more or less divergent coxal lines on ventrite 1.

There is some resemblance to the *Thalycra* complex (*Thalycra* Erichson, *Perthalycra* Howden and *Neothalycra* Grouvelle), especially to *N. latitibialis* Audisio and Kirejtshuk (1983), in body shape, details of frons, labrum and antennal grooves, peculiarities of sternal structure, and the divided ventral plate of the male. The present group may be distinguished from members of the *Thalycra* complex by the following features: (1) regular seriate punctation, usually with series of weak furrows on elytra

formed by alternate puncture rows; (2) weakly carinate mesosternum; (3) metasternum with large, triangular axillary space; (4) coxal lines on ventrite 1 arcuately diverging from edges of hind coxal cavities; (5) genital structures of both sexes characteristic. *Thalycrodes* is similar to *Thalycra* (Holarctic) and *Perthalycra* (Nearctic) in having the basal segment of the antennal club greatly enlarged; however, the latter 2 genera lack the antennal vesicles found in *Thalycrodes* (see below) and differ in a number of other respects.



FIGS 5-10—*Thalycrodes* spp.: (5) *T. calvatum*, mesal portion of prosternum, showing pubescent fovea; (6-7) *T. australe*: (6) meso-metathorax, ventral, with right mid coxa, metepisterna and hind coxae removed; (7) portion of right elytron, showing lateral fringe of hairs; (8-10) portion of elytron showing alignment of macropunctures and micropunctures: (8) *T. australe*; (9) *T. calvatum*; (10) *T. pulchrum*.

Members of the *Thalycrodes* complex also resemble species of *Aethina* Erichson and related genera, such as *Ithyra* Reitter, *Aethinopsis* Grouvelle and *Idaethina* Reitter (Kirejtshuk 1986, 1987; Kirejtshuk and Lawrence 1990), in the somewhat abrupt elytral apices, shape of the prosternal process, carinate mesosternum, large axillary space and contour of the coxal lines of ventrite 1 (in some representatives). However, they differ from members of that group in having: (1) arcuately convergent antennal

grooves; (2) approximate hind coxae; (3) moderately dilated fore coxae; and (4) regularly seriate elytral punctation and longitudinal impressions.

The genus *Australycra* has a combination of features which also occur in the genus *Gaulodes* Erichson, but in *Gaulodes* the hind angles of the pronotum project posteriorly, the elytra are distinctly, longitudinally ridged, and the coxal lines on both metasternum and ventrite 1 follow the edges of the coxal cavities and do not deviate from them.

Key to Genera of *Thalycrodes* Complex

1. Antennal club (Figs 1, 12, 25, 28) highly compacted, 1st segment much larger than the 2nd and 3rd taken together; first 2 club segments with large, paired, internal sensory vesicles (Figs 2-4); pronotum widest at middle, with sides weakly to strongly rounded and narrowed anteriorly and posteriorly; all tibiae with subapical process strongly projecting and usually forked; prosternum of male with median tuft of hairs placed in a large fovea (Fig. 5) **Thalycrodes** Blackburn
- Antennal club (Figs 46, 61) not as above, 1st and 2nd segments subequal and sensory vesicles absent; pronotum widest near base and strongly narrowed anteriorly or parallel-sided; tibiae without projecting subapical process, only with prominent outer apical angle (Fig. 61); prosternum of male without tuft of hairs or fossa 2
2. Body (Fig. 61) larger (length rarely less than 3.5 mm), more oval and convex; pronotum and elytra arcuately narrowed towards both head and pygidium; elytra moderately sloping posteriorly, with longitudinal rows of densely packed punctures bearing decumbent hairs; outer apical angle of tibia quite distinct and somewhat prominent; distance between fore coxae subequal to that between hind coxae **Australycra** gen.n.
- Body (Fig. 44) smaller (length usually less than 3.5 mm), more elongate and flattened; pronotum and elytra subparallel-sided; elytra weakly sloping posteriorly, with longitudinal rows of very dense punctures bearing suberect hairs, alternating with similar rows bearing decumbent hairs; tibiae arcuately narrowed along outer edge from middle towards apex, only the fore tibiae with a more or less developed outer apical angle; distance between fore coxae about 0.33 times as great as that between hind coxae. **Rixerodes** gen.n.

Thalycrodes Blackburn

Thalycrodes Blackburn, 1891: 110. Type species, here designated, *T. australe* (Germar).

Diagnosis

Easily distinguished from *Rixerodes* and *Australycra* by the enlarged first antennal club segment and by other characters given in the key above.

Redescription

Body (Figs 11, 23, 27, 34, 43)—Oblong to moderately elongate, moderately convex dorsally and ventrally. Surface usually clothed with suberect pubescence; pronotal and elytral margins with more or less raised cilia; elytra with longitudinal rows of hairs. Elytra of most species with a variable pattern of spots at the shoulders and along the suture (Figs 11, 23, 27).

Head—Flattened and transverse, with arcuate, transverse depression between antennal insertions (very weak in *T. alutaceum*). Eyes usually small, projecting, temples behind them more or less developed (except in *T. calvatum*, Fig. 43). Antennal grooves arcuately convergent, with sharply defined inner edge. Labrum bilobed, with deep excision at middle. Mandibles strongly curved with bidentate apex. Mentum subquadrangular, transverse. Last segment of both maxillary and labial palps elongate, somewhat narrowed towards abrupt apex. Antennae almost as long as head width; club (Figs 1, 12, 25, 28) 3-segmented with first segment as large as next 2 combined, first 2 segments each with pair of deep, internal, sensory vesicles (Figs 2-4; see below).

Dorsal surfaces—Pronotum widest at middle, with arcuate sides, usually slightly sloping (steeply so in *T. cylindricum*), almost non-explanate (except in *T. annae*, Fig. 27); base and apex distinctly margined. Scutellum transversely triangular. Elytra very weakly sloping posteriorly, with posteriorly, steeply to almost vertically sloping laterally, broadly rounded to subtruncate at apex; micropunctures and megapunctures forming regular longitudinal rows; subsutural striae visible on posterior 3rd; epipleura slightly sloping upwardly, outer edge on slightly higher plane than inner one. Pygidium with apex exposed, truncate in male and rounded in female.

Ventral surfaces—Prosternum mesally tumid, prosternal process extending behind fore coxae, either strongly arched and approaching mesosternum (Fig. 24) or slightly arched and vertically truncate apically (Fig. 35); apex subtriangular and slightly expanded laterally. Prosternum in male with a tuft of hairs (Fig. 5) emerging from fovea located at midline just behind anterior edge. Fore coxal cavities closed behind, pronotal (hypomeral) projections fitting into cavities in apex of prosternal process; distance between fore coxae about 0.33 times as great as width of coxal cavity. Mesosternum carinate anteriorly, slightly elevated posteriorly to form broad intercoxal process, notched at apex; distance between mid coxae slightly less than that between fore coxae. Metasternum with coxal lines abruptly diverging from hind margins of mid coxal cavities, so that each meets edge of metepisternum at point just beyond the middle of metasternum and forms triangular, impunctate axillary space. Posterior edge of metasternum narrowly emarginate between hind coxae. Distance between hind coxae somewhat greater than that between fore coxae. Abdomen with coxal lines on ventrite 1 (Fig. 16) strongly diverging from edges of hind coxae and extending posteriorly, forming curved angle towards hind edge of ventrite; apex of last ventrite transverse or slightly biemarginate in male and evenly rounded in female.

Legs (Fig. 43)—Stout and moderately long. All tibiae (Figs 13-15, 29, 37, 41-43) expanded apically, with strongly projecting subapical process (usually forked); mid and hind tibiae with thin or stout spines intermixed with rows of suberect hairs and setae along outer edge. Femora slightly, evenly rounded internally and externally. All tarsi similar, narrow, without evident sexual dimorphism; tarsomeres 1-3 scarcely dilated, 5 almost as long as 1-3 or 1-4 combined. Claws small, scarcely widened at base.

Genitalia—Aedeagus (Figs 18-20, 30-32, 38-39) well sclerotised and flattened; tegmen with slightly projecting apical lobe; ventral plate of genital capsule (Fig. 17) divided into 2 parts. Ovipositor (Figs 22, 33, 40) moderately sclerotised and rather typical of more generalised representatives of the family.

Distribution

Restricted to Australia, but occurring in most parts of the continent. The occurrence of *T. australe* in New Zealand is thought to be the result of an introduction from Australia.

Biology

Little is known of the feeding habits or microhabitats of *Thalycrodes* spp., since most adults are collected at light or in flight intercept or pitfall traps; however, both *T. pulchrum* and *T. calvatum* have been collected on different types of fungi. The former was collected with *Coprinus comatus* (Müller ex Fries) S. F. Gray (Agaricales: Coprinaceae) in the A.C.T. and under an unidentified mushroom in New South Wales; the latter has been recorded from two Gasteromycetes in Western Australia: "puff ball fungi" (Lycoperdaceae?) and "basket fungus" (Clathraceae?). In an ecological survey conducted near Mt Wog Wog in southeastern New South Wales, *Thalycrodes* (mainly *T. australe* and *T. pulchrum*) were among the most commonly trapped beetles in pitfalls, the number collected from 188 pitfall traps in a 1-week period usually varying from 35 to 200, with almost 4,000 being recorded during one trapping period. Similarly, large series of the wingless *T. calvatum* were taken in dung- and carrion-baited pitfalls in Western Australia.

A clue to larval feeding habits may be found in the peculiar structure of the antennal club in the adult. *Thalycrodes* are distinguished by having the first segment of the antennal club much larger than the other 2; among the Nitidulidae, this feature occurs elsewhere only in a few highly modified myrmecophilies in the Lawrenceosini (Kirejtshuk 1990) and in the Holarctic genera *Thalycra* and *Perthalycra*, the first of which is known to breed in the subterranean fruiting bodies of certain Gasteromycetes (Hymenogastraceae) (Howden 1961; Fogel and Peck 1975). The *Thalycrodes* antennal club is also characterised by having enlarged, internal, sensory vesicles in the first 2 segments (9 and 10), a feature not found in *Thalycra* and related genera. These vesicles (Figs 1-4) represent invaginations of the lateral portions of the apical surface of each segment, which in most nitidulids are the locations of the greatest concentrations of sensilla basiconica; they are not homologous to the structures described by Gillogly (1947) on the apical antennal segment in some Carphophilinae.

The vesicles on segment 9 are particularly large and may be somewhat asymmetrical. The inside surface is packed with what appear to be a single type of sensilla projecting into the lumen (Figs 2-3); each sensillum has a narrow base (about 3 μm), but expands abruptly in one plane only, forming a flattened structure, tapered to a narrowly rounded apex. Crowson (1955) and Peck (1977) noted the presence of similar vesicles on the antennal club (particularly segments 9 and 10) in the staphylinoid family Leiodidae, and Corbière-Tichané (1974) described in detail those occurring in the cavernicolous leiodid *Speophyes lucidula* (Delarouzée). These structures appear to be most highly developed in genera such as *Dietta* Sharp, *Leiodes* Latreille and *Hydnobius* Schmidt, where adults are highly modified for burrowing in soil and larvae apparently feed on subterranean fungi. These facts combined with the known association of adult *Thalycrodes* with Gasteromycetes and soft Basidiomycetes (Agaricales) suggest that these nitidulids may also burrow into the soil and lay their eggs on hypogean fungal fruiting bodies. The invagination of basiconic sensilla with the formation of internal vesicles would serve to protect the olfactory apparatus while the insect is burrowing.

Notes

Species of this genus exhibit a great amount of variation in body size, elytral maculation, tibial and tarsal structures, punctation and surface sculpture, structure of the antennal club, eye size, and the development of temples. The spines along the outer edge of the mid and hind tibiae often vary considerably in number and in thickness. The shape of the subapical tibial process seems to be quite variable, although the crenulation of the fore tibia proximal of the process is relatively stable. The more prominent teeth along the outer edge of the fore tibia in *T. mixtum* are somewhat variable in size and number. Identification of species of *Thalycrodes* is made particularly difficult because of this variation, and the fact that the genitalia are very similar among the species adds to the problem. Relatively few features were found to be diagnostic; these include body shape, peculiarities of punctation, sculpturing and pubescence, crenulation of the outer edge of the fore tibia and (in one case) the contour of the coxal lines on ventrite 1. Members of the *australe* group (see below) are particularly difficult to distinguish in some areas. It is also likely that 1 or more additional undescribed species are represented among the specimens here identified as *T. australe* or *T. pulchrum*. Wing length and correlated features, such as metasternal development, may vary both among and within species; in a population of *T. pulchrum* from southeastern New South Wales wing length varied from less than half to more than twice the elytral length, and the ratio of metasternum to ventrite 1 varied accordingly from less than 1.0 to almost 1.5.

Species of the genus may be divided into 2 groups on the basis of body shape and differences in the prosternal process: the *cylindricum* group, including *T. cylindricum*, *T. alutaceum* and *T. annae*, and the *australe* group, including the remaining species.

Key to Species of *Thalycrodes* Blackburn

1. Body more slender and elongate, with more or less parallel sides and somewhat flattened dorsum; elytra at least 1.5 times as long as their combined width; prosternal process weakly produced posteriorly and relatively strongly curved in middle, so that the apex approaches the surface of the mesosternum; outer edge of fore tibia finely and gradually crenulate and with raised, subapical, forked process **cylindricum** group 2
- Body more robust, oval and more convex, with sides of pronotum and elytra more rounded; elytra less than 1.4 times as long as their combined width; prosternal process extending well behind fore coxae, only slightly curved in middle, and abruptly raised and truncate at apex **australe** group 4
2. Dorsum entirely finely granulate and dull, its punctation sparse and moderately fine; elytra without furrows and interstices between longitudinal rows of dense punctures almost impunctate; dorsal

pubescence rather short and dense; eyes small, the temples behind them prominent; colour reddish-brown, with pair of red humeral spots and 3 pairs of spots along suture; 3.7-4.0 mm (Fig. 23); Qld., N.S.W. **alutaceum** sp.n.

Dorsum more or less shiny, spaces between punctures smooth or finely reticulate, sometimes only partly granulate; elytra with low but conspicuous ridges between longitudinal rows of dense punctures 3

3. Sides of pronotum slightly arcuate, rather steeply sloping and not explanate; surfaces of head and pronotum with large, dense punctures; first segment of antennal club only a little longer than combined lengths of 2nd and 3rd segments; pubescence shorter and more decumbent; 2.3-3.5 mm (Fig 11); N.S.W., A.C.T., Vic., Tas. **cylindricum** Blackburn

Sides of pronotum more strongly arcuate, slightly sloping and widely explanate; surfaces of head and pronotum with large but sparse punctures, the distances between them a puncture diameter or more; first segment of antennal club more than 2 times as long as combined lengths of 2nd and 3rd segments; pubescence longer and more erect; 3.6-4.1 mm (Fig. 27); W.A. **annae** sp.n.

4. Outer edge of fore tibia with 2 or 3 more prominent teeth among the almost even crenulation; pubescence always well developed and strongly contrasting, with suberect hairs much longer than decumbent ones; smaller and more slender (length 2.2-3.4 mm; width 1.2-1.7 mm); fore tarsus about 0.75 as long as corresponding tibia (Figs 41-42); W.A., S.A., Qld., A.C.T., Vic., Tas. **mixtum** sp.n.

Outer edge of fore tibia evenly crenulate, without prominent teeth; pubescence variable but not as strongly contrasting 5

5. Pubescence very long and suberect, hairs of pronotal and elytral fringes longer than width of antennal scape (Figs 7-8); more or less reddish or light brown in colour, usually without or with vaguely indicated spots on elytra; 2.5-4.2 mm (Fig. 34); widely distributed **australe** (Germar)

Pubescence shorter and more inclined, hairs of pronotal and elytral fringes much shorter than width of antennal scape; more often brown to almost black in colour, with contrasting light spots on elytra 6

6. Pronotum strongly and evenly convex, with broadly rounded angles; femoral line of hind coxae not extending beyond middle of ventrite 1; eyes somewhat larger, the temples behind them rather small; punctuation and pubescence on dorsum sparser (Fig. 9); 2.3-4.2 mm (Fig. 43); W.A. **calvatum** sp.n.

Pronotum moderately convex, with sides sharply rounded off and with distinct angles; femoral lines of hind coxae extending beyond the middle of ventrite 1; eyes small, the temples behind them rather prominent; punctuation and pubescence on dorsum denser (Fig. 10); 2.0-3.5 mm; Qld., N.S.W., A.C.T., N.T., W.A. **pulchrum** Blackburn

Thalycrodes cylindricum Blackburn (Figs 11-22)

Thalycrodes cylindricum Blackburn, 1891: 112. Type locality: VICTORIA, *Lectotype*, here designated, in BMNH, labels: "T 3643 HT" (card to which lectotype attached); "Type H.T." (red bordered disc); "Blackburn coll. 1910-236" (machine-printed); "Thalycrodes cylindricum, Blackb." (hand-written).

Specimens examined (140+)—NEW SOUTH WALES: 2, 15 km NE of Thredbo Village (36.30 S, 148.19 E), 27.ii.1962, R. N. Norris (ANIC, ZINL); 14, 4 km NE of Mt Wog Wog, 17 km SE Bombala (37.04.30 S, 149.28.00 E), x.1986, ii.1987, vii.1987, iv.1988, pitfall traps, C. Margules (ANIC); AUSTRALIAN CAPITAL TERRITORY: 2, Black Mtn, 21&24.iii.1968, light trap, M. S. Upton (ANIC); 1, Honeysuckle Creek (35.35 S, 149.00 E), 11-22.iv.1985, Malaise trap, I. D. Naumann, J. C. Cardale (ANIC); 1, Mt Franklin, 5.i.1979, J. F. Lawrence, D. C. Rentz (ANIC); VICTORIA: 1, Mt Buffalo N.P., 900 m, 18-19.i.1980, carrion trap (fish) 565-6, A. F. Newton, M. K. Thayer (ANIC); 2, Mt Donna Buang, 1200 m, 11-17.i.1980, pitfall

trap 556, A. F. Newton, M. K. Thayer (ANIC, ZINL); 1, Strawberry Saddle (36.56 S, 147.19 E), Bogong N.P., 1650 m, 22.i-13.ii.1987, flight intercept (window) trap (FMNH 87-197), A. Newton, M. Thayer (FMNH); 1, 5.5 km E of Strawberry Saddle (36.57 S, 147.21 E), Bogong N.P., 1450 m, 22.i-13.ii.1987, berl. leaf & log litter (FMHD 87-196) (FMNH); 4, 6.1 km ESE of Tanjil Bren (37.50 S, 146.12 E), 590 m, 29.i-10.ii.1987, flight intercept (window) trap, A. Newton, M. Thayer (ANIC, FMNH); 2, 12 km E of Warburton, 215 m, 12-16.i.1980, A. F. Newton, M. K. Thayer (ANIC); TASMANIA: 2, 2 km NW of Derwent Bridge, 730 m, 24-28.i.1980, human dung trap 562, A. F. Newton, M. K. Thayer (ANIC); 1, 9 km WSW of Derwent Bridge (42.10 S, 146.08 E), 21.i.1980, I. D. Naumann, J. C. Cardale (ANIC); 2, Hastings St. Res., nr Newdegate Cave, 130 m, 9.ii.1980, trapped in floating debris, forest stream, A. F. Newton, M. K. Thayer (ANIC); 1, Huon R., A. M. Lea (SAM); 2, W side of Lake St. Clair, c. 750 m, 25-29.i.1980, window trap 560, A. F. Newton, M. K. Thayer (ANIC); 3, Lower Gordon R. (42.38 S, 145.53 E-42.37 S, 145.56 E), i.1978, H.E.C. Survey, 14L.250, litter, Howard, Hill (ANIC); 2, Mt Barrow Rd., 570 m, 15-17.ii.1980, pitfall trap 583, A. F. Newton, M. K. Thayer (ANIC, ZINL); 1, Mt Barrow Rd., 890 m, 15-17.ii.1980, A. F. Newton, M. K. Thayer (ANIC); 8, Mt Barrow Rd., 1040 m, 15-17.ii.1980, pitfall trap (ANIC, ZINL); 1, Mt Field N. P., 240 m, 30.i-5.ii.1980, A. F. Newton, M. K. Thayer (ANIC); 3, Mt Field N. P., Lake Dobson Rd, 710 m, 30.i-5.ii.1980, A. F. Newton, M. K. Thayer (ANIC, ZINL); 1, Mt Field N. P., nr SE end Lake Fenton, 1000 m, 30.i-5.ii.1980, A. F. Newton, M. K. Thayer (ANIC); 1, Mt Field N. P., E edge of Wombat Moor, 1060 m, 30.i-5.ii.1980, A. F. Newton, M. K. Thayer (ANIC); 1, Mt Mangana (43.21 S, 147.13 E), Bruny I., 4-9.iv.1989, pitfall trap, P. Greenslade, J. Diggle (ANIC); 2, Mt Murchison (41.50 S, 145.37 E), 21.iv.1989, rainforest, pitfall trap, H. Mitchell (ANIC); 1, Mt Wellington, 24.xii.1901, Griffith (SAM); 1, Rufus Canal, 13.5 km WNW of Derwent Bridge, 800 m, 26-28.i.1980, pitfall trap 563, A. F. Newton, M. K. Thayer (ANIC); 1, Ulverstone, 5911, A. M. Lea (SAM); SOUTH AUSTRALIA: 8, Deep Creek, 2 km S of Boat Harbour Rd, 1-8.xii.1983, pitfall, P. Greenslade (SAM); 9, Kuitpo/Kyeema For., Mt Lofty Ranges, 30.ix.1984, pitfalls P. Greenslade (SAM); *, same locality, various dates, pitfalls, P. Greenslade (SAM); 29, Monarto Stn, 7.22.iv.1969, mallee site, P. J. M. Greenslade (ANIC, SAM).

Redescription

Length 2.3-3.5 mm; width 1.0-1.3; height 0.7-0.8 mm. Body (Fig. 11) elongate, moderately convex dorsally and somewhat flattened ventrally. Colour reddish-brown to dark brown; elytra usually with 3 pairs of indistinct red spots along suture; dorsum with faint sheen; vestiture of dense, contrasting, greyish-gold hairs, whose length on head and pronotum is a little greater than distance between them; hairs on elytra arranged in longitudinal rows, with hairs similar to those on head and pronotum, alternating with rows of sparser, less contrasting hairs; sides of pronotum and elytra distinctly ciliate. Head shorter than distance between eyes, with transverse, somewhat arcuate, deep depression between antennal insertions and with distinct temples; eye facets moderately large. Antenna longer than head width, club $ca \frac{1}{2}$ of total antennal length. Punctures large, much larger eye facets, and indistinct, separated by about $\frac{1}{2}$ to 1 puncture diameter; interspaces with weak reticulation. Pronotum with flattened disc and steeply sloping and narrowly explanate sides; punctation and sculpture as on head. Scutellum with small, sparse punctures and distinct reticulation. Elytra with very steeply sloping, subparallel sides; apices forming continuous arc. Surface slightly, longitudinally furrowed, with rows of dense, large and moderately shallow punctures, bearing longer, suberect hairs, on ridges and smaller, longitudinally subcontiguous punctures, bearing shorter, decumbent hairs, forming furrows. Pygidium finely, somewhat sparsely punctate and coarsely reticulate, almost granular. Prosternum with reticulation similar to and punctation finer and sparser than that on head and pronotum; distance between fore coxae slightly less than that between hind coxae. Metasternum longer than ventrite 1, flattened, punctures on mesal portion larger than those on prosternum but less distinct and with smooth intervals. Fore tibia finely crenulate before strong subapical process; mid and hind tibiae usually with slender spines along outer edges. Punctuation on ventrites similar to that on prosternum; lateral portions of all ventral sclerites without clear punctation and with deeply impressed, net-like reticulation. Male genital capsule as in Fig. 17; aedeagus as in Figs 18-20. Female spiculum ventrale as in Fig. 21; ovipositor as in Fig. 22.

Notes

This species differs from its congeners by the very slender, subcylindrical body with steeply sloping sides on pronotum and elytra, the very small first segment of the antennal club, and extremely dense pronotal punctation. From the closely related *T. alutaceum* it differs in the more finely reticulate and shiny elytra, which lack any trace of longitudinal furrows, in the smaller head with a deep depression between the antennal insertions, and the more strongly projecting subapical process on the fore tibia. It differs from *T. annae* by the much more convex body, with steeply sloping sides, and the smaller first antennal club segment. It differs from both of these species in having the prosternal process more strongly projecting behind the fore coxae.

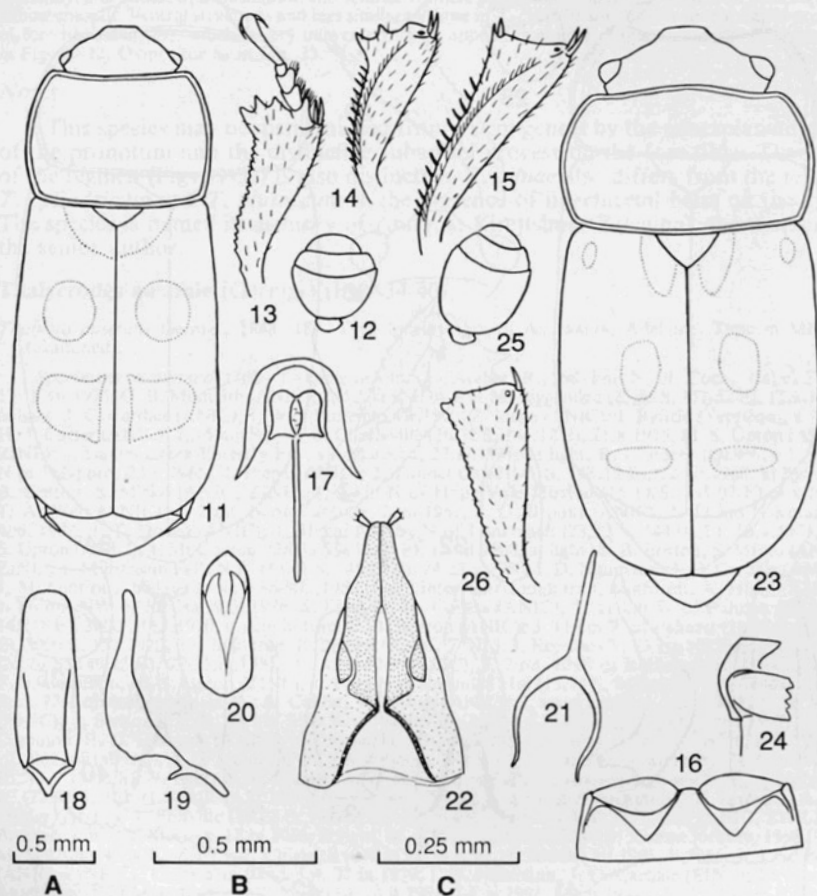
Thalycrodes alutaceum sp.n. (Figs 23-26)

Types—QUEENSLAND: *holotype* ♀, Ewan Rd, 10-12 mi. W of Paluma, 4-6.i.1966, J. C. & J. A. G. Brooks (ANIC); *paratype*: NEW SOUTH WALES: 1 ♀, 4 km NE Mt Wog Wog, 17 km SE Bombala (37.04.30 S, 149.28.00 E), vii.1989, pitfalls (pit 122), C. R. Margules (ANIC).

Description

Length 3.7, 4.0 mm; width 1.6, 1.8 mm; height 1.0 mm. Body (Fig. 23) elongate, moderately convex

dorsally and ventrally. Colour reddish-brown, with indistinct yellowish-reddish spots on elytra. Dorsal surface completely alutaceous and dull; ventral surface faintly shiny, finely and densely reticulate, except for mesal portion of mesosternum, which is shiny. Upper surfaces clothed with long but somewhat sparse, suberect hairs; sides with well-developed cilia (vestiture somewhat abraded on both types). Head comparatively large and broad, evenly convex, with faint trace of frontoclypeal suture; punctures large, separated by a puncture diameter or slightly more. Mandibles with short, blunt, simple apices. Antennae $\frac{2}{3}$ as long as head width, club more than $\frac{1}{2}$ total antennal length (Fig. 25). Pronotum evenly convex, with all edges margined; punctuation as on head. Elytra rather steeply sloping laterally, their apices forming a continuous arc; punctuation forming simple longitudinal rows with flat interstices, the punctures very fine, those bearing longer, suberect hairs sparsely distributed along row, those bearing shorter hairs subcontiguous. Ventral surfaces with less well developed punctuation, only those punctures on middle of metasternum and ventrite 1 slightly outlined. Metasternum longer than ventrite 1. Distance between fore coxae almost as large as that between hind coxae. Coxal lines on both metasternum and ventrite 1 as in *T. cylindricum*. Fore tibia with weakly developed subapical process (Fig. 26); mid and hind tibiae as in *T. cylindricum*. Male unknown. Ovipositor similar to that of *T. cylindricum* (cf. Fig. 22).



FIGS 11-26—*Thalycrodes* spp.: (11-22) *T. cylindricum*: (11) body, dorsal, showing pattern of spots on elytra; (12) antennal club; (13) fore tibia, dorsal; (14) mid tibia; (15) hind tibia; (16) femoral lines on ventrite 1; (17) male genital capsule, ventral plate and spiculum gastrale; (18) tegmen, ventral; (19) tegmen, lateral; (20) penis, dorsal; (21) female spiculum ventrale; (22) ovipositor, ventral; (23-26) *T. alutaceum*: (23) body, dorsal, showing pattern of spots on elytra; (24) middle of prosternum, lateral, with intercoxal process and base of fore leg; (25) antennal club; (26) fore tibia, dorsal. Scale A for Figs 11, 16, 23, 24; B for Figs 12-15, 17-21, 25, 26; C for Fig. 22.

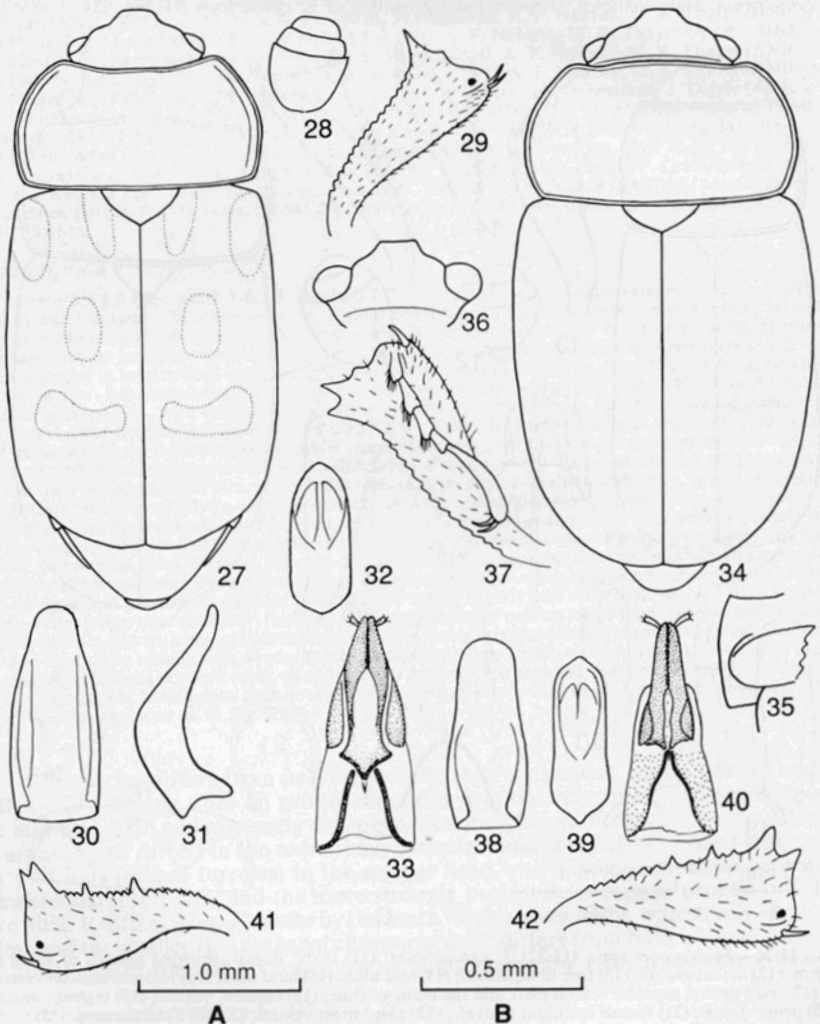
Notes

This species differs from all of its congeners in the large and slightly convex head

with a very weak frontoclypeal impression, absolutely alutaceous dorsal surface and elytral surface with no trace of longitudinal elevations. In addition, the species is characterised by the blunt, simple mandibular apices and weakly developed subapical process on the fore tibia.

***Thalycrodes annae* sp.n. (Figs 27-33)**

Types—WESTERN AUSTRALIA: *holotype* ♂, Woodline (31.55 S, 122.24 E), W.A.M. Goldfields Survey, WLR 4, shrubland, viii.1980, pitfalls, W. F. Humphreys et al. (WAM); *paratypes* (11): 8, same data as holotype (ANIC, WAM, ZINL); 1, Goongarrie (29.51 S, 121.08 E), W.A.M. Goldfields Survey, GGR 4, vii.1981, inter dune, pitfalls, W. F. Humphreys et al. (ANIC); 2, same locality, W.A.M. Goldfields Survey, GGR1, vii.1981, dune top, pitfalls, W. F. Humphreys (ANIC, WAM).



FIGS 27-42—*Thalycrodes* spp.: (27-33) *T. annae*: (27) body, dorsal, showing pattern of spots on elytra; (28) antennal club; (29) fore tibia, dorsal; (30) tegmen, ventral; (31) tegmen, lateral; (32) penis, dorsal; (33) ovipositor, ventral; (34-40) *T. australe*: (34) body, dorsal; (35) middle of prosternum, with intercoxal process and base of fore leg; (36) head of one of largest specimens, dorsal; (37) fore tibia and tarsus of one of largest specimens; (38) tegmen, ventral; (39) penis, ventral; (40) ovipositor, ventral; (41, 42) *T. mixtum*, fore tibia, dorsal. Scale A for Figs 27, 34; B for Figs 28-33, 35-42.

Description

Length 3.3-4.2 mm; width 1.2-1.7 mm; height 1.0 mm. Body (Fig. 27) elongate, moderately convex dorsally and ventrally; reddish-brown with contrasting reddish-yellow spots on elytra; lateral edges of pronotum, mouthparts, antennae and legs also yellowish-red; dorsal surface moderately shiny, with quite long and contrasting, dense greyish pubescence. Head as in *T. cylindricum*, but eyes somewhat larger, with short hairs placed among eye facets; punctures large, intervals between them somewhat larger than puncture diameter, finely and densely, lightly reticulate. Antennal club with very large first segment, more than twice as long as last 2 segments combined (Fig. 28). Pronotum slightly sloping laterally, the sides somewhat explanate; punctuation as on head but separated by up to 2 puncture diameters, similarly reticulate. Elytra more steeply sloping laterally to narrowly margined sides; punctures moderately large and densely placed along ridges and furrows, spaces between them reticulate as on head and pronotum; pubescence contrasting, hairs on ridges longer and more erect. Pygidium with apex truncate in male, rounded in female; punctures small and dense; intervals coarsely reticulate, almost granulate. Ventral surface with indistinct, more or less dense punctuation and dense reticulation, except for middle of prosternum, which is impunctate and shiny, and middle of metasternum and ventrite 1, where punctuation is sparser; intervals on metasternum almost smooth. Ventral structures and legs similar to those in *T. cylindricum*, except for subapical process of fore tibia (Fig. 29), which is very unevenly forked, appearing almost simple and acute. Aedeagus as in Figs 30-32. Ovipositor as in Fig. 33.

Notes

This species may be distinguished from its congeners by the subexplanate sides of the pronotum and the distinctive subapical process on the fore tibia. The apex of the tegmen (Figs 31-32) is also distinctive. *T. annae* also differs from the related *T. cylindricum* and *T. alutaceum* in the presence of interfacetal hairs on the eyes. The species is named in memory of Anna A. Kirejtshuk (Zelenina), the mother of the senior author.

Thalycrodes australe (Germar) (Figs 34-40)

Thalycra australis Germar, 1848: 187. Type locality: SOUTH AUSTRALIA, Adelaide. Type in MNHU (examined).

Specimens examined (700+)—QUEENSLAND: 1, Archer R., 68 km N of Coen, Cape York, 17-18.vii.1975, G. B. Monteith (ANIC); 2, 5.5 km SE by S of Mt Biggenden (25.35 S, 151.57 E), 11.x.1984, at light, J. C. Cardale (ANIC); 1, W of Burleigh, 4.v.1970, Z. Liepa (ANIC); 1, Byfield (Yeppoon), x.1924, H. J. Carter (ANIC); 2, 15 km S by W of Charleville (26.32 S, 146.12 E), 21.x.1975, M. S. Upton (ANIC, ZINL); 1, Davies Creek Forestry Rd., via Mareeba, 27.xi.1981, at light, R. I. Storey (QDPM); 1, 9 mi. N of Dayboro, 23.v.1966, Z. Liepa (ANIC); 2, Funnell Ck (21.47 S, 148.55 E), 12.xii.1968, at light, E. B. Britton, S. Misko (ANIC, ZINL); 1, Millstream Falls N.P. (17.41 S, 145.26 E), 24-25.v.1980, I. D. Naumann, J. C. Cardale (ANIC); 1, Mt Glorious, 630 m, 14.xi.1986-30.i.1987, flight intercept/trough trap, rainforest, A. Hiller (ANIC); 1, 66 mi. NW of Mt Isa, 9.iv.1976, at light, D. H. Colless (ANIC); 1, 11 km W of Paluma (11.55 S, 143.18 E), 3000', 15.i.1970, u.v. light trap, E. B. Britton (ANIC); 3, 11 km W of Paluma (11.55 S, 143.18 E), 3000 ft, 15.i.1970, u.v. light trap, E. Britton (ANIC, ZINL); 1, Repulse Ck, 23 km NE Bauhinia Downs (26.24 S, 149.23 E), 22-23.iv.1981, A. A. Calder (ANIC); 1, 2 mi. ENE of Rollingstone, 26.iv.1969, I. F. B. Common, M. S. Upton (ZINL); 1, 1 km N of Rounded Hill (15.17 S, 145.13 E), 5-7.v.1981, ANIC Berl. 725, open forest litter, A. A. Calder, J. Feehan (ANIC); 2, same locality, 5-6.x.1980, T. A. Weir (ANIC); 1, Stannary Hills, 11 km S by W of Matchilba (17.14 S, 145.11 E), 700 m, 26.v.1977, I. F. B. Common, E. D. Edwards (ANIC); 1, Townsville, 23-30.v.1968, light trap, P. Ferrar (ANIC); 8, Wilpa, vii.1982, pitfall trap, J. D. Majer (ANIC); NEW SOUTH WALES: 1, 10 km N of Adamina, Murrumbidgee R., 17.v.1983, M. V. light, G. R. Brown, A. E. Westcott (BCRI); 1, Barrington Tops N.P., Gloucester R. (32.04 S, 151.41 E), 12-14.xi.1981, ANIC Berl. 751, rainforest litter with moss, T. A. Weir, A. A. Calder (ANIC); 4, Bonville (30.23 S, 153.04 E), 12.xii.1968, light trap, P. B. Carne (ANIC, ZINL); 7, Brooulee, 7 mi. NE Moruya, 12.iv.1986, at light, M. S. Upton (ANIC, ZINL); 5, same locality, 19.v.1966, M. S. Upton (ANIC, ZINL); 5, Chiswick (CSIRO Lab.), nr. Armidale, xii.1965, ii.1966, B. Clydesdale (ANIC, ZINL); 1, Clyde Mtn (landslip), 27.ix.1979, I. D. Naumann, J. C. Cardale (ZINL); 14, Congo, 8 km SE by E of Moruya (35.58 S, 150.09 E), 14.ii.1981, 7-8.xi.1981, 30.xii.1981, 12.iii.1983, M. S. Upton (ANIC); 2, same locality, 16-17.iii.1985, M. V. Light, C. A. M. Reid (ANIC); 2, 9 km NNE of Coonabarabran, Pilliga Scrub, 24.x.1980, E. B. Britton (ANIC); 1, Copeland Tops Forest Rd, 19 km from Gloucester, 4.i.1982, E. B. Britton (ANIC); 2, Kioloa State For., 15 km NE of Batemans Bay (35.30 S, 150.18 E), x.1986, i.1987, flight intercept trap, M. G. Robinson (ANIC); 3, Mebbin St. For., 18 km W of Uki, 23-24.xi.1982, J. T. Doyen (ANIC); 1, Mollymook, nr Ulladula (35.21 S, 150.28 E), 26.i.1971, at light, E. B. Britton (ANIC); 2, Mootwingee Historical Site (31.14 S, 142.18 E), 2.v.1976, I. F. B. Common, E. D. Edwards (ANIC); 1, Mt Kosciusko, Summit Rd, 5000 ft., 20.iv.1967, T. G. Wood (ANIC); 1, Mt Kosciusko, near Hotel, 5000 ft, 17.v.1966, T. G. Wood, Winbush (ANIC); 1, Valery, A. P. M. Eucalyptus plantation, 10.1.1967, black light trap, R. McInnes (ANIC); 11, 4 km NE of Mt Wog Wog, 17 km SE of Bombala (37.04.30 S, 149.28.00 E), x.1986, ii.1987, x.1988, i.1989, pitfalls, C. R. Margules (ANIC); 4, 2 km WSW of Three Corners HS, Goanoo St. For. (31.55 S, 149.00 E), 26-28.v.1976, A. Nicholls (ANIC, ZINL); 1, Yuragor N. P., Station Coak, 20.xi.1982, at light, J. & E. Doyen (ANIC); AUSTRALIAN CAPITAL

TERRITORY: 3, Black Mtn, Canberra 18.xii.1951, 17.i.1952, L. Chinnick (ANIC); 1, Black Mtn, west face, 620 m, 8.vii.1970, J. Simmons (ANIC); * Black Mtn, i-iv.1965-1968, I. F. B. Common, M. S. Upton (ANIC, ZINL); 13, same locality, xi-xii.1965-1968, light trap, I. F. B. Common, M. S. Upton (ANIC, ZINL); * Black Mtn, 600 m, v.1987, flight intercept/trough trap, T. A. Weir, J. F. Lawrence, W. Dressler (ANIC); 1, Black Mtn, SE slope, 11.ii.1988, light trap, A. A. Calder (ANIC); 4, Black Mtn Reserve, E slope, 22.x.1970, S. Misko (ANIC, ZINL); 1, Deakin, xii.1978, E. B. Britton (ANIC); * Wombat Creek, 6 km NE Piccadilly Circus, 750 m, ii.iii.1984, i.ii.iii.iv.viii.ix.1985, flight intercept/trough trap, T. A. Weir, J. F. Lawrence, M. L. Johnson (ANIC); VICTORIA: 1, 5.4 km E by S of Hattah, 25.x-3.xi.1988, banana-baited pitfall trap, T. A. Weir, J. F. Lawrence, M. Hansen (ANIC); 1, Lake Hattah, 26.viii.1969, G. W. Anderson (ANIC); 2, Mt. Buffalo N. P. (36.42 S, 146.50 E), above Eurobin Point, 820 m, 23.i-12.ii.1987, flight intercept (window) trap, FMHD 87-200, A. Newton, M. Thayer (ANIC, FMNH); 1, Nerrin Nerrin, 18-19.vii.1979, K. & E. Carnaby (ANIC); 2, 7 km SW of Wemen (34.50 S, 142.35 E), 25.x-3.xi.1988, mallee at night, T. A. Weir, J. F. Lawrence, M. Hansen (ANIC); 8, Wyperfeld N. P., 4.5.xi.1966, I. F. B. Common, M. S. Upton (ANIC, ZINL); 2, Wyperfeld N. P., Frew's Plain (35.37 S, 142.01 E), 15-17.xi.1973, at light, S. Misko (ANIC); 5, Wyperfeld N. P., Lowan Track (35.35 S, 142.05 E), 16.xi.1973, at light, S. Misko (ANIC, ZINL); TASMANIA: 2, Mt Barrow Rd, 570 m, 15-17.xi.1980, pitfall trap 583, A. F. Newton, M. K. Thayer (ANIC); 1, Cradle Mtn N. P., Waldheim, ii-iii.1988, U. V. light, L. Hill (ANIC); 2, 1 km SSE of Gladstone (40.58 S, 148.01 E), 29.i.1983, at light, J. C. Cardale (ANIC); 1, 45 km ESE of Queenstown, 410 m, 19-20.ii.1980, fermenting malt trap, A. F. Newton, M. Thayer (ANIC); NORTHERN TERRITORY: 20, 9 km N by E of Alice Springs, Todd R., 1-10.x.1978, M. S. Upton (ANIC, ZINL); 2, 10 km N of Alice Springs, 19.iv.1976, G. Griffin (ANIC); 10, 30 km NW by W of Alice Springs (23.32 S, 133.38 E), Mt Solitaire, 20.ix.7.x.1978, M. S. Upton (ANIC, ZINL); 20, 32 km S by E of Alice Springs (23.59 S, 133.56 E), 23.ix.1978, M. S. Upton (ANIC, ZINL); 1, 32 km WNW of Alice Springs (23.36 S, 133.35 E), 8.x.1978, M. S. Upton (ANIC); 3, 33 km WNW of Alice Springs (23.36 S, 133.34 E), 30.ix.1978, M. S. Upton (ANIC, ZINL); 11, 39 km E of Alice Springs (23.41 S, 134.15 E), 25.26.ix.5.x.1978, M. S. Upton (ANIC); 6, 39 km SW by S of Alice Springs (23.59 S, 133.38 E), Waterhouse Range, 11.x.1978, M. S. Upton (ANIC, ZINL); 5, 41 km S by E of Alice Springs (24.03 S, 133.59 E), 4.x.1978, M. S. Upton (ANIC); 6, 53 km E by N of Alice Springs (23.35 S, 134.22 E), 6.x.1978, M. S. Upton (ANIC, ZINL); * 56 km S by E of Alice Springs (24.11 S, 134.01 E), 24.ix.3.x.1978, M. S. Upton (ANIC, ZINL); 1, Dingo Hole Dam, 30 km N of Ammaroo Stn, 8.x.1977, at light, J. A. Forrest (SAM); 1, Entire Creek, 155 km NE by E of Alice Springs (22.58 S, 135.09 E), 13.x.1978, M. S. Upton (ANIC); 4, Groote Eylandt, vi.1982, pitfall trap, J. D. Majer (ANIC); 4, same locality, N. B. Tindale (SAM); * James Ranges (24.15 S, 133.26 E), 22.ix.1978, M. S. Upton (ANIC, ZINL); 1, Koongara (12.52 S, 132.50 E), 6-10.iii.1973, M. S. Upton (ANIC); 13, 14 km SW by S of Kulgera (25.57 S, 133.13 E), 21.ix.1978, M. S. Upton (ANIC); 3, 18 km E by N of Oenpelli (12.17 S, 133.13 E), 1.vi.1973, E. G. Matthews, M. S. Upton (ANIC); 2, Plenty Highway, 268 km ENE of Alice Springs (22.47 S, 126.18 E), 14.x.1978, M. S. Upton (ANIC); 5, Plenty River, 187 km ENE of Alice Springs (22.54 S, 135.28 E), 14.x.1978, M. S. Upton (ANIC); 2, The Gorge WH, between Hatches Creek and Elkedra, 7.x.1977, at light, J. A. Forrest (SAM); SOUTH AUSTRALIA: 1, Adelaide, Blackburn (SAM); 2, Aldinga Sellicks Beach Res.15-22.ix.1987, pitfalls, E. G. Matthews (SAM); 2, Arcoona Ck, 2 km NE of Owieandana OS, Gammon Ra. N. P., 2-3.v.1989, at light, J. A. Forrest, G. F. Gross (SAM); 4, Buckaringa Gorge, c. 30 km NNW of Quorn, 18.xii.1985, C. A. M. Reid (ANIC); 2, Devon Downs, xii, S. A. Mus. Exp. (SAM), 1, Ferries-McDonald N. P., 1.ix.1978, E. G. Matthews (SAM); 3, Hambidge Nature Pk (33.30 S, 135.54 E), Eyre Peninsula, 16.xii.1970, at light, E. B. Britton, S. Misko, K. Pullen (ANIC); 1, Hookins Ck, Flinders Range, 16.x.1968, 428, P. J. M. Greenslade (ANIC); 1, Kolay Dam (32.33 S, 135.36 E), Paney Stn, Gawler Ranges, 7-11.xii.1989, pitfalls, J. Forrest (SAM); 1, Little Pine Hills (33.20 S, 137.06 E), 19.xii.1970, mallee at light, E. B. Britton, S. Misko, K. Pullen (ANIC); 1, Lucindale (SAM); 1, Melrose, 15.x.1968, 416, at light, P. J. M. Greenslade (ANIC); 6, 35 mi. ESE of Morgan, 5.v.1968, I. F. B. Common, M. S. Upton (ANIC); 1, Mt Lofty, xi,xii.1971, P. J. M. Greenslade (SAM); 2, Murray R., H. S. Cope (SAM); 2, Murray R., F. R. Zietz (SAM); 17, 54 km W by S of Nullarbor (31.35 S, 130.22 E), 25.x.1977, J. F. Lawrence (ANIC, ZINL); 1, 21 km SE Oodnadatta (30.40 S, 135.37 E), 20.ix.1978, M. S. Upton (ANIC); 1, Parachilna, Flinders Range, Hale (SAM); 1, Poochera (32.43 S, 134.50 E), x-xi.1984, R. T. Taylor, R. J. Bartell (ANIC); 2, 7 mi. SE of Salt Creek, 14.i.1962, G. F. Gross, P. Aitken (SAM); 1, Scorpion Springs C. P., 0.5 km SW of Nanam's Well, 16.xii.1983, at light, Museum Party (SAM); 1, Wharminda Wells, E side Hinks Cons. Pk, Eyre Pen., 5.xii.1986, at light, J. A. Forrest (SAM); 2, 14 km WNW of Yalata Mission (31.22 S, 131.47 E), 10.v.1983, E. E. Nielsen, E. D. Edwards (ANIC); WESTERN AUSTRALIA: 2, 11 km ENE of Anketel HS (28.00 S, 118.57 E), 15-16.iii.1982, 439-8, at light, T. F. Houston B. Hanich (WAM); 1, 2 mi. W of Augusta (34.19 S, 115.10 E), 14.xi.1969, karri forest, at light, E. B. Britton (ANIC); 8, Baker's Hill, 5 mi. W Northam (31.47 S, 116.23 E), 18.iii.1969, CSIRO light trap (ANIC, ZINL); 1, same locality, 7.v.1969 (ANIC); 1, Beegull WH, S of L. Throssell (27.43 S, 124.10 E), 12.ix.1982, 457-1, at light, B. Hanich, T. F. Houston (WAM); 2, Billy Well Creek, 20 km NE Mt Sandiman HS, 11-13.v.1981, 378-8, at light, B. Hanich, T. F. Houston (WAM); 1 Boorabbin N. P., 109 km WSE of Coolgardie (31.15 S, 120.05 E), 13.v.1984, E. S. Nielsen, E. D. Edwards (ANIC); 1, Mt Boyalup, 74 mi. E of Esperance, 23.iii.1968, I. F. B. Common, M. S. Upton (ANIC); 1, 46 mi. E of Broome, 24.v.1970, around light, Lemley Expedition (WAM); 13, 163 km SE by E Broome (18.49 S, 123.17 E), 3.viii.1976, I. F. B. Common (ANIC, ZINL); 1, 1.7 km N by E of Cane River H.S. (21.56 S, 115.39 E), 27.iv.1971, M. S. Upton, N. R. Mitchell (ANIC); 1, Cannington, 27.iv.1953, R. P. McMillan (WAM); 8, 19 mi. WSE Carnamah, 16.iv.1968, I. F. B. Common, M. S. Upton (ANIC, ZINL); 8, 11 mi. S by W of Cockebiddy (32.45 S, 126.03 E), 250', 22.xi.1969, at light, E. B. Britton, R. W. Taylor, M. S. Upton (ANIC, ZINL); 1, 16 mi. N of Collier, 7.iv.1968, I. F. B. Common, M. S. Upton (ANIC); 10, Collier Rd, 5 km NW of Esperance, 25-26.xii.1985, light trap, C. A. M. Reid, P. Gullan, M. Lewis (ANIC); 3, Coral Bay, 8.viii.1973, at light, K. & E. Carnaby (ANIC, ZINL); 1, Culham, 29.x.1951, R. P. McMillan (WAM); 1, Dongara, 2.x.1987, in sand dunes, R. P. McMillan (WAM); 1, 2 mi. SSW of Dongara, 15.x.1970, D. H. Colless (ANIC); 1, 7 mi. ESE of Dongara, 17.iv.1968, I. F. B. Common, M. S. Upton (ANIC); 10, Drysdale River (15.02 S, 126.55 E), 3-8.viii.1975, I. F. B. Common, M. S. Upton (ANIC, ZINL); 1, Drysdale River (14.39

S, 126.57 E), 18-21.viii.1975, I. F. B. Common, M. S. Upton (ANIC); 3, Eucla Motel, 18.x.1968, E. B. Britton, M. S. Upton, J. Balderson (ANIC, ZINL); 3, 1 km NNW of Eucla Pass (31.40 S, 128.52 E), 9.v.1983, E. S. Nielsen, E. D. Edwards (ANIC); 2, 2 mi. NE of Fraser Range H.S., 12.x.1968, E. B. Britton, M. S. Upton, J. Balderson (ANIC, ZINL); 2, 32 km NNE of Geraldton (28.46 S, 114.36 E), 2.xi.1971, U.V. light, D. & N. McFarland (ANIC); 2, 30 km N Gingin, 13.ix.1981, K. & E. Carnaby (ANIC); 2, Hamelin Pool Stn, 8.viii.1977, at light, K. & E. Carnaby (ANIC, ZINL); 2, Hamersley R. Crossing (33.53 S, 119.51 E), 26.xi.1979 200-9, at light, T. F. Houston, A. Chapman (WAM); 1, Irwin, 8.iii.1954, J. H. Calaby (ANIC); 2, Julimar St. For., 2.x.1967, light trap, E. G. Matthews (ANIC); 3, Junana Rock, 9 km NW of Mt Ragged (33.23 S, 123.24 E), 26.x.1977, J. F. Lawrence (ANIC); 6, 12 km S of Kalumburu Mission, CALM Site 13/4 (14.25 S, 126.38 E), 7-11.vi.1988, at light, T. A. Weir (ANIC); 3, 13 km E of Karalee (31.17 S, 119.59 E), 13.x.1970, M. S. Upton, J. Feehan (ANIC, ZINL); 1, Karolin Rock, 18 km W of Bullfinch (30.59 S, 118.55 E), 11.v.1984, E. S. Nielsen, E. D. Edwards (ANIC); 1, Kojonup, 10.xi.1959, light trap, J. A. Mahon (ANIC); 3, 23 mi. W of Kojonup, 28.iii.1968, I. F. B. Common, M. S. Upton (ANIC, ZINL); 16, 37 km NE of Laverton (28.21 S, 122.37 E), 110-12.ix.1982, 453-1, at light, B. Hanich, T. F. Houston (WAM); 1, Madura, 20.iii.1968, I. F. B. Common, M. S. Upton (ANIC); 2, 28 mi. W of Madura, 30.iv.1968, I. F. B. Common, M. S. Upton (ANIC, ZINL); 3, Marloo Stn, Wurarga, 1931-1941, A. Goerling (ANIC, ZINL); 3, Merandoo Camp (22.38 S, 118.06 E), 5-19.v.1980, 317-1, at light, T. F. Houston et al. (ANIC, WAM); 12, Millstream (21.35 S, 117.04 E), 28.x-4.xi.1970, at light, E. B. Britton (ANIC); 1, .5 km from Millstream H. S. (21.35 S, 117.04 E), 2.iv.1971, M. S. Upton, N. R. Mitchell (ANIC); 2, 24 mi. W of Moore, 14.iv.1968, I. F. B. Common, M. S. Upton (ANIC); 1, Mt Jackson (30.12 S, 119.16 E), xi.1981, WAM Goldfields Survey, MJR 4, *E. salubris*, pitfall, W. F. Humphreys (WAM); 2, 96 km N of Murchison R., at light, K. & E. Carnaby (ANIC); 2, Neumann Rock (32.07 S, 123.10 E), 7.v.1983, E. S. Nielsen, E. D. Edwards (ANIC); 2, 2 km SW by W Noongar (31.21 S, 118.57 E), 9.x.1981, at light, J. C. Cardale (ANIC); 1, 61 mi. E of Norseman, 29.iv.1968, I. F. B. Common, M. S. Upton (ANIC); 1, 27 mi. E of Ravensthorpe, 23.iii.1968, I. F. B. Common, M. S. Upton (ANIC); 1, Remlap, Mauroubr Rd., 27.ix.1985, at light, V. R. Bejsak (VRB); 1, 12 km N of Scaddan (33.20 S, 121.43 E), 16.v.1984, E. S. Nielsen, E. D. Edwards (ANIC); 1, 18 km NW by N Southern Cross (31.06 S, 119.13 E), 12.v.1984, E. S. Nielsen, E. D. Edwards (ANIC); 1, Stirling Range N. P., Bluff Knoll Rd, 360 m, 29-30.xii.1985, light trap, C. A. M. Reid (ANIC); 2, Thomas River, 101 km E of Esperance (33.51 S, 121.53 E), 20.xi.1969, at light, beach dunes, E. B. Britton, R. W. Taylor, M. S. Upton (ANIC); 8, Thomas River, 23 km NW by W of Mt Arid (33.51 S, 123.00 E), 4-7.xi.1977, Malaise trap, J. F. Lawrence (ANIC, ZINL); 1, York, 14.x.1984, at light, R. P. McMillan (WAM); 5, Yuna, 24.iv.1968, I. F. B. Common, M. S. Upton (ANIC, ZINL); 1, Wilroy Reserve, ca 16 km S of Mullewa, 4-5.vi.1977, attracted to gas stove, B. G. Muir (WAM); 5, Woodline (31.57 S, 122.24 E), WAM Goldfields Survey, WLR 3, Mallee/shrubs, viii.1980, pitfalls W. F. Humphreys et al. (ANIC, WAM); 2, 29 km WNW of Woolbernup Hill (34.01 S, 119.41 E), 29-30.xi.1979, at light, 298-25, T. F. Houston (WAM); 2, 42 km NE of Wubin (29.49 S, 116.57 E), 26.ix.1981, ethanol, I. D. Naumann, J. C. Cardale (ANIC); 3, 7 km E of Wuraga, xi.1981, K. & E. Carnaby (ANIC); 1, Wydgee H. S., 21.v.1953, J. H. Calaby (ANIC); 1, Yuinmery (28.31 S, 119.14 E), WAM Goldfields Survey, YJR 6, *E. garyocarpa* w/land/*Triodia*, pitfalls, ix.1981, W. F. Humphreys et al. (ANIC); 1, Yundamindra (29.24.00 S, 122.28.05 E), x.1980, WAM Goldfields Survey, YMR 3, mallee, mulga/*Triodia*, pitfalls, W. F. Humphreys (WAM).

Redescription

Length 2.5-4.9 mm; width 1.2-2.5 mm; height 1.0-1.5 mm. Body (Fig. 34) elongate oval, rather convex dorsally and ventrally; reddish-yellow to brown, rarely dark brown, elytra sometimes with indistinct yellow spots of variable configuration (mainly along suture as in other species in the genus); dorsal surface more or less shiny; dorsum with long, dense, contrasting golden yellow hairs, forming longitudinal rows on elytra; sides of pronotum and elytra with long, dense cilia. Head (Fig. 36) as in *T. cylindricum*, but the eyes usually somewhat larger and the frontoclypeal impression only weakly developed; punctures more or less distinct, intervals varying between 0.5 and 2 puncture diameters, weakly reticulate. Antennal club with 1st segment much larger than 2nd and 3rd combined. Pronotum with punctation and reticulation as on head. Elytra with punctation similar to that in *T. cylindricum*, but punctures sparser and intervals lightly reticulate or smooth. Pygidium densely punctured, with narrow interspaces, strongly reticulated. Ventral surface dull and indistinctly punctured, except for metasternum, which has distinct punctures and smooth intervals. Metasternum longer than ventrite 1; hind wings fully developed. Coxal lines on ventrite 1 extending posteriorly beyond middle of ventrite, as in *T. cylindricum*. Fore tibia as in *T. cylindricum*; mid and hind tibiae not as flattened as in other species of the genus, variably armed, frequently with strongly forked subapical process (Fig. 37). Tarsi 2/3 as long as fore tibiae. Aedeagus as in Figs 38-39. Ovipositor as in Fig. 40.

Notes

Specimens of *T. australe* are usually distinguished by the well-developed, suberect pubescence (similar to that in *T. mixtum*) and the lightly pigmented body, which lacks elytral spots. However, both colouration and pubescence may be somewhat variable. Other variable features include eye size (and the corresponding variability in the development of temples behind the eyes), and the occurrence of interfascial hairs (in specimens with larger eyes).

Thalycrodes pulchrum Blackburn (Figs 1-4, 10)

Thalycrodes pulchrum Blackburn, 1891: 111. Type locality: SOUTH AUSTRALIA, near Port Lincoln. Lectotype, here designated, in BMNH, labels: "T 1066" (on card to which lectotype attached); "Type

H. T." (red-bordered disc); "Blackburn coll. 1910-236" (machine-printed); "Thalycrodes pulchrum, Blackb." (hand-written).
 ?*Thalycrodes australe* var. *tenebrosus* Blackburn, 1891: 111.

Specimens examined (500+)—QUEENSLAND: 1, Barron Falls, 12.xii.1964, J. G. Brooks (ANIC); 1, Black Mountain Rd, Julatten, 21.xi-13.xii.1987, rainforest intercept trap, A. Walford-Huggins (ANIC); 1, Cardstone, 10-13.iii.1966, X. Hyde (ANIC); 2, same locality, 17-23.ii.1966, X. Hyde (ANIC, ZINL); 1, Cunnamulla, H. Hardcastle (SAM); 1, Ewan Rd, 2 km W of Paluma (19.06 S, 146.34 E), 800 m, 22.ii.1972, at light, J. G. Brooks (ZINL); 1, Ewan Rd, c. 8 km W of Paluma, 8.i.1967, at light, J. G. Brooks (ANIC); 1, Ewan Rd, 5 mi. W of Paluma, 3.i.1966, J. G. Brooks (ANIC); 1, Herberton Range, 7-10 km NW of Herberton, 17-18.xii.1982, J. T. Doyen (ANIC); 5, 14 km W by N of Hope Vale Mission (15.16 S, 144.59 E), 8-10.x.1980, T. A. Weir (ANIC); 1, 12 km N of Kuranda, 4.xii.1982, J. T. Doyen (ANIC); 1, Lamington Nat. Pk, Coomera River, 1200', 28.v.1966, Z. Liepa (ANIC); 2, North Stradbroke Island, x.1982, J. D. Majer (ANIC); 2, Paluma (18.59 S, 146.09 E), 2900', 12.13.i.1970, at light, E. B. Britton, S. Misko (ANIC, ZINL); 1, 3 km W of Paluma (18.59 S, 146.09 E), 2900', 16.i.1970, at light, E. B. Britton (ANIC); 1, 9 mi. W of Paluma, 2500 ft., 15.iv.1969, I. F. B. Common, M. S. Upton (ANIC); 1, Station Creek, 17 km N of Mt Molloy, 2.ii.1970, at light, J. G. Brooks (ANIC); 2, Tamborine Mts., 1-9.v.1935, R. E. Turner (BMNH); 2, same locality, 18-25.v.1935, R. E. Turner (BMNH); 1, Western Creek, W of Millmerran, 12.xi.1974, 539-P, at light, R. A. Yule (DFQ); NEW SOUTH WALES: 1, Belmore Falls, Kangaroo Valley, x.1966, L. Reeves (ANIC); 1, Blue Mts Nat. Pk, Euroka Clearing Fire Trail (33.47 S, 150.37 E), 160 m, 5-26.ix.1987, Malaise trap, G. R. Brown, J. A. Macdonald (BCRI); 1, Blue Mts Nat. Pk, The Oaks (33.49 S, 150.34 E), 280 m, 5.i.1988, m.v. lamp, G. R. Brown, J. A. Macdonald (BCRI); 1, "Calosoma" via Gundaroo, vii-ix.1981, gum litter, B. P. Moore (ANIC); 1, Clovelly, 11.vii.1950, W. E. Wright (BCRI); 3, Clyde Mtn, 18 km SE of Braidwood, 780 m, 4.ii.1981, J. Powell (ANIC); 1, Clyde Mtn, c. 2450 ft., 4.xii.1967, R. W. Taylor, G. Brooks (ANIC); 3, Congo, 8 km SE by E of Moruya (35.58 S, 150.09 E), 14.iii.30.xii.1981, M. S. Upton (ANIC); 2, 6 km W of Coramba (30.14 S, 150.01 E), 26.vi.1976, W. Allen (ANIC); 2, Grenfell, E. W. Ferguson (ANIC); 7, Goonoo State For., 2 km WSW of Three Corners (31.55 S, 149.00 E), 26-28.v.1976, A. Nicholls (ANIC, ZINL); 1, Kanangra Boyd N. P., Kanangra Creek & Rocky Spur, 20.iii.1982, ANIC Berl. 829, closed forest litter, L. Hill (ANIC); 1, Lindfield, 19.x.1953, P. S. Norleg (BCRI); 1, 24 km NE of Merulan, 25.iii.1985, under mushroom, E. Holm (ANIC); 2, Mittagong, A. M. Lea (SAM); 1, Mt Kosciusko, 3000', 30.xi.1968, T. G. Wood (ANIC); 1, New England N. P., Thungutti Camp, 1500 m, 14-15.xi.1982, J. T. Doyen (ANIC); 1, Pearl Beach, near Woy Woy, 2.v.1987, at mercury vapour light, M. J. Fletcher, J. A. Macdonald, D. J. Scambler (BCRI); 2, Pigeon House Range, via Nerriga, 25.x.1979, I. D. Naumann (ANIC, ZINL); 1, Pine Creek St. For., 6 km NNE of Raleigh (30.24 S, 153.01 E), 16.xi.1966, I. F. B. Common, E. D. Edwards (ANIC); 1, Rydalmere, 30.i.1968, m.v. light (BCRI); 1, same locality, 26.x.1971, m.v. light (BCRI); 2, South Ramshead, 2000 m, Kosciusko Nat. Pk, iii.1981, K. Green (ANIC, ZINL); 1, same locality, iv.1982, K. Green (ANIC); 9, Sydney, A. M. Lea (SAM); 2, Tamworth, 9.xii.1892, A. M. Lea (SAM); 1, Thredbo River Kosciusko N. P., Site 2, 24HD1, xi.1982, M. E. McKaige (ANIC); 1, Upper William R., x.1925, Lea, Wilson (SAM); 1, Wiangaree St. For., Isakson Ridge, 1050 m, 29.ii-3.iii.1980, A. Newton, M. Thayer (ANIC); AUSTRALIAN CAPITAL TERRITORY: 1, Bendora Dam, 17.vii.1969 (ANIC); *, Black Mtn (35.16 S, 149.06 E), 600 m, xii.86, i-xi.1987, flight intercept/trough trap, T. A. Weir, J. F. Lawrence, W. Dressler (ANIC); 10, Black Mtn, 15.20.25.iv.1966, I. F. B. Common (ANIC, ZINL); 4, same locality, 26.31.iii.1968, M. S. Upton (ANIC); 1, same locality, 6.vi.1968, from fungus (*Coprinus comatus*), Z. Liepa (ANIC); 1, Black Mtn, west slope, 640m, 21.v.1970, I. Simmons (ANIC); 1, 0.8 km N of Black Mt peak, 620 m, 17.vi.1970, I. Simmons (ANIC); 25, Blundell's Creek, 3 km E of Picadilly Circus (35.22 S, 148.50 E), 850 m, viii.1985, flight intercept/trough trap, T. A. Weir, J. F. Lawrence, M. L. Johnson (ANIC); 15, Blundell's Creek-Lee's Creek area (35.22 S, 148.50 E), Brindabella Range, 1979-1981, C. L. Dickman (ANIC); 3, 3 km N of Mt Aggie, 1-21.ii.1979, gutter trap, D. C. F. Rentz (ANIC, ZINL); 1, 1 km N of Mt Gingera (35.33 S, 148.47 E), 18.ii.1981, A. A. Calder (ANIC); 1, Paddy's River, 1 mi. S of Cotter Dam, 17.iv.1969, S. Misko (ANIC); 1, Picadilly Circus (35.22 S, 148.48 E), 1240 m, i.1984, ANIC Berl. 1001, sub-alpine eucalypt litter, J. F. Lawrence, T. A. Weir, M. L. Johnson (ANIC); 3, same locality, iv.1984, flight intercept/trough trap, J. F. Lawrence, T. A. Weir, M. L. Johnson (ANIC); 1, Pierce's Creek Forest, 20.i.1989, IPS trap, I. McArthur (ANIC); 5, Uriarra, 22.v.1972, pine forest, Z. Liepa (ANIC, ZINL); 12, Wombat Creek, 6 km NE of Picadilly Circus (35.19 S, 148.52 E), 750 m, i.iii.x.1982, i.vii.viii.1985, flight intercept/trough trap, T. A. Weir, J. F. Lawrence, M. L. Johnson (ANIC); VICTORIA: 2, Eltham, 18.v.1918, from fungus, F. E. Wilson (SAM); 5, Haines Junction (38.39 S, 143.42 E), 1.9 km W on Turtons Track, 525 m, 25.i-8.ii.1987, flight intercept (window) trap (FMHD 87-213), A. Newton, M. Thayer (ANIC, FMNH); 1, 3 km N of Kawarren, Otway Ranges, 15.i.1962, at light, G. F. Gross, P. Aitken (SAM); 1, Little Desert, 6.xi.1966, I. F. B. Common (ANIC); 7, Mallacoota, Nat. Pk, 10 m, 22.v.1978, log litter and fungi, S. & J. Peck (ANIC, ZINL); 13, Mt Buffalo Nat. Pk, Eurobin Ck, 1300 ft., 24.iv.1978, litter, S. & J. Peck (ANIC); 13, Mt Buffalo Nat. Pk, Eurobin Creek (36.43 S, 146.50 E), 460 m, 23.i-12.ii.1987, flight-intercept (window) trap (FMHD87-203), A. Newton, M. Thayer (ANIC, FMNH); 3, Mt Donna Buang (36.43 S, 145.41 E), N of Warburton, 1200 m, 26.i-11.ii.1987, flight-intercept (window) trap (FMHD 87-216), A. Newton, M. Thayer (ANIC, FMNH); 1, Mt Dandenong, summit, 25.vi.1984, in litter, P. Greenslade (SAM); 3, Ringwood, 5.vii.1919, 1520, F. E. Wilson (ANIC); 4, Strawberry Saddle (36.56 S, 147.19 E), Bogong N. P., 1650 m, 22.i-13.ii.1987, flight intercept (window) trap (FMNH 87-197), A. Newton, M. Thayer (FMNH); 3, 5.5 km E of Strawberry Saddle (36.57 S, 147.21 E), Bogong N. P., 1450 m, 22.i-13.ii.1987, berl. leaf & log litter (FMHD 87-196) (FMNH); 5, 6.1 km ESE Tanjil Bren (37.50 S, 146.12 E), 590 m, 29.i-10.ii.1987, flight intercept (window) trap, A. Newton, M. Thayer (ANIC, FMNH); 2, Wilson's Promontory Nat. Pk, Lilly Pilly Tr., 15.v.1978, leaf and log litter, S. & J. Peck (ANIC, ZINL); TASMANIA: 1, 12 km NNE Bronte Park (42.02 S, 146.33 E), ANIC Berl. 800, eucalypt litter, I. D. Naumann, J. C. Cardale (ANIC); 1, The Gap, 820 m, 9 km NE of Maydena, Florentine Rd., 28.ii.1980, L. Hill (ANIC); 1, Huon R., Lea (SAM); 1, Kettering, 18.x.1981, G. Bornemissza (ANIC); 1, Lake St. Clair (42.06 S, 146.10 E), 750 m, 25-27.i.1980, ANIC Berl. 664, litter under tree

ferns & *Nothofagus*, J. Lawrence, T. Weir (ANIC); 1, Lake St. Clair, west side, c. 750 m, 25-29.i.1980, fine debris under *Nothofagus cunninghamii* logs, A. Newton, M. Thayer (ANIC); 24, Lower Gordon River (42.31-42.56 S, 145.42-145.56 E), H.E.C. Survey, ii.1976, i-ii.1977, ii.1978, moss, litter, Howard, Hill (ANIC); 7, Lyell Hwy at Franklin R., 55 km ESE of Queenstown, 400 m, 19-20.ii.1980, window trap 587, A. F. Newton, M. Thayer (ANIC); 1, Mt Field N. P. (42.41 S, 146.43 E), 160-240 m, 4.ii.1980, ANIC Berl. 669, moss and litter *Nothofagus*, *Atherospermum*, J. Lawrence, T. Weir (ANIC); 1, Mt Field, campground, 160 m, 31.i.-4.ii.1980, A. Newton, M. Thayer (ANIC); 2, Mt Field N. P., SE end of Lake Fenton, 1000 m, 30.i.-5.ii.1980, A. Newton, M. Thayer (ANIC, ZINL); 1, Mt Murchison (41.50 S, 145.37 E), 21.iv.1989, moss on ground, rainforest, H. Mitchell (ANIC); 1, Mt Wellington, Griffith (SAM); 1, 9 km W by S of Poatina (41.48 S, 146.52 E), 20.i.1983, I. D. Naumann, J. C. Cardale (ANIC); 1, Port Arthur, 2.ix.1981, ANIC Berl. 901, G. Bornemissza (ANIC); 1, Waddamana, 1.iii.1982, ANIC Berl. 916 (ANIC); NORTHERN TERRITORY: 1, 62 mi. NNW of Alice Springs, 12.ii.1966, E. B. Britton, M. S. Upton, E. G. Matthews (ANIC); SOUTH AUSTRALIA: 1, Arcoona Ck, Gammon Rgs, 18.ix.1956, at light, G. F. Gross (SAM); 2, Blair N. P. (NE corner), 10-16.viii.1980, pitfall, P. J. M. Greenslade (SAM); 1, same locality, 8-15.ix.1980, pitfall, P. J. M. Greenslade (SAM); 2, same locality, 30.vii.1969, P. J. M. Greenslade (SAM); 1, 13 km N of Cap du Couedic, 7-12.i.1982, J. Thurmer et al. (SAM); 1, Corapee Hill, Eyre Pen., 29-30.x.1979, P. J. M. Greenslade (SAM); 7, Ferries-McDonald N. P., 19.v.1977, E. G. Matthews (SAM); 1, Hinks Cons. Pk (SE corner), Eyre Peninsula, 4-5.xii.1986, J. A. Forrest (SAM); 3, Kuitpo/Kyeema For., Mt Lofty Ranges, experimental site D, burnt, 15-22.vi.1981, pitfalls, P. Greenslade (SAM); *, same locality, various dates, pitfalls, P. Greenslade (SAM); 1, Maclaren Flat, 16.vii.1969, C. A. Kirby, P. J. M. Greenslade (SAM); 1, Monalta (34.54 S, 138.43 E), 20.x.1986, pitfall, N. Anderson (SAM); 1, Monarto Stn., 27.vi.1969, P. J. M. Greenslade (SAM); *, Mt Bonython, 1.vii.1969, C. A. Kirby, P. J. M. Greenslade (SAM); 2, Mt Crawford For. Res., v-ix.1988, pitfall samples burnt area, eucalypt woodland, R. Tuckwell (SAM); 22, Mt Lofty, 16.v.1969, P. J. M. Greenslade (SAM); 5, same locality, xi, xii.1971, P. J. M. Greenslade (SAM); 1, Owieandana, N. Flinders Ra., Hale, Tindale (SAM); 1, Port Lincoln, T. Blackburn (SAM); WESTERN AUSTRALIA: 6, Baker's Hill, 5 mi. W of Northam (31.47 S, 116.23 E), 7.v.1969, CSIRO light trap (ANIC); 1, Beverley, F. H. du Boulay (SAM); 1, Goongarrie (29.55 S, 121.08 E), vii.1981, WAM Goldfields Survey, YMR3, mallee/*Triodia*, pitfalls, W. F. Humphreys (WAM); 1, Goongarrie (29.55 S, 121.08 E), W.A.M. Goldfields Survey, vii.1981, pitfall trap, inter dune, W. F. Humphreys et al. (ANIC); 1, Gracetown, Gowaramup Nat. Pk, 18-21.vii.1980, SBP 120, dung traps S. & J. Peck (ANIC); 1, 24 km W of Kalbarri, 29.vii.1972, E. G. Matthews (SAM); 1, McDermid Rock (32.01 S, 120.44 E), 27.ix-3.x.1978, 208-3, at light, T. F. Houston et al. (WAM); 1, Merandoo Camp (22.38 S, 118.06 E), 5-19.v.1980, 317-1, at light, T. F. Houston et al. (WAM); 1, Moore River Nat. Pk (near Lancelin), 28.iii-5.iv.1977, G. Barron, G. Harold (WAM); 3, Nornalup, Valley of Giants, 21.vi.1980, SBP 74, berl. rotted tingle bark, S. & J. Peck (ANIC, ZINL); 1, 70-75 km ENE of Norseman, 10-16.xi.1978, 220-28, at light, T. F. Houston et al. (WAM); 2, Porongorup Nat. Pk, Bolganup Ck, 8-16.vi.1986, SBP 33, dung traps, open sclerophyll, S. & J. Peck (ANIC, ZINL); 6, Stirling Range Nat. Pk, White Gum Flats, 7-15.vi.1980, SBP 31, dung traps, open sclerophyll, S. & J. Peck (ANIC, ZINL); 2, Swan R., Lea (SAM); 1, Yuna, 26.iv.1968, I. F. B. Common, M. S. Upton (ANIC).

Redescription

Length 2.0-3.5 mm; width 1.1-1.7 mm; height 0.7-1.1 mm. Body elongate oval, rather convex dorsally and ventrally; colour reddish-brown to dark brown, unicoloured or with spots on elytra; antennae (usually excluding club) and legs somewhat lighter; spots on elytra extremely variable in size, number and configuration, normally clearly defined. Surface moderately shiny. Vestiture of short, moderately dense, decumbent pubescence; sides or pronotum and elytra with moderately long and dense cilia (shorter than in *T. australe*). Metasternum varying in length, shorter than or longer than ventrite 1; hind wings variable, length varying from half as long as elytra to more than twice their length. Aedeagus and ovipositor similar to those of *T. australe* (cf. Figs 38-40).

Notes

This species is very similar to *T. mixtum* and the 2 species may be distinguished from their congeners by the relatively short and moderately dense pubescence and extremely variable spot pattern on the elytra. *T. pulchrum* differs from *T. mixtum* in the even crenulation on the fore tibia (without longer spines among the crenulations) and the somewhat shorter tarsi; both characters are subject to some variation, however, and it is possible that the two forms do not represent distinct species. In general, *T. pulchrum* is an eastern species, and only a few specimens are known from Western Australia.

The identity of Blackburn's *T. australe* var. *tenebrosus* is uncertain, since the name *tenebrosus* could be found on no specimens in the Museum of Natural History or South Australian Museum collections. However, it is obvious from Blackburn's descriptions and discussion that the name refers to darker specimens with a definite spot pattern and without a strongly crenulate outer edge on the fore tibia; Blackburn does not mention the differences in vestiture which are here used to distinguish *australe* from *pulchrum*. On this basis we have tentatively synonymised *tenebrosus* with *pulchrum* and consider the former name to be based on the more common form of

pulchrum occurring mainly in New South Wales and Victoria and having much finer fore tibial crenulation than does typical *pulchrum* from South Australia.

Thalycrodes mixtum sp.n. (Figs 41-42)

Types—*Holotype* ♂, WESTERN AUSTRALIA: Dinaup, 8 km E of Manjimup, 4.iv.1975, Z. Manzanec (ANIC); *paratypes* (221): WESTERN AUSTRALIA: 9, same data as holotype (ANIC, ZINL); 15, Baker's Hill, 5 mi. W of Northam (31.47 S, 116.23 E), 16.17.iii.2.6.7.iv.1969, CSIRO light trap (ANIC, ZINL); 3, Boranup St. For., Augusta, 19-22.vii.1980, SBP 125, dung traps and berl. bark and litter, karri forest, S. & J. Peck (ANIC, ZINL); 1, 11 mi. S of Cocklebidy (32.45 S, 126.03 E), 25^o, 22.xi.1969, at light, E. B. Britton, R. W. Taylor, M. S. Upton (ANIC); 1, 3 km S by W of Donnybrook (33.36 S, 115.49 E), 28.iv.1983, E. S. Nielsen, E. D. Edwards (ANIC); 1, 12 km S by W of Donnybrook (33.40 S, 115.44 E), 3.x.1981, I. D. Naumann, J. C. Cardale (ANIC); 1, 14 km SW by W of Donnybrook (33.39 S, 115.42 E), 27.iv.1983, E. S. Nielsen, E. D. Edwards (ANIC); 1, Goongarrie (29.55 S, 121.08 E), WAM Goldfields Survey, GGR 5 mallee, vii.1981, W. F. Humphries et al. (ZINL); 1, Gracetown, Gowaramup N. P., 18-20.vii.1980, SBP 120, dung traps, coastal heath, S. & J. Peck (ANIC); 1, Harvey R., 14 km W by S Waroona (32.52 S, 115.46 E), 30.iv.1983, E. S. Nielsen, E. D. Edwards (ANIC); 5, Kalbarri, 7.viii.1972, E. G. Matthews (SAM); 3, 0-50 mi. E of Kalbarri, 30.vii.1972, E. G. Matthews (SAM); 6, Kojonup (33.50 S, 117.09 E), 16.iii.28.iii.6.iv.24.iv.1969, CSIRO light trap (ANIC, ZINL); 1, Lake Muir, 60 km SE of Manjimup, 6-10.vii.1980, SBP 93, dung trap, S. & J. Peck (ANIC); 2, 40 km ESE of Manjimup, 6-28.vii.1980, SBP 88, Malaise trap with trough, jarrah forest, S. & J. Peck (ANIC, ZINL); 1, 54 km SE of Manjimup, 22-26.vi.1980, SBP 76 dung traps, jarrah forest, S. & J. Peck (ANIC); 1, Porongurup N. P., Bolganup Ck, 8-16.vi.1980, SBP 33, dung trap in open sclerophyll, S. & J. Peck (ANIC); 3, Stirling Range N. P., White Gum Flats, 7-15.vi.1980, SBP 31, 32, dung traps, S. & J. Peck (ANIC, ZINL); 3, Stirling Range N. P., Toolbrunup Tr., 10.vi.1980, SBP 50, carrion trap, S. & J. Peck (ANIC, ZINL); 2, Swan River, J. Clark (MVM); 5, Swan River, A. M. Lea (SAM); 15, Walpole Rd, Nornalup Beach Rd, 20-26.vi.1980, SBP 73, flight intercept trap, S. & J. Peck (ANIC, ZINL); 1, Woodline (31.55 S, 122.22 E), WAM Goldfields Survey, WLR4, viii.1980, shrubland, pitfalls, W. F. Humphreys (WAM); SOUTH AUSTRALIA: 1, Albinga, 30.iv.1968, leaf litter, mallee, E. B. Britton (ANIC); 2, Aldinga-Sellicks Beach Res., 3-13.iv.1987, bucket pitfalls, E. G. Matthews, J. A. Forrest (SAM); 1, same locality, 16-26.vi.1987, bucket pitfalls, E. G. Matthews, J. A. Forrest (SAM); 1, same locality and dates, Malaise trap, E. G. Matthews, J. A. Forrest (ANIC); 2, same locality, 15-22.ix.1987, pitfall trap, E. G. Matthews, J. A. Forrest (SAM); 2, Aldinga Scrub, 2.iv.1987, at light, E. G. Matthews, J. A. Forrest (SAM); 3, 9 km S of Ashbourne, near Coxes Scrub N. P., 1-8.xii.1981, P. Greenslade (SAM); 1, 145 km N of Cook (29.29 S, 130.10 E), transect A, 19-21.viii.1980, P. J. M. Greenslade (SAM); 1, Devon Downs, xii (SAM); 27, Ferries-McDonald N. P., 13.v.1977, E. G. Matthews (ANIC, SAM); 28, same locality, 13.x.1977, E. G. Matthews (ANIC, SAM); 2, same locality, 9.xi.1977, E. G. Matthews (SAM); 6, same locality, 1.ix.1978, E. G. Matthews (SAM); 2, Hambridge N. P., Eyre Peninsula, 16.xii.1970, at light, E. B. Britton, S. Misko, K. Pullen (ANIC, ZINL); 2, Monarto Stn, 22.iv.1969, mallee site, 520, P. J. M. Greenslade (ANIC); 1, 1 km NW of Monash, 17.v.1970, J. C. Taplin (ANIC); 1, Murray R., H. S. Cope (SAM); 1, Port Lincoln, 16.viii.1960, C. Oke (MVM); 2, 14 km NNW of Yalata Mission (31.22 S, 131.47 E), 10.v.1983, E. S. Nielsen, E. D. Edwards (ANIC); QUEENSLAND: 1, near Charters Towers, 19.i.1902, Mrs. Black (BCR1); 1, 9 mi. W of Paluma, 2500 ft., 15.iv.1969, I. F. B. Common, M. S. Upton (ANIC); NEW SOUTH WALES: 1, Rotary Lookout, Pigeon House Range, 12 mi. NW of Milton, 12.iv.1968, Z. Liepa (ANIC); 1, Windsor, A. M. Lea (SAM); AUSTRALIAN CAPITAL TERRITORY: 1, Black Mtn Reserve, E slope, 3.x.1970, on flowers, S. Misko (ANIC); 1, Black Mtn, 23.iii.1966, light trap, 23.iii.1966, I. F. B. Common (ANIC); 1, 40 km S of Canberra, 10.iv.1968, A. Neboiss (MVM); VICTORIA: 1, 7 km S by E of Hattah (34.50 S, 142.18 E), 19.x.1983, ethanol, I. D. Naumann, J. C. Cardale (ANIC); 1, Lake Hattah, 30.x.1964, G. W. Anderson (ANIC); 1, Nunawading, 1.iii.1961, A. Neboiss (MVM); 1, Sea Lake, Goudie (MVM); 23, 7 km SW of Wemen (34.50 S, 142.35 E), 25.x-3.xi.1988, ANIC 1088, flight intercept/trough trap, mallee, T. A. Weir, J. F. Lawrence, M. Hansen (ANIC, ZINL); TASMANIA: 1, 1 km SSE of Gladstone (40.58 S, 148.01 E), 29.i.1983, at light, J. C. Cardale (ANIC).

Description

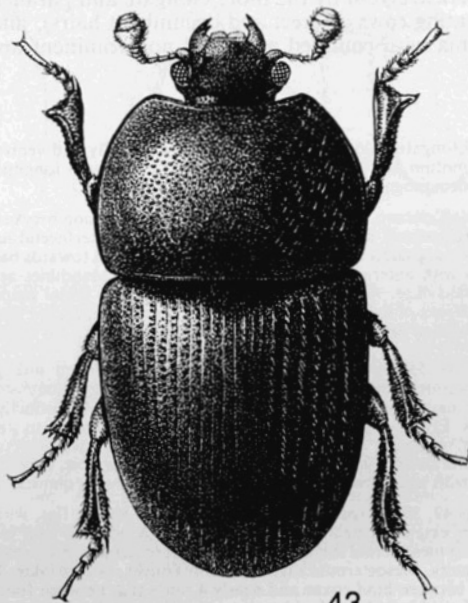
Length 2.2-4.1 mm; width 1.2-2.3 mm; height 0.8-1.3 mm. Body rather convex dorsally and ventrally; colouration and configuration of elytral spots extremely variable (nearly as in *T. pulchrum*), with a more or less distinct shine; pubescence moderately dense and comparatively short; sides of pronotum and elytra with well-developed cilia. Metasternum well developed, longer than ventrite 1; hind wings fully developed. Aedeagus and ovipositor similar to those of *T. australe* (cf. Figs 38-40).

Notes

This species differs from other members of the genus mainly in the presence of several prominent teeth or spines among the crenulations along the outer edge of the fore tibia (Figs 41, 42). In other respects, it shares many features with *T. pulchrum* and *T. calvatum*. Darker specimens with reduced pubescence resemble *T. calvatum*, but they also differ from that species in having the coxal lines on ventrite 1 extend well beyond the middle of the ventrite. In contrast to *T. pulchrum*, this species occurs primarily in Western Australia, South Australia and the drier parts of the eastern states.

Thalycrodes calvatum sp.n. (Figs 5, 9, 43)

Types—WESTERN AUSTRALIA: *holotype* ♂, Sues Bridge, 50 km SW of Nannup, 24-26.vii.1980, SBP 141, dung traps, karri forest, S. & J. Peck (ANIC); *paratypes* (168): 7, same data as holotype (ANIC, ZINL); 1, Augusta, Boranup State For., 19-22.vi.1980, SBP 123, dung traps, karri forest, S. & J. Peck (ANIC); 3, Barrabur Pool, Nannup, 23-26.vii.1980, SBP 135, dung trap, marri forest, S. & J. Peck (ANIC); 3, Beedelup Nat. Pk, 14-17.vii.1980, SBP 113, dung traps, karri forest, S. & J. Peck (ANIC); 2, Brockmann, Saw Pit, 7-13.vii.1980, SBP 100, dung traps, jarrah forest, S. & J. Peck (ANIC); 1, Brockmann Nat. Pk, 9.vii.1980, SBP 103, berl. karri litter with fungi, S. & J. Peck (ANIC); 5, 30 km SW of Canebrake, 24-28.vii.1980, SBP 138, dung trap, marri forest, S. & J. Peck (ANIC); 1, Cannington, 15.v.1953, R. P. McMillan (WAM); 2, Cannington, 7.viii.1953, in rotten fungus, R. P. McMillan (MVM, WAM); 1, The Cascades, 7-10.vii.1980, SBP 98, dung traps, jarrah forest, S. & J. Peck (ANIC); 4, Collier Rd, 19-26.vi.1980, SBP 64, dung traps, karri-tingle forest, S. & J. Peck (ANIC); 11, Dwellingup, 18.v.1983, on puff ball fungi, C. Codd (ANIC); 2, Forth R., 45 km SE of Northcliffe, 11-16.vii.1980, SBP 104, dung traps, forest and sandy heath, S. & J. Peck (ANIC); 14, Hilltop Rd, 20-27.vi.1980, SBP 69, dung trap in forest, S. & J. Peck (ANIC, ZINL); 3, same locality, 21.vi.1980, SBP 75, berl. karri & tingle litter, S. & J. Peck (ANIC); 8, 35 km WSE of Manjimup, 14-17.vii.1980, SBP 115, berl. jarrah forest litter, S. & J. Peck (ANIC, ZINL); 2, 40 km ESE of Manjimup, 6-28.vii.1980, SBP 88, Malaise trap with trough, jarrah forest, S. & J. Peck (ANIC, ZINL); 1, 54 km SE of Manjimup, 22-26.vi.1980, SBP 76, dung traps, jarrah forest, S. & J. Peck (ANIC); 4, Margaret River, Rosa Brook Rd, 22-26.vii.1980, SBP 133, dung traps, marri forest, S. & J. Peck (ANIC); 6, 28 km W of Nannup, 23-26.vii.1980, SBP 134, dung traps, marri forest, S. & J. Peck (ANIC, ZINL); 1, Nornalup Beach Rd, 20-26.vi.1980, SBP 72, dung traps, coastal heath, S. & J. Peck (ANIC); 6, Northcliffe, 13-16.vii.1980, SBP 107, dung traps, karri forest, S. & J. Peck (ANIC); 2, Parkerville, 53-1568/9, on basket fungus, F. White (WAM); 2, Pemberton, Gloster Tree, 5-9.vii.1980, SBP 83, dung traps, karri forest, S. & J. Peck (ANIC); 6, 44 km E of Perth, E. G. Matthews, H. F. Howden (SAM); 1, Porongorup Nat. Pk, Bolganup Ck, 8-16.vi.1980, SBP 33, under *Eucalyptus* bark, S. & J. Peck (ANIC); 2, Quininup, 29 km SSE of Manjimup, 13-16.vii.1980, SBP 112, berl. karri litter, S. & J. Peck (ANIC); 2, Rockingham Penguin Island, 2.vii.1980, SBP 80, berl. silver gull nest litter, S. & J. Peck (ANIC); 2, Stirling Range Nat. Pk, N Entrance, 10-15.vi.1980, SBP 51, carrion trap, open forest, S. & J. Peck (ANIC, ZINL); 3, same locality, 7-10.vi.1980, SBP 32, dung traps, open sclerophyll (ANIC, ZINL); 1, Swan R., J. S. Clark (SAM); 28, Walpole Nat. Pk, Tingle Tree, 18-27.vi.1980, SBP 63, berl. fungi and litter, S. & J. Peck (ANIC, ZINL); 1, same locality, 19-27.vi.1980, SBP 68, carrion traps, S. & J. Peck (ANIC); 2, same locality, 4.vii.1980, SBP 81, berl. *Casuarina* log litter, S. & J. Peck (ANIC); 1, Near Wanneroo, 9.viii.1972, E. G. Matthews (SAM); 14, Warren Nat. Pk, 5-28.vi.1980, SBP 82, Malaise trap with trough, S. & J. Peck (ANIC, ZINL); 1, Yallingup Nat. Pk, Yallingup, 18-21.vii.1980, SBP 121, dung traps, marri forest, S. & J. Peck (ANIC); 1, Yanchepp, 1971, G. H. Lowe (WAM); 1, same locality, 10.viii.1972, E. G. Matthews (SAM); 10, Zig Zag Nat. Pk, Zig Zag Rd, 19-27.vi.1980, SBP 66, 70, carrion traps, S. & J. Peck (ANIC, ZINL).



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FIG. 43—*Thalycrodes calvatum*.

Description

Length 2.3-3.6 mm; width 1.2-1.8 mm; height 0.8-1.2 mm. Body (Fig. 43) rather convex dorsally and ventrally. Dorsum dark brown or black, sometimes reddish-brown, and usually with small, yellow spots on elytra; ventral surface reddish-brown to dark brown; antennae, mouthparts and legs reddish-brown. Dorsum shiny; pronotal disc almost glabrous. Elytral pubescence short and sparse; sides of pronotum and elytra ciliate. Head somewhat impressed between antennal insertions; punctures large, nearly as large as eye facets, comparatively shallow; intervals $\frac{2}{3}$ to 1 puncture diameter, with light reticulation. Antennae (Fig. 43) $\frac{1}{2}$ as long as head width; club $\frac{2}{3}$ of total antennal length. Pronotum with rounded fore and hind angles; punctation as on head, but intervals more than 1 puncture diameter and intervals with very light reticulation. Elytra with narrowly margined sides; reticulation between puncture rows similar to that on pronotum. Pygidium with small, sparse punctures; intervals with dense and more well defined reticulation. Ventral surface with punctation and reticulation similar to that on pygidium, but mesal portion of metasternum and ventrite 1 with large punctures and smooth intervals. Distance between mid coxae as narrow as that between fore coxae, half as great as that between hind coxae. Metasternum reduced, shorter than ventrite 1; hind wings absent. Coxal lines on ventrite 1 diverging from hind edge of coxal cavities and nearly reaching middle of ventrite. Last ventrite almost truncate. Tibia as in most other species, but crenulation along outer edge of fore tibia more or less regular and sometimes more developed than in other species (except *T. mixtum*). Femora about 1.2 times as wide as fore tibia. Fore tarsi nearly 0.2 times as wide as fore tibia; mid and hind tarsi only half as wide as fore tarsi; claws short and simple. Aedeagus and ovipositor similar to those of *T. australe* (cf. Figs 38-40).

Notes

This species is easily distinguished by the characters given in the key. It is most notable for its large, strongly convex pronotum and reduced pubescence. Some variation was observed in the development of the crenulation on the outer edge of the fore tibia and in the deviation of the coxal lines from the hind edge of the hind coxal cavities.

Rixerodes gen.n.

Type species—*R. cornutus* sp.n.

Diagnosis

Distinguished from *Thalycrodes* by the normal antennal club (without an enlarged first segment), from *Australycra* by the more elongate and parallel-sided body with dual vestiture (alternating rows of erect and decumbent hairs), and from both taxa by the subparallel tibia with rounded apex and no prominent apical or subapical process.

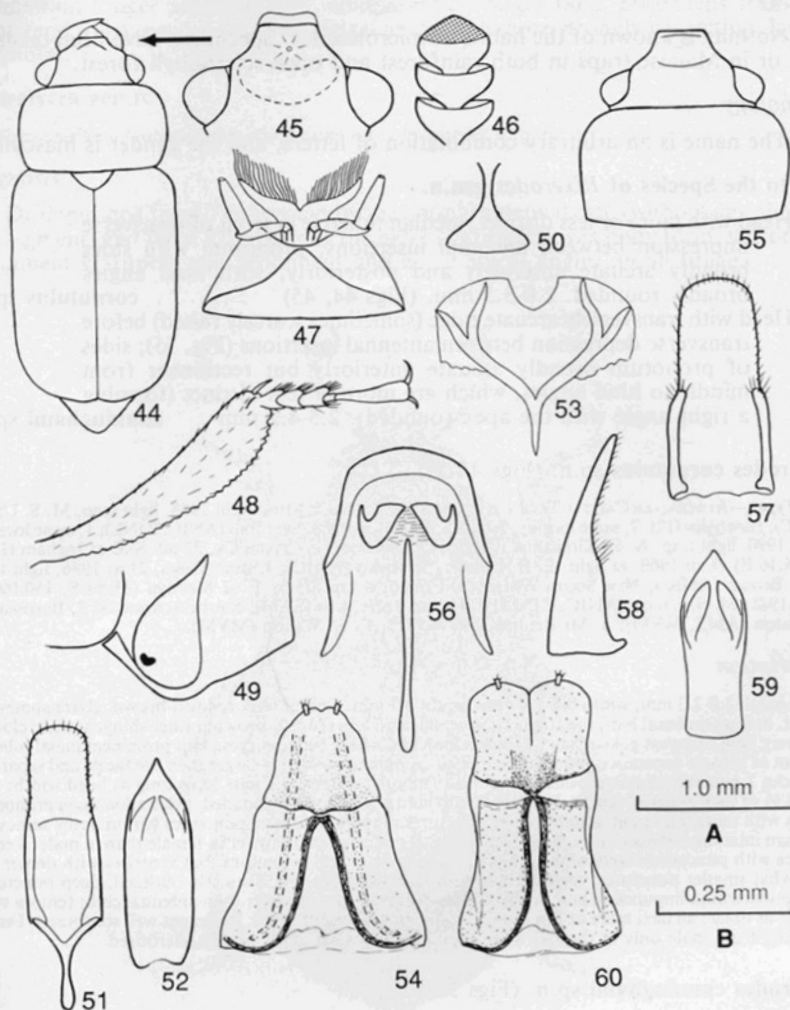
Description

Body (Figs 44, 45)—Elongate-oblong, somewhat flattened dorsally and ventrally. Pubescence long and suberect; sides of pronotum and elytra with distinct cilia; elytra with longitudinal rows of longer, suberect and shorter, subdecumbent hairs.

Head (Figs 45-47, 55)—Concave, with arcuate or transverse impression between antennal insertions. Eyes quite large with comparatively large facets and slightly visible interfacial hairs; temples scarcely developed. Antennal grooves arcuately convergent, moderately narrowed towards base of head, inner edge sharply outlined. Labrum with anterior edge shallowly emarginate. Mandibles as in *Thalycrodes* spp. Mentum subtriangular, transverse. Apical segments of maxillary and labial palps elongate, gradually narrowed to abrupt apex. Lobes of ligula long and with dense brushes. Antennae shorter than head width; club consisting of 3 unmodified segments, first 2 about equal in length, 3rd slightly longer.

Dorsal surfaces (Figs 44, 55)—Pronotum with sides arcuately rounded anteriorly and arcuately or rectilinearly narrowed posteriorly; disc flattened or slightly convex, sides moderately to steeply sloping; lateral edges not explanate, narrowly margined; anterior and posterior edges distinctly margined. Scutellum with broadly rounded apex. Elytra very weakly sloping posteriorly, moderately to steeply sloping laterally, broadly truncate at apex, exposing pygidium; micropunctures and megapunctures forming regular longitudinal rows; subsutural striae visible on posterior $\frac{2}{3}$; epipleura narrow, upwardly sloping externally. Pygidium subtriangular, with apex broadly rounded in male, narrowly rounded in female.

Ventral surfaces (Figs 49, 50)—Prosternum in front of coxae almost flat, without pubescent fovea in male; intercoxal process extending behind fore coxae, strongly convex, with laterally expanded and transverse apex approaching mesosternal surface (Figs 49-50); fore coxae approximate, separated by about 0.1 times width of coxal cavity. Mesosternum slightly, evenly convex, not carinate. Distance between mid coxae about $\frac{1}{2}$ ths as that between hind coxae and nearly 4 times that between fore coxae. Metasternum with coxal lines diverging from hind edges of mid coxae, as in *Thalycrodes* spp.; hind edge of metasternum shallowly emarginate between hind coxae. Abdomen with coxal lines on ventrite 1 arcuately diverging from edge of coxal cavities and reaching middle of ventrite; apex of last ventrite broadly rounded in both sexes. Ventral punctation less distinct than that on dorsum.



FIGS 44-60—*Rixerodes* spp.: (44-54) *R. cornutus*: (44) body, dorsal; (45) head, dorsal; (46) antennal club; (47) mentum and prementum with labial palps; (48) fore tibia and tarsus, dorsal; (49) middle part of prosternum, with prosternal (intercoxal) process and base of mesosternum, lateral; (50) prosternal plate, ventral; (51) tegmen, ventral; (52) penis, ventral; (53) female spiculum ventrale; (54) ovipositor, ventral; (55-60) *R. cunninghami*: (55) head and pronotum, dorsal; (56) male genital capsule, ventral plate and spiculum gastrale; (57) tegmen, ventral; (58) tegmen, lateral; (59) penis, ventral; (60) ovipositor, ventral. Scale A for Figs 44, 55; B for Fig. 45; C for Figs 46-54, 56-60.

Legs (Fig. 48)—Narrow, moderately long, not flattened. All tibiae subparallel, without prominent apical or subapical process; fore tibiae very finely crenulate, mid and hind ones with 2 rows of long hairs along outer edge. Femora slightly, evenly rounded internally and externally. All tarsi nearly the same, without sexual dimorphism; first 3 segments distinctly lobed; claws simple.

Genitalia—Aedeagus (Figs 51, 52, 57-59) well sclerotised and flattened; penis with acute apex. Genital capsule with ventral plate separated into 2 distinctively-shaped sections (Fig. 56). Ovipositor (Figs 54, 60) with subtruncate apex and reduced, apically attached styli.

Distribution

Eastern coastal areas from southern New South Wales to the base of the Cape York Peninsula.

Biology

Nothing is known of the habits or microhabitat. Specimens have been taken at light or in Malaise traps in both rainforest and open sclerophyll forest.

Etymology

The name is an arbitrary combination of letters, and the gender is masculine.

Key to the Species of *Rixerodes* gen.n.

1. Head with more or less distinct, median tubercle in front of transverse impression between antennal insertions; pronotum with sides broadly arcuate anteriorly and posteriorly, with hind angles broadly rounded. 2.0-3.3 mm. (Figs 44, 45) **cornutus** sp.n.
- Head with transversely arcuate ridge (sometimes scarcely raised) before transverse depression between antennal insertions (Fig. 55); sides of pronotum broadly arcuate anteriorly but rectilinear from middle to hind angles, which are more or less distinct (forming a right angle with the apex rounded). 2.5-4.2 mm **cunninghami** sp.n.

Rixerodes cornutus sp.n. (Figs 44-54)

Types—AUSTRALIAN CAPITAL TERRITORY: *holotype* ♂, Black Mtn, 24.iii.1968, light trap, M. S. Upton (ANIC); *paratypes* (17): 7, same locality, 2.6.22.ii.4.12.21.iii.1968, light trap (ANIC, ZINL); 1, same locality, 27.xii.1990, light trap, A. G. Kirejtshuk (ZINL); QUEENSLAND: 1, Crystal Ck, 23 mi. SSE of Ingham (18.58 S, 146.16 E), 9.xii.1968, at light, E. B. Britton, S. Misko (ANIC); 1, near Tolga, 21.xi.1986, light trap, J. D. Brown (ANIC); NEW SOUTH WALES: 2, Congo, 8 km SE by E of Moruya (35.58 S, 150.09 E), 14.iii.1981, M. S. Upton (ANIC, ZINL); 2, Forest Reefs, Lea (SAM); SOUTH AUSTRALIA: 2, Barossa, A. H. Elston (AMS, MVM); 1, Mt Remarkable, x.1925, F. E. Wilson (MVM).

Description

Length 2.0-2.3 mm; width 0.8-1.4 mm; height 0.7 mm. Colour dark reddish-brown, elytra somewhat lighter, at least on basal half, mouthparts, antennae and legs reddish-brown; rather shiny; surface clothed with very long, suberect golden hairs. Head as long as distance between eyes, with prominent mesal tubercle in front of arcuate depression; punctation indistinct, punctures slightly larger than eye facets and separated by about 1 puncture diameter, intervals almost smooth. Antennae about $\frac{3}{4}$ as long as head width; club length $\frac{1}{2}$ of total antennal length. Pronotum with hind angles broadly rounded; punctation as on pronotum. Elytra with uniform, longitudinal rows of punctures; intervals between punctures within a row somewhat less than intervals between rows, finely reticulate. Pygidial apex narrower in female than in male. Ventral surface with punctation somewhat similar to that on head and pronotum, but ventrites with denser and somewhat smaller punctures, metasternum at middle with sparser, distinctly outlined, deep punctures, and mesosternum impunctate and finely rugose. Tibiae feebly narrower than antennal club; femora twice as wide as tibiae; all tarsi more or less similar, segments 1-3 weakly lobed. Aedeagus well sclerotised. Female differing from male only in the narrower pygidial apex. Ovipositor lightly sclerotised.

Rixerodes cunninghami sp.n. (Figs 55-60)

Types—QUEENSLAND: *holotype* ♂, 3 km NE Mt Webb (15.03 S, 145.09 E), 30.iv-3.v.1981, A. A. Calder (ANIC); *paratypes* (10): 1, same locality, 1-3.x.1980, T. A. Weir (ANIC); 2, Bligh's Lookout, Cardwell Range, 30.ix.1967, at light, J. G. Brooks (ANIC, ZINL); 1, Cow Bay, N of Daintree, 20.ii-15.iii.1984, J. C. Cunningham (ANIC); 1, Mt Molloy Rd, 10 mi. N of Mareeba, 7.ii.1965, J. G. Brooks (ZINL); NEW SOUTH WALES: 1, Sydney, E. W. Ferguson collection (ANIC); 1, Broulee, 7 mi. NE of Moruya, 12.iv.1966, M. S. Upton (ANIC); 1, Lorien Wildlife Refuge, 3 km N Lansdowne, via Taree, 17-24.i.1988, Malaise trap, G. Williams (ANIC); VICTORIA: 1, Horsham, 28.ix.1956, R. V. Southcott (SAM); TASMANIA: 1, Mt Wellington, Griffith (SAM).

Description

Length 2.5-4.2 mm; width 1.1-1.6 mm; height 0.7-0.8 mm. Colour reddish-brown, head and pronotum sometimes dark brown. Head with variably raised, transversely arcuate ridge in front of transverse impression between antennal insertions; punctation on head and pronotum moderately coarse and dense as in *R. cornutus*, with intervals shiny. Pronotum with sides somewhat unevenly curved, evenly arcuate anteriorly and rather straight posteriorly; hind angles less broadly rounded than in *R. cornutus*. Most other features as in type species, except tegmen (Figs 57-59), which has a distinct basal projection, and coxites (Fig. 60), which are much broader at apex.

Notes

Larger specimens have an almost triangular fore tibia, slightly widened to apex,

a somewhat longer antennal club, comparatively larger tarsi. Specimens from Mt Webb tend to have more truncate elytral apices and more strongly projecting, larger mandibles.

Australycra gen.n.

Type species—*Lasiodactylus marginatus* var. *obscurus* Blackburn.

Diagnosis

Distinguished from *Thalycrodes* by the normal antennal club (without an enlarged first segment) and from *Rixerodes* by the more oval and convex body form, uniformly decumbent vestiture, and prominent and acute apical angles on all tibiae.

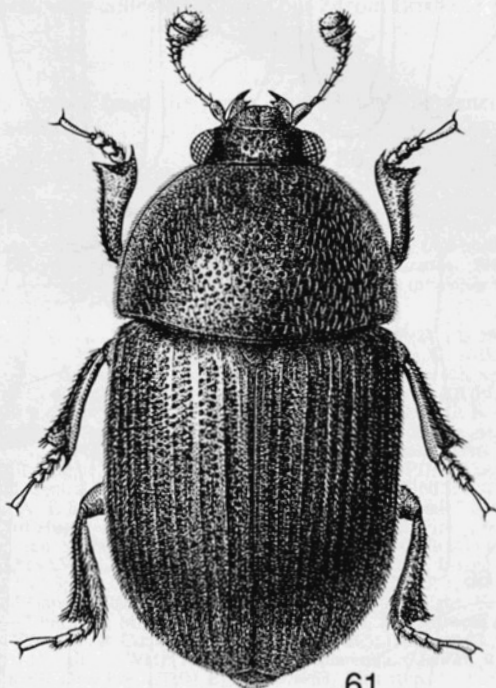


FIG. 61—*Australycra obscura*.

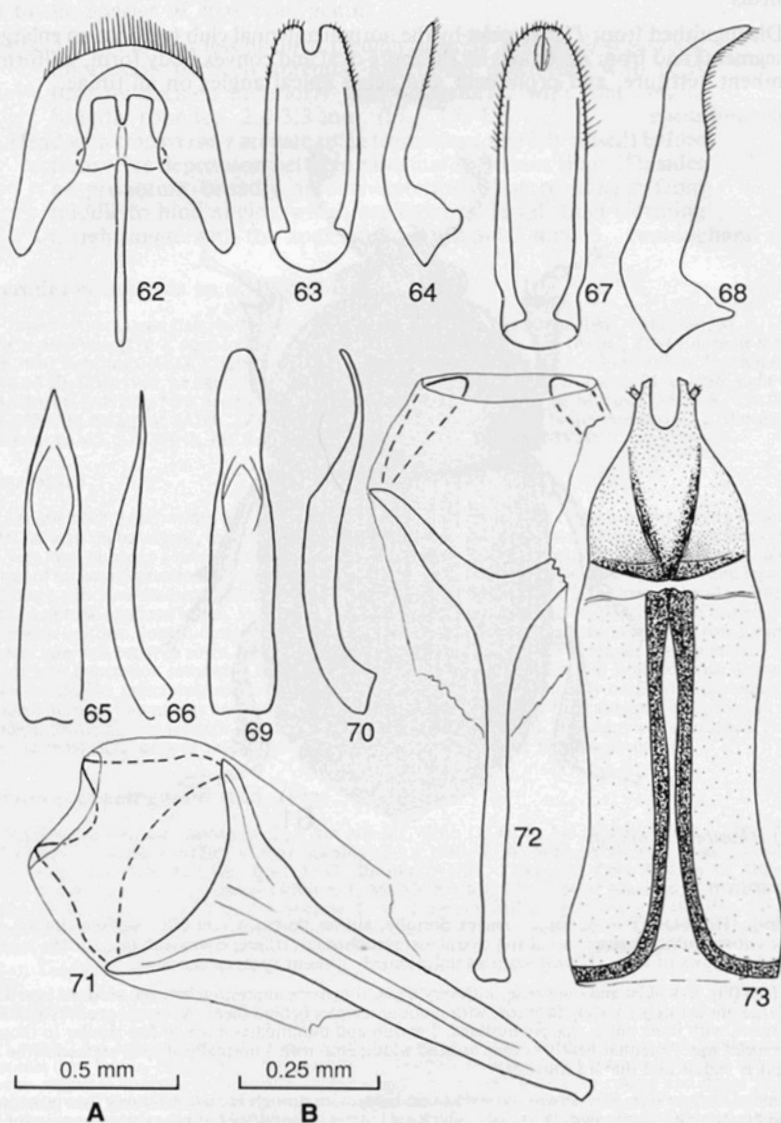
Description

Body (Fig. 61)—Oblong, rather convex dorsally, almost flattened ventrally. Surface clothed with subdecumbent pubescence; pronotal and elytral margins distinctly ciliate; elytra with more or less regular, longitudinal rows of hairs. Dorsal surfaces unicoloured, without spots or maculae.

Head (Fig. 61)—Flat and transverse, with very slight, transverse impression between antennal insertions. Eyes large, moderately coarsely faceted, with reduced temples behind them. Antennal grooves arcuately convergent, with inner edges sharply outlined. Labrum and mouthparts more or less similar to those in *Thalycrodes* spp. Antennae nearly as long as head width; club with 3 normally-shaped segments (the 2nd segment is widest and the 3rd longest).

Dorsal surfaces (Fig. 61)—Pronotum widest near base, more strongly arcuate anteriorly than posteriorly; disc moderately and evenly sloping to sides, which are narrowly margined but not explanate; anterior and posterior edges narrowly margined laterally, emarginate mesally. Scutellum subtriangular. Elytra moderately sloping posteriorly, with steeply and evenly sloping sides and broadly rounded apices, concealing pygidium or exposing apex only; subsutural striae visible in distal $\frac{1}{2}$; disc with micropunctures forming regular, longitudinal rows, but megapunctures less regularly seriate; hairs arising from both types of puncture subdecumbent; epipleura slightly upwardly, outer edge on slightly higher plane than inner one. Pygidium widely rounded in male, moderately narrowly so in female; entire surface diffusely punctured.

Ventral surfaces—Prosternum in front of coxae slightly tumid mesally, without pubescent fovea in male; intercoxal process scarcely extending behind coxae, strongly curved and abruptly depressed at apex, which is slightly expanded laterally. Fore coxal cavities closed as in *Thalycrodes*; distance between fore coxae about $\frac{1}{2}$ times as great as width of coxal cavity. Mesosternum slightly concave anteriorly, not carinate. Metasternum with coxal line on each side diverging from hind edge of mid coxal cavity at about lateral $\frac{1}{3}$ and extending posteriorly to meet metepisternum near posterior end, forming a moderately small, impunctate axillary space with a narrow posterior extension; hind edge of metasternum between hind coxae almost angularly excised. Distance between hind coxae subequal to that between fore coxae and about 1.5 times as great as that between mid ones. Hind wings well-developed.



Figs 62-71—*Australycra obscura*: (62) male genital capsule, ventral plate and spiculum gastrale; (63) form A, tegmen ventral; (64) form A, tegmen, lateral; (65) form A, penis, dorsal; (66) form A, penis, lateral; (67) form B, tegmen, ventral; (68) form B, tegmen, lateral; (69) form B, penis, dorsal; (70) form B, penis, lateral; (71-72) female genital capsule and spiculum ventrale; (73) ovipositor, ventral. Scale A for Figs 62-70; B for Figs 71-73.

Legs—Stout and moderately long. All tibiae subtriangular (Fig. 61), with distinct outer apical angle; fore tibia with outer edge finely crenulate; mid and hind tibiae with rows of suberect, long hairs and short setae along outer edge. Femora evenly rounded externally and internally. All tarsi (especially those of fore tarsus) with first 3 segments rather wide, last segment with 2 long claws and a bisetose empodium.

Genitalia—Aedeagus (Figs 65, 66) well sclerotised and flattened; tegmen (Figs 63, 64, 67, 68) deeply and narrowly excised at middle of apex; ventral plate as in Fig. 62. Ovipositor (Fig. 73) with excised apex and subapical styli; spiculum gastrale as in Fig. 72.

Distribution

Northern and eastern Australia, as far south as the Murray River in northern Victoria; also known from Papua New Guinea.

Biology

Most specimens were collected at light, but 2 from Brisbane were recorded from rotten fungi.

Etymology

The name is formed from the prefix *austral-* and the generic name *Thalycra*; the gender is feminine.

Australycra obscura (Blackburn) (Figs 61-73)

Lasiodyctylus marginatus Reitter var. ? *obscurus* Blackburn, 1891: 106. Type locality: QUEENSLAND (no specific locality). *Lectotype*, ♂, here designated, in BMNH, labels: "T 3645 Qu" (on card to which lectotype and paralectotype were originally attached); "Type H. T." (red-bordered disc); "Blackburn coll. 1910-236" (machine-printed); "Lasiodyctylus var. ? obscurus, Blackb." (hand-written); *paralectotype*, ♀, here designated, in BMNH, labels as for lectotype (originally mounted on same card). Additional paralectotypes (7) in SAM.

Specimens examined (112)—QUEENSLAND: 1, Ayr (19.35 S, 147.24 E), 28.xii.1970, W. B. Muir (ANIC); 1, Bamaga (10.53 S, 142.24 E), 5-12.xii.1986, at light, K. Houston, K. Sadler (QDPI); 2, Blackdown Tableland, via Dingo, 1-6.ii.1981, G. B. Monteith (QMB); 1, Black Mtn Rd, near Kuranda, 21.i.1962, J. G. Brooks (ANIC); 2, Brisbane, 18.xii.1940, rotten fungi, H. Jarvis (QDPI); 1, Brisbane, Griffith University Campus, 1978 (ANIC); 6, Cairns, i.1947, 12.1948, 12.1949, J. G. Brooks (ANIC); 2, Cairns Dist., F. P. Dodd (SAM); 6, Camp Milo, Cooloolo Forestry Area, E of Gympie, iv.1978, at light, I. D. Galloway (ANIC, QDPI, ZINL); 1, Cardstone, 26.xi.1966, J. G. Brooks (ANIC); 1, Cooloolo Forestry Area (Camp Milo), E of Gympie, iv.1978, at light, I. D. Galloway (QDPI); 4, Cunnamulla, H. Hardecastle (SAM); 1, Fraser Island, Central Station, 14-15.x.1978, G. B. Monteith (ZINL); 6, Glasshouse Mts, 3.ii.1927, D. A. O'ld C8631, W. A. T. Summerville (QDPI); 1, Holroyd River, 12 mi. S of Coen, Cape York Pen., 29.xi.1974, M. Walford-Huggins (AWH); 1, Kirrama Range (Barracks area), 600 m, 9-12.xii.1986, G. B. Monteith, G. Thompson, S. Hamlet (QMB); 1, Kuranda, iii.1971, J. G. Brooks (ANIC); 1, same locality, 2.xii.1920, F. P. Dodd (SAM); 1, 13 km NW of Kuranda, 6.xii.1982, J. Doyen (ANIC); 1, 31 km NW by N of Longreach (23.13 S, 144.04 E), 10.v.1973, M. S. Upton (ANIC); 1, Mudgerbah, iv.1889, C. J. Wild (QMB); 1, Pistol Gap, Byfield (22.50 S, 150.40 E), 10.i.1970, at light, E. Britton, G. Holloway, S. Misko (ANIC); 1, 17 km N of Mt Molloy, 2.ii.1970, at light, J. G. Brooks (ANIC); 1, 2 mi. ENE of Rollingstone, 26.iv.1969, I. F. B. Common, M. S. Upton (ANIC); 1, Station Ck, 12 km N of Mt Molloy, 24.ii.1971, A. Walford-Huggins (AWH); 1, Townsville, Pallarella, 6.i.1975, R. Barrett (ANIC); NEW SOUTH WALES: 1, Bonville (30.23 S, 150.04 E), 16.xii.1968, light trap, P. B. Carne (ZINL); 3, S of Charleville, 9.v.1973, M. S. Upton (ANIC, ZINL); 3, Coulouk Range, 30.vi.1985, V. R. Bejsak (VRB); 1, Galston, Dumbrell (SAM); 1, 6 km W of Kangaroo Valley (34.44 S, 150.32 E), 21.i.1971, S. Misko, K. Pullen (ANIC); 2, Maryborough, E. W. Fischer (SAM); 1, Mullaly, H. J. Carter (ANIC); 3, Port Macquarie, iv.1924, H. J. C. (ANIC); 7, Sydney, Lea (SAM); 1, Warumbungle Nat. Pk, Camp Pincham, 8.xi.1987, ex *Acacia decora*, C. Reid (ANIC); VICTORIA: 1, Robinville (34.35 S, 132.46 E), 25.x-3.xi.1988, light trap, T. A. Weir, J. F. Lawrence, M. Hansen (ANIC); NORTHERN TERRITORY: 3, Black Point, Coburg Pen. (11.09 S, 132.09 E), 28.30.i.1977, E. D. Edwards (ANIC, ZINL); 2, same locality, 15-23.ii.1977, T. A. Weir (ANIC); 3, Darwin, G. F. Hill (SAM); 1, 3 mi. NE of Gosses Bluff (23.48 S, 132.21 E), 7.iv.1969, E. H. Pelz (ANIC); 1, Katherine, 6-10.ii.1968, at light, E. G. Matthews (ANIC); 1, same locality, 9.ii.1968, J. A. L. Watson (ANIC); 1, Koongarra (12.52 S, 132.50 E), 6-9.iii.1973, M. S. Upton (ANIC); 9, same locality, 6-10.iii.1973, M. S. Upton (ANIC, ZINL); 1, Magela Ck, 9 km SSE of Mudginberry H.S. (12.40 S, 132.54 E), 7.xi.1972, M. S. Upton (ANIC); 18, Tindal (14.31 S, 132.22 E), 1-20.xii.1967, light trap, W. J. M. Vestjens (ANIC, ZINL); 1, 12 km NE of Wallera (132.26 S, 24.35 E), 21.xi.1975, attracted to light, G. Griffin (ANIC); WESTERN AUSTRALIA: 1, 17 km N by E of Cane River H.S. (21.56 S, 115.39 E), 27.iv.1971, M. S. Upton, N. R. Mitchell (ANIC); 4, "NW Austr" (MACL, ZINL); PAPUA NEW GUINEA: 1, Port Moresby, Mt Lawes, 1300 ft., 5.iii-12.v.1963, W. W. Brandt (ANIC).

Redescription

Length 3.0-5.8 mm; width 1.7-3.0 mm; height 1.0-1.8 mm. Colour usually almost uniform chestnut brown, but varying from reddish-brown to almost black; rather shiny. Head and pronotal surfaces with distinct punctures, not less than 1.5 times as large as an eye facet and separated by about 1 puncture diameter; intervals smooth. Elytra with somewhat smaller and scarcely denser, less sharply outlined punctures, the

spaces between them lightly reticulate and shiny. Pygidium with distinct punctures nearly as large as eye facets and narrow intervals strongly reticulated. Ventral surfaces with indistinct, sparse and fine punctation and more or less smooth intervals; mesal portion of metasternum and axillary spaces completely impunctate, densely and finely reticulate.

Notes

Dimorphism in male genitalia was observed, even among specimens in the same series; and no intermediate conditions were found among the specimens examined. However, no external differences could be found which were correlated with the 2 types of genitalia. The lectotype has a shorter aedeagus (Form A, Figs 63-66), about 0.4 times as long as the basal width of the abdomen; in addition, the tegmen is more broadly emarginate at apex and characteristically curved in lateral view, and the apex of the penis is acute. In Form B (Figs 67-70), the longer tegmen is narrowly emarginate and differently curved, while the penis has a broadly rounded apex. Differences were also found in the female spiculum ventrale (Figs 71-72). Until more material can be examined and a more detailed comparative study made, we are retaining both forms under the single species name.

A. obscura was considered by Blackburn to be a variety of *Lastodactylus marginatus* Reitter (1873). The type of *marginatus*, which has been examined by one of us (AGK), does not belong to the present complex and will be dealt with later.

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