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**Classification, natural history, and evolution of Tarsosteninae  
(Coleoptera: Cleroidea: Cleridae). Part IV.  
Taxonomy of the *Tarsostenodes* complex of Australia,  
New Caledonia, New Guinea, and Tasmania**

Weston OPITZ

**Abstract:** The *Tarsostenodes* complex, a monophyletic group, comprises the genera *Blackburniella* CHAPIN, *Paratillus* GORHAM, *Tarsostenodes* BLACKBURN, and *Tarsostenus* SPINOLA. *Blackburniella* includes *B. apicula* OPITZ, nov.sp. and *B. intricata* BLACKBURN. The generic name *Paratillus* is resurrected and includes *P. atali*, OPITZ, nov.sp. and *P. carus* (NEWMAN). *Tarsostenodes* involves *T. bullatus* OPITZ, nov.sp., *T. albonotatus* (PIC), *T. cribripennis* SCHENKLING, *T. gibbus* OPITZ, nov.sp., *T. guttulus* (WHITE), *T. howensis* BARTLETT, *T. leucogramma* ELSTON, *T. morulus* OPITZ, nov.sp., *T. simulator* BLACKBURN, *T. tentus* OPITZ, nov.sp., and *T. vesica* OPITZ, nov.sp. *Tarsostenus* covers *T. antehelvis* OPITZ, nov.sp., *T. bicolor* OPITZ, nov.sp., *T. hilaris* (WESTWOOD), *T. kanak* OPITZ, nov.sp., *T. tricolor* (HELLER), and *T. univittatus* ROSSI. A Neotype for *Tarsostenus univittatus* ROSSI is selected. *Tarsostenosis* HELLER is synonymized with *Tarsostenus* SPINOLA. Lectotypes are designated for *Blackburniella intricata*, *Paratillus carus*, *Tarsostenodes albonotatus*, *T. cribripennis*, *T. guttulus*, *T. simulator*, and *Tarsostenus hilaris*. Many of these beetles have been collected from blossoms of hardwoods. The cosmopolitan species *Tarsostenus univittatus* and *Paratillus carus* are commonly found in commercial wooden crates in the company of powder-post beetles of the genus *Lyctus* FABRICIUS. It is postulated that the ancestral stock of the *Tarsostenodes* complex evolved in mainland Australia, probably during the Middle Cretaceous, some 115 mya. when the sea recessed from that island continent. Moreover, morphological and distributional evidence suggest that the ancestral stock underwent two major evolutionary events that established two major lines of evolution among the *Tarsostenodes* complex; one involving continental Australia, the other entailing the islands of New Guinea, New Caledonia, and Tasmania. A phylogeny of the species of the *Tarsostenodes* complex is postulated. It is computer generated with WINCLADA in consort with NONA. This work includes description of species, key to species, 42 line drawings, 6 Scanning Electron Micrographs, 21 color habitus illustrations, 18 color photographs of genitalia, and 5 distributional maps.

**Key words:** Coleoptera, Cleridae, Tarsosteninae, Checkered Beetles, New Species, Classification, Natural History, Phylogenetics, Australia.

### Introduction

The *Tarsostenodes* complex, a monophyletic group (OPITZ 2012), includes the genera *Blackburniella* CHAPIN, *Paratillus* GORHAM, *Tarsostenodes* BLACKBURN, and *Tarsostenus* SPINOLA. Several members of this complex are very colorful Australian checkered beetles associated with the blooms of various hardwoods. *Tarsostenodes* species have

been collected in the presence of superficially similar cerambycids (BLACKBURN 1900). I suspect that these two types of beetles are members of a Batesian mimetic complex. Their size and constriction at the elytral middle suggests a mimetic relationship with ants, which is reminiscent of the morphologically similar species of the Middle American genus *Caestron* SPINOLA. This is the fourth contribution to elucidate the taxonomic components of the subfamily Tarsosteninae.

## Material and Methods

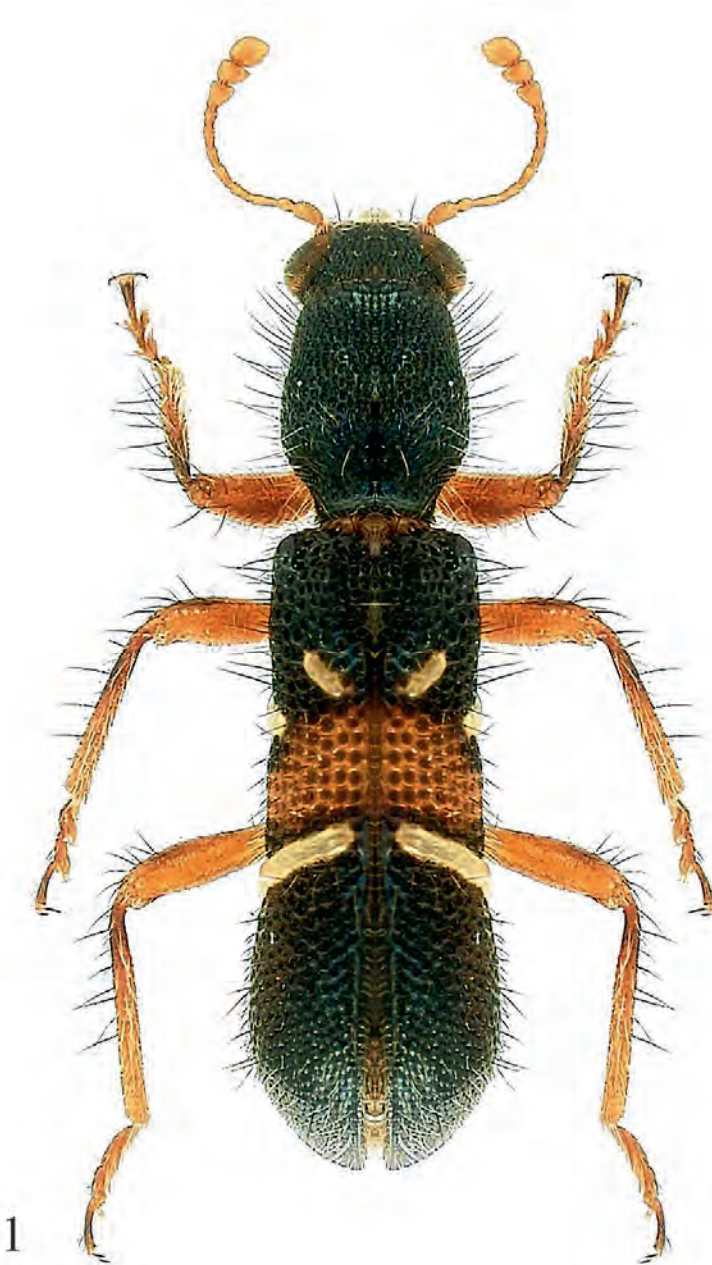
This study is based on the external morphology of 619 adult specimens. In a previous publication OPITZ (2012) described the adult external morphology and the morphology of the female mesodermal reproductive organs of *Tarsostenodes simulator* BLACKBURN. In that same work, Opitz presented generic redescrptions of the genera included in this work. These redescrptions serve as a baseline for the species-level treatments herein. In essence, methods involving dissection and measurements are similar to those presented in OPITZ (2010).

I used BROWN (1956) as my source for naming species and I followed the concept of the biological species as advocated by STANDFUSS (1896), DOBZHANSKY (1937), and MAYR (1963). I assumed that consistent differences in the aedeagus and other aspects of external morphology represent species-level discontinuities. With one exception, the aedeagus was significantly different among the 21 species considered in this work. The exception involved *Tarsostenodes guttulus* and *T. simulator* whose aedeagi are identical. Separate species status has been retained for these taxa by the following rationale.

I examined 114 specimens of *Tarsostenodes guttulus* and 158 of *T. simulator*, many of which were males. These are sympatric species, whose males have structurally identical aedeagi, but who may be easily distinguished by their elytral characteristics. *T. guttulus* specimens have three bullules (Fig. 58) and a testaceous mid-elytral macula, whereas those of *T. simulator* have two bullules (Fig. 62) and the elytral disc is dark blue. Four specimens present an intermediate condition of elytral characteristics, while the aedeagal construction is identical to that in males of the two species in question. The four intermediate individuals show the tree bullules of *T. guttulus* and the elytral coloration of *T. simulator*. My hypothesis is that *T. guttulus* and *T. simulator* represent a recent speciation divergence whose resulting populations retained sufficiently similar gene pools to produce hybrids as described above.

Habitus photographs were taken with a JVC KY-F75U 3-CCD camera and controlled by Syncroscopy AutoMontage® software (Cambridge, United Kingdom). The SEM micrographs were produced with a Scanning Electron Microscope-S-3500N (Hitachi Science Systems, Ltd., Tokyo, Japan). To facilitate the identity of all type specimens I transcribed locality information in the exact manner as found on labels. For the most part, the label information noted in the descriptions of species is verbatim.

Abbreviations used in this treatise are defined as follows: FW/EW= frons width/eye width; PL/PW= pronotal length/pronotal width; EL/EW= elytral length (from the anterior transverse carina to the elytral apex), elytral width (the greatest width of an elytron in dorsal view). Orismology follows that used in EKIS (now OPITZ, 1977) and OPITZ (2010). With two exceptions, the codons used on this work follow the listings in ARNETT et al. (1993).



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**Fig. 1:** Habitus of *Tarsostenodes cribripennis*.

The evolutionary hypotheses presented herein are based on Hennigian concepts (HENNIG 1966), although I subscribe to the TUOMIKOSKI (1967) concepts of "apotypy" and "plesiotypy" on the basis that phylogenetic work may involve more than morphological criteria. Twenty-five adult morphologic characteristics were used to predict the phylogenetic relationships among the *Tarsostenodes* complex genera. The Australian genus *Pylus* NEWMAN and, to a lesser extent, other generic taxa of Tarsosteninae were also used as outgroup taxa.

Character states were organized into a matrix (Table 1), which was then analyzed with NONA (GOLOBOFF 2003) in combination with Winclada version 100.80 (NIXON 2002). Two phylogenetic trees were derived via heuristic analysis [Maximum trees (hold) = 100, number of replications 1 (mult) = 100, and multiple TBR = TBR (mult max) were used]. Character states given the value of "0" are assessed plesiotypic whereas those judged a value of "1" are assessed apotypic. There are various methods to interpret the evolutionary states of characters. Most of these are discussed by EKIS (now OPITZ 1977: 166), WATROUS & WHEELER (1981: 5), and NIXON & CARPENTER (1993: 413)

- Character 0.....Spermathecal gland: not long (0); long (1)
- Character 1.....Pronotum: not oblong (0); oblong (1)
- Character 2.....Phallobasic lobes: not minute (0); minute (1)
- Character 3.....Elytron: not slender (0); slender (1)
- Character 4.....Elytral base: without umbo (0); with umbo (1)
- Character 5.....Eyes: spherical (0); slender (1)
- Character 6.....Male accessory glands: more than one pair (0); one pair (1)
- Character 7.....Shape of phallic apex: not elongate (0); elongate (1)
- Character 8.....Elytral apex: not tufted (0); tufted (1)
- Character 9.....Pronotum: not obovate (0); obovate (1)
- Character 10.....Elytral color: not mostly testaceous (0); mostly testaceous (1)
- Character 11.....Midelytral white fascia: not present (0); present (1)
- Character 12.....Extremity of phallus: not truncate (0); truncate (1)
- Character 13.....Elytral disc: without bullules (0); with bullules (1)
- Character 14.....Elytral shape: not constricted at middle (0); constricted at middle (1)
- Character 15.....Elytral ground color: not mostly brown (0); mostly brown (1)
- Character 16.....Midbase of pronotum: not carinose (0); carinose (1)
- Character 17.....Phallic lobe: without basal line (0); with basal line (1)
- Character 18.....Pronotal disc: without glabrous streaks (0); with glabrous streaks (1)
- Character 19.....Posterior bullule: slender (0); broad (1)
- Character 20.....Epipleural margin: not very convex in posterior 1/3<sup>rd</sup>: very convex in posterior 1/3<sup>rd</sup>
- Character 21.....Forebody color: not testaceous (0); testaceous (1)
- Character 22.....Elytral disc: not mostly black (0); mostly black (1)
- Character 23.....Ninth antennomere: not long (0); long (1)
- Character 24.....Phallobasic struts: not expanded distally (0); expanded distally (1)

**Table 1.** Character matrix of 25 adult morphological characters of the species in *Blackburniella*, *Paratillus*, *Tarsostenodes*, and *Tarsostenus*.

Taxa	Characters																								
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
Outgroup	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paratillus carus</i>	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>P. atali</i>	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Tarsostenus tricolor</i>	0	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>T. bicolor</i>	0	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>T. univittatus</i>	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<i>T. antehelvis</i>	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<i>T. hilaris</i>	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>T. kanak</i>	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Tarsostenodes howensis</i>	0	1	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
<i>T. cribripennis</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	1	0	0	0	0	0
<i>T. tentus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	1	0	0	0	0	0
<i>T. bullatus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	0
<i>T. guttulus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	1
<i>T. simulator</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	1
<i>T. vesica</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0
<i>T. leucogramma</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0
<i>T. gibbus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0
<i>T. albonotatus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	1	0
<i>T. morulus</i>	0	1	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	1	0
<i>Blackburniella apicula</i>	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>B. intricata</i>	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Repository of Specimens**

To remain consistent with my previous works, I rely on ARNETT et al. (1993) for codens identifying repository of specimens.

- AMSA ..... Australian Museum, Sydney NSW 2010, Australia (Derek J. Smith)
- ANIC ..... Australian National Insect Collection, CSIRO, Canberra, ACT, 2601 Australia (Adam Slipinski, Cate Lemann).
- BMNH ..... The Natural History Museum, Department of Entomology, United Kingdom (Beulah Garner)
- NBCN ..... Netherlands Centre for Biodiversity Naturalis, Leiden, The Netherlands (Ben Brugge)

- MNHN ..... Museum d'Histoire Naturelle, Paris, France (Antoine Mantilleri).  
 MVMA..... Museum Victoria, Science Program: Terrestrial Invertebrates, Melbourne, Victoria, Australia (Catriona McPhee).  
 QDPI ..... Queensland Department of Primary Industry, Indooroopilly, Queensland, Australia (J. S. Bartlett)  
 QMBA ..... Queensland Museum, South Brisbane, Queensland 4101, Australia (Christine Lambkin)  
 QPIM ..... Primary Industries, Insect Collection, Mareeba, Queensland 4880, Australia (Now at QDPI, J. S. Bartlett)  
 SAMA ..... South Australian Museum, Department of Entomology, North Terrace, Adelaide, Australia (Jo Wood).  
 SDEL..... Senckenberg Deutsches Entomologisches Institute Müncheberg. Müncheberg, Germany (Lutz Behne).  
 SMTD ..... Museum für Tierkunde, Senckenberg Naturhistorische Sammlungen, Dresden, Germany (Olaf Jäger).  
 WOPC..... Weston Opitz Collection, Research Associate: Florida Collection of Arthropods, Division of Plant Industry/Entomology, Gainesville, Florida 32614-7100.

### Natural History

I have limited information about the natural history of *Blackburniella*. *Blackburniella intricata* (BLACKBURN) was collected by C. Reid on the red-eye wattle, *Acacia Cyclops* A, CUM. Ex G. Don (Fabaceae).

*Paratillus* GORHAM is widely known via its member *P. carus* (NEWMAN). This small slender and cylindrical beetle is most commonly found on freshly cut lumber, particularly in mill yards where wood is often infected with *Lyctus* FABRICIUS powder-post beetles. More specifically, it is known to prey on *Lyctus brunneus* (STEPHAN) in California live oak (*Quercus agrifolia* NÉE) (Fagaceae). Also, *Paratillus carus* has been reared from coccid galls and was collected under the bark of *Eucalyptus saligna* SM. (Myrtaceae). Other specimens of this species emerged from crab apple, other bush wood, and from freshly cut oak logs. W. W. Froggatt provides a detailed account of the life habits of *P. carus*; he writes "They deposit their own eggs in the bark or cracks in the surface of the wood, and the resultant larvae worm their way through into the wood-borers' galleries and feed upon any larvae they find". G.B. Monteith collected specimens of *Paratillus atali* OPITZ, nov.sp., by spraying felled logs with pyrethrum.

Most *Tarsostenodes* have the elytra constricted at the middle and the disc is depressed. This body form is reminiscent of the Middle American clerine genus *Caestron* SPINOLA, with which the aforementioned Australian beetles probably share an ecological-homolog relationship. Specimens of these disjunctive genera have been collected on flowers, both have the appearance of some cerambycids, and, at least, members of *Caestron* have been collected along with superficially similar-looking species of ants. BLACKBURN (1900), reports that specimens of *Tarsostenodes simulator* mimic cerambycids of the genera *Homaemota* PASCOE and *Zoedia* PASCOE, while GORHAM (1882) notes, "This species (*Caestron contractus* GORHAM) has a singularly ant-like look, and, indeed, closely resembles an ant of the genus *Cryptocerus* from the same district". In view of their superficial similarity to ants, one may surmise that some species of *Tarsostenodes* and *Caestron* may be involved in a type of Batesian mimicry with ants serving as models.

Specimens of *Tarsostenodes* BLACKBURN were collected on *Acacia* MILL (Fabaceae) and on *Jacksonia scoparia* SM. (Fabaceae). Some emerged from *Acacia mearsnii* DEWILD (Fabaceae), and some were collected on dead *Eucalyptus* L'HÉR. (Myrtaceae). A variety of specimens were collected on flowers of *Cerapetalum apetalum* D. DON (Cunoiaceae), *Syzygium smithii* (POIR.) (Myrtaceae), *Guioa semiglauca* F. MUELL. RADLK (Sapindaceae), *Waterhousia floribunda* (F. MUELB) (Myrtaceae), and *Angophora hispida* (SM.) BLAZEL (Myrtaceae). One specimen was collected on the two-veined hickory *Acacia binervata* D. C. (Fabaceae), and another on *Cassinia* R. BR. (Asteraceae). G. B. Monteith collected specimens of *T. guttulus* by praying pyrethrum on coniferous tree logs of *Callitri* VENT. (Cupressaceae).

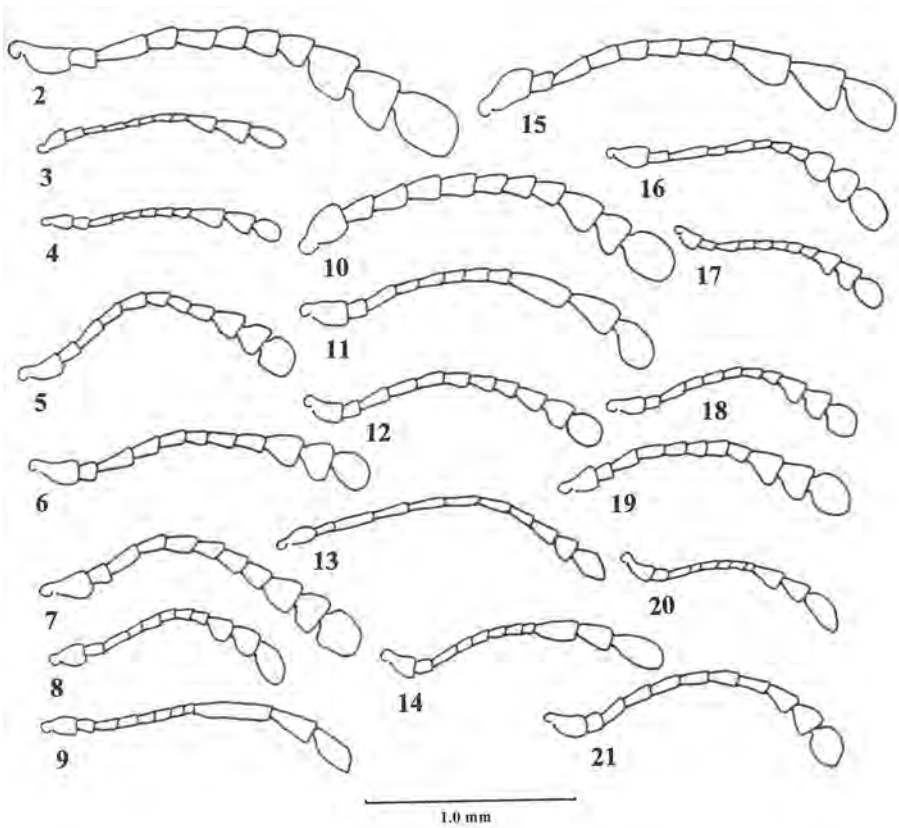
*Tarsostenus* SPINOLA includes the cosmopolitan species, *T. univittatus* ROSSI. This vagile tiny species is among the most common clerid intercepted at international ports of entry; especially when goods are shipped in wooden crates infested with lignicolous insects. *Tarsostenus univittatus* prey on powder-post beetles, such as *Lyctus parallellocollis* BLACKBURN, *L. brunneus* STEPHANS, *L. africanus* LESNE, *L. planicollis* LECONTE, and species of *Sinoxylon* DUFTSCMID. It is also a predator of the bostrichid *Xylothrips flavipes* ILLIGER, and has emerged from the flowering plants *Sterculia alata* LINNAEUS (Malvaceae), and *Cassia fistula* LINNAEUS (Fabaceae). Edward P. STEBBING (1914) associates *T. univittatus* with bamboo infested with the wood borers *Sinoxylon crassum* LESNE, *S. anale* LESNE, and *Dinoderus pilifrons* LESNE.

### Taxonomic History

CHAPIN (1924) introduced the genus *Blackburniella* to accommodate the type of the genus *B. intricata* (BLACKBURN). *Blackburniella*, placed under Korynetinae by CORPORAL (1950) and KOLIBÁČ (2003), was relegated to Tarsosteninae by OPITZ (2010, 2012). The same sequence of subfamily assignment was performed for *Tarsostenus* SPINOLA. *Paratillus*, established by GORHAM in 1876, was synonymized by KOLIBÁČ (2003) under *Tarsostenus*, but reestablished herein as a valid genus. *Tarsostenosis* HELLER, assigned to Korynetinae by CORPORAL (loc. cit.) and to Tarsosteninae by OPITZ (loc. cit.), is herein synonymized under *Tarsostenus*.

The genus *Tarsostenodes* was established by BLACKBURN in 1900, and has been variously classified. SCHENKLING (1903) placed the genus under subfamily Clerini (= Clerinae), CORPORAL (1950) and KOLIBÁČ (2003) under Korynetinae, and OPITZ (2010) under Tarsosteninae. In addition to Thomas Blackburn, Adam White, William J. Macleay, Albert E. Elston, and Sigmund Schenkling have added species to the genus. Two nominal species names, *Tarsostenus mastersii* MACLEAY and *Tarsostenus pulcher* MACLEAY, listed under *Tarsostenodes* by CORPORAL (1950), require further discussion.

First, the only available physical evidence of the type of *Tarsostenus mastersii* MACLEAY is a portion of the antennal capitulum and portions of each pair of legs. These organs are glued on a mount-card in the AMSA collection. Moreover, the original description of this nominal species is brief with important morphological features wanting; to an extent that I cannot assign the name to any available specimen of *Tarsostenodes*. Indeed, the shape of the 10<sup>th</sup> antennomere suggests that this nominal species may not be a *Tarsostenodes*. Therefore, *Tarsostenus mastersii* MACLEAY is herein assigned to the category of incertae sedis. The second consideration involves *Tarsostenus pulcher* MACLEAY, which is clearly a junior synonym of *Tarsostenus carus* (NEWMAN) (BARTLETT, in press).



**Figs 2-21:** Antennae. (2) *Paratillus carus*. (3) *Tarsostenus bicolor*. (4) *T. kanak*. (5) *Tarsostenodes tentus*. (6) *T. guttulus*. (7) *T. simulator*. (8) *Tarsostenus univittatus*. (9) *Tarsostenodes morulus*. (10) *Blackburniella intricata*. (11) *Tarsostenodes albonotatus*. (12) *T. gibbus*. (13) *T. leucogramma*. (14) *Tarsostenus antehelvis*. (15) *Blackburniella apicula*. (16) *Tarsostenus tricolor*. (17) *Paratillus atali*. (18) *Tarsostenodes vesica*. (19) *T. cribripennis*. (20) *Tarsostenus hilaris*. (21) *Tarsostenodes howensis*.

**Key to the genera and species of the *Tarsostenodes* complex**

- 1 Eyes narrow, oblong (*Paratillus*) .....2
- 1' Eyes not narrow, spheroid .....3
- 2(1) Basal 1/4<sup>th</sup> of sutural margin vested with tuft of white setae (New Caledonia)  
*Paratillus atali* OPITZ, nov.sp.
- 2' Basal 1/4<sup>th</sup>. of sutural margin not vested with tuft of white setae (Cosmopolitan) .....  
.....*Paratillus carus* (NEWMAN)
- 3(1') Elytral apical region vested with dense tuft of white setae; elytral tubercle vested  
with tuft of black setae (*Blackburniella*) .....4
- 3' Elytral apical region not vested with dense tuft of white setae.....5
- 4(3) Elytral preapical setal tuft constricted to oblong aggregate (Australia).....  
.....*Blackburniella apicula* OPITZ, nov.sp.



4'	Elytral preapical setal tuft diffuse (Australia).....	<i>Blackburniella intricata</i> (BLACKBURN)	
5(3')	Elytral disc with bullules (Fig. 43) or body predominantly testaceous ( <i>Tarsostenodes</i> ).....		6
5'	Elytral disc without bullules, body never predominantly testaceous .....		16
6(5)	Body color predominantly or entirely testaceous (Lord Howe Island).....	<i>Tarsostenodes howensis</i> BARTLETT	
6'	Body color not predominantly or entirely testaceous .....		7
7(6')	Ground color of elytral disc unicolorous, black or brown .....		8
7'	Ground color of elytral disc multicolorous.....		10
8 (7)	Elytral asetiferous punctations extended to elytral apex (Australia).....	<i>Tarsostenodes albonotatus</i> (PIC)	
8'	Elytral asetiferous punctations extended to or slightly beyond posterior bullule .....		9
9(8')	Elytral umbo very prominent; elytra very constricted at middle (Australia) .....	<i>Tarsostenodes gibbus</i> OPITZ, nov.sp.	
9'	Elytral umbo not very prominent; elytra not very constricted at middle (Australia) .....	<i>Tarsostenodes morulus</i> OPITZ, nov.sp.	
10(7')	Elytral asetiferous punctation extended to elytral apex .....		11
10'	Elytral asetiferous punctation not extended to elytral apex .....		12
11(10)	Pronotal disc profusely punctate, interstitial spaces narrower than punctation (Australia) .....	<i>Tarsostenodes cribripennis</i> SCHENKLING	
11'	Pronotal disc moderately punctate, interstitial spaces wider than punctation (Australia) .....	<i>Tarsostenodes vesica</i> OPITZ, nov.sp.	
12(10')	Each elytron with 3 bullules .....		13
12'	Each elytron not with 3 bullules .....		15
13(12)	Cranium testaceous (Australia) .....	<i>Tarsostenodes leucogramma</i> ELSTON	
13'	Cranium black .....		14
14(13')	Pronotal sides without tubercle (Australia) .....	<i>Tarsostenodes tentus</i> OPITZ, nov.sp.	
14'	Pronotal sides with tubercle (Fig. ) (Australia).....	<i>Tarsostenodes guttulus</i> (WHITE)	
15(12')	Each elytron with 2 bullules (Australia).....	<i>Tarsostenodes simulator</i> BLACKBURN	
15'	Each elytron with 4 bullules (Fig. ) (Australia)...	<i>Tarsostenodes bullatus</i> OPITZ, nov.sp.	
16(5')	Cranium completely or mostly black.....		17
16'	Cranium testaceous .....		19
17(16)	Elytra predominantly brown, with white fascia at middle (Cosmopolitan) .....	<i>Tarsostenus univittatus</i> ROSSI	
17'	Elytra predominantly yellow-red.....		18
18(17')	Pronotal arch yellow (New Caledonia) .....	<i>Tarsostenus bicolor</i> OPITZ, nov.sp.	
18'	Pronotal arch black (New Caledonia).....	<i>Tarsostenus tricolor</i> (HELLER)	
19(16')	Elytral basal 1/3 black, elytral disc with faint light fascia at middle (New Guinea) .....	<i>Tarsostenus antehelvis</i> OPITZ, nov.sp.	
19'	Elytral basal 1/3 yellow-red, with strongly expressed white fascia at middle .....		20
20(19')	White elytral fascia vested with tuft of white setae (New Caledonia) .....	<i>Tarsostenus kanak</i> OPITZ, nov.sp.	
20'	White elytral fascia not vested with tuft of white setae (Tasmania, Australia).....	<i>Tarsostenus hilaris</i> (WESTWOOD)	

## Descriptive Taxonomy

### *Blackburniella* CHAPIN, 1924

*Blackburniella* CHAPIN, 1924: 66. Type species: *Thanasimomorpha intricata* BLACKBURN, 1891: 304. By original designation. CORPORAAL, 1950: 302. MATTHEWS, 1992: 5. KOLIBÁČ, 2003: 47. OPITZ, 2012: 8.

*Thanasimomorpha* BLACKBURN, 1891: 304. CORPORAAL, 1950: 303.

*Erolestus* WOLCOTT, 1927: 108. CORPORAAL, 1950: 302.

**D i a g n o s i s :** The members of this genus have the base of the elytral disc adorned with a shallow umbo, which is covered by a tuft of black setae. The combination of these characteristics will distinguish these beetles from any others in the *Tarsostenodes* complex.

**A p o t y p i e s :** Elytral umbo vested with black setae, phallic apex very long.

**D e s c r i p t i o n :** This genus was illustrated by KOLIBÁČ (2003), and redescribed and illustrated by OPITZ (2012).

**D i s t r i b u t i o n :** This genus is known only from Australia.

**S p e c i e s E x a m i n e d :** *Blackburniella apicula*, OPITZ, new species, *B. intricata* BLACKBURN.

### *Blackburniella apicula* OPITZ, nov.sp. (Figs 15, 26, 51, 71, 89)

**H o l o t y p e :** ♀. [Australia] 23°41'S 134°15'E, 39 km E of Alice Springs, N.T., 25 Sep. 78, M. S. Upton (ANIC). **P a r a t y p e s :** Five. One specimen from the same locality as the holotype, [Australia] 26 Sep. 78, M. S. Upton (ANIC); 31°20'S 138°35'E, SA, Brachina Creek, 8 Nov. 1987, J. C. Cardale, at light (ANIC, 1); 23°38'S 133°53'E, Todd River, 9 km N by E of Alice Springs, NT. 10 Oct. 78, Upton & Barrett (WOPC, 1); N. T., Near Phillip Creek on Stuart Highway, 331 m. S19°18'343" E134°11'104", G. Hangay, I. Rozner, A. Podlussány, 2.XI.2000 (HNHM, 1); R. P. McMillan, DATE Nov 7. 49, Culham (WAMP, 1).

**D i a g n o s i s :** Distinguishable from the superficially similar specimens of *Blackburniella intricata* by the more elongate body and the oblique patch of white setae near the apex of the elytra.

**D e s c r i p t i o n :** **Size:** Length 6.0 mm; width 1.8 mm. **Form:** As in Fig. 51. **Integument:** Forebody red-brown, except collar dark brown, pterothorax red-brown, legs brown, abdomen black, elytron tricolored, with basal umbo vested with black setae, otherwise elytral basal half red-brown, followed by narrow, transverse black fascia, then oblique white fascia, remainder of elytral disc brown, except with oblique patch of white setae. **Head:** Cranium coarsely punctate, frons wider than width of eye (FW/EW-35/20); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 15). **Thorax:** Pronotum obovate, constricted posteriorly (Fig. 26) (PL/PW-95/85), coarsely punctated, without tubercle at sides; elytral disc with prominent subbasal umbo, with large asetiferous punctations that diminish beyond oblique white fascia (EL/EW- 228/40); disc not constricted, but slightly depressed at middle. **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes bifid, fimbriate, phallobasic rod not extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex very long, phallic plates narrow (Fig. 71).

**V a r i a t i o n :** Length 5.0-6.0 mm; width 0.9-1.8 mm. The specimen from Phillip

Creek is more melanistic; the forebody is black with a purplish tinge whereas the basal half of the elytral disc is entirely black.

**Natural History:** The type specimens were collected in September, October, and November, one with a light trap and one at 331 m.

**Distribution** (Fig. 89): This species is known only from the Northern Territory and South Australia of Australia.

**Etymology:** The specific epithet *apicula* is a Latin noun derived from *apex* (= tip). The name refers to white tufts of hair at the elytral extremity.

***Blackburniella intricata* (BLACKBURN, 1891) (Figs 10, 27, 52, 72, 89)**

*Thanasimomorpha intricata* BLACKBURN, 1891: 304. Lectotype. Gender not known. Herein designated. (Australia) West Australia, E. Meyrick (BMNH). ELSTON, 1923: 213. CORPORAAL, 1950: 303. MATTHEWS, 1992: 5. KOLIBÁČ, 2003: 49. OPITZ, 2012: 9. Blackburn did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species.

*Erolestus cleroides* WOLCOTT, 1927: 109; 1947: 87. CORPORAAL, 1950: 303.

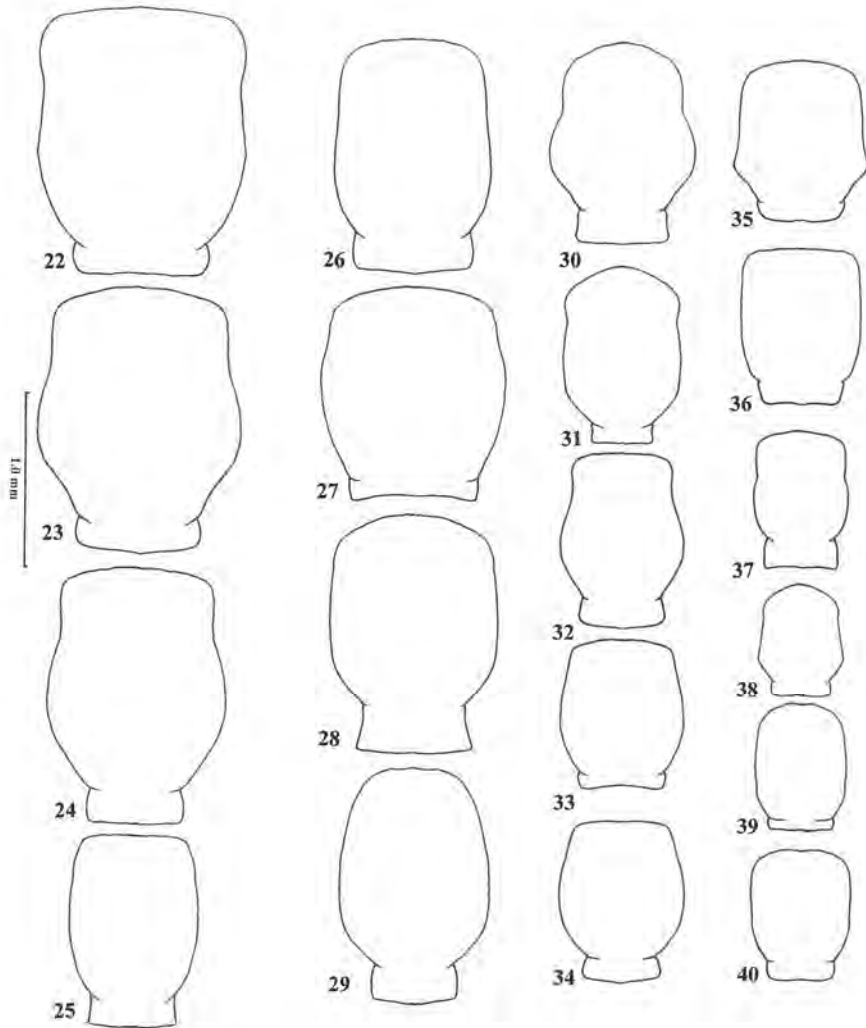
*Thanasimomorpha intricata* var. *bipartita* BLACKBURN, 1891: 304. nov.syn. ELSTON, 1923: 213. CORPORAAL, 1950: 303.

**Diagnosis:** Distinguishable from the superficially similar specimens of *Blackburniella apicula* by having a shorter, more stout, body form and the pronotal sides are more rounded (compare Figs 26, 27).

**Description:** Size: Length 5.0 mm; width 1.5 mm. Form: As in Fig. 52. Integument: Forebody black, pterothorax and legs red-brown, legs, abdomen black, elytron tricolored, with basal gibba vested with black setae, otherwise elytral basal third red-brown, followed by triangular black fascia, then oblique white fascia, remainder of elytral disc brown, except with a small red-brown macula behind white fascia proximal to the sutural margin, elytral apex with patch of white setae. Head: Cranium coarsely punctate, frons wider than width of eye (FW/EW-40/20); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> suboval (Fig. 10). Thorax: Pronotum obovate, constricted posteriorly (Fig. 27) (PL/PW- 84/77), coarsely punctated, without tubercle at sides; elytral disc with shallow subbasal umbo, with large asetiferous punctation that extend slightly behind transverse white fascia (EL/EW- 220/52); disc not constricted, but slightly depressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes narrow, fimbriate, phallobasic rod not extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex very long, phallic plates narrow (Fig. 72).

**Variation:** Size: Length 5.0-6.5 mm; width 1.5-2.0 mm. In some specimens the elytra are black, except for the midelytral white fascia.

**Natural History:** Specimens were collected from September thru January; one by beating, two in a Malaise trap, and one at 700 m. C. Reid collected this beetle on the red-eye wattle, *Acacia Cyclops* A, Cum. Ex G. Don ( Fabaceae).



**Figs 22-40:** Pronota. (22) *Paratillus carus*. (23) *Tarsostenodes cribripennis*. (24) *T. guttulus*. (25) *T. albonotatus*. (26) *Blackburniella apicula*. (27) *B. intricata*. (28) *Tarsostenodes simulator*. (29) *T. bullatus*. (30) *T. tentus*. (31) *T. gibbus*. (32) *T. leucogramma*. (33) *T. howensis*. (34) *T. vesica*. (35) *Tarsostenus hilaris*. (36) *Tarsostenus. univittatus*. (37) *T. morulus*. (38) *T. bicolor*. (39) *T. kanak*. (40) *Paratillus atali*.

**Distribution** (Fig. 89): In addition to the type I examined 97 specimens from: Australia: South Australia: Port. Lincoln, 18-10-51, E. Smith; K 1 Finders Chas, 4 km W Rocky River, 1-7 Nov 90, Malaise trap, E. G. Matthews, J. A. Forrest; idem, 1 Nov.1990, E. G. Matthews, J. A. Forrest: Western Australia: Beverly, E. du Bouley; Toolbrunup (700 m), Stirling Ra. NP, 1Jan.1986, with long thin phyllodes, C. Reid;

26 km WNW Northampton, 28°15'S 114°23'E, 30.Sept.1981, I. D. Naumann, J. C. Cardale; Thomas River, 33°51'S 123°00'E, 23 km NW by W of Mt. Arid, 4-7.xi.1977, Malaise trap, J. F. Lawrence; William Bay, nr. Denmark, 35°02'S 117°11'E, 9.xi.69, E. Britton; Kojarena, 6 Sept. 1926; Nedlands, 30-10-51, M. M. H. Wallace; Cooge, Fremantle, 2 Jan 1939, K. R. Norris; 3 mi. W. of Augusta, 34°19'S 115°10'E, 14.xi.69, E. Britton; Swan River, J. Clark; Cape Le Grand Beach NP, 26 Dec1985, C. Reid, on *Ac.cyclops*; Yallingup, Nov. 1913, R. E. Turner; Drummond Cove, 7 km N. Geraldton, 9.IX.1981, H. & A. Howden; Cape Arid, Thomas River, 17-19.X.1988, H. & A. Howden; Medina, 25.9.1960, H. Demarz; Mt. Marker, Helms: Victoria: Bendigo, 10-10-25, C. Oke; Dimond Creek; Parvan, Wesburn, J. E. Dixon; Thurra River, 27-XII-14, E. Smith; Macedon, C. Oke; Barwon Heads, 4-II-44, E. Milt; Mount Donna Buang, E. T. Smith; Lakes, Entrance, F. E. Wilson, Oct. 1919; Melton, 31-10-36, F. E. Wilson; Black Rock, J. E. Dixon; Rye, 9-II-59, F. E. Wilson; Warburton, 30-12-22, C. Oke; Ringwood, 20. 10. 21; Dutsar Downs, Dec.15-1968, M. & G. Coulsor; Frankford, Lea; Mole Creek, Lea; 14 km ESE Cranbrook, 42°04'S148°13'E, 28 Jan. 1983, I. D. Naumann & J. C. Cardale; Kampton Water Tray, 28 Nov. 1985, L. Hill; Cambridge, 12.XI. 1965, K. L. Taylor; Liffey, 29-12-78; Trevallyn, Laun, Nov.1982, S. Fearn; Hobart, II/35. J. W. E.; Beechford, 11/2/86, S. Fearn.; Specimens are deposited in ANIC and WOPC.

#### ***Paratillus* GORHAM, 1876, new status**

*Paratillus* GORHAM, 1876: 62. Type species: *Clerus carus* NEWMAN. By original designation. There is ample historical literature cited in CORPORAAL, 1950: 299. More recently, the genus was mentioned by MATTHEWS, 1992: 5, GERSTMEIER 1998: 197, and KOLIBÁČ, 2003: 50. KOLIBÁČ (2003) synonymized *Paratillus* under *Tarsostenus*, but during this study it became apparent that the reduction of the eyes, characteristic of the two *Paratillus* species, represents an outstanding apotypy in the *Tarsostenodes* complex. GORHAM (1878) also emphasized this eye characteristic by leading his generic description of *Paratillus* with, "Head with eyes little prominent". I surmised that this eye-form discontinuity between *Paratillus* and *Tarsostenus* is sufficiently strong to warrant the generic resurrection of *Paratillus*.

**D i a g n o s i s :** Within the *Tarsostenodes* complex only specimens of *Paratillus* have the eyes reduced and the mandibles extraordinarily large.

**A p o t y p i e s :** Eyes reduced.

**D e s c r i p t i o n :** This genus is described by GORHAM, 1878: 157. To this description I add: **Size:** Length 3.0-9.0 mm, width 0.6-1.8 mm; mandible large; maxillary terminal palpomeres subsecuriform or strongly securiform; frons much wider than eye width, eyes reduced, narrow; pronotal disc with glabrous elevations; elytral asetiferous punctations restricted to anterior half of elytral disc, with 1° and 2° setae, 2° setae restricted to regions near epipleural margin and elytral apex; tarsus comprised of 5 tarsomeres, 4<sup>th</sup> tarsomere minute, unguis without denticle; abdomen extended beyond elytral apex or not; aedeagus short, tegmen slightly sclerotized, phallobasic lobed short, fimbriate, phallobasic struts confluent with phallobasic apodeme, phallobasic rod present; spicular apodemes fused at distil limit or not fused.

**D i s t r i b u t i o n :** Cosmopolitan.

**S p e c i e s E x a m i n e d :** *Paratillus atali* OPITZ, new species, *P. carus* (NEWMAN)

***Paratillus atali* OPITZ, nov.sp. (Figs 17, 40, 54, 74, 93)**

**Holotype:** ♂. NEW CALEDONIA 11199, 22°21'Sx166°58'E, 200 m, Port Boise (G. Kanua), 18Nov2002, G. Monteith, pyrethrum, trees & logs (MNHN).

**Paratypes:** Twenty-one. New Caledonia: Mt. Koghis, 22°11'S 166°01'E, 500m, 22Nov.2000, G. B. Monteith, pyrethrum, trunks & logs (QMBA, 1); Fort Boise, 22°21'S 166°58'E, 20 m (G. Kanua), 18Nov. 2002, G. Monteith, pyrethrum, trees & logs (QMBA, 12); Pic du Pin, 22°15'S 166°50'E, site 1, 23Dec. 2004, 280 m, G. Monteith, pyrethrum (QMBA, 3); idem, 22°15'S 166°49'E, 25Nov.-23Dec.2004, Malaise, Burwell, Wright, rainforest (QMBA, 1); Col de Petchecara, middle, 21°34'S 166°06'E, 28Jan.2004, G. Monteith, pyrethrum, trees & logs (QMBA, 1); Pic du Grand Kaori, site 2, 22°17'S 166°53'E, 250 m, Monteith Burwell, pyrethrum, rainforest (QMBA, 2); Mount Mou base, 22°05'S 166°22'E, 350 m, 4Feb.2004, G. Monteith, pyrethrum, trees & logs (QMBA, 1).

**D i a g n o s i s :** *Paratillus atali* OPITZ, new species, specimens may be distinguished from the superficially similar specimens of *P. carus* by the presence, in the former specimens, of a diffuse white setal tuft on the basal 1/4<sup>th</sup> of the elytral sutural margin.

**D e s c r i p t i o n .** **Size:** Length 3.0 mm; width 0.7 mm. **Form:** As in Fig. 54. **Integument:** Forebody red, elytra predominantly black, with a slight blue tinge, elytral disc with a white transverse fascia that does not reach sutural margin, profemora black, mesofemora, and metafemora yellow at base, infuscated distally, abdomen black, except 6<sup>th</sup> visible sternite yellow. **Head:** Cranium coarsely punctate, frons much wider than width of eye (FW/EW-32/8); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 17). **Thorax:** Pronotum densely punctate at sides, sparsely punctate at middle, with glabrous streaks at center of disc, without lateral tubercle (Fig. 40) (PL/PW- 50/43); elytral disc with prominent asetiferous punctation that extend just beyond white transverse fascia, elytral preapical region subglabrous, (EL/EW- 115/26). **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, phallobasic rod bifid distally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, phallic plates narrow, spicular apodemes not fused (Fig. 74).

**V a r i a t i o n .** **Size:** Length 3.0- 4.3 mm; width 0.6-1.0 mm. The forebody may be black and the white midelytral fascia may reach the sutural margin.

**N a t u r a l H i s t o r y :** Specimens were collected in November, December, and February, at altitudes ranging from 20-500 m. G. B. Monteith collected all but one specimen by spraying felled logs with pyrethrum. One specimen was collected in a Malaise trap.

**D i s t r i b u t i o n** (Fig. 93): This species is known only from New Caledonia.

**E t y m o l o g y :** The specific epithet *atali* is a patronymic dedicated to the Grand Chief Atal of the Kanak indigenous people of New Caledonia.

***Paratillus carus* (NEWMAN, 1840) (Figs 2, 22, 45, 47, 49, 53)**

*Clerus carus* NEWMAN, 1840: 15. **Lectotype.** Gender not known. Herein designated. New Holland (Australia), near Adelaide, Davis (BMNH). Newman did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species. There is ample historical literature cited in CORPORAAL, 1950: 304. More recently, this species was mentioned by MCKEOWN, 1952: 371, GERSTMEIER 1998: 197, KOLIBÁČ, 2003: 50, and OPITZ, 2012: 33. **Paralectotypes:** Two. Australia, Adelaide (BMNH).

**Diagnosis:** *Paratillus carus* specimens may be distinguished from the superficially similar specimens of *P. atali* OPITZ, new species, by not showing a white setal tuft on the basal 1/4<sup>th</sup> of the elytral sutural margin.

**Description:** Size: Length 5.5 mm; width 1.8 mm. Form: As in Fig. 53. Integument: Forebody red, elytra basal 3/4<sup>th</sup> dark brown, apical 1/4<sup>th</sup> testaceous, disc with a white transverse fascia that reaches sutural margin, pterothorax and legs dark brown, abdomen red-brown. Head: Cranium coarsely punctate, frons much wider than width of eye (Fig. 45) (FW/EW-50/10); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 2). Thorax: Pronotum (Fig. 49) coarsely punctate at sides, sparsely punctate at middle, with glabrous streaks at center of disc, without lateral tubercle (Fig. 22) (PL/PW-87/70); elytral disc with prominent asetiferous punctation that extend just beyond white transverse fascia, elytral preapical region subglabrous, (EL/EW- 215/52). Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, phallobasic rod bifid distally, phallobasic struts contiguous with phallobasic apodeme, phallic apex digitiform, phallic plates narrow, spicular apodemes fused at extremity (Fig. 73).

**Variation:** Size: Length 4.5-8.0 mm; width 1.0-1.8 mm. The cranium and anterior margin of the pronotum may be black. The elytral disc may be predominantly red or black; if mostly black it shows a blue tinge.

**Natural History:** This species is known for its predatory habits on lignicolous insects, particularly on the larvae of powder-post beetles. For example, it is known to prey on *Lyctus brunneus* (STEPHAN) in California live oak. Also, *Paratillus carus* has been reared from the galls of coccids, and was found under the bark of *Eucalyptus saligna* SM (Myrtaceae).

**Distribution:** Cosmopolitan.

### ***Tarsostenodes* BLACKBURN, 1900**

*Tarsostenodes* BLACKBURN, 1900: 139. Type species: *Tarsostenodes simulator* BLACKBURN, 1900: 139. By monotypy. CORPORAAL, 1950: 303. WEBB, 1990. KOLIBÁČ, 2003: 45. OPITZ, 2012: 25.

**Diagnosis:** The members of this genus have the procoxal cavities closed externally. The procryptosternum, relevant to the internal aspects of the procoxal cavities, is open. These characteristics will distinguish these beetles from any others in the *Tarsostenodes* complex.

**Apotypies:** Procoxal cavities closed externally; pronotum obovate.

**Description:** This genus was discussed by KOLIBÁČ (2003), and redescribed and illustrated by OPITZ (2012). In addition, the elytral disc shows a basal umbo, and may show up to 4 white bullules. Bullules are defined as anterior, epipleural, sutural, and posterior (Fig. 43).

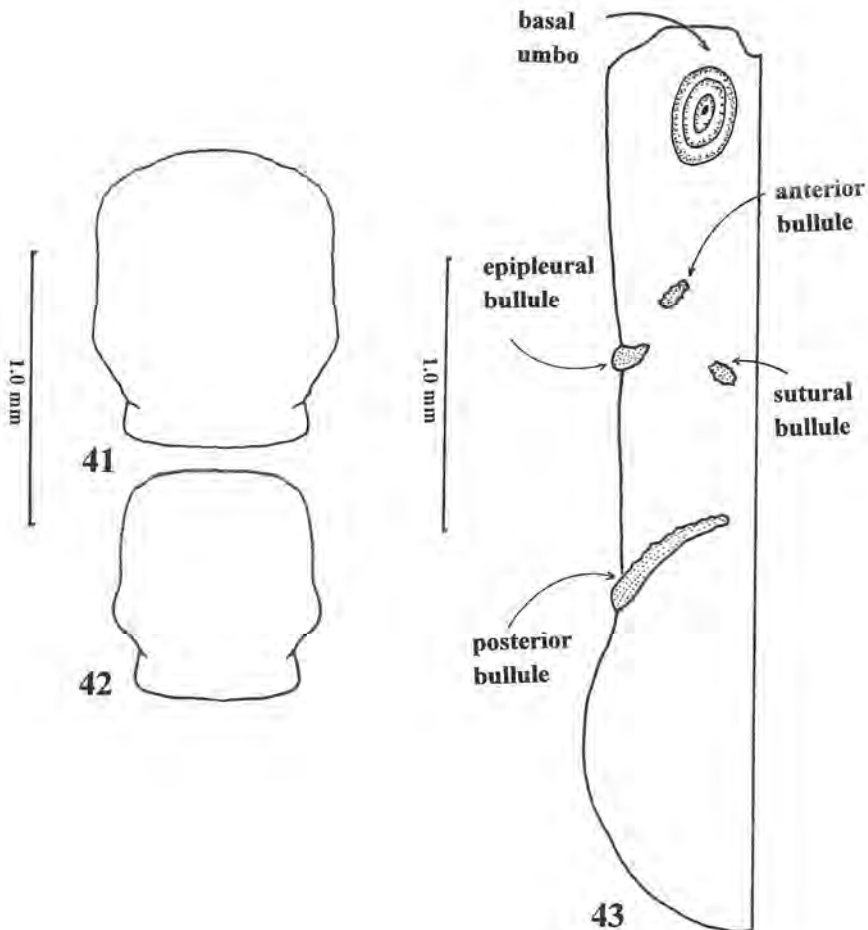
**Distribution:** This genus is known from continental Australia and Lord Howe Island

**Species examined:** *Tarsostenodes albonotatus* (PIC), *T. bullatus* OPITZ, new species, *T. cribripennis* SCHENKLING, *T. gibbus* OPITZ, new species, *T. guttulus* (WHITE), *T. howensis* BARTLETT, *T. leucogramma* ELSTON, and *T. vesica* OPITZ, new species.

***Tarsostenodes albonotatus* (PIC), 1941a (Figs 11, 25, 56, 75, 89)**

*Mimopallenis albonotatus* PIC, 1941a: 3. Lectotype, gender unknown, herein designated (MNHN). [Australia] Kuranda, Hacker. CORPORAAL, 1950: 292. KOLIBÁČ, 2003: 45. Pic did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN and designate a lectotype for this nominal species.

**D i a g n o s i s :** There are three species in *Tarsostenodes* whose specimens have the body and legs mostly black, *T. albonotatus*, *T. gibbus*, and *T. morulus*. From the latter two species, *T. albonotatus* is distinguished by having asetiferous punctation behind the posterior bullule.



**Figs 41-43:** Various organs. **41-42** Pronota. **(41)** *Tarsostenus tricolor*. **(42)** *T. antehelvis*. **43** Elytron. *T. bullatus*.



**Description:** Size: Length 5.0 mm; width 1.2 mm. Form: As in Fig. 56. Integument: Body and legs black, with blue shine, with 3 white bullules, elytral posterior third dark brown. Head: Cranium coarsely punctate, frons wider than width of eye (FW/EW-27/17); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres long triangular, 11<sup>th</sup> antennomere ovoid (Fig. 11). Thorax: Pronotum oblong, constricted posteriorly (Fig. 25) (PL/PW-80/60), coarsely punctated, with a longitudinal glabrous plate, without tubercle at sides; elytral disc with subbasal shallow umbo, with anterior, epipleural, and posterior bullules, with large asetiferous punctations that extend posteriorly beyond posterior bullule, but do not reach elytral apex (EL/EW- 170/40). Abdomen (Fig. 75): Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes fimbriate and delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, phallic plates wide.

**Variation:** The 2 specimens before me are quite homogeneous.

**Natural History:** The non-type specimen was collected at 335 m, between the 3<sup>rd</sup> of May and the 20<sup>th</sup> of June.

**Distribution** (Fig. 89): In addition to the type, I examined 2 specimens. Australia: Queensland: N. Queensland, Kuranda, 335 m, 3-V-20-VI-1913, R. E. Turner; idem, Kuranda, Qld., April, 1905, F. P. Dodd. Specimens are deposited in MNHN, MVMA, and SAMA.

***Tarsostenodes bullatus* OPITZ, nov.sp. (Figs 29, 43, 55, 89)**

Holotype: ♀. Australia, Qld., Black Mountain, Kuranda For. Sta., 30, 31. XII. 1988, H. & A. Howden (ANIC).

**Diagnosis:** This is the only species of *Tarsostenodes* whose specimens have 4 white bullules on each elytron. Also, within *Tarsostenodes*, this is the only specimen whose forebody is entirely red; with the pronotal collar being more red-brown.

**Description:** Size: Length 6.0 mm; width 1.3 mm. Form: As in Fig. 55. Integument: Forebody red, except collar red-brown, rest of body and legs brown, elytron with 4 white bullules. Head: Cranium coarsely punctate, frons wider than width of eye (FW/EW-38/24); antennal funicular antennomeres subfiliform, 9<sup>th</sup> antennomeres triangular (10<sup>th</sup> and 11<sup>th</sup> antennomeres missing). Thorax: Pronotum obovate, constricted posteriorly (Fig. 29) (PL/PW- 95/85), coarsely punctated, midbase of disc carinose, without tubercle at sides; elytral disc with prominent subbasal umbo, with anterior, epipleural, sutural, and posterior bullules (Fig. 43), large asetiferous punctation in elytral basal 2/3 and small setiferous punctations in apical half (EL/EW- 228/40); disc constricted and compressed at middle. Abdomen: Female pygidium not incised at middle of anterior margin.

**Variation:** One specimen examined.

**Natural History:** The holotype was collected in December.

**Distribution** (Fig.): This species is known only from northeastern Australia

**Etymology:** The specific epithet *bullatus* (= inflated) is a Latin adjective. The name refers to the bullules in the elytral disc.

***Tarsostenodes cribripennis* SCHENKLING, 1916 (Figs 1, 19, 23, 76, 89)**

*Tarsostenodes cribripennis* SCHENKLING, 1916: 155. Lectotype, ♀. Herein designated. Australia, Qld., Kuranda, (SDEI). CORPORAAL, 1950: 303. WINKLER, 1961: Tafel 1 (Fig. 8 misidentified as *T. guttulus*). KOLIBÁČ, 2003: 46 (Photo 2 misidentified as *T. guttulus*). SCHENKLING noted that his nominal species was based on 9 specimens. He did not designate a holotype. Therefore, I invoke Article 72.4 of the ICZN (1999) and designate a lectotype for this nominal species.

Paralectotypes. Eight specimens. Australia: Queensland: Kurunda, F. T. Dodd (SDEI, 3); Kurunda, Hacker (NBCN, 1; SDEI, 2); Herberston, Dodd, II-1911, 3700 Ft. (SDEI, 2).

**D i a g n o s i s**: The members of this species resemble superficially those of *T. guttulus* (WHITE) from which they may be distinguished by having asetiferous punctations extend to the elytral apex. Such punctation diminishes behind the oblique-transverse elytral white bullule.

**D e s c r i p t i o n**: Size: Length 6.0 mm; width 2.0 mm. Form: As in Fig. 1. Integument: Forebody dark blue, elytra tricolored, mostly dark blue, with testaceous transverse fascia at middle that traversed sutural margin but does not reach epipleural margin, elytral disc with 3 white bullules, legs and first visible abdominal sternite testaceous, remainder of abdomen black. Head: Cranium coarsely punctate, frons much wider than width of eye (FW/EW-45/20); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres short triangular, 11<sup>th</sup> antennomere ovoid (Fig. 19). Thorax: Pronotum obovate, constricted posteriorly (Fig.23) (PL/PW-103/87), coarsely punctated, midbase of disc carinose, without tubercle at sides; elytral disc with shallow subbasal umbo, with anterior, epipleural, and posterior bullules, asetiferous punctations extended to elytral apex (EL/EW- 250/60); disc slightly constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes fimbriate, delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex with uncus, phallic plates wide (Fig. 76).

**V a r i a t i o n**: Size: Length 6.0-8.0 mm; width 1.3-2.0 mm. The anterior bullule varies in expression; it may be expressed in form as a spot, line or is divided.

**N a t u r a l H i s t o r y**: Specimens were collected in December and January and February.

**D i s t r i b u t i o n** (Fig. 89): In addition to the types, I examined 8 specimens. Australia: Queensland: Stanthorpe, 14-April 1929, E. Sutton; N. Queensland, Kuranda, I-1950, J. G. Brooks; idem, 7.Jan.62, Carne & Britton; idem, Jan-1950, J. G. Brooks; idem, Kuranda, Haker; idem, Kuranda, Q. Jan. 1953, G. Brooks. Specimens are deposited in AMSA, ANIC, BMNH, MVMA, SDEI, and WOPC.

***Tarsostenodes gibbus* OPITZ, nov.sp. (Figs 12, 31, 57, 77, 89)**

Holotype: ♂. Australia: n. Qld., Davies Ck., 22 km WSW of Mareeba, Malaise T., 2.xii.1984-7.i.1985, Storey & Titmarsh (QPIM).

Paratypes: Three. Australia: n. Qld., Davies Ck., 22 km WSW of Mareeba, Malaise T., 6.xi.-2.xii.1984, Storey & Halfpapp (WOPC, 1); 17 km up Mt. Lewis Rd, 1.xi.1990. S. DeFaveri & R. Storey (QPIM, 1); Queensland, Cairns, P. P. Dodd (BMNH, 1).

**D i a g n o s i s**: The glabrous condition of the posterior half of the elytral disc, and the strong constricted condition of the elytral middle, will distinguish the members of the species from congeners.

**Description:** Size: Length 4.0 mm; width 1.0 mm. Form: As in Fig. 57. Integument: Body brown, elytron with 3 white bullules. Head: Cranium coarsely punctate, frons wider than width of eye (FW/EW-30/18); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> globose (Fig. 12). Thorax: Pronotum obovate, constricted posteriorly (Fig. 31) (PL/PW- 75/58), coarsely punctated, with a longitudinal glabrous plate, without tubercle at sides; elytral disc with prominent sub-basal umbo, with anterior, epipleural, and posterior bullules, with large asetiferous punctations that end at posterior bullule (EL/EW-195/40); disc strongly constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase extended anteriorly ventrally, lobes particularly elongate, fimbriate, delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, apex curvate, phallic plates wide (Fig. 77).

**Variation:** The four specimens before me are quite homogeneous.

**Natural History.** The holotype was collected in November, December, and January; two others with a Malaise trap.

**Distribution** (Fig. 89): This species is known only from northeastern Australia.

**Etymology:** The specific epithet *gibbus* (= swollen) is a Latin adjective. The name refers to the well-developed umbo at the elytral base.

### ***Tarsostenodes guttulus* (WHITE), 1849 (Figs 6, 24, 58, 78, 92)**

*Clerus guttulus* WHITE, 1849: 59. Lectotype, gender unknown. Herein designated.

Australia (BMNH). BLACKBURN, 1900: 139. SCHENKLING, 1906: 281. BROOKS, 1948: 27. CORPORAL, 1950: 303. WINKLER, 1961: Tafel 1 (Fig. 8 misidentified as *T. guttulus*). The figure represents *T. cribripennis* SCHENKLING). KOLIBÁČ, 2003: 46 (Photo 2 misidentified as *T. guttulus*). The figure represents *T. cribripennis* SCHENKLING). White did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species.

**Diagnosis:** The presence of a testaceous, centrally positioned, fascia at the middle of the elytra separates members of this species from superficially similar specimens of *Tarsostenus simulator*.

**Description:** Size: Length 7.5 mm; width 2.0 mm. Form: As in Fig. 58. Integument: Forebody dark blue, elytra tricolored, mostly dark brown with a blue shine, with testaceous fascia that extends from humeral angle, but does not reach margin, elytral disc with 3 white bullules, legs and first visible abdominal sternite testaceous, remainder of abdomen dark brown. Head: Cranium coarsely punctate, frons much wider than width of eye (FW/EW-44/17); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres short triangular, 11<sup>th</sup> antennomere ovoid (Fig. 6). Thorax: Pronotum obovate, constricted posteriorly (Fig. 24) (PL/PW-115/85), coarsely punctated, midbase of disc subrugose, without tubercle at sides; elytral disc with shallow sub-basal umbo, with anterior, epipleural, and posterior bullules, asetiferous punctations diminish behind posterior bullule (EL/EW- 285/60); disc distinctly constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes well developed, fimbriate, delineated basally by a transverse

sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, apex curvate, phallic plates wide (Fig. 78).

**V a r i a t i o n :** Size: Length 5.0-9.0 mm; width 1.2-2.0 mm. The testaceous transverse, centrally positioned, fascia at the middle of the elytra may or may not reach the sutural margin. The anterior bullule may be reduced or absent.

**N a t u r a l H i s t o r y :** Specimens were collected in October, November, December, January, and February, at 610-1500 m. J. G. Brooks collected this species on the red bloodwood *Eucalyptus gummifera* (GAERTN.) HOCHR. (Myrtaceae), and R. de Keyzer found a specimen on the dogwood *Jacksonia scoparia* SM. (Fabaceae). Specimens were also collected from *Acacia mearnsii* DEWILD (Fabaceae) and dead *Eucalyptus* L'HÉR. (Myrtaceae). G. B. Monteith collected this beetle by praying pyrethrum on logs of *Callitris*.

**D i s t r i b u t i o n** (Fig. 92): In addition to the type, I examined 113 specimens. **Australia:** New South Wales: Bawley Point, 35°30'S 150°24'E, 3Jan.1996, D. Rentz, K. McCarron; Nepean Gorge, nr. Mulgoa, 21 X 84; Berkshire Pk, 6.XI.87, dead *Eucalyptus*, S. Watkins; Wingham Brush, Manning R, 21. XI-1993; Lapstone Hill, 11-XI-84, S. Watkins; Macleay River, Nov. 1928, H. J. Carter; 35 km S Tenterfield, 16 Nov. 1986, ex *Acacia*, C. Reid; Mittagong, 2/1901, J. J. W., 610-671 m; Murrumbidgee R.; Crowdy Bay National Park, 29. Oct.1978, on heathland, G. T. Williams; Lilyvale, 1-I-1972, R. H. M.; idem, 12-2-1972, R. H. M.; Helensburgh, 18-12-1976; idem, 11-12-1976, R. H. M.; Shoalhaven R, 30 km W Nowra, 25. XII-1986, G. A. Holloway; Royal NP. Audley tip, 3404S 15103E, 6.xii.2006, beating/bushes, Reid & Dungalhoel; Mt. Thoma, Blue Mtns, 12-12-83; Budgewoi, 16 Aug 1986, ex *Jacksonia scoparia*, R. de KEYZER; idem, 25-I-1988, N. W. Rodd; Nambucca River, 10-21; idem, Mittagong, 2000-2200 ft., J. J. W.; idem, Coonabarabran, 11-II-56, E. Smith; near Jervis bay, 35°08'S 150°42'E, 6 Nov. 1955, J. Balderson; 6 km WNW of Mt. Kembla nr. Wollongong, 15 December 1966, Balderson; Mt. Gladstone, 5 km WSW of Cooma, 12.3.1972, R. Kohout; Great Dividing Range, Mt. Coricudgy, 491 m, S32°50' E 150°17', 28-30-2000, A. Podlussány; idem, Olinda Station, 800 m, 25-27.I.2006, G. Hangay, I. Rozner, & A. Podlussány; Burrinjuck, 1999.I.2.3, A. Podlussány; Bigga, 860 m, 43°05'S 149°09'E, 24.XI. 2000, G. Hangay & I. Rozner; idem, 24-25.XI.2000, A. Podlussány; Mount Kapular N. P., 1500 m, 13-15.I.2006, G. Hangay, I. Rozner, R. de Keyzer & A. Podlussány; Mittagong, J. J. W.: Queensland: Morangah, 22°03'S 148°04'E, 20Dec.97-26Apr.1968, pitfall trap, 220 m, G. Monteith; Sydney Heads, camp gully, 21°24.6'S 148°34.8'E, 12-13Oct.2005, 880, night hand collect, C. Burwell; Braemar, S.F., via Kogan, 15-19-X-1979, pyrethrum on *Callitris*, G. B. Monteith; Gold Creek, Brisbane, 2Nov.2003, G. Monteith; Stanthorpe, E. Sutton; Woodbye, nr. Nambour, 16.x.65, D. H. Colless; Brisbane, 20-11-38, C. F. Ashby; Blackdown Range, 2345S 14910E, 6.x.73, E. E. Adams; Bunya Mts., 8-2-38, 2000', N. Geary; idem, 22-I-38, 2000', N. Geary; Blackall Rgs., Oct. 1920, F. E. Wilson; The Pinnacles, Bluff Range, via Biggenden, 900 m, 16.X.75, H. Frauca; Maryborough, Q., 5-11-56; Dalveen, Queensland, 12-10: Victoria: Lilydale, J. E. Dixon; Warburton, 2-I-26, F. E. Wilson; Mansfiels, 21.12.51, E. T. Smith; Pakenham, C. Oke; idem, Beaconsfield, C. Oke; Woori Yallock, 10.12.11; idem, Valencia Creek, 27-11-59, F. E. Wilson; Moe, 12.2.17; idem, Ferntree Gully; idem, Mansfield, 21-12-51, E. T. Smith; idem, Warburton District; Healesville, 26-1-04, E. Smith; Yara Glen, 5.11.55; idem, Lakes Entrance, E. S. Wilson, Oct. 1919; Ferntree Gully, Xmas. 1920, F. P. S.: Australian Capital Territory: Canberra, emerged from branch of *Acacia mearnsii* between Dec.

1970-Jan. 1972, T. Bellas; North Canberra, Dec-Jan 1971/2, K. R. Pullen; Lower Se slope of Black Mountain, 23 Dec. 1983, K. R. Pullen; Gibraltar Ck., 8.III.1972, S. Misko, R. Kohout; Turner, 9.12.66, K. Pullen. Specimens are deposited in AMSA, ANIC, BMNH, FSCA, MVMA, and WOPC.

***Tarsostenodes howensis* BARTLETT, 2009 (Figs 21, 33, 59, 79)**

*Tarsostenodes howensis* BARTLETT, 2009: 227. **Holotype**. ♂. (Australia) NSW; Approx. 200 m E of trail to Goat House, foot slopes of Mt. Ladybird, Lord Howe Is., 31°33'41"S 159°5'15"E, 24 Nov. 2000, ex *Howea belmoreana*, M. Elliot, Plunkett-Cole, LHM029/03B (beating) (AMSA).

**Paratypes**: Sixteen. **Australia**: NSW: Lord Howe Is. Jn Rocky Run & Boat Harbour Trails (CBCR Site 24), 30 m, 31°33'19"S 159°05'33"E, 03 Dec 2000, C. Reid, Beating *Pandanus/Howea* trees (AMSA, 2); idem, path corner past Mutton Bird, 31°32'S 159°05'E, 29 Nov 2000, C. Reid, general beating veg (AMSA, 1); idem, Beating bushes Stevens Res, 11-14.v.2003, C. Reid (AMSA, 1); idem, Valley of Shadows, 31°31'50"S 159°4'36"E, 06 Dec 2000, R. Harris, Active sampling (AMSA, 4); idem, saddle between Intermediate Hill and Goat House Cave 31°32'S 159°05'E, 23 Nov 2001, C. Reid (AMSA, 1); idem, Stephens Reserve, 10 m 31°31'33"S 159°03'53"E, beating 29 Nov 2000, C. Reid (AMSA, 1); idem, 04 Dec 2000, beating trees & bushes, C. Reid (AMSA, 1); idem, 09 Dec, C. Reid, beating (AMSA, 1); idem, 1/3 way up Goat House Trail (1<sup>st</sup>, patch of palms), 31°33'47"S 159°05'09"E, 23 Nov 2001, 280 m, C. Reid (AMSA, 1); idem, R. Baxter, XII-1921 (AMSA, 1). I have not examined the two specimens in QMBA (BARTLETT 2009: 227).

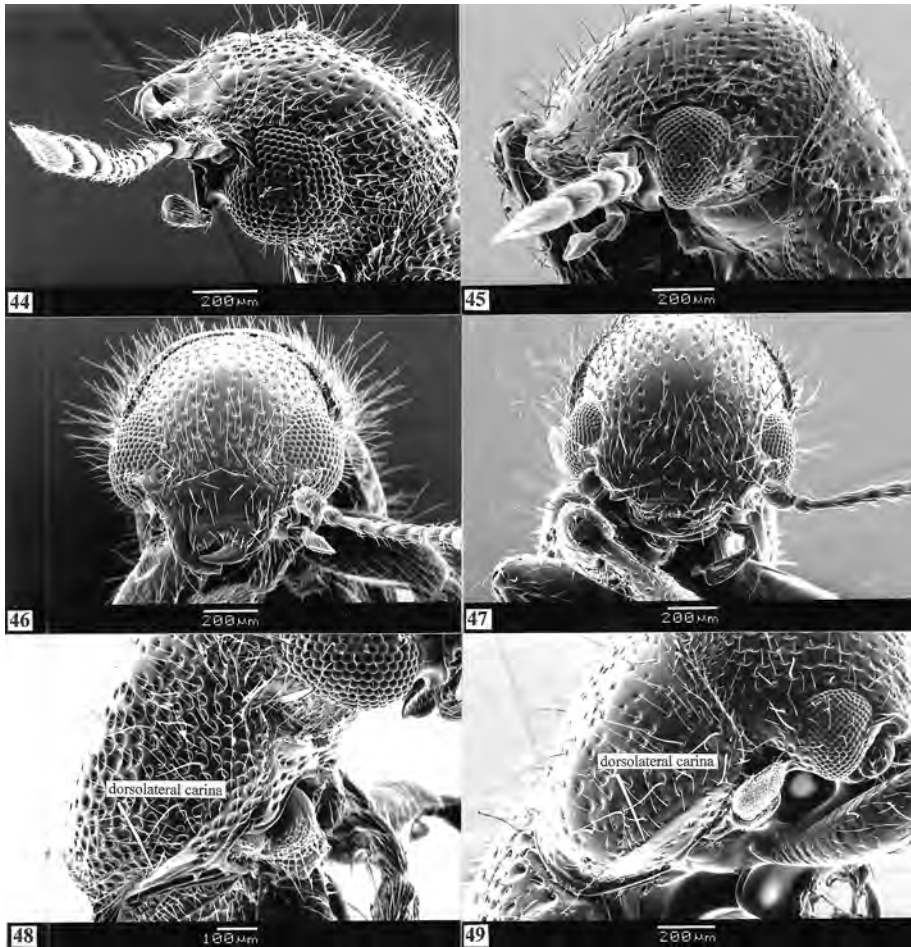
**D i a g n o s i s**: The light brown body color in combination with a dark midline vitta that extends from the lower frons to the pronotal collar, and two dark vitae proximal to the elytral sutural margin, will distinguish the members of this species from congeners. There are no elytral bullules. Also, this is the only known *Tarsostenodes* species from Lord Howe Island.

**D e s c r i p t i o n**. This species was recently described by BARTLETT (2009: 227). Additional characteristics are: Antennae as in Fig. 21; pronotum as in Fig. 33; habitus as in Fig. 59; male pygidium not incised at middle of anterior margin; phallobasic lobes short, fimbriate, not delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex truncate, phallic plates wide (Fig. 79).

**V a r i a t i o n**: Size: Length 3.5-4.8 mm; width 0.7-1.0 mm. The dark forebody vitta and the dark vitta near the elytral sutural margin vary in expression.

**N a t u r a l H i s t o r y**: Specimens were collected during May, November, and December. Eight specimens were found on, and in, flowers of the curly palm *Howea belmoreana* (MOORE & MUELL.) Becc. (Palmaceae). One specimen was gathered in a Malaise trap, in a rainforest, and three others with Pyrethrum spray.

**D i s t r i b u t i o n**: This species is known only from Lord Howe Island, an oceanic island east of Sydney, Australia. In addition to the holotype I examined 30 specimens. Lord Howe Island, Dawson Ridge Top, 3-8 IX-1979, Malaise, rainforest, G. B. Monteith; North Bay, 19-IX-1979, Scrub, Pyrethrum knockdown, G. B. Monteith; Leanda Lei, 10-IX-1979, Rainforest, Pyrethrum knockdown; I-1992, A. Andersen; NSW, 1992-1993, in & on flowers of *Howea foresteriana*, P. Huber; Stephens Reserve 10 m, 31°31'33"S 159°03'53"E, beating 29 Nov 200, C. Reid; Walking track en route to Valley of the Shadows, 31°31'47"S 159°4'40"E, 06-Dec-2000, H. Smith (Beating) Specimens are deposited in AMSA, ANIC, BMNH, QMBA, SAMA, and WOPC.



**Figs 44-49:** Various organs. **44-45** Eyes. (44) *Tarsostenus univittatus*. (45) *Paratillus carus*. **46-47** Heads. (46) *Tarsostenus univittatus*. (47) *Paratillus carus*. **48-49** Pronota (48) *Tarsostenus univittatus*. (49) *Paratillus carus*.

***Tarsostenodes leucogramma* ELSTON, 1922 (Figs 13, 32, 60, 80, 89)**

*Tarsostenodes leucogramma* ELSTON, 1922: 316. Holotype. Gender not known. (Australia) Queensland: National Park (H. Hacker); New South Wales: Illawarra (W. du Boulay) (K 209301) (AMSA). CORPORAAL, 1950: 303. KOLIBÁČ, 2003: 47 (Photo 3 represents this species).

Paratypes: Four. Australia: Illawarra, N. S. W., W. du Boulay (SAMA 1) (K 209302); N.S.W. (NBCN, 1); National Park, Q (QMBA, 2).

**Diagnosis**: Like in *T. bullatus* specimens, the forebody is not black, but what distinguishes *T. leucogramma* from *T. bullatus* is that in the former there are no asetiferous punctations behind the posterior bullule.

**Description**: Size: Length 5.5 mm; width 1.3 mm. Form: As in Fig. 60.

**Integument:** Forebody testaceous, elytra tricolored, mostly black, basal fourth testaceous, except basal umbo black, with broad testaceous transverse fascia at middle that traverses the sutural margin, elytral disc with 3 white bullules, legs bicolored, mostly dark brown, femoral base yellow, first visible abdominal sternite yellow, remainder of abdomen dark brown. **Head:** Cranium shallowly punctate, subrugose, frons much wider than width of eye (FW/EW-35/15); antennal funicular antennomeres filiform, 9<sup>th</sup> antennomere rectangular, 10<sup>th</sup> triangular, 11<sup>th</sup> subacuminate (Fig. 13). **Thorax:** Pronotum oblong, with shallow tubercle at sides, constricted posteriorly (Fig. 32) (PL/PW-72/58), finely punctated, with a longitudinal glabrous plate, without tubercle at sides; elytral disc with shallow subbasal umbo, with anterior, epipleural, and posterior bullules, asetiferous punctations end in front of posterior bullule (EL/EW- 80/65); disc distinctly constricted and compressed at middle. **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes well developed, fimbriate, delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex particularly long, acuminate, phallic plates wide (Fig. 80).

**V a r i a t i o n :** Size: Length 4.0-6.0 mm; width 1.0-1.5 mm. In one specimen from the Bunya Mountains, Queensland, the anterior bullule is missing and the epipleural bullule is reduced. The forebody and the anterior half of the elytral disc may be completely testaceous or it may be variously infuscated.

**N a t u r a l H i s t o r y :** Specimens were collected in November, December, January, and February; 2 at light, 1 with a flight intercept trap, and 1 by beating, the latter two at 1021 m. Specimens were also collected in a rain forest at 700 m. A variety of specimens were gathered by beating and sweeping foliage in littoral rain forests. One specimen was collected in a Malaise trap.

**D i s t r i b u t i o n** (Fig. 89): In addition to the types I examined 71 specimen from: **Australia:** Queensland: Bulburin barracks, 24°31.6'S 151°28.0'E, 14-15 Jan. 2008, G. Monteith; Lamington NP, 28.188°S 153.121°E, 6-22Jan.2009, Malaise G. Monteith; Kenilworth State Forest, 5.XII.1966, G. Monteith; Mt. Spec S1, 19°00'S 146°11'E, 6Dec. 1994-10Jan.1995, M. Cermak, Malaise Trap; Kuranda, Windy Hollow Rd., 11-24-1997, L. B. O'Brien; Queensland, A. M. Lea; Mt. Tamborine; Bunya Mts., 26°50'S 151°33', 3 km from summit, on Kingaroy Rd, 6.1.1970, Britton, Holloway, Misko; idem, 9-I-38, N. Geary, 2000'; idem, 20-12-37, N. Geary, 3000'; idem, 22-I-38, N. Geary, 2000'; 5 km NW Mt. Mowbullan, 3350', 8.1.70, Britton, Holloway, Misko; Mt. Glorious, 7.12.1971, J. Sedlacek; Bunya Mts., 5-6 Jan. 1981, J. Powel; idem. Jan.-Feb. 1987, ex. *Argyrodendron actinophyllum*, Y. Basset; North Queensland, Mt. Spec, 1/ 65, G.A.: New South Wales: Mooney Mcneay Ck near Sosford, 18 Jan. 1930, B. J. Day & D. K. McAlpine; Lilyvale, 1-I-1979, R. H. M; idem, 30: I: 1972, D. A. Doolan; Red Cedar Flat, Royal NP, 3409S 1510E, beating rainforest margin, 10 XII 2006, C. Reid; Harrington, 6.Jan. 1981, Swept from foliage in littoral rainforest, G. & T. Williams; vic. Dingo Tops Forest Park, Dingo S. F. NW Wingham, 14 Jan 1987, on fallen branch in rain forest; 3 k N Lansdowne, 23 Dec. 1992; ex. *Cuttsia vibunea*, G. Williams; idem, 22. Jan.1981, on tree foliage adjoining pasture, G. & T. Williams; 24 km NNW Gloucester, 27-29 Jan-1990, ex. rainforest/subtropical, G. & T. Williams; Cocker Awombeeba Ck.-Easy Ck. Jct., NW Wauchope, Mt. Boss, 15-17-Jan. 1990, ex rain forest, G. & B. Williams; Iluka, NR, mth. of Clarence R. 18-xi-1988, littoral r. for., G. Williams;

Halliday's Point, E of Taree, 16 Nov. 1996, ex. rainforest, G. Williams; Illawara, W. du Boullay; 4 km W Lansdowne, Lorient, 4. I. 1987, Flight Intercept Trap, A. & H. Howden; 3 km N Lansdowne, via Taree, 6-11 Jan 1987, ex. Malaise trap, rainforest margin, G. Williams; Starr's Ck. NW sect, Lansdowne, N of Taree, 9 Jan 1987, ex. rain forest margin, G. Williams; Nightcap NP, NE of Nimbin, Googarna Rd., 14-15-xi-1988, subtrop. Rainforest, G. Williams; Illawarra; Mt. Keira, 9 Feb. 1981, J. Powel; idem, 9 Jan. 1983, G. A. Holloway; Dorrigo N. P. rain forest, 700 m 3-6. I.2006, G. Hangay, I. Rozner, R. de Keyzer & A. Podlussany; Mt. Keira, Wollongong, 9Feb. 1981, J. Powel; Dingo Tops Forest Park NW Wingham, 8Jan.1984, rainforest margin, G. Williams; Specimens are deposited in AMSA, ANIC, BMNH, FSCA, JKCC, MVMA, QMBA, SAMA, and WOPC.

***Tarsostenodes morulus* OPITZ, nov.sp. (Figs 9, 37, 61, 81, 91)**

**Holotype:** ♂. Australia, 17.06S 145.36E QLD, GSI, Mt Haig 1150 m, 31 Oct-29 Nov 1995, L. Umback, Fl Trap JCU (ANIC).

**Paratypes:** Four. Australia: Queensland: NE: Mt. Finnigan Summit, 15°49'S 145°17'E, 21 Nov1998, 1100 m, rainforest, sieved litter, G. B. Monteith (QMBA, 1); Upper Boulder Ck, 1000 m, 11 km NNW of Tully, 16-19 Nov 1984, Cook, Monteith & Thomson (QMBA, 1); Mt. Lewis Rd., 16 km from Highway, 18 Dec 1989-13 Jan 1990, Monteith, Thomson & Anzees., Site 2, 950 m, Flt. Intercept (QMBA, 1); Mossman Bluff Track, 5-10-km W. Mossman, 20 Dec 1989-15 Jan1990, Monteith, Thomson & Anzees, Site 9, 1260 m, flt. Intercept (QMBA, 1).

**Diagnosis:** Within *Tarsostenodes* only specimens of *T. morulus* and those of *T. albonotatus* have the body mostly black. Also, the black regions show a blue tinge. But, *T. morulus* specimens differ from those of *T. albonotatus* by having a more extended antennal capitulum (compare Figs 9, 11), the asetiferous punctation extend only slightly beyond the posterior bullule, and the phallobasic venter is expanded anteriorly into a long thin-triangular plate

**Description:** Size: Length 4.0 mm; width 1.0 mm. **Form:** As in Fig. 61. **Integument:** Body and legs black, with blue shine, with 3 white bullules, elytral posterior third dark brown. **Head:** Cranium coarsely punctate, frons wider than width of eye (FW/EW-22/15); antennal funicular antennomeres subfiliform, 9<sup>th</sup> antennomere rectangular, 10<sup>th</sup> antennomeres long triangular, 11<sup>th</sup> antennomere oblong (Fig. 9). **Thorax:** Pronotum oblong, constricted posteriorly (Fig. 37) (PL/PW-58/45), sparsely punctated, with a longitudinal glabrous plate, without tubercle at sides; elytral disc with small shallow subbasal umbo, with anterior, epipleural, and posterior bullules, with large asetiferous punctations that extend posteriorly slightly beyond posterior bullule (EL/EW- 165/28). **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobasic venter expanded anteriorly into along thin triangular plate, lobes not fimbriate and delineated basally by a faintly indicated transverse sclerotic line, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, truncate, phallic plates wide (Fig. 81).

**Natural History:** Specimens were collected during October, November and December, at altitudes ranging from 950-1150 m. Collecting techniques involved flight intercept traps and litter sieve.

**Distribution** (Fig. 91). Known from Queensland, Australia.

**Etymology:** The specific epithet *morulus* (= black) is a Latin adjective and refers to the body color of this beetle.



***Tarsostenodes simulator* BLACKBURN, 1900 (Figs 7, 28, 62, 82, 90)**

*Tarsostenodes simulator* BLACKBURN, 1900: 139. Lectotype, gender unknown. Herein designated [Australia] Victoria, Dividing Range (BMNH). SCHENKLING, 1906: 281; 1916: 155. BROOKS, 1948: 27. CORPORAL, 1950: 303. KOLIBÁČ, 2003: 46. Blackburn did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species.

**Diagnosis:** The members of this species resemble superficially those of *T. guttulus* (WHITE), but in *T. simulator* specimens the anterior bullule is absent, the antennal capitulum is slightly wider, there are no red-brown markings near the elytral epipleural bullule, the elytral basal umbo is less pronounced, and the pronotal sides show a shallow tubercle (compare Figs 24, 28).

**Description:** Size: Length 8.0 mm; width 2.2 mm. Form: As in Fig. 62. Integument: Cranium and pronotum black, with a blue sheen, elytra bicolored, mostly dark brown, with a blue shine, middle third of elytral disc with gold shine, with 2 white bullules, legs brown, abdomen black. Head: Cranium coarsely punctate, frons much wider than width of eye (FW/EW-53/25); antennal funicular antennomeres subfiliform, 9<sup>th</sup> antennomeres short triangular, 10<sup>th</sup> transverse 11<sup>th</sup> ovoid (Fig. 7). Thorax: Pronotum obovate, constricted posteriorly (Fig. 28) (PL/PW-115/100), coarsely punctated, midbase of disc carinose, without tubercle at sides; elytral disc with very shallow subbasal umbo, with epipleural and posterior bullules, asetiferous punctations extend to posterior bullule (EL/EW-350/75); disc distinctly constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes well developed, fimbriate, delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, apex curvate, phallic plates wide (Fig. 82).

**Variation:** Size: Length 5.8-9.0 mm; width 1.3-2.2 mm. The midelytral region that shows a gold shine varies in size.

**Natural History:** Specimens have been collected in January, February, April, October, November, and December. BLACKBURN (1900: 139) reports that these beetles mimic cerambycids of the genera *Homaemota* PASCOE and *Zoedia* PASCOE. Henry and Ann Howden collected one specimen on *Cassinia* R. Br. (Asteraceae). Joel Bugeja found this species on the flowers of the coachwood *Cerapetalum apetalum* D. DON (Cunoniaceae), and he, and A. Sundholm, on the flowers of the evergreen *Acmena smithii* [= *Syzygium smithii* (POIR.) NIED.] (Myrtaceae). Others of this species were collected by G. Williams, in a littoral forest, on flowers of the wild quince *Guioa semiglaucoides* F. MUELL. RADLK (Sapindaceae), and on the flowers of *Waterhousia floribunda* (F. MUELL.) (Myrtaceae). One specimen was collected on the two-veined hickory *Acacia binervata* D. C. (Fabaceae) by R. de Keyzer. A. Sundholm and R. de Keyzer collected specimens on the flowers of the dwarf apple *Angophora hispida* (SM.) BLAZELL (Myrtaceae).

**Distribution** (Fig. 90): In addition to the type I examined 158 specimens. Australia: Queensland: Stanthorne, 1-12-39, E. Sutton; Wyberba, 24-11-49, E. Sutton; Cainbale Quarry, RF, 28145S 153.113E, 28Oct-9Nov2008, Malaise, R. F. Monteith; Upper Dairyple Creek, via Goomburra, 21-22Nov.1987, G. B. Monteith; New South Wales: Mt. Keira (west flank), 27 Nov 1994, on flowers of *Acmena smithii*, A. Sundholm; Aurimbah district, 5 Dec. 1994, on *Acmena smithii* flowers, A. Sundholm &

R de Keyzer; Black Flat Lane near Mt. George, 23-XI-90; Blaxland Ridge Rd. 3.XII. 86, on *A. hispida*, S. Watkins, Hawkesbury, 16:12:75, on *Eucalyptus* blossom, D. P. Carne; Morton National Park, 9.Dec.1995, A. Polak; Hartley Vale, 24.XI.87, emerged, S. Watkins; Manning River, at Wingham, 21-XI-1993, Waterhousca; Caparra, 4-XII-88, Bakhousia; Jamberoo Pass. W of Kiama, reared from *Acacia binervata*, emerged 25-X-88; Kioloa SF, 35°30'S 150°18'E, 15 km NE Batemans Bay, Nov. 86, flight intercept trap, M. G. Robinson; Tweed River; 0.5 km SE Lansdowne via Taree, 27Nov.1984, *Eucalyptus* woodland; Dorrigo National park, 11Nov.1961, C. W. Frazier; Depot Beach, 10 miles NE of Batema'n Bay, 27Oct1967, I. F. B. Common; Newport, I.26; Tweed River, 18-X-01; Acacia Plat, J. Armstrong; Mt. Tomah, Blue Mtns, 29-12-83, N. W. Rodd; idem, 26-XII-1987, N. W. Rodd; idem, 30.II-83, N. W. Rodd; idem, 12-XII-82, N. W. Rodd; Wollongong Expressway, 13 November 1989, on flowers of *Acmena smithii*, Roger de Keyzer; idem, Mount Kiera, 14 November 1989, on flowers of *Cerapetalum apetalum*, A. Sundholm, Joe Bugeja; idem, 25 November 1988, on flowers of *Acmena smithii*, Joe Bugeja; idem, Illawarra Dist, 15 Dec 1990, A. Sundholm; 3-5 km NE Harrington, 3 Dec. 1990, on flowers of *Guioa semiglauca*, ex littoral rainforest, G. and T. Williams; idem, 3 Km NE Harrington, 26 Nov 1990, on flowers of *Guioa semiglauca*, ex littoral rainforest, G. Williams; Wingham, 24 Dec. 1991, ex. *Waterhousia floribunda*, G. Williams; approx. 0.5 km SE of Lansdowne via Taree, 12 Nov 1990, ex. *Acmena smithii*, G. Williams; 3 km N. Lansdowne, nr Taree, 5 Dec. 1991, ex *Waterhousia floribunda*, G. Williams; Helensburgh, 10-II-1977, R. H. M.; idem, 5-XII-1976, R. H. M.; idem, 3-XII-1980, R. N. M.; 18-XII-1976, R. H. M.; Bundeena, 25-II-1962, R. N. M.; Otford, 25 Nov1990, on flowers of *Acmena smithii*, R. de Keyzer; idem, 31 Aug 1990, ex. *Acacia binervata*, R. de Keyzer; idem, 4 November 1988, on flowers of *Acmena smithii*, R. de Keyzer, Tamar Robinson; "Tuglo" 48 km N. Singleton, 10-XII-83; R. de Keyzer 16-XII-1978, A. S. Smithers; Jamberoo, Jan. 1950, N. W. Rodd; Kurrajong, X.1. 33; Mount Wilson, 11 Dec 1959, D. K. McAlpine; Blue Mountain near Jarvis Bay, 6 Nov.1955, J. Balderson; Dorrigo, W. Heron; 12 km NE of Tianjarra Falls, Braidwood to Nowra rd, 35°04'S 150°25'E, 19 Nov.1993, J. Balderson & P. K. Christensen; 40 km S. Sydney, 1-2-XII-1986, on *Cassinia* R. Br. sp. flowers, H. & A. Howden; Sydney (Narrabeen Plateau), 33°44'S 151°17'E, 30 October 1948, J. Balderson; Ebor, Jan. 1934, F. E. Wilson; Jenolan Caves, Oct. 1930, F. E. Wilson; Gosford, II. 1902: Victoria: Driffield, 29 Dec 1951, J. C. Courtenay; Moe, 23 December 1978, on *Eucalyptus*, R. Peterson; Bayswater, Nov. 1928; Mallacoota, 29.XI.1988, H. A. Howden; idem, vic. Mallacoota, 29.XI.1988, H. & A. Howden; Omeo, Jan. 1935, F. E. Wilson; Warburton, 1-II-26; Moorooduc, Nov. 1919; Millgrove, Jan. 1923; Darnum, 21.II. 37, F. E. Wilson; Launching Place, Jan. 1919, E. Oke; Fernshaw, Ferntree Gully, Nov. 1929, E. Miller; Warragul, April 1953, F. E. Wilson; Michell Gorge, Jan. 1929; Woori Yallock; Croydon, 30-XI-08; Dandenong, I. 36; Macedon, F. E. Wilson: Australian Capital Territory: Condor Creek bridge, Brinddabella Ra, 18.Jan.1976, K. R. Pullen. Specimens are deposited in ANIC, BMNH, CMNC, RGCG, MVMA, and WOPC

***Tarsostenodes tentus* OPITZ, nov.sp. (Figs 5, 30, 63, 83, 91)**

Holotype: ♂. (Australia) Bunya Mts. Q. 22-12-37, N. Geary, 2000' (Australian Museum K 464388) (AMSA).

D i a g n o s i s : The available specimen resembles superficially those of *T. guttulus*, from which it differs by having significantly wider elytral bullules and the phallobasic lobes are bipartite.

**Description:** Size: Length 6.0 mm; width 1.7 mm. Form: As in Fig. 63. Integument: Forebody black, elytra tricolored, anterior third red-brown except umbones black, middle third black, posterior third dark brown, elytral disc with 3 white bullules, legs and first visible abdominal sternite testaceous, remainder of abdomen dark brown. Head: Cranium coarsely punctate, frons much wider than width of eye (FW/EW-20/35); antennal funicular antennomeres subfiliform, 9<sup>th</sup> antennomere triangular, 10<sup>th</sup> transverse, 11<sup>th</sup> antennomere subovoid (Fig. 5). Thorax: Pronotum obovate, constricted posteriorly (Fig. 30) (PL/PW-80/65), coarsely punctated, midbase of disc subrugose, with slight tubercle at sides; elytral disc with subbasal shallow umbo, with anterior, epipleural, and posterior bullules, asetiferous punctations extend to posterior bullule (EL/EW- 230/45); disc distinctly constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes well developed, bifid, fimbriate, delineated basally by a transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, apex curvate, phallic plates wide, bifid distally (Fig. 83).

**Natural History:** The only available specimen was collected in December at 915 m.

**Distribution** (Fig. 91): Known only from the type locality.

**Etymology:** The trivial name *tentus* (= spread out) is a Latin adjective. The name refers to the broader shape of the elytral bullules.

***Tarsostenodes vesica* OPITZ, nov.sp. (Figs 18, 34, 64, 84, 91)**

Holotype: ♂. [Australia] Iron Range, Cape York Pen., N. Qld., 16-23.xi.1965, G. Monteith (QDPI). Paratypes: One. Australia: Iron Range, Cape York Pen., N. Qld., 16-23.xi.1965, G. Monteith (WOPC).

**Diagnosis:** A broad testaceous fascia, directly in front and contiguous with the posterior bullule, is present in specimens of this species and in those of *T. cribripennis*. But, in *T. vesica* specimens the testaceous fascia extends from the epipleural margin to the sutural margin. Also, specimens of *T. vesica* are half the length of those of *T. cribripennis*.

**Description:** Size: Length 4.0 mm; width 1.0 mm. Form: As in Fig. 64. Integument: Forebody dark brown, elytron tricolored, mostly dark brown, with broad testaceous fascia at middle., with 3 white bullules. Head: Cranium coarsely punctate, frons wider than width of eye (FW/EW-30/15); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> globose (Fig. 18). Thorax: Pronotum obovate, constricted posteriorly (Fig. 34) (PL/PW- 71/63), coarsely punctated, with a longitudinal glabrous plate, without tubercle at sides; elytral disc with prominent subbasal umbo, with epipleural, sutural, and posterior bullules, with large asetiferous punctations that extend to the elytral apex (EL/EW-160/30); disc constricted and compressed at middle. Abdomen: Male pygidium not incised at middle of anterior margin; phallobase extended anteriorly ventrally, lobes particularly short, fimbriate, delineated basally by a faint transverse sclerotic line, phallobasic rod extended laterally, phallobasic struts contiguous with phallobasic apodeme, phallic apex broad triangular, apex curvate, phallic plates wide (Fig. 84).

**Variation:** Size: Length 3.0-4.0 mm; width 0.8-1.0 mm. Other than size, the two specimens before me are quite homogeneous.

**Natural History:** The available specimens were collected in November.

**Distribution** (Fig. 91). This species is known only from northeastern Australia

**Etymology:** The specific epithet *vesica* (= blister) is a Latin noun. The name refers to the well-developed bullules on the elytral disc.

### ***Tarsostenus* SPINOLA, 1844**

*Tarsostenus* SPINOLA, 1844: 287. Type species: *Clerus univittatus* ROSSI. By monotypy. There is ample historical literature cited in CORPORAAL, 1950: 304. More recently, the genus was mentioned by BÖVING, 1920: 612, EKIS & GUPTA, 1971: 63 (alimentary canal), MATTHEWS, 1992: 5, GERSTMEIER 1998: 199, KOLIBÁČ, 2003: 50, and OPITZ, 2012: 32.

*Tarsostenosis* HELLER, 1916: 277. nov.syn. CORPORAAL, 1950: 304. OPITZ, 2012: 28.

Having examined the aedeagus of a new species akin to *Tasostenosis tricolor* HELLER, the type of the genus, I now conclude that there are no sufficiently significant discontinuities between *Tasostenosis* and *Tarsostenus*.

**Diagnosis:** Within the *Tarsostenodes* complex only specimens of *Tarsostenus* have a distinctly formed dorsolateral carina at the posterior half of the pronotum.

**Apotopies:** One pair of male accessory glands; 4 larval ocelli.

**Description:** This genus is redescribed and illustrated in OPITZ (2012).

**Distribution:** This genus is known from Australia, New Caledonia, New Guinea, and

Tasmania. *T. univittatus* is cosmopolitan.

### ***Tarsostenus antehelvis* OPITZ, nov.sp. (Figs 14, 42, 65, 85, 91)**

**Holotype:** ♂. PAPUA NEW GUINEA, Western Highlands, Jimi River, 4700 ft., 16.7-21.9.1961, W. W. Brandt (ANIC).

**Paratypes:** One specimen from the same locality as the holotype (ANIC).

**Diagnosis:** The elytral disc is predominantly black. It has a narrow dim white fascia at the middle. The elytral asetiferous punctations are present throughout the elytral disc, and the capitulum is elongate. These characteristics will distinguish the members of this species from congeners.

**Description:** **Size:** Length 4.0 mm; width 1.2 mm. **Form:** As in Fig. 65. **Integument:** Forebody testaceous, pterothorax black, legs brown, except profemur half testaceous, abdomen black, elytron bicolored, predominantly black, with dim white fascia at middle. **Head:** Cranium coarsely punctate, frons wider than width of eye (FW/EW-23/18); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 14). **Thorax:** Pronotum coarsely punctate, with slightly developed lateral tubercle and with three glabrous elevations near base (Fig. 42) (PL/PW-60/57); elytral disc with prominent asetiferous punctations that extend to elytral apex, with 1° and 2° (EL/EW- 210/40). **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, fimbriate, phallobasic rod very long, phallobasic struts not contiguous with phallobasic apodeme, phallic apex triangular, phallic plates narrow, spicular apodemes fused (Fig. 85).

**Variation:** The two specimens before me are quite homogeneous.

**Natural History:** The two available specimens were collected during a time period from July 16 through September 21, at 1433 m.

**D i s t r i b u t i o n** (Fig. 91): This species is known only from Papua New Guinea.

**E t y m o l o g y**: The specific epithet *antehelvis* is a Latin compound name derived from *ante* (= before) and *helvus* (= yellow). The name refers to the coloration of the forebody.

***Tarsostenus bicolor* OPITZ, nov.sp. (Figs 3, 38, 66, 86, 93)**

**Holotype**: ♂. NEW CALEDONIA 12074, 22°19'Sx166°65'E, 480 m, Forend Nord, site 1, malaise, 22Dec2004-9Jan2005, Burwell, Wright (MNHN).

**Paratypes**: Two. New Caledonia: 22°19'Sx166°65'E, 480 m, Forend Nord, site 1, malaise, 22Dec2004-9Jan2005, Burwell, Wright (QMBA, 2).

**D i a g n o s i s**: The pronotal disc is black, but the pronotal arch and collar are testaceous. Also, the basal 1/3<sup>rd</sup> of the elytra are black and the distal 2/3<sup>rd</sup>s is testaceous. These characteristics will distinguish the members of this species from congeners.

**Description**: Size: Length 3.0 mm; width 0.7 mm. **Form**: As in Fig. 66. **Integument**: Cranium bicolored, upper frons and post genae black remainder testaceous, pronotum mostly brown, pronotal arch and collar testaceous, legs testaceous, abdomen testaceous, elytron bicolored, anterior third black testaceous in remainder. **Head**: Cranium coarsely punctate, frons wider than width of eye (FW/EW-21/11); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres long triangular, 11<sup>th</sup> long oval (Fig. 3). **Thorax**: Pronotum coarsely punctate at sides, with slightly developed lateral tubercle (Fig. 38). (PL/PW- 46/39); elytral disc with prominent asetiferous punctations extend to elytral posterior 1/3<sup>rd</sup>, with 1° setae, 2° setae present along epipleural margin and near elytral apex (EL/EW- 125/27). **Abdomen**: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, fimbriate, phallobasic rod short, phallobasic struts not contiguous with phallobasic apodeme, phallic apex triangular, phallic plates narrow, spicular apodemes not fused (Fig. 86).

**N a t u r a l H i s t o r y**: Specimens were collected in December at 480 meters, in a rain forest with a Malaise trap.

**D i s t r i b u t i o n** (Fig. 93): Known only from New Caledonia.

**E t y m o l o g y**: The trivial name *tricolor* refers to the coloration of these beetles.

***Tarsostenus hilaris* (WESTWOOD, 1849) (Figs 20, 35, 67, 87, 91)**

*Tillus hilaris* WESTWOOD, 1849: 48. Lectotype. Gender not known. Herein designated. Van Diemen's Land (Tasmania) (BMNH). WESTWOOD, 1852: 50 (*Opilus*). GORHAM, 1876: 62 (*Tillus*). BLACKBURN, 1900: 118 (*Tillus*). BASHFORD, 1991: 105 (*Blackburniella*); 1994: 133 (*Blackburniella*); 2004: 4 (*Blackburniella*). OPITZ, 2012: 32 (*Tarsostenosis*). BARTLETT, 2013: 413 (*Tarsostenus*). Westwood did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species.

*Thanasimorpha hilaris* var. *ruficollis* PIC, 1941: 6. nov.syn. The characteristic on which this variety is based falls within the range of variation of the nominal species. A male genitalic comparison confirms the synonymy.

**D i a g n o s i s**: The forebody and the anterior 1/3<sup>rd</sup> of the elytral disc is testaceous, the posterior 2/3<sup>rd</sup>s of the elytral disc is black except for a white narrow fascia that extends, at the middle of the disc, from the epipleural margin to the sutural margin. These characteristics will distinguish the members of this species from superficially similar specimens of *T. kanak* OPITZ, new species.

**Description:** Size: Length 3.8 mm; width 1.0 mm. **Form:** As in Fig. 67. **Integument:** Head red-brown, pronotum predominantly red-brown but infuscated anteriorly, pterothorax and legs testaceous, abdomen black, elytron tricolored, anterior third testaceous, with white fascia at middle, posterior third black. **Head:** Cranium coarsely punctate, frons wider than width of eye (FW/EW-29/18); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres long triangular, 11<sup>th</sup> oblong (Fig. 20). **Thorax:** Pronotum coarsely punctate, with slightly developed lateral tubercle and with three glabrous elevations near base (Fig. 35). (PL/PW- 68/62); elytral disc with prominent asetiferous punctations that extend beyond white transverse fascia, posterior fourth without asetiferous punctation, with 1° setae, 2° setae present on periphery of disc (EL/EW- 210/40). **Abdomen:** Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, fimbriate, phallobasic rod very long, phallobasic struts not contiguous with phallobasic apodeme, phallic apex long triangular, phallic plates narrow, spicular apodemes not fused (Fig. 87).

**Variation:** Size: Length 3.8-5.5 mm; width 0.8-1.2 mm. The forebody of specimens from Australia is entirely red-brown. The extent of the anterior infuscation on the pronotal disc varies among the available specimens from Tasmania.

**Natural History:** Specimens were collected in January, February, and March. Some specimens were reared from *Eucalyptus* L' HÉRITIER, laden with various species of cerambycids. One specimen was collected at 850 m.

**Distribution** (Fig. 91): This species is known from Tasmania and Australia. In addition to the type I examined 42 specimens. **Tasmania:** Hobart, Lea; Patrick River, Jan. 1933, F. E. Wilson; National Park, 24-I-34, K. C. McKeown. **Australia:** Victoria: Belgrave, 22-10-19, C. Oke; Croydeon; Nunawading, 3-1-55, a. Nebois; Hawthorn, Dec. 1963, E. M.; Melbourne, 23-XII-27, F. E. Wilson; Gembrook, June 1927, C. Oke; Queensland: Cairns, II/70, Bowen, A. Simson; Brisbane, IV-1969, *Lyctus* FABRICIUS predator: South Australia: Mt. Lofty Rgs., A.H. Elston; Adelaide, A. H. Elston: New South Wales: Sydney, 5 November 1958, P. Goodwin; 35°43'S 150°11'E, Surf Beach, Bateman's Bay, 2.iii.1972, private house, S. Misko; Surf Beach, 35°43'S 150°11'E, Bateman's Bay, 2.iii.1972, private house, S. Misko; Dorrego, 10.11.1923, W. W. Froggatt; Murrumbateman, 7-I-82, E. C. Zimmerman: Australian Capital Territory: Canberra, Kambah, 5-II-79, D. C. Rentz; Garran, 13.ii-67, T. Parker; Canberra, 28-XII-60, B. P. Moore; Black Mountain, 1-ii-68, M. S. Upton; Brindabella Range, 35°22'S 148°50'E, 19 Nov.1991, 850 m, J. F. Lawrence, M. A. & D. Ivie; Mt. Majura, 2-ii-1969, K. Pullen. Specimens are deposited in AMSA, ANIC, BMNH, and WOPC.

***Tarsostenus kanak* OPITZ, nov.sp. (Figs 4, 39, 68, 93)**

**Holotype:** ♀. NEW CALEDONIA 11955, 20°24'Sx164°32'E, 730 m, Mandjelia, 1 km SW, 5Jan2005, G. Monteith, beating, rainforest (MNHN).

**Diagnosis:** The wisp of white setae on the surface of the white fascia of the elytral disc will distinguish the members of this species from superficially similar specimens of *T. hilaris*.

**Description:** Size: Length 3.0 mm; width 0.7 mm. **Form:** As in Fig. 68. **Integument:** Forebody testaceous, pterothorax brown, legs testaceous, abdomen testaceous, elytron tricolored, anterior half testaceous, testaceous color extends along sutural margin to reach elytral apex, posterior ½ of disc with oval black macula, disc with white

fascia at middle that begins at epipleural margin but does not reach sutural margin. **Head:** lower frons, post genae coarsely punctate, vertex glabrous, frons wider than width of eye (FW/EW-26/10); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 4). **Thorax:** Pronotum coarsely punctate at sides, with slightly developed lateral tubercle (Fig. 39) (PL/PW- 53/43); elytral disc with prominent asetiferous punctations that extend slightly beyond white transverse fascia, posterior fourth without asetiferous punctation, with 1° setae, 2° setae present along epipleural margin and near elytral apex (EL/EW- 140/30). **Abdomen:** Female pygidium not incised at middle of anterior margin.

**Natural History:** The holotype was collected in January at 730 meters, by bating vegetation in a rainforest.

**Distribution** (Fig. 93): Known only from New Caledonia.

**Etymology:** The trivial name constitutes a noun in apposition. I honor the Kanak indigenous people of New Caledonia.

### ***Tarsostenus tricolor* (HELLER, 1916) (Figs 16, 41, 69, 93)**

*Tarsostenosis tricolor* HELLER, 1916: 277. Lectotype. ♀. Here designated. Neukaledonien (New Caledonia), Mt. Kanala, Drs. F. Sarasin & J. Roux (SMTD). CORPORAAL, 1950: 304. Heller did not indicate in his description whether his nominal species is based on more than one specimen. Therefore, I invoke Recommendation 73F of the ICZN (1999) and designate a lectotype for this nominal species.

**Diagnosis:** The black forebody and the white macula on the elytral disc will conveniently distinguish the members of this species from superficially similar specimens of *Tarsostenus bicolor* OPITZ, new species.

**Description:** Size: Length 5.0 mm; width 1.5 mm. **Form:** As in Fig. 69. **Integument:** Forebody black, elytra tricolorous, basal 1/4<sup>th</sup> black, yellow-red in remainder, except with a small white macula at the middle, femora mostly yellow, infuscated distally, tibiae and tarsus brown, pterothorax brown, abdomen yellow-red. **Head:** Cranium coarsely punctate, frons wider than width of eye (FW/EW-47/10); antennal funicular antennomeres subfiliform, 9<sup>th</sup> triangular, 10<sup>th</sup> transverse, 11<sup>th</sup> ovoid-oblong (Fig. 16). **Thorax:** Pronotum coarsely punctate, with slightly developed lateral tubercle, disc with glabrous elevations (Fig. 41) (PL/PW- 75/62); elytral disc with prominent asetiferous punctations that extend to elytral middle, with 1° setae, 2° setae present along epipleural margin and near elytral apex (EL/EW- 190/40). **Abdomen:** Female pygidium not incised at middle of anterior margin.

**Distribution** (Fig. 93): This species is known only from New Caledonia.

### ***Tarsostenus univittatus* ROSSI, 1792 (Figs 8, 36, 44, 46, 48, 70, 88)**

*Clerus univittatus* ROSSI, 1792: 44. **Neotype.** Here selected. Australia. 15°38'S 125°15'E, CALM Site 28/3 4km W of King Cascade, W.A. 12-16-June 1988, T.A. Weir. A second label reads: at light, open forest. (ANIC). The neotype is selected in accordance with Article 75.3.1 of the ICZN (1999). *T. univittatus* ROSSI is a cosmopolitan species. By selecting a neotype I fix the type locality of the species. Despite intensive efforts this Rossi type has not been found and is believed to be lost. There is ample historical literature cited in CORPORAAL, 1950: 304. More recently, this species was mentioned by BÖVING, 1920: 613, CRAIGHEAD, 1920: 628, 1950: 198, MCKEOWN, 1952: 270, HORION, 1953: 164, EKIS & GUPTA, 1971: 63, KOLIBÁČ, 1987: 104; 1989: 36; 2003: 50, FOSTER & LAWRENCE, 1991: 451, MATTHEWS, 1992: 5. GERSTMEIER 1998: 199. SOLERVICENS, 2005: 330, and OPITZ, 2010: 79; 2012: 33.

**D i a g n o s i s :** There are two species in this genus in which the elytral disc is predominantly brown, *T. univittatus* and *T. antehelvis*. In the latter species the forebody is red-yellow. In *T. univittatus* specimens the forebody is brown.

**D e s c r i p t i o n :** Size: Length 3.5 mm; width 0.9 mm. Form: As in Fig. 70. Integument: Cranium dark brown, rest of body brown except elytral disc with white fascia at middle. Head: Cranium coarsely punctate (Fig. 46), frons wider than width of eye (Fig. 44) (FW/EW-20/11); antennal funicular antennomeres subfiliform, 9<sup>th</sup> and 10<sup>th</sup> antennomeres triangular, 11<sup>th</sup> oval (Fig. 8). Thorax: Pronotum sparsely punctate, with glabrous streaks at center of disc, without lateral tubercle (Figs 36, 48) (PL/PW- 48/42); elytral disc with prominent asetiferous punctation that diminish just beyond white transverse fascia, elytral preapical region subglabrous, with 1° setae, 2° setae restricted to preapical region of elytral disc (EL/EW- 130/28). Abdomen: Male pygidium not incised at middle of anterior margin; phallobase slightly sclerotized ventrally, lobes very small, fimbriate, phallobasic rod bifid distally, phallobasic struts contiguous with phallobasic apodeme, phallic apex triangular, phallic plates narrow, spicular apodemes fused (Fig. 88).

**V a r i a t i o n :** Size: Length 3.5- 5.5 mm; width 0.9-1.2 mm. Other than size, the beetles before are quite homogeneous.

**N a t u r a l H i s t o r y :** A common predator on *Lyctus* FABRICIUS, including *L. brunneus* STEPHANS, *L. africanus* LESNE, and *L. planicollis* LECONTE. Also known to prey on the bostrichid beetle *Xylothrips flavipes* ILLIGER. Many specimens were reared from the flowering plants *Sterculia alata* Linnaeus (Malvaceae) and *Cassia fistula* LINNAEUS (Fabaceae). Edward P. Stebbing associates *T. univittatus* with bamboo infested with the wood borers *Sinoxylon crassum* Lesne, *S. anale* Lesne, and *Dinoderus pilifrons* Lesne. With regard to the biology of *T. univittatus* CRAIGHEAD (1920: 628) writes, "Is principally a predator on powder post beetles as *Lyctus* and *Sinoxylon* in dry, seasonal wood products. Reared from ash timber infested with *Lyctus parallelocollis*, received from Portsmouth Navy Yard; from hickory lumber infested with *Lyctus*; persimmon blocks containing work of *Lyctus* and *Sinoxylon*; white oak infested with *Lyctus*; from hickory axe handles containing *Lyctus*, and other similar articles."

**D i s t r i b u t i o n :** This species is cosmopolitan.

### Evolutionary Considerations

In 2012, I presented a hypothesis of phylogeny for the genera of Tarsosteninae. The present work extends the discussion to include species-level phylogenetics involving a monophyletic group comprised of four monophyletic genera: *Blackburniella*, *Tarsostenodes*, *Paratillus*, and *Tarsostenus*. The latter two genera are internationally known because they each contain a cosmopolitan species; i.e. *Paratillus carus* and *Tarsostenus univittatus*. Both of these species have close relatives in the Australian region, which invites the speculation that their origin stems from the region in question. There are two major lines of evolution in the *Tarsostenodes* complex (Fig. 50). Placing aside the two cosmopolitan species, distributional evidence (Figs 89-93) points to an Australian origin for the *Blackburniella-Tarsostenodes* lineage and an islandic (Tasmania-Nova Caledonia-New Guinea) emergence for the *Paratillus-Tarsostenus* line. Further, the small body size among the *Paratillus-Tarsostenus* species follows the long standing convention that small size is a characteristic of island species.



### Phylogenetic Interpretations

My hypothesis for the phylogenetics of the taxa under consideration is illustrated in Fig. 50. The phylogeny was generated by computer via NONA (GOLOBOFF, 2003) in combination with Winclada version 1.00.08 (NIXON, 2002). The analysis yielded one tree ( $L = 27$ ,  $Ci = 92$ ,  $Ri = 97$ ).

It is postulated that the ancestral stock of the *Tarsostenodes* complex evolved in mainland Australia, probably during the Mid Cretaceous, some 110-100 mya. when the sea recessed from that island continent (LASERON, 1984: 232). This ancestor, progenitor species A, which is characterized by having an oblong pronotum, spheroid eyes, unicolorous elytral disc that is not characterized by a fascia or bullules, and that, has more than one pair of male accessory glands. This ancestral species eventually produced two mainstream lines of evolution. In one line, which led to ancestral species B, the phallobasic lobes became minute. In the complementary stock, which led to ancestral species C, the elytral base developed an umbo and the phallobasic rod became expanded laterally. Progenitor species B proliferated islandic species, probably on terrain produced by volcanic cataclysms, which created the Tasmanian Sea to the southeast and the Coral Sea to the north.

Progenitor species B diversified to evolve ancestor species D, in which the eyes became reduced. Ancestor D produced *Paratillus carus* and *P. atali*. In the complementary stock, ancestor species E, the male accessory glands were reduced to one pair. This ancestral species evolved into what is now *T. hilaris* and progenitor species G and H. Progenitor species G, generated *T. kanak* and progenitor species H, which evolved ancestral species I and J. Progenitor species I, produced *T. univittatus* and *T. antehelvis*, whereas progenitor J developed *T. tricolor* and *T. bicolor*.

The second major lineage of the *Tarsostenodes* complex, which except for *Tarsostenodes howensis*, evolved on mainland Australia. This lineage began with ancestral species C. The latter promulgated ancestral species K, characterized by having the elytral apex tufted and a phallic apex that is extraordinarily long. Ancestor K evolved *Blackburniella apicula* and its sister species *B. intricate*. The complementary stock led to progenitor species F, in which the pronotum became obovate. Ancestral species F evolved the insular *Tarsostenodes howensis* and progenitor species L, characterized by having a constricted elytra and the elytral disc laden with bullules. Next, there evolved ancestral species M and N. In ancestral species M, in which the pronotal disc developed glabrous streaks, generated ancestral species O and P. Ancestor O produced *Tarsostenodes vesica* and *T. leucogramma*, whereas progenitor species P evolved *T. gibbus* and ancestral species Q. In the latter ancestral species the 9<sup>th</sup> antennomere became very long, which is characteristic of its two descendants, *T. albonotatus* and *T. morulus*. The complementary stock of ancestral species M, progenitor species N, characterized by having the midbase of the pronotum carinose, produced two bispecies lineages; ancestral species R, evolved *T. cribripennis* and *T. tentus*. In both of these species the elytral basal bullule became notably broad. Progenitor species N also led to ancestral species S. The latter evolved *T. bullatus* and the complementary stock ancestral species T, in which the phallobasic struts became widened. Finally, progenitor species T evolved the very closely related *T. guttulus* and *T. simulator*.

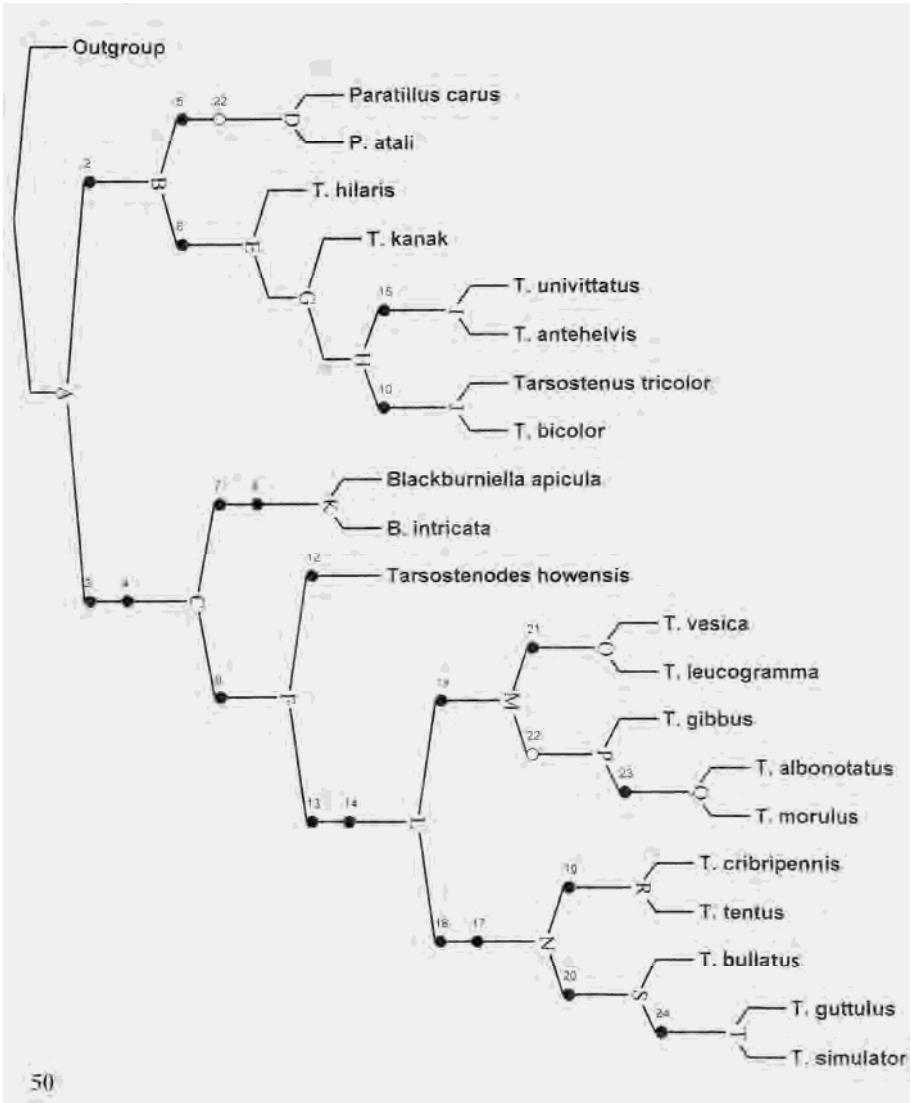
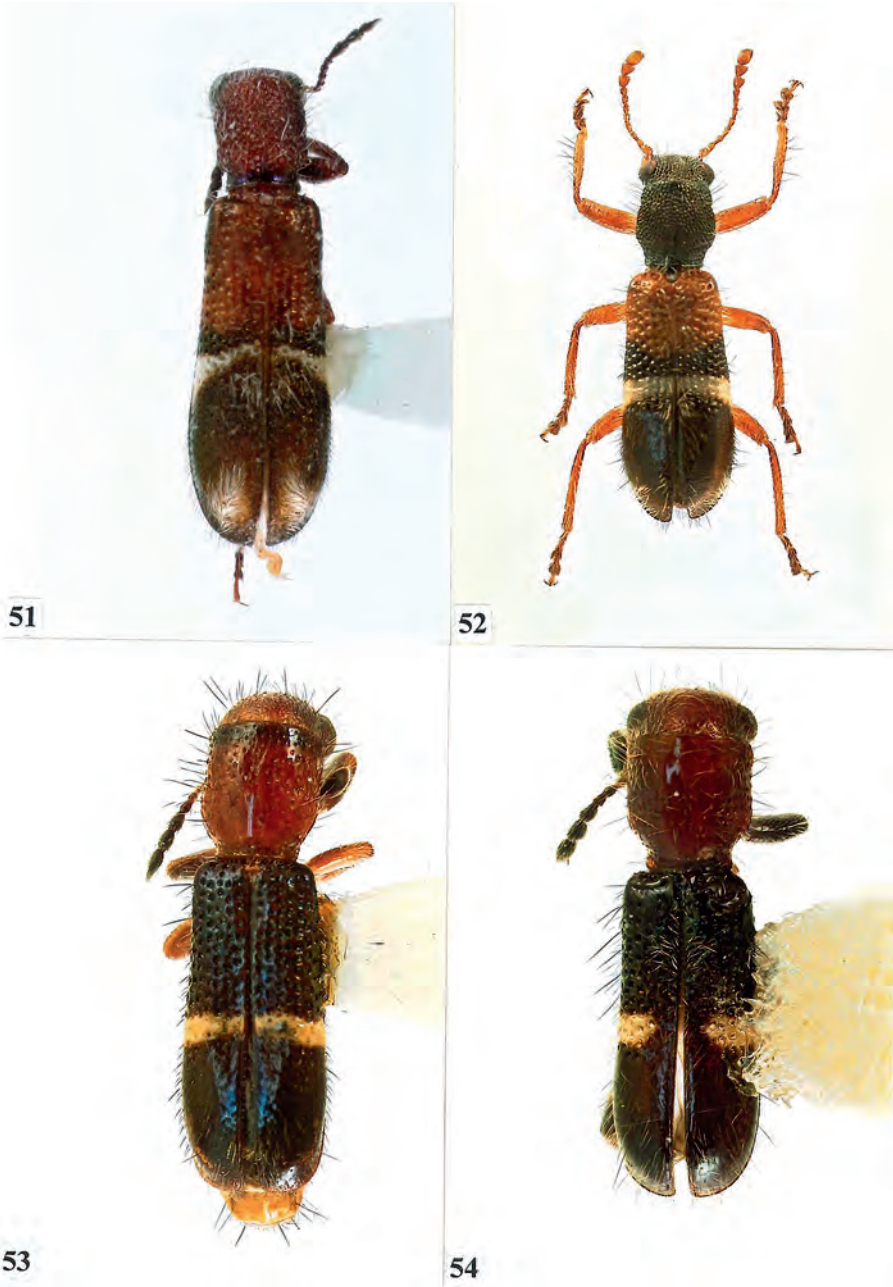
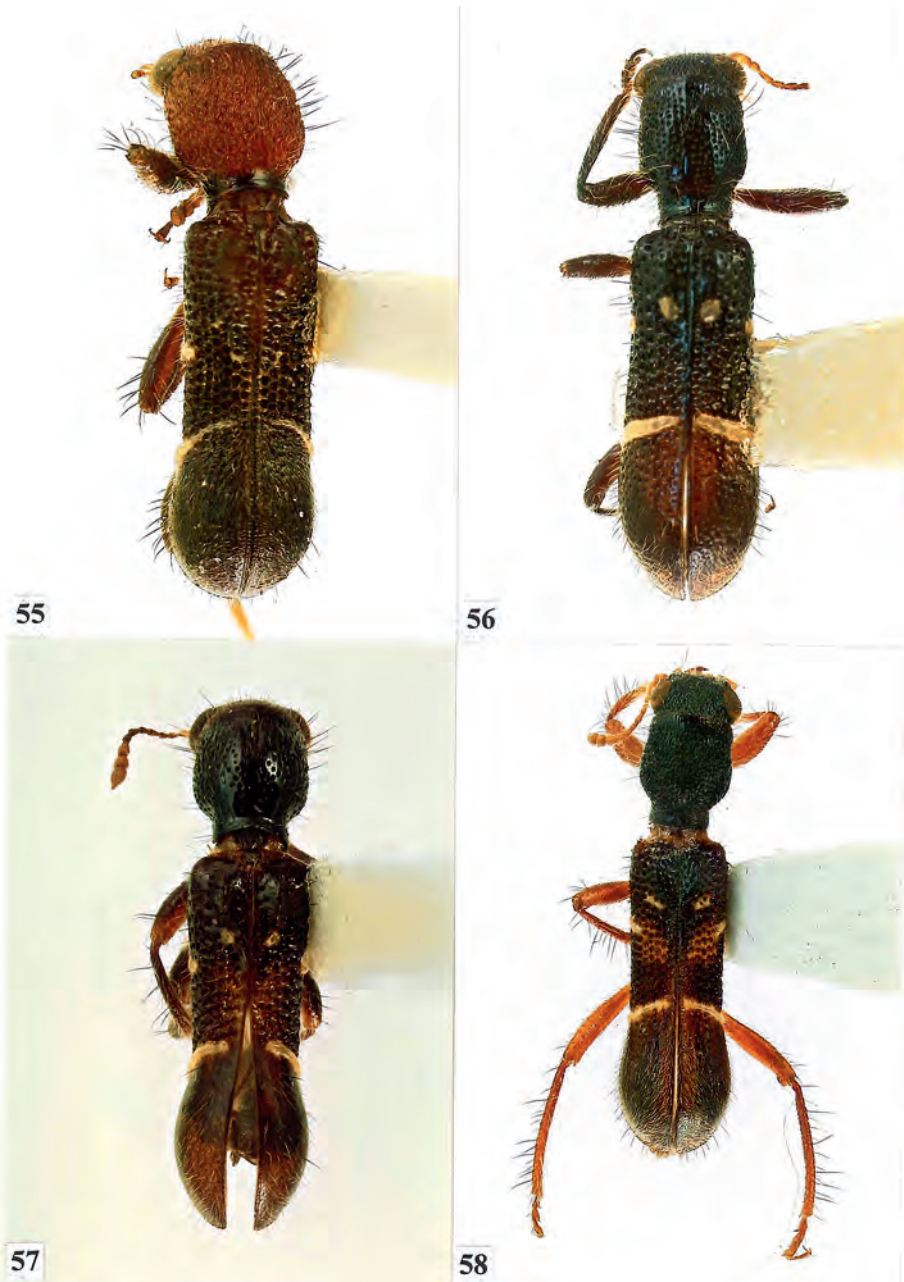


Fig. 50: Phylogenetic hypothesis of the species of the *Tarsostenodes* complex.



**Figs 51-54: Habitus. (51) *Blackburniella apicula*. (52) *Blackburniella intricata*. (53) *Paratillus carus*. (54) *P. atali*.**



**Figs 55-58:** Habitus. (55) *Tarsostenodes bullatus*. (56) *T. albonotatus*. (57) *T. gibbus*. (58) *T. guttulus*.



59



60

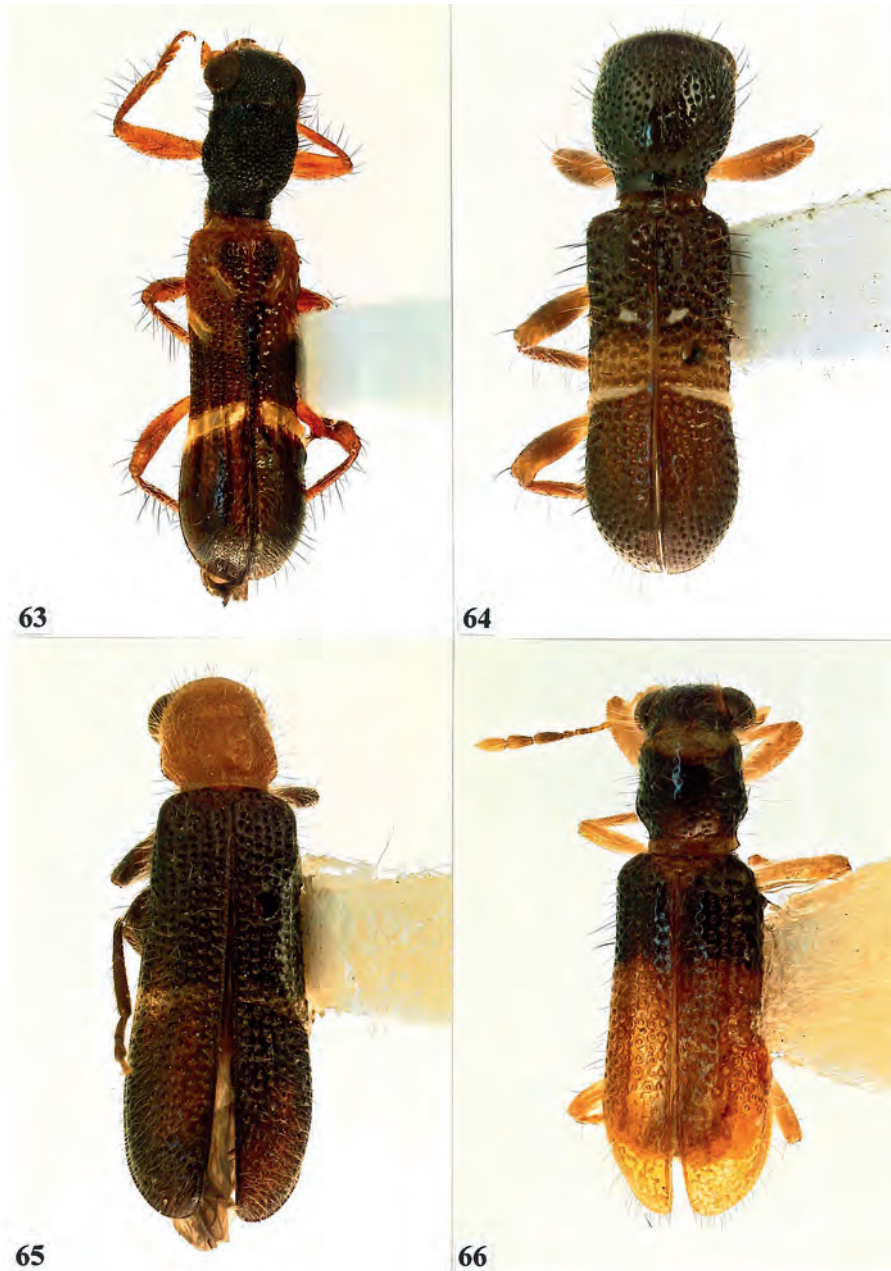


61

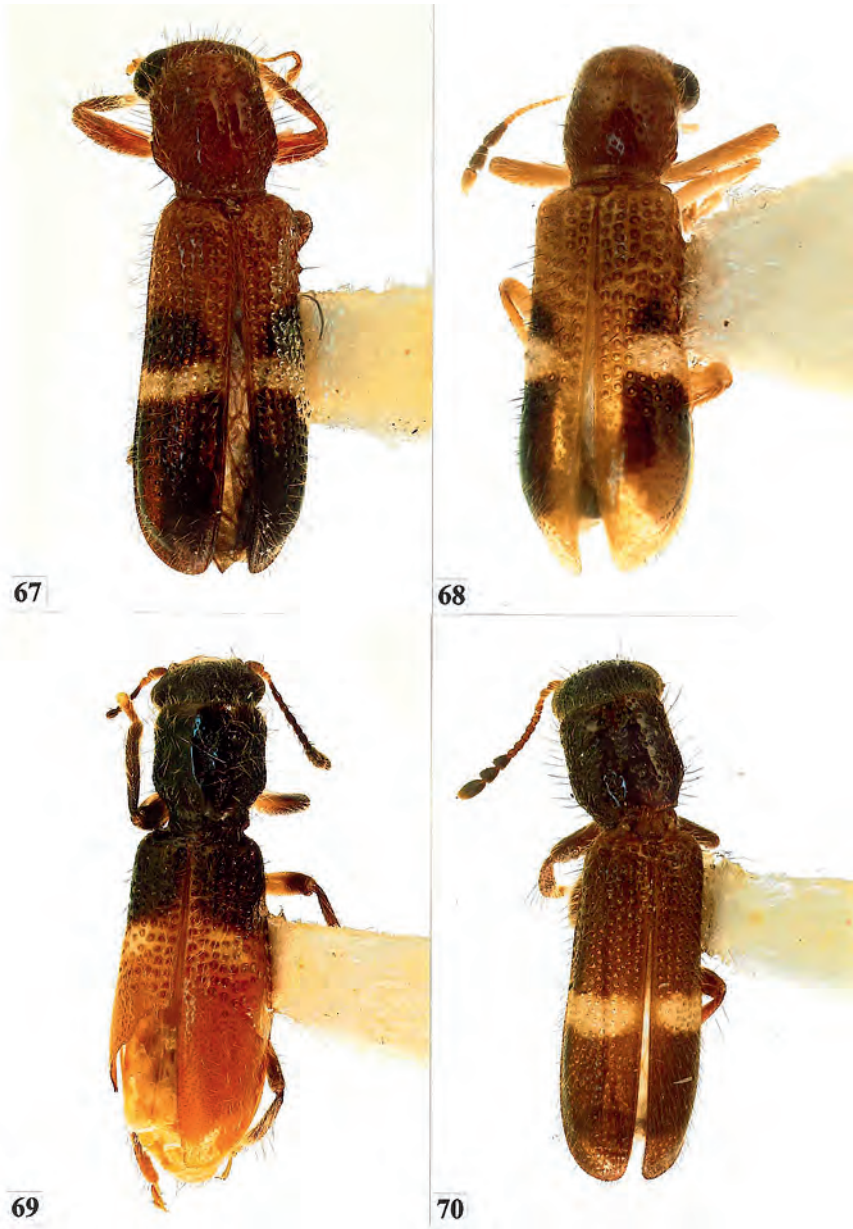


62

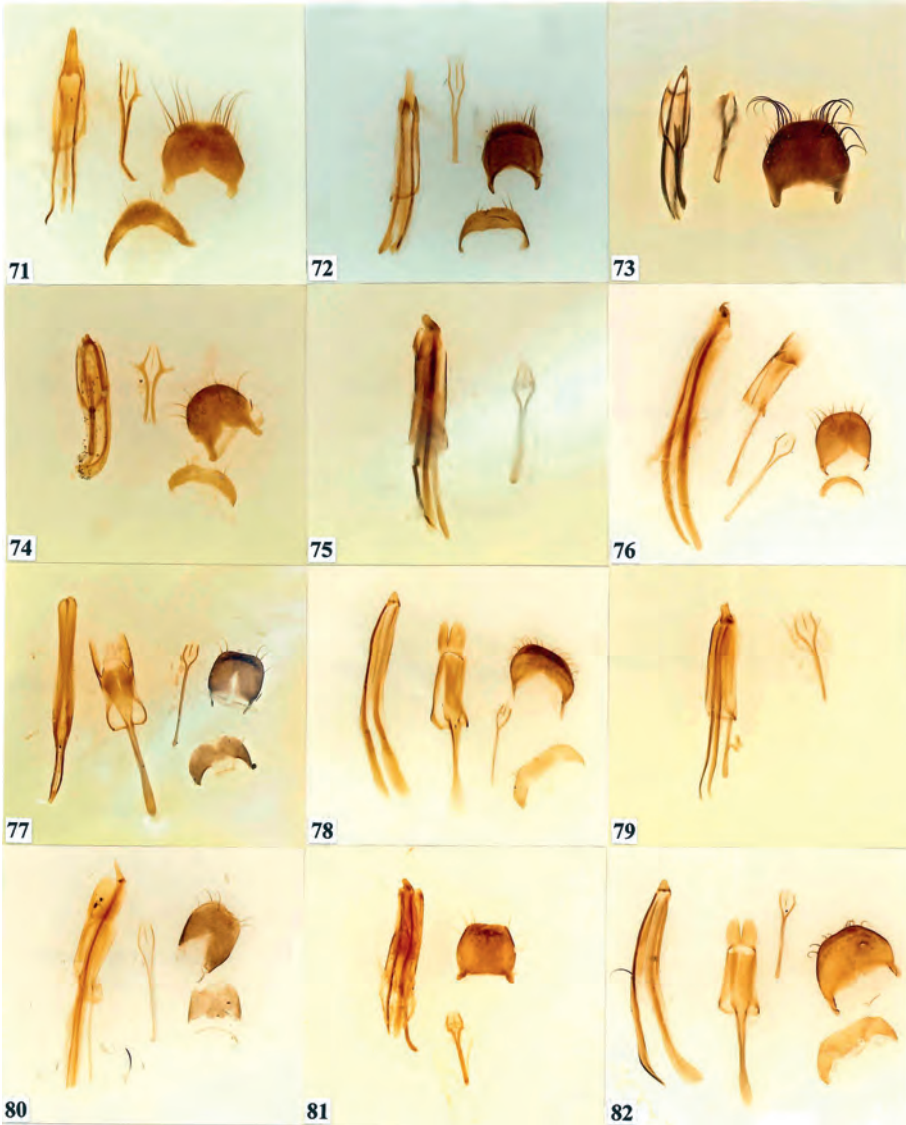
**Figs 59-62:** Habitus. (59) *Tarsostenodes howensis* (60) *T. leucogramma*. (61) *T. morulus*. (62) *T. simulator*.



**Figs 63-66:** Habitus. (63) *Tarsostenodes tentus*. (64) *T. vesica*. (65) *Tarsostenus antehelvis*. (66) *T. bicolor*.

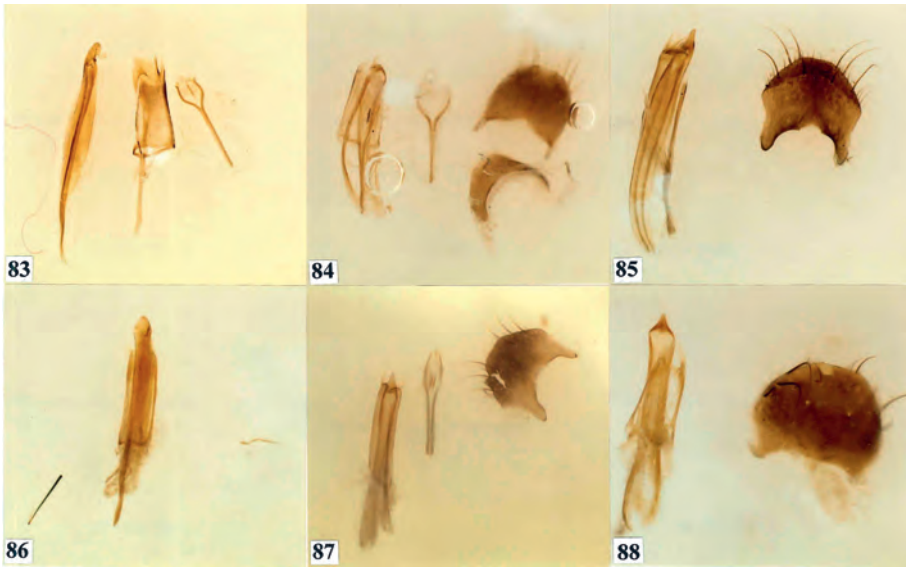


**Figs 67-70:** Habitus. (67) *Tarsostenus hilaris*. (68) *T. kanak*. (69) *T. tricolor*. (70) *T. univittatus*.



**Figs 71-82:** Male terminalia. (71) *Blackburniella apicula*. (72) *B. intricata*. (73) *Paratillus carus*. (74) *P. atali*. (75) *Tarsostenodes albonotatus*. (76) *T. cribripennis*. (77) *T. gibbus*. (78) *T. gutulus*. (79) *T. howensis*. (80) *T. leucogramma*. (81) *T. morulus*. (82) *T. simulator*.





**Figs 83-88:** Male terminalia. (83) *Tarsostenodes tentus*. (84) *T. vesica*. (85) *Tarsostenus antehelvis*. (86) *T. bicolor*. (87) *T. hilaris*. (88) *T. univittatus*.

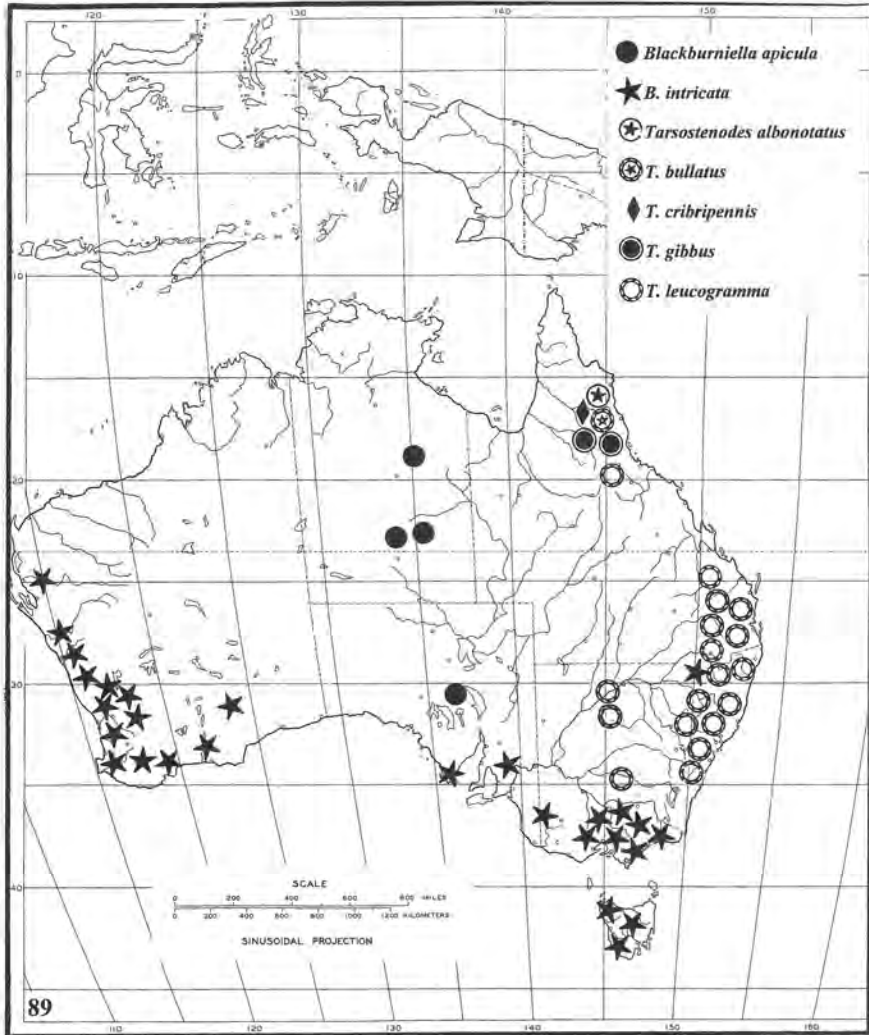


Fig. 89: Geographic distribution of species as noted.

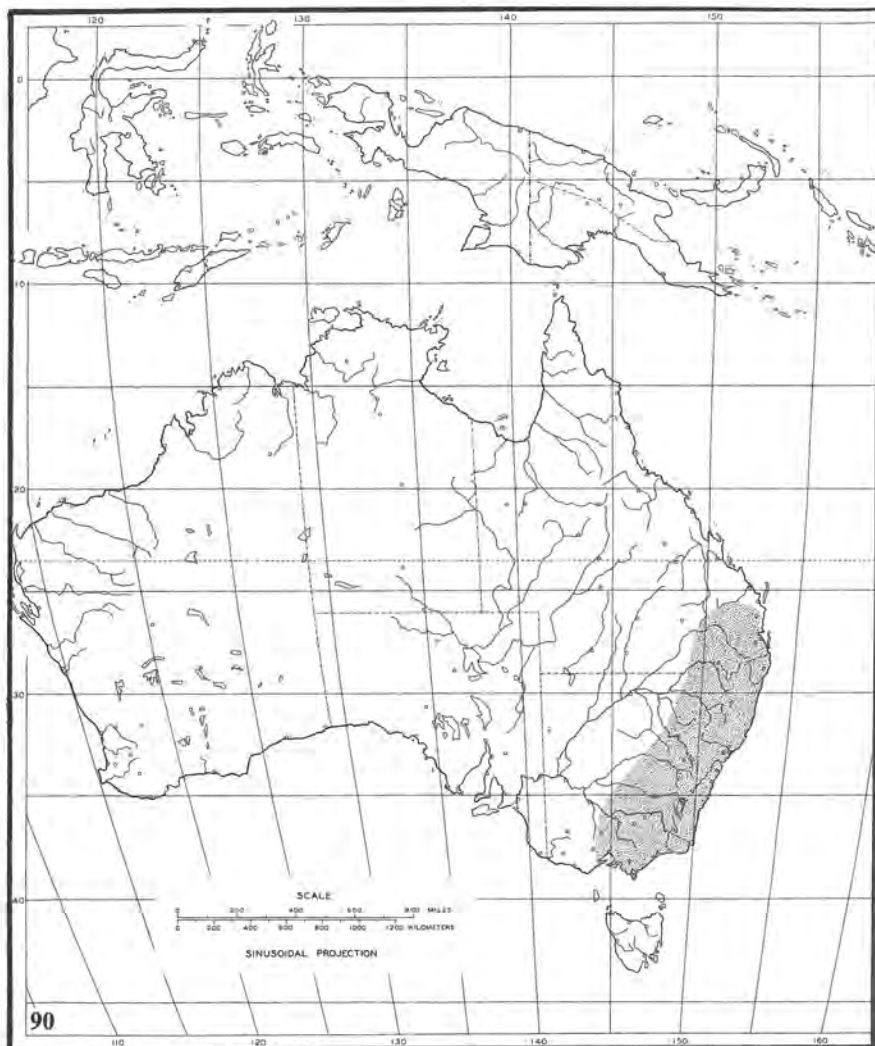


Fig. 90: Geographic distribution of *Tarsostenodes simulator*.

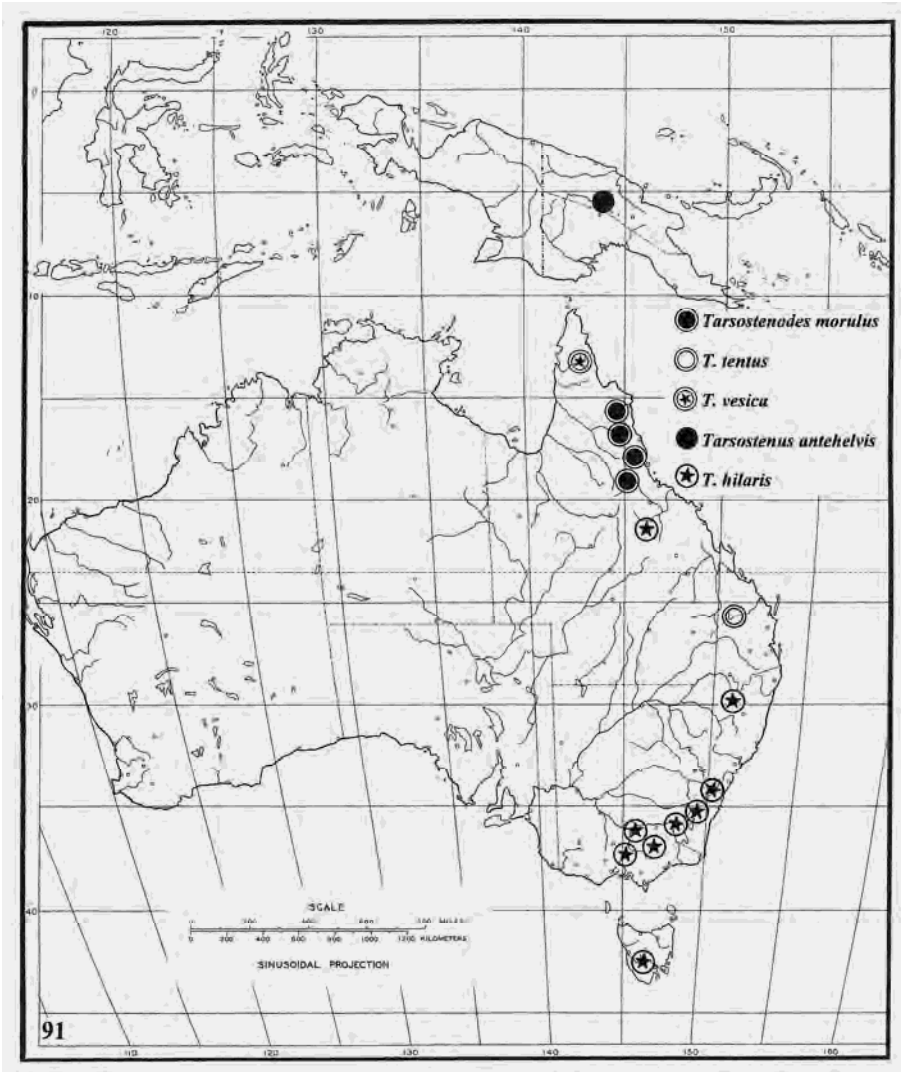


Fig. 91: Geographic distribution of species as noted.

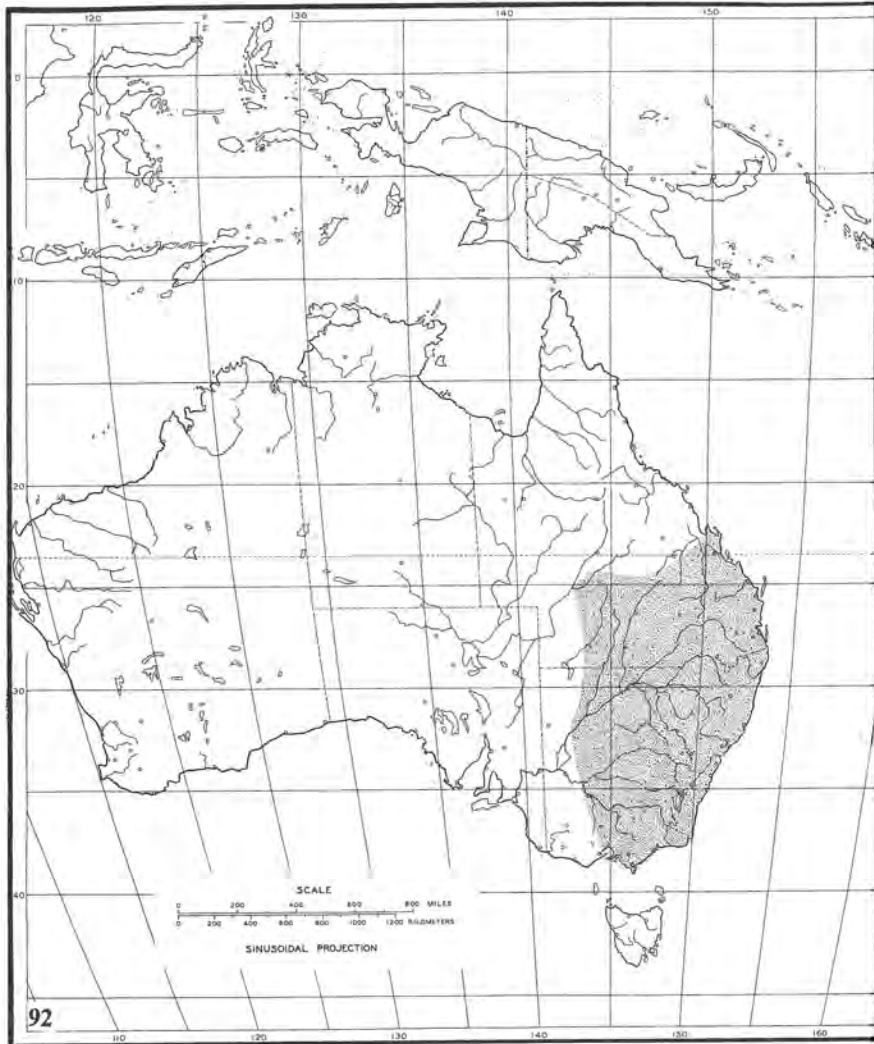


Fig. 92: Geographic distribution of *Tarsostenodes guttulus*.

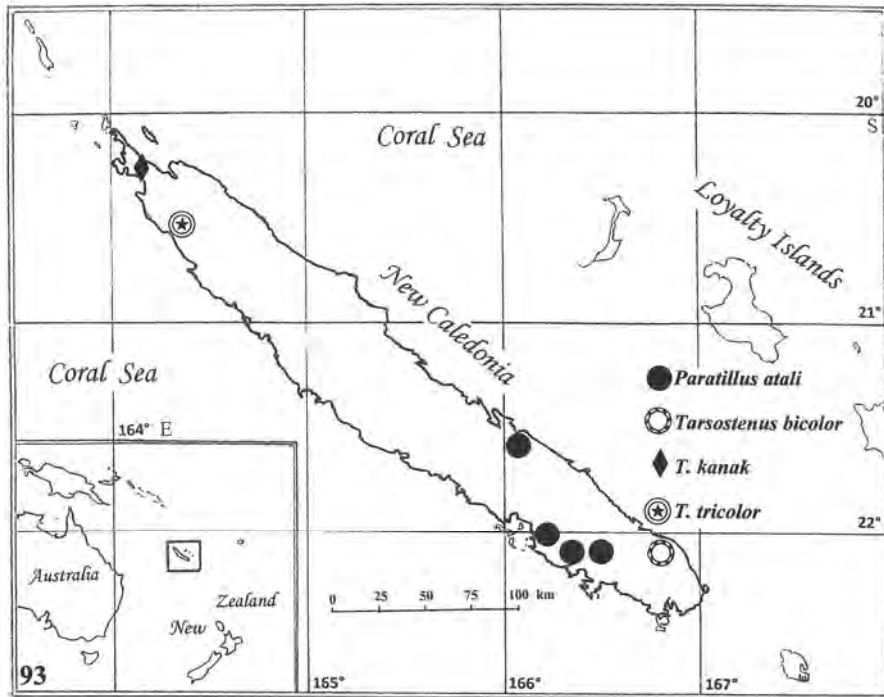


Fig. 93: Geographic distribution of species as noted.

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### Zusammenfassung

Der *Tarsostenodes*-Komplex, eine monophyletische Gruppe, besteht aus den Gattungen *Blackburniella* CHAPIN, *Paratillus* GORHAM, *Tarsostenodes* BLACKBURN, und *Tarsostenus* SPINOLA. *Blackburniella* beinhaltet die Arten *B. apicula* OPITZ, nov.sp. und *B. intricata* BLACKBURN. Der Gattungsname *Paratillus* wird wieder etabliert und die Gattung beinhaltet *P. atali*, OPITZ, nov.sp. und *P. carus* (NEWMAN). Zu *Tarsostenodes* gehören die Arten *T. bullatus* OPITZ, nov.sp., *T. albonotatus* (PIC), *T. cribripennis* SCHENKLING, *T. gibbus* OPITZ, nov.sp., *T. guttulus* (WHITE), *T. howensis* BARTLETT, *T. leucogramma* ELSTON, *T. morulus* OPITZ, nov.sp., *T. simulator* BLACKBURN, *T. tentus* OPITZ, nov.sp., und *T. vesica* OPITZ, nov.sp. *Tarsostenus* beinhaltet *T. antehelvis* OPITZ, nov.sp., *T. bicolor* OPITZ, nov.sp., *T. hilaris* (WESTWOOD), *T. kanak* OPITZ, nov.sp., *T. tricolor* (HELLER), und *T. univittatus* ROSSI. Ein Neotypus für *Tarsostenus univittatus* ROSSI wird festgelegt. *Tarsostenosis* HELLER wird mit *Tarsostenus* SPINOLA synonymi-

siert. Lectotypen werden für *Blackburniella intricata*, *Paratillus carus*, *Tarsostenodes albonotatus*, *T. cribripennis*, *T. guttulus*, *T. simulator*, und *Tarsostenus hilaris* designiert.

Viele dieser Käfer wurden auf Blüten von Laubhölzern gesammelt. Die kosmopolitischen Arten *Tarsostenus univittatus* und *Paratillus carus* werden im allgemeinen in kommerziellen Holzkisten in Gesellschaft mit Bohrkäfern der Gattung *Lyctus* FABRICIUS gefunden.

Es wird postuliert, dass die Vorfahren des *Tarsostenodes*-Komplexes auf dem australischen Festland evolvierten, wahrscheinlich während der mittleren Kreidezeit, etwa vor 115 Millionen Jahren, als sich das Meer von diesem Inselkontinent zurückzog. Des weiteren legen morphologische und Verbreitungs-Hinweise nahe, dass diese Vorfahren zwei hauptsächlichen evolutiven Ereignissen unterworfen waren, welche zwei Hauptlinien der Evolution innerhalb des *Tarsostenodes*-Komplexes etablierten. Eine Hauptlinie führte zum kontinentalen Australien, die andere zu den Inseln Neuguinea, Neukaledonien und Tasmanien. Eine Phylogenie der Arten des *Tarsostenodes*-Komplexes wird postuliert, computergeneriert mit WINCLADA in Kombination mit NONA.

Diese Arbeit beinhaltet die Beschreibung von neuen Arten, die Erstellung eines Bestimmungsschlüssels, 42 Strichzeichnungen, 6 rasterelektronenmikroskopische Aufnahmen, 21 farbige Habitusillustrationen, 18 Farbfotos von Genitalien und 5 Verbreitungskarten.

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