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FURTHER CONSIDERATION OF THE SUBTRIBE THOMASSETIINA BELLAMY: A NEW SPECIES, NEW RECORDS AND PLACEMENT IN THE CONTEMPORARY CLASSIFICATION (COLEOPTERA: BUPRESTIDAE)

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A new species of *Thomassetia* Théry, *T. parva*, is described from the Western Cape Province, and new distribution records are presented for *T. crassa* (Waterhouse), *Jakovleviola oresibata* Obenberger and *J. strandi* Obenberger. A cladistic analysis of genera from the buprestid subtribes Thomassetiina, Bubastina, and Polyctesina was carried out to allow some confirmation of generic placement within the subtribes. The subtribal name Bulisina Bellamy, 1995, is emended to Bulina and Curidina Hołyński, 1988, is emended to Curina.

Keywords: Coleoptera, Buprestidae, Buprestinae, *Thomassetia, Jakovleviola,* Southern Africa, Taxonomy.

INTRODUCTION

When originally defined, the buprestid subtribe Thomassetiina Bellamy (Bellamy, d'Hotman and Holm, 1987) was proposed to contain four African genera: *Thomassetia* Théry, *Jakovleviola* Obenberger, *Senegalisia* Bellamy and *Augrabies* Bellamy. In a subsequent paper (Bellamy, 1991), I suggested that the subtribal parameters be expanded to include the new Mexican genus *Oaxacanthaxia* Bellamy, and the Oriental genera *Philanthaxia* Deyrolle and *Pagdeniella* Théry. *Kurosawaia* Toyama and Ohmomo may also be placed here although it might have some relationship to the Australasian genus *Melobasis* Laporte and Gory.

Of many intriguing and interesting proposals in his familial 'reassessment,' Hołyński (1993) suggested that two Nearctic genera, *Chrysophana* LeConte and *Beerellus* Nelson, traditionally placed in the Polyctesina Cobos (Thrincopygini LeConte), be grouped with the thomassetiine genera and combined within a reconstituted Bubastina Obenberger, a group previously comprising mostly Australian and a few northern African species. This is perhaps the most controversial of all the ideas presented in Hołyński's 1993 paper. With the recent revisions of *Philanthaxia* and *Pagdeniella* (Bílý, 1993), and additional species referred to both *Oaxacanthaxia* (see Nelson and MacRae, 1994) and *Beerellus* (see Bellamy 1995*a*), as well as the need to describe a new South African species of *Thomassetia,* it is an appropriate time to seek a phylogenetic perspective on these relationships and previous unsubstantiated predictions.

Complete synonymies for the previously described taxa discussed below were provided by Bellamy *et al.* (1987). Label data are presented verbatim with a slash (/) to indicate data from separate labels; additional comments are contained within square brackets. All material of new species or records is deposited in the Transvaal Museum (TMSA) or the collections of A. Joubert, Somerset West (AJCS); D. S. Verity, Los Angeles, (DSVC); Naturhistorisches Museum, Basel, Switzerland (NHMB); National Museum, Prague, (NMPC); R. L. Westcott, Oregon Department of Agriculture, Salem (RLWE); and the South African National Collection of Insects, Pretoria (SANC); these abbreviations are listed in Arnett, Samuelson and Nishida (1993) or are in the same style.

Genus *THOMASSETIA* Théry

This genus was revised by Bellamy *et al.* (1987) and at that time included four species: the type species *T. natalensis* Théry, *T. anniae* Obenberger, both from Natal, *T. strandi* Obenberger from the Eastern Cape Province and *T. crassa* (Waterhouse) from the Western Cape Province.

Thomassetia crassa (Waterhouse), Figs 1, 3

Aristosoma crassum Waterhouse, 1887: 291.
Thomassetia crassa: Bellamy, d'Hotman and Holm, 1987: 228.

This is the common species in Namaqualand, generally associated with *Rhus undulata* Jacq., and has now been collected from the Gifberg south of Vanrhynsdorp and northwards to the

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southern Richtersveld.

New locality and host records (*R. undulata* unless otherwise listed) are: N. Cape, Dermbergsdraai, W. of Garies, along the Green River course, 30.46S 17.41E; 2.5 km W Kommandokraal, 31.29S 18.11E, beaten from foliage of *Euclea racemosa* Murray (Ebenaceae); base of Vanrhynspas, 36 km E Vanrhynsdorp; Kamieskroon, 30.12S 17.52E; Wildeperdehoekpas, 29.54S 17.42E, beaten from foliage of *Euclea tomentosa* E. Mey. ex A. DC. x *E. natalensis* A. DC.; Richtersveld, Eksteenfonteinvallei, 28.47S 17.12E, beating *Acacia* sp. and beating 'false olive' [*Euclea* sp.]. The records of plants other than *Rhus* possibly represent coincidental adult resting sites, unless this species is polyphagous.

With the number of specimens now available. a brief discussion of variation is possible. There is a tendency in several populations for the colour. especially of the head and pronotum, to become a more iridescent aeneocupreous and is possibly related to a difference in host plants. This variation in colour is present in specimens listed above from Kommandokraal and Eksteenfonteinvallei. Another variable feature observed in specimens from Eksteenfonteinvallei is that the elytral disk has somewhat irregular transverse elevations between the more lateral longitudinal carinae (Fig. 1). Despite this variation, *T. crassa* exhibits the autapomorphic character state of the male genitalia throughout its range, *i.e.,* the bilobed apex of the medium lobe (Fig. 3), a feature unique to the species of *Thomassetia.*

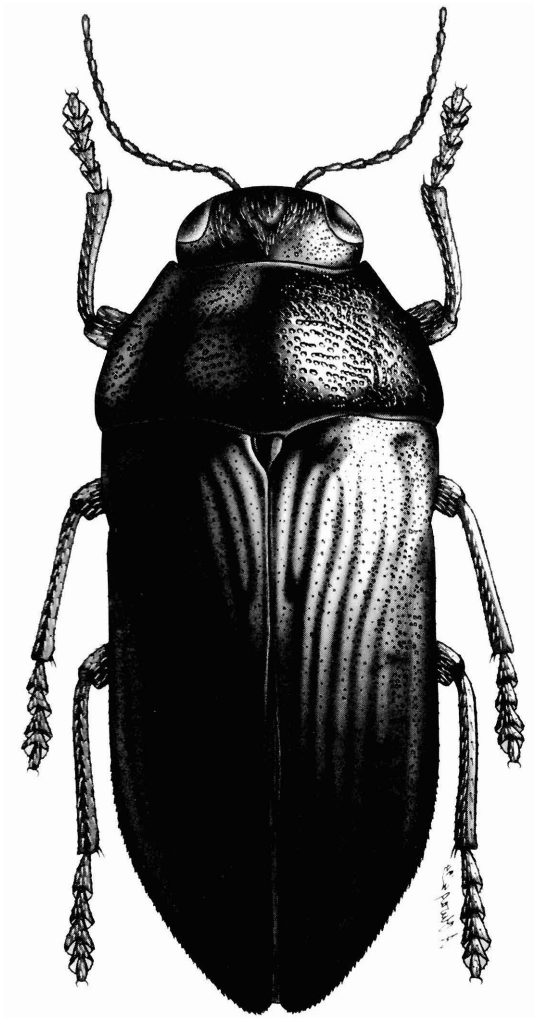


Fig. 1

Thomassetia crassa (Waterhouse), dorsal habitus.

Thomassetia parva **spec. nov.**, Figs 2, 4, 5

DESCRIPTION. HOLOTYPE ♂. 6,8 × 2,7 mm; flattened above and below; nitid black with faint aeneous tint; frontoclypeus, narrow mediobasal portion of elytra, margin of epipleuron, entire underside, femora and tibiae red cupreous; surface punctate, pronotum coarsely so; frons, antennae, underside and legs with sparse setal vestiture.

Head: frontovertex more or less evenly transverse, when viewed from above; frons only slightly narrowed above frontoclypeal margin; frontoclypeus feebly, transversely depressed between antennae, distal margin carinate, biangulately emarginate. Antennae: scape longer than antennomeres 2+3, 3 subserrate, 4–10 serrate; 11 shorter, slightly narrower than 10.

Pronotum: width 1,80 times the length, widest at about midpoint; anterior margin arcuate medially, straight on either side; posterior margin arcuate on either side of narrow prescutellar median truncation; lateral margins broadly, evenly arcuate, carinate, marginal carinae entire; posterolateral angles obtuse; disc flattened posteromedially, slightly transversely convex laterally; narrow impunctate longitudinal stripe present medially. Scutellum: small, triangular, longer than wide, posterior angle somewhat produced, acuminate; disc with central depression.

Elytra: length 1,82 times the width, widest before posterior third; basal margin somewhat swollen, costate; disc longitudinally costate, lateral costae feebly elevated; humeri short, moderately elevated, slightly oblique to orientation of costae; lateral

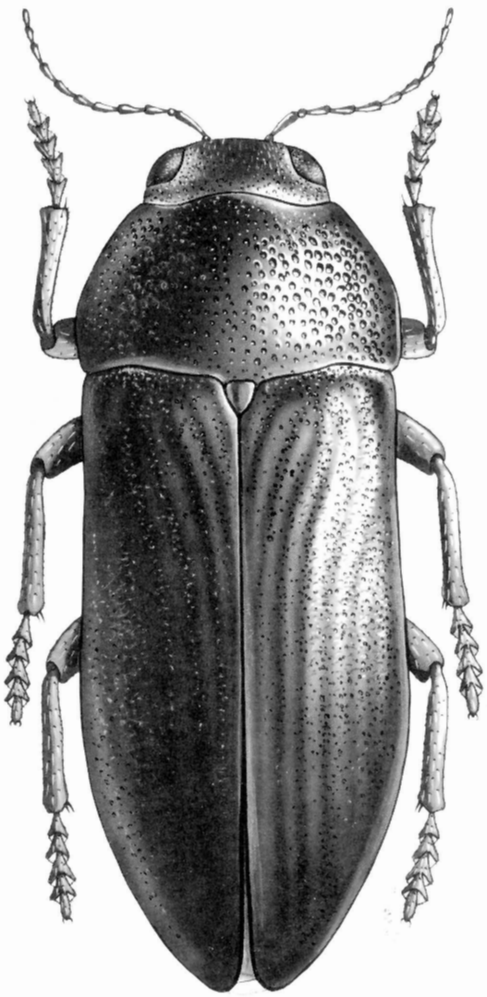
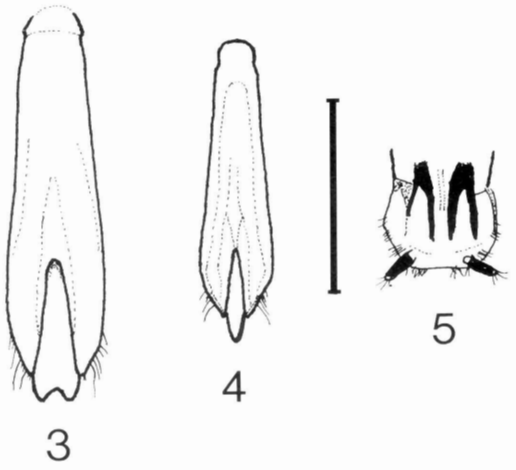


Fig. 2

Thomassetia parva spec. nov., dorsal habitus.



Figs 3–5

Thomassetia genitalia. **3**: *T. crassa*, aedeagus, dorsal aspect; **4–5**: *T. parva*. 4: aedeagus, dorsal aspect; 5: ovipositor, dorsal aspect (scale bar = 1 mm).

margins from base slightly narrowing to opposite humeri, then gradually widening to maximum width before posterior third, thereafter converging arcuately to separately rounded apices; lateral margins finely serrate from about widest point until before apical rounding; epipleuron short, extending to posterior metacoxal margin, narrow, only separated from disc by short carina which extends from base to opposite humerus; pygidium not visible from above.

Underside: surface mainly areolate, very large shallow cells, each with internal surface shagreened and one adpressed long white seta; surface between cells finely shagreened; cells generally with residue of white pulverulence; prosternum with anterior margin straight, process broadly attenuate; metacoxal plate with posterior margin arcuate in lateral half; lengths of abdominal sterna as follows: 1+2>3+4+5, 2>3+4, 3–5 each subequal; 5 narrowing caudad to broad, feebly arcuate apex, with a narrow premarginal groove present on all sterna.

Legs: femora fusiform; tibiae slightly expanded apically; tarsomeres 1–4 slightly progressively shorter, each with ventral pulvillus; 5 elongate, narrow, claws simple.

Genitalia: as in Fig. 4.

Allotype ♀: 9,6 × 3,8 mm; slightly more robust than holotype: pronotal width 1,65 times the length; elytral length 1,86 times the width; dorsal coloration more sombre black with no reflected tint; tarsal pulvilli wider and narrower. Ovipositor as in Fig. 5.

Variation: ♂ (n = 11), 6,7–7,2 × 2,5–2,9 mm; (n = 11), 7,6–9,7 × 3,1–3,9 mm; dorsal coloration is variable, especially in males, some having the elytral costae with a cupreous tint in the basal half and one specimen having the costae rather with a faint blue tint. Otherwise the variation observed in the type series is limited to size and proportional differences.

MATERIAL EXAMINED. Holotype ♂ (TMSA): SOUTH AFRICA: Western Cape, 3,5 km W. Clanwilliam, [200m] 32.11S 18.52E / 24.IX.1994 E-Y:3038, beating *Rhus incisa* [L. f. var. *incisa*,

Table 1
Taxa examined and used to construct character state matrix. Classification and order suggested by results of cladistic analysis.

BUPRESTINAE Leach
THRINCOPYGINI LeConte
Thrincopygina LeConte
Thrincopyge alacris LeConte
Polyctesina Cobos
Polyctesis rhois Marseul
Chrysophana conicola Chamberlin
Beerellus taxodii Nelson
BUPRESTINI Leach
Buprestina Leach
Aristosoma suturalis (Thunberg)
Bubastina Obenberger
Bubastes obscurus Obenberger
Neobubastes flavovittata Carter
Euryspilus chalcodes Laporte and Gory
Paratassa coraebiformis Fairmaire
Thomassetiina Bellamy
Thomassetia crassa (Waterhouse)
Jakovleviola strandi Obenberger
Augrabies schotiaphaga Bellamy
Philanthaxia ohmomoi Bílý
Pagdeniella nigroviolacea (Théry)
Kurosawaia yanoi (Kurosawa)
Oaxacanthaxia viridis Bellamy
Anthaxiina Gory and Laporte
Trachykele blondeli Marseul

Anacardiaceae] C. L. Bellamy; allotype ♀ (TMSA), same data as holotype; 36 paratypes: 5♂, 8♀, same data; 8♂, 8♀, same data except 8.IX.1995, 3♀, same data except R. L. Westcott; 1♂, same data except 9.IX.1986, C. L. Bellamy and D. S. Verity; 3 ex. [1♀, 2♂?], Clanwilliam, 12.IX.1989, W. Wittmer and S. Gussmann. Paratypes in TMSA (22), SAMC (2), SANC (2), GHNC (1), NHMB (3), NMPC (1), DSVC (1) and RLWE (4).

REMARKS. The specific epithet comes from the Latin root for small, as this is the smallest species in the genus. This species can be easily distinguished from *T. crassa* by its smaller size, lack of oblique supra-antennal carina, shape of the frontoclypeal emargination, cupreous ventral surface and male genitalia. This species originates from the same locality as that of an unrelated buprestid, *Embrikillium cupriventre* Bellamy, 1988, which also has a cupreous venter, a feature by which both, in part, differ from their respective congeners.

Genus *JAKOVLEVIOLA* Obenberger

This genus was reviewed by Bellamy *et al.* (1987). A new locality record for one species is as follows.

Table 2
Characters and character states of examined taxa: p = plesiomorphic; a, a^1, a^2 = apomorphic.

1. Body shape: flattened (p), sub-, cylindrical (a).
2. Body shape: elongate (p), more compact, ovoid (a).
3. Eyes in proportion to head: small (p), large (a).
4. Eyes: longitudinal (p), ovoid (a).
5. Antennal insertions: close together, distant from eye (p), widely separated, close to eye (a).
6. Mandibles: entire, arcuate laterally (p), with angulate lateral projection (a).
7. Anteclypeus: visible (p), not visible (a).
8. Antenna: serrate from antennomere 3 (p), from 4 (a), from 5 (a^1), from 6(a^2).
9. Last antennomere: truncate (p), oblong, rounded (a).
10. Pronotum, widest portion: median (p), base (a).
11. Pronotal basal foveae: present, deep (p), absent (a).
12. Pronotal basal foveae: one medial, two lateral (p), only one medial (a).
13. Pronotal basal margin: concave on either side of middle (p), convex posteriorly (a).
14. Pronotal lateral carina: entire from base to apex (p), partial, not reaching apical margin (a).
15. Pronotal lateral carina: visible from above (p), more ventrad, not visible from above (a).
16. Pronotal basolateral angle: acute (p), obtuse (a).
17. Scutellum: absent, not visible (p), present, visible (a).
18. Scutellum: small, round or ovoid (p), larger, triangular or cordiform (a).
19. Elytral surface: punctate (p), costate with interstitial punctures (a), carinate (a^1).
20. Elytral punctures: without setae (p), with single seta projecting (a).
21. Elytral apices: simple, truncate, or rounded (p), with sutural spine (a), bispinose (a^1).
22. Epipleural lobe: rounded distally (p), with sharp angulate posterior margin (a).
23. Pygidium: apex hidden beneath elytral apex (p), projecting well beyond elytral apex (a).
24. Prosternal disc: compressed, medially gibbose (p), evenly transverse, flattened (a).
25. Sternal cavity: projecting into base of metasternum (p), within mesosternal lobes (a).
26. Metacoxal posterior margin: angulate laterally (p), entire (a).
27. Suture between first and second abdominal sterna: visible (p), fused, not visible (a).
28. Abdominal sternum 5: entire (p), with entire premarginal groove (a), with premarginal groove only apically (a^1).
29. Metatibiae, apical spines: two (p), one (a).
30. Metatarsi: elongate, 1> 2+3 (p), compressed, 2+3>1 (a).
31. Metatarsomere 1, ventral pulvillus: only present apically (p), along entire ventral length (a).
32. Tarsal pulvilli: sexually equal (p), sexually dimorphic (a).
33. Tarsal claws: simple, slender (p), simple, swollen basally (a), appendiculate.(a^1).

Jakovleviola strandi Obenberger

This species is known from only four specimens collected after the original type series of eight specimens and is recorded from only three

Table 3
Character state matrix for 17 buprestid taxa (Table 1) and characters (Table 2): plesiomorphic (p) = 0, apomorphic (a, a^1, a^2) = 1, 2, 3; character absent or state unknown = ?.

Taxon	Characters and states																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Aristosoma	0	0	0	0	0	0	0	1	1	0	1	?	0	1	1	0	1	1	1	0	0	0	0	1	0	1	?	0	0	0	0	0	0
Augrabies	0	0	0	0	0	0	0	1	0	0	1	?	0	1	1	1	1	1	0	1	0	0	0	1	0	1	1	1	1	0	0	0	1
Beerellus	1	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	1	1	0	0	1	0	0	0
Bubastes	1	0	1	1	1	0	1	1	0	0	0	1	0	1	1	0	1	1	1	1	1	1	0	0	0	1	1	0	0	1	0	0	0
Chrysophana	1	0	0	0	1	0	0	1	1	1	0	0	0	1	1	0	1	0	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0
Euryspilus	1	0	1	1	1	0	1	3	1	0	0	1	0	1	1	0	1	1	1	1	2	0	0	0	0	1	?	0	0	1	0	0	0
Jakovleviola	0	0	1	0	0	0	0	2	0	0	1	0	0	1	1	1	1	1	1	0	0	0	0	1	0	1	1	0	0	1	0	0	1
Kurosawaia	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	0	0	0	1	0	1	?	0	0	1	0	0	2
Neobubastes	0	0	1	1	0	0	0	1	0	0	1	1	0	1	1	1	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0
Oaxacanthaxia	0	1	0	0	0	0	1	0	1	1	1	?	0	0	0	0	1	1	1	1	0	0	0	1	0	1	1	0	0	1	0	0	2
Pagdeniella	0	1	1	0	0	1	1	1	1	0	1	?	0	0	0	0	1	1	1	1	0	0	0	1	0	1	1	0	0	1	0	0	2
Paratassa	1	0	0	0	0	0	0	1	?	0	1	?	0	0	1	0	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	0	0
Philanthaxia	0	1	1	0	0	0	1	1	1	1	1	?	0	0	1	0	1	1	2	0	0	0	0	1	0	1	1	0	0	1	0	0	1
Polyctesis	1	0	0	0	1	0	0	1	0	0	0	0	1	1	1	1	1	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	0
Thomassetia	0	1	0	0	0	0	0	1	0	1	1	?	0	0	0	1	1	1	2	0	0	0	0	1	0	1	0	1	0	0	0	1	1
Thrincopyge	0	0	0	0	1	0	1	2	1	0	1	0	1	1	1	1	1	0	1	0	0	1	0	0	1	0	2	2	0	1	1	0	0
Trachykele	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

localities: Cape Town, Bainskloof, and Mossel Bay (Bellamy *et al.*, 1987). Two additional specimens recorded here represent the easternmost locality in the geographic range of this species: 1♂, 1♀, Willowmore, 8.I.1988, A. Joubert (AJCS, TMSA).

PHYLOGENY OF THOMASSETIINA

The subtribe Bubastina is a group composed of genera from Australia (*Bubastes* Laporte and Gory, *Neobubastes* Blackburn, *Eububastes* Obenberger, and *Euryspilus* Lacordaire) and Africa (*Paratassa* Marseul, *Strandiola* Obenberger and *Bubastoides* Kerremans). The only other genus previously placed in this tribe is *Notobubastes* Carter (Bellamy, 1985), which was justifiably moved to Psilopterina by Hołyński (1988). Specimens of the genera *Strandiola, Bubastoides* and *Senegalisia* were not available for study. All three taxa apparently are represented by type specimens only and housed in European museums. The membership of *Strandiola* and *Bubastoides* within a higher taxon is not clearly established and further study is needed to establish proper placement. *Senegalisia* was described for a single West African species. Hołyński (1993) stated that he considered *Senegalisia* to be no more than a subgenus of *Thomassetia;* as discussed previously (Bellamy *et al.,* 1987), it is closer to *Jakovleviola* and *Augrabies.*

Trachykele Marseul (Trachykelina Hołyński, Anthaxiini Gory and Laporte) was selected as the working outgroup for this analysis, following Hołyński (1988) where he argued that *Trachykele,* along with *Nascio* Laporte and Gory (Nascionina Hołyński), 'seem to represent relatively little modified offsprings of the ancient stock, ancestral to all the Buprestinae' and because all remaining taxa have putative apomorphic character states in common with others of the included taxa. The other taxa that were added to the analysis each possess some degree of relationship, at least in traditional perceptions, to select members of the focal taxa and are included to help give some added polarity. *Polyctesis* Marseul is the nominate genus of the subtribe Polyctesina Cobos, the higher taxon that has traditionally included *Chrysophana* and *Beerellus* (Levey, 1978; Nelson, 1982). *Thrincopyge* LeConte is the nominate genus of the tribe Thrincopygini LeConte, the tribe in which Polyctesina has been placed by Hołyński (1993). *Aristosoma* Thomson is a monotypic South African genus which was last considered by Bellamy *et al.* (1987) and placed in Buprestina, at the time that the subtribe Thomassetiina was described.

Table 1 lists the taxa examined in this study and in the construction of the character state matrix. Table 2 lists the characters and plesiomorphic and apomorphic states of each. Table 3 is the matrix.

A cladistic analysis was conducted with Hennig86, version 1.5 (Farris 1988), initially applying

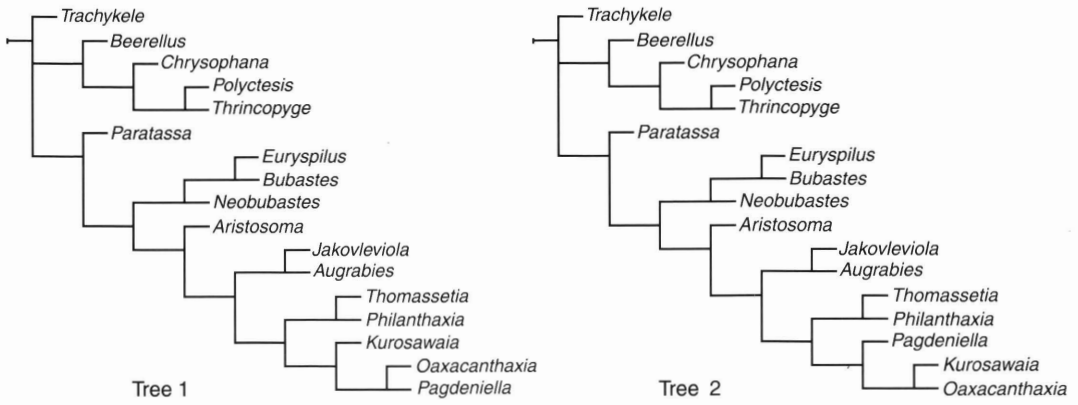


Fig. 6

Two equally parsimonious cladograms (length 241, CI 79, RI 88) showing relationships for Thomassetiina, Bubastina, Polyctesina and outgroups.

the implicit enumeration (ie) option alternated with the *a posteriori* successive weighting (xs w) routine. Due to the size of the matrix (Table 3), the implicit enumeration command did not terminate. Therefore, following recent comments by Griswold (1993) and Doyen (1993), the data were analysed using the h; bb; and m*; bb*; options, and both sets of calculations were subjected to the *a posteriori* successive weighting routine. These routines were alternated and repeated on successively produced cladograms until they no longer changed. The Hennig86 weighting procedure operates by calculating weights from the best fits of the character states on the most parsimonious cladograms using rescaled consistencies, *i.e.,* the products of the character states consistency and retention indices. Neither the taxa nor the characters were considered ordered. The m*; bb*; xs w; option calculated two equally parsimonious trees of length = 241, consensus index = 79, and retention index = 88; these are shown in Fig. 6. Table 4 lists the resultant statistical values, including the consensus and retention index scores.

The only difference between the two cladograms (Fig. 6) is the relationship and ordering between the three most terminal taxa *Kurosawaia, Oaxacanthaxia* and *Pagdeniella.* The most obvious facet of both cladograms is that the taxa cluster in essentially three groups: *Beerellus* and *Chrysophana* are grouped with *Polyctesis* and *Thrincopyge;* the three Australian bubastine genera (*Bubastes, Neobubastes, Euryspilus*) share a clade and the seven genera previously placed in the Thomassetiina are all clustered together. As suggested earlier (Bellamy *et al.,* 1987), *Aristosoma* does not cluster with the thomassetiine genera but rather branches as their sister-group, justifying its placement in the Buprestina. Note that the curious and monotypic genus *Paratassa* from arid North Africa branches as sister-group to the entire Bubastina + Buprestina + Thomassetiina clade; from this analysis it differs by having the pygidium projecting posteriorly beyond the elytral apices. This might indicate that removal of *Paratassa* from Bubastina is warranted; further study might suggest monotypic subtribal status.

The relationship of *Kurosawaia* to *Melobasis* and other Australasian buprestine genera requires further study. There is also some suggestion that a relationship exists between Thomassetiina and the Trigonogeniina Cobos, a monotypic subtribe defined for the Patagonian genus *Trigonogenium* Gemminger and Von Harold. If such were found to be the case, a reconstituted Trigonogeniina might need to incorporate Thomassetiina and become the valid name for such a taxon. However, with the need to describe a new genus and species from eastern Australia (Bellamy and Williams, in preparation) that exhibits some similarity to *Philanthaxia* and *Pagdeniella,* any further transfer in this part of the family should be left until further study has been carried out on this group of taxa.

It seems clear that Hołyński's (1993) proposals to combine genera from such disparate subtribes as Polyctesina, Bubastina and Thomassetina are not supported by cladistic analysis. Traditionally viewed relationships seem justified, even in the current period of rather dynamic evolution of buprestid higher classification.

Table 4
Number of changes of state, consistency index and retention index values for 33 characters used in Hennig86 analysis for two equally parsimonious trees of length 241, CI 79, RI 88.

Tree 1																			
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Steps	4	2	4	1	2	1	4	7	6	3	3	1	1	3	3	4	1	1	4
CI	25	50	23	100	50	100	25	42	16	55	33	100	100	33	33	25	100	100	50
RI	40	66	40	100	80	100	40	0	28	50	60	100	100	71	50	40	100	100	60
Character	20	21	22	23	24	25	26	27	28	29	30	31	32	33					
Steps	4	2	3	1	1	1	2	4	4	1	6	1	1	2					
CI	25	100	33	100	100	100	30	50	50	100	16	100	100	100					
RI	50	100	60	100	100	100	50	0	0	100	0	100	100	100					
Tree 2																			
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Steps	4	2	4	1	2	1	5	6	6	3	3	1	1	3	3	4	1	1	4
CI	25	50	23	100	50	100	20	50	16	55	33	100	100	33	33	25	100	100	50
RI	40	66	40	100	80	100	20	25	28	50	60	100	100	71	50	40	100	100	60
Character	20	21	22	23	24	25	26	27	28	29	30	31	32	33					
Steps	4	2	3	1	1	1	2	4	4	1	6	1	1	2					
CI	25	100	33	100	100	100	30	50	50	100	16	100	100	100					
RI	50	100	60	100	100	100	50	0	0	100	0	100	100	100					
Best Fits																			
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Steps	4	2	4	1	2	1	5	6	6	3	3	1	1	3	3	4	1	1	4
CI	25	50	23	100	50	100	20	50	16	55	33	100	100	33	33	25	100	100	50
RI	40	66	40	100	80	100	20	25	28	50	60	100	100	71	50	40	100	100	60
Character	20	21	22	23	24	25	26	27	28	29	30	31	32	33					
Steps	4	2	3	1	1	1	2	4	4	1	6	1	1	2					
CI	25	100	33	100	100	100	30	50	50	100	16	100	100	100					
RI	50	100	60	100	100	100	50	0	0	100	0	100	100	100					
Worst Fits																			
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Steps	4	2	4	1	2	1	4	7	6	3	3	1	1	3	3	4	1	1	4
CI	25	50	23	100	50	100	25	42	16	55	33	100	100	33	33	25	100	100	50
RI	40	66	40	100	80	100	40	0	28	50	60	100	100	71	50	40	100	100	60
Character	20	21	22	23	24	25	26	27	28	29	30	31	32	33					
Steps	4	2	3	1	1	1	2	4	4	1	6	1	1	2					
CI	25	100	33	100	100	100	30	50	50	100	16	100	100	100					
RI	50	100	60	100	100	100	50	0	0	100	0	100	100	100					

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CORRIGENDA

In a recent paper in this same journal (Bellamy 1995*b*), I stated that while Hołyński (1993) preferred the spelling Astraeina, I saw no reason to change it from the original Astraeusina of Cobos; clearly Cobos was in error in the formation of this name and Hołyński is correct. Likewise, the

subtribal name Acherusina must be corrected to Acherusiina, being based on the generic name *Acherusia*. Furthermore, in that same work I proposed the new subtribe Bulisina for the genus *Bulis* Laporte and Gory. The Latin name *Bulis,* indicated to be feminine in gender like the majority of buprestid generic names, forms its genitive singular according to the third declension as *Bul-is,* which yields a family-group name *Bul-idae* (masculine names ending in *-is* generally take a connecting consonant such as *-d-* to form their genitive singular, e.g. *lapis, lapidis*). In addition, the name *Bulis* has the Greek origin βουλη (Gemminger and Von Harold 1869:1380), which ends in a latinized -ē and gives the genitive singular Bul-ēs and the stem *Bul-*. Therefore, the appropriate family-group names based on *Bulis* are Bulidae, Bulina etc., analogous to Buprestidae (based on *Buprestis*). Likewise, the similar generic name *Curis* Gory and Laporte, even though not apparently Greek in origin (Gemminger and Von Harold 1869:1392), is treated as a feminine name and therefore also yields a subtribal name Curina, not Curidina as given by Hołyński (1988).

The subtribal name Bulisina Bellamy, 1995 is therefore here emended to Bulina and Curidina Hołyński, 1988, is emended to Curina.

I thank Rolf Oberprieler, (SANC), local Latin and entomological expert for pointing out the need for these emendations.

REFERENCES

ARNETT, R. H., SAMUELSON, G. A. and NISHIDA, G. M., 1993. *The insect and spider collections of the world.* 2nd. edn. Flora and Fauna Handbook No. 11. Sandhill Crane Press, Inc., Gainesville, Florida.

BELLAMY, C. L., 1985. A catalogue of the higher taxa of the family Buprestidae (Coleoptera). *Navorsinge van die Nasionale Museum, Bloemfontein* **4**(15): 405–472.

BELLAMY, C. L., 1988. The status of *Embrikillium* Obenberger, with the description of a new species (Coleoptera, Buprestidae, Chalcophorinae). *Journal of the Entomological Society of Southern Africa* **51**(1): 81–86.

BELLAMY, C. L., 1991. *Oaxacanthaxia viridis,* a new genus and species (Coleoptera: Buprestidae) from Mexico with Old World affinities. *Insecta Mundi* **4**(1–4): 81–86.

BELLAMY, C. L., 1995*a*. A second species of *Beerellus* Nelson; this from the Old World (Coleoptera: Buprestidae). *The Coleopterists Bulletin* **49**(1): 72.

BELLAMY, C. L., 1995*b*. A new subtribe for the monotypic Southern African genus *Bulis* Laporte and Gory (Coleoptera: Buprestidae). *Annals of the Transvaal Museum* **36**(11): 171–175.

BELLAMY, C. L., D'HOTMAN, D. and HOLM, E., 1987. A review of the Afrotropical Buprestinae with the description of a new tribe, genera and species (Coleoptera: Buprestidae). *Journal of the Entomological Society of Southern Africa* **50**(1): 217–239.

BÍLÝ, S., 1993. A revision of the genera *Philanthaxia* Deyrolle and *Pagdeniella* Théry (Coleoptera, Buprestidae). *Folia Heyrovskyana* **1**(9-10): 84–115.

DOYEN, J. T., 1993. Cladistic relationships among pimeliine Tenebrionidae (Coleoptera). *Journal of the New York Entomological Society* **101**: 443–514.

FARRIS, J. S., 1988. Hennig86 reference. Version 1.5. Published by the author, Port Jefferson, New York.

GEMMINGER, M. and VON HAROLD, E., 1869. *Catalogus coleopterorum hucusque descriptorum synonymicus et systematicus* Vol. 5, pp. 1347–1608, Monachii, London. (Buprestidae, Trixagidae, Monommidae, Eucnemidae, Elateridae, Cebrionidae).

GRISWOLD, C. E., 1993. Investigations into the phylogeny of the lycosoid spiders and their ken (Arachnida, Araneae, Lycosoidea). *Smithsonian Contributions to Zoology* **539**: 1–39.

HOŁYŃSKI, R. B., 1988. Remarks on the general classification of Buprestidae Leach as applied to Maoraxiina Hol. *Folia Entomologia Hungarica* **49**: 49–54

HOŁYŃSKI, R. B., 1993. A reassessment of the internal classification of the Buprestidae Leach (Coleoptera). *Crystal, Series Zoologica* no. 1, 42 pp.

LEVEY, B., 1978. A taxonomic revision of the genus *Prospheres* (Coleoptera: Buprestidae). *Australian Journal of Zoology* **26**: 713–726.

NELSON, G. H., 1982. A new tribe, genus and species of North American Buprestidae with consideration of subfamilial and tribal categories. *The Coleopterists Bulletin* **35**(4)(1981): 431–450.

NELSON, G. H. and MACRAE, T. C., 1994. *Oaxacanthaxia nigroaenea* Nelson and MacRae, a new species from Mexico (Coleoptera: Buprestidae). *The Coleopterists Bulletin* **48**(2): 149–152.

WATERHOUSE, C. O., 1887. Descriptions of new coleoptera in the British Museum. *The Annals and Magazine of Natural History* **19**: 289–295.

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Books

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