The phylogenetic placement of two new genera and species of Buprestidae (Coleoptera) from Mexico

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Paracmaeoderoides callyntromorion, n. gen. and sp., is described from Loreto, Baja California Sur and Pelycothorax tylauchenioides, n. gen. and sp., is described from localities in Puebla and Oaxaca, Mexico. Both new taxa are fully illustrated and differentiated from their perceived sister taxa. In addition, the results of a cladistic analysis of the genera of the subtribes Thrincopygina LeConte and Tyndarina Cobos are presented in an effort to place both new taxa among putative relatives.

KEYWORDS: Coleoptera, Buprestidae, Thrincopygina, Tyndarina, cladistics.

Introduction

The recent call to document the world's biodiversity (Wilson, 1992) is highly affected by such negative impacts as habitat destruction, loss of university or museum departments, lack of support for systematic collections, and faculty and funding cuts. However, most daunting to collectors, the front line in our quest for such knowledge, are the plethora of bewildering and restrictive legalities which seem at best to threaten them with entanglement in red tape. It is not only collectors that are threatened (Miller, 1993). Thus many systematists are found wandering in the wilderness. For example, one of us might discover a single specimen, incidently collected many years prior, legally or not, and determine that it represents a new taxon. Prior to a description, there might be a desire to visit the collecting locality in an attempt to learn more about this new organism through observation and collection of additional specimens. Unfortunately such activities may no longer by feasible, thus many taxa awaiting description will be made known to science only by the original collection. Accordingly we describe two new taxa herein, one from a small series, the other one from a single specimen. Similar was an earlier work by one of us (Bellamy, 1991).

Mexico is certainly well known for its rich biological diversity as is documented by the recent volume edited by Ramamoorthy et al. (1993). We are keenly interested in the Mexican fauna of Buprestidae and are involved collectively, separately and with others in several projects aimed at documenting the richness of buprestid life in this wonderful country. This paper is intended to be our first in a series that will,
subequal to pronotum, but $> 2 \times$ as long; sutural and lateral margins serrate apically, sutural margins slightly overlapped basally; disk flattened, with impressed rows of distinct punctures; intervals with rows of bristle-like setae; epipleuron broadly lobed anteriorly, covering extreme lateral portion of metasternum, entire metepisternum and metepimeron; pygidium not visible from above. Prosternum with anterior margin nearly straight, margin costiform; process broad distally, truncate; metacoxal plate with posterior margin broadly arcuate, emarginate laterally; femora fusiform; tibiae slender, longer than femora, slightly arcuate, with two short spines apically; tarsomeres slender, ventral pulvilli only present on 3 and 4, 5 slightly longer than 2 + 3 + 4; claws only feebly swollen basally. Ovipositor (Fig. 2) short, with dense, fine, elongate, hair-like setae.

**Etymology.** The feminine generic name indicates the paradox we find in trying to define both the relationships and placement within the current confused hierarchy of buprestid higher taxa. It is as 'close to' *Acmaeoderoides* as *Nothomorphoides* Holm is to *Nothomorpha* Thomson.

**Comments.** Although superficially resembling species of *Acmaeoderoides*, *Paracmaeoderoides* differs by a number of character states and seems to come closest (see Phylogeny below) to *Nothomorphoides*. These character states are tabulated for these three genera below (Table 1). *Acmaeoderoides* was erected for *Acmaedera insignis* Horn by Van Dyke (1942), a species from Baja California and southern California. *Nothomorphoides* was erected by Holm (1986) for *N. irishi* from Namibia, in contrast to species of *Nothomorpha* from the western Cape Province of South Africa. Holm (1986) concluded that *Nothomorphoides* represented an intermediate between the two monotypic tribes erected by Cobos (1955): Acmaeoderoidini and Nothomorphini, and synonymized the former under the latter. *Paracmaeoderoides* is a most interesting discovery because it comes from an area much closer to the extant distribution of the species of *Acmaeoderoides* than to the area inhabited by *N. irishi* and yet is apparently related more closely to the latter than the former. In contrast to Holm’s synonymy, the more recent work of Hołynski (1993) again separated these taxa as subtribes Nothomorphina (= Xyroscelidina Cobos) and Ptosimina Kerremans (= Acmaeoderoidina Cobos), but with no mention of placement for *Nothomorphoides*. Considering the obviously tortuous recent history of this classification and apparent lack of consensus, this study provides an opportunity to examine these taxa from a modern perspective to see if a more objective placement and classification can be concluded.

This presents, of course, an interesting biogeographic problem in terms of explaining such a disjunct extant distribution between two monotypic taxa that are predicted herein cladistically as sister groups. It also makes one think about how well the past position and connections between continents and their fragments are understood and if there were perhaps very ancient connections between these two parts of the world (Hartnady 1986). Such a distribution is found between members of the same subfamily in other beetle groups, e.g. the carabid subfamily Promecognathinae. This group is divided into two tribes and represented by four genera and six species in South Africa placed in the Axinidiini (Basilewsky 1963) and a monotypic genus in western North America placed in the Promecognathini (D. Kavanaugh, in litt.).
Table 1. Characters and states showing differences and similarities between *Acmaeoderoides*, *Paracmaeoderoides*, and *Nothomorphoides*.

<table>
<thead>
<tr>
<th>Character</th>
<th>Acmaeoderoides</th>
<th>Paracmaeoderoides</th>
<th>State</th>
<th>Nothomorphoides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner margin of eye</td>
<td>Subparallel</td>
<td>Diverging dorsally</td>
<td>Diverging dorsally</td>
<td></td>
</tr>
<tr>
<td>Antennomere 11</td>
<td>Truncate distally</td>
<td>Rounded distally</td>
<td>Rounded distally</td>
<td></td>
</tr>
<tr>
<td>Pronotal basal foveae</td>
<td>Two lateral</td>
<td>One medial, two lateral</td>
<td>One medial, two lateral</td>
<td></td>
</tr>
<tr>
<td>Epipleural lobe</td>
<td>Carinate</td>
<td>Without carina</td>
<td>Without carina</td>
<td></td>
</tr>
<tr>
<td>Elytral surface</td>
<td>Carinate</td>
<td>Punctate</td>
<td>Carinate</td>
<td></td>
</tr>
<tr>
<td>Tarsal pulvilli</td>
<td>On four basal tarsomeres</td>
<td>On tarsomeres 3 and 4</td>
<td>On tarsomeres 3 and 4</td>
<td></td>
</tr>
<tr>
<td>Tarsal claws</td>
<td>Appendiculate</td>
<td>Simple, base swollen</td>
<td>Appendiculate</td>
<td></td>
</tr>
<tr>
<td>Ovipositor</td>
<td>Elongate, nearly glabrous</td>
<td>Short, heavily setose</td>
<td>Short, glabrous</td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td>S.W. U.S., northern Mexico</td>
<td>Central Baja California, Mexico</td>
<td>Namibia</td>
<td></td>
</tr>
</tbody>
</table>
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Paracmaeoderoides callymorison, n. sp.
(Figs 1-3)

Description. **HOLOTYPE, ♀:** 6.2 × 2.0 mm; elongate ovoid, flattened above, transversely convex below; surface above and below nitid black with reflected aeneous colour varying in intensity depending on angle and amount of incident light; elytra maculate

FIGS 1-2. *Paracmaeoderoides callymorison*, new genus and species: (1) female holotype, dorsal aspect; (2) ovipositor of holotype, dorsal aspect.

FIG. 3. Type locality of *Paracmaeoderoides callymorison*, Loreto, Baja California Sur, Mexico.
as in Fig. 1; head, pronotum and hypomera reticulate, elytra straitopunctate, surface otherwise finely rugose; underside generally moderately punctate; head and pronotum with moderate covering or recurved, white, bristle-like setae, those on pronotal disk more stout, subsquamiform, elytral intervals with sparse rows of semi-erect, fine, bristle-like setae; underside with generally even covering of white, adpressed setae. Head with frontovertex subconvex between eyes; eyes large, with inner margins subarcuate in middle, feebly diverging dorsally; frontoclypeus short, broadly, shallowly arcuately emarginate, somewhat explanate laterally below antennal cavities; antennal cavities large, widely separated; antenomere 1 subgeniculate basally, subclavate distally, two cylindrical, swollen, three subcylindrical, 4–10 serrate, swollen, 11 oblong. Pronotum 1.2 × wider than long, widest posterior to middle; anterior margin sinuate, with slight median arcuate lobe; basal margin nearly straight, with narrow band of short parallel carinae, each apically toothed; lateral margins arcuate, marginal carinae not visible from above, extending from base to slightly anterior of middle; laterobasal angles obtuse; disk flattened medially, subconvex laterally; one large, moderately deep fovea on either side anterior to base, one small, fine, shallow depression in middle anterior to scutellum. Scutellum small, cordate, surface slightly irregular, disc feebly elevated, surface rugose. Elytra 2.1 × longer than width opposite humeri, widest at about apical third; humeri moderately elevated, somewhat oblique; sides subparallel from base, very slightly widening to apical third, then broadly arcuately narrowing to separately rounded apices; margins serrate from point of confluence with epipleural lobe around apices and along sutural margin to point of overlap; epipleuron broadly expanded, not separated from disc by marginal carina; disc nearly flat longitudinally, transversely subconvex. Underside transversely convex; lateral portion of abdominal sterna convex, margin with pleurites hidden beneath elytra; sutures between abdominal sterna clearly indicated except medially between 1 and 2, sutures subsinuate, lateral angles rounded, obtuse; sternum 5 with lateral margins narrowing strongly to broadly arcuate apex. Ovipositor as in Fig. 2.


Etymology. The specific epithet used for this new species is derived from kallytron (Gr., brush) and morion (Gr., sexual member) to denote the strongly setose ovipositor.

Comments. According to the collector (in litt.) the specimen was taken on the grounds of ‘Hotel Oasis’, which is located directly on the beach, probably swept from flowers in his quest for Hymenoptera. During 17–18 June 1993, one of us (RLW) visited this site and others nearby. According to the manager of the hotel, the ground had not changed appreciably since 1986. Although the habitat is relatively disturbed and lacking in plant diversity, nevertheless there remained some area seemingly suitable for collecting (Fig. 3). Several large mesquites were observed, and growing in the sand were two species of Asteraceae in bloom, both attracting a variety of insects. One, perhaps, not native, bears yellow ray flowers and was more restricted in occurrence—most notably in an area receiving regular watering. The other, which can be seen in Fig. 3, is Palafaxia linearis (Cav.) Lag. (Spanish needle), a somewhat shrubby plant with only pinkish-white ray flowers. It has good potential to be an adult host because related species of Buprestidae, most notably Acmaeoderoides, have been taken thereon.
Unfortunately, however, no Buprestidae were collected despite using several collecting techniques that included visual search of flowers, sweeping, and pan and pitfall traps.

**Pelycothorax**, new genus

*Type species:* *Pelycothorax tylauchenioides*, n. sp. (by monotypy).

*Description.* Flattened above, feebly transversely convex below; surface generally punctate; clothed with hair-like setae above and below. Head vertical, front broader than vertex, vertex convex, front flat; eyes of moderate size, finely faceted, somewhat reniform, converging dorsally; clypeus short, arcuately emarginate apically; antennal cavities large, widely separated, inner margins carinate; antenna with 11 antennomeres, short, serrate apically; anteclypeus visible; labrum short, broad, setose apically; mandibles large, robust laterally; maxillary palps elongate, slender; mentum subtrapezoidal, rounded apically. Pronotum wider than long, disk depressed basally, strongly convex laterally; anterior margin arcuate, slightly lobed; basal margin bisinate; lateral margin evenly arcuate, carina not visible from above. Scutellum small, oblong. Elytra as wide as pronotum, subparallel in basal two thirds; sutural and lateral margins entire; humeri only feebly elevated; disk flattened, with longitudinal costae, interstitial areas with longitudinal punctate striae, most punctures giving rise to one elongate hair-like seta; apex irregularly, variously dentate–serrate; epipleura broadly lobed anteriorly, covering metepisternum and metepimeron. Prosternum wider than long, apical margin broadly, shallowly arcuately emarginate; process broad, apex round arcuately, obtuse; metacoxae more or less straight, posterior margin somewhat dilated. Femora fusiform, tibiae straight, each longer than respective femur; tarsi with ventral pulvilli well developed, that on tarsomere 4 bilobed apically, tarsal claws simple, gradually narrowing from base. Genitalia: ♂ with parameters slender, elongate, without lateroapical sensory setae; ♀ ovipositor narrow, elongate.

*Etymology.* This generic name is masculine and is derived from *pelykos* (Gr., bowl, basin) in combination with *thorax* to denote the markedly depressed condition of the pronotum.

*Comments.* *Pelycothorax* keys to *Tyndaris* (*Paratyndaris*) Fisher in the subgeneric key to Cobos (1980), but differs from that taxon in the following characters: large size; head with narrow, median, longitudinal, feebly elevated and sparsely punctate carina; pronotum not globosely swollen, asperate or deeply punctured, disk flattened with basal two thirds depressed; lateral margin of elytra entire (as in *Tylauchenia* Burmeister), not serrate/serrulate; tarsal pulvilli well developed; and tarsal claws simple, without any basal swelling.

There is dispute amongst buprestid researchers regarding higher taxonomic work of the last decade by Cobos (e.g. 1980) on the ‘chaotic’ polycerine lineage. Among unresolved problems, as recently pointed out by Hołyński (1993), is the situation of *Tyndarini* Cobos (1955) versus *Tylauchenini* Cobos (1973). Despite Hołyński’s (1993) comments and proposed changes, questions remain about the validity of both tribal taxa (or subtribal *sensu* Hołyński). Perhaps *Pelycothorax* can help to illuminate future analysis. With a complete revision of *Tyndaris* (*sensu* Cobos) underway (Nelson and Bellamy, in preparation), questions of relationship and phylogeny will be left to that work although it has been included in the cladistic analysis herein for preliminary placement.
Description. **Holotype, \( \delta \):** 12.4 \( \times \) 4.2 mm; elongate, subcylindrical, subparallel; above and below nitid black, below with faint red-purple reflections; surface generally moderately punctate with simple, shallow punctures, punctuation of pronotum around perimeter of basal depression more sparse and shallow; vestiture of elongate, white or silver recumbent or recurved hair-like setae. Head with longitudinal, median costa
extending from vertex to midpoint between eyes; large antennal cavities bordered by narrow perimeter carina, ventrally subcontiguous with clypeal margin; clypeal margin moderately deeply, arcuately emarginate; gena with feebly indicated rounded lobe ventral to antennal cavity; surface moderately, irregularly punctate, with moderately dense covering of recurved setae between eyes. Antenna short, not extending beyond basal quarter of pronotum, with 1st antennomere short, geniculate; 2 half as long, as wide as 1; 3 more slender, nearly 2 \times length of 2; 3–5 subequal in length, 4 and 5 slightly wider apically, 6–10 triangular, longer than wide, each successively shorter and with sensillae concentrated into tiny terminal inferior fovae; 11 oblong, slightly longer than 10, apex lateroapically rounded. Pronotum 1.25 \times wider than long, widest at about middle; lateral margins carinate, entire, carinae feebly sinuate; apicolateral angles subacute, round; basolateral angles 90°; basal margin scarcely produced medially, narrowly notched in front of scutellum, shallowly arcuate on either side; disk with broad mediobasal depression on about basal two thirds, width of depression slightly < 0.5 pronotal width; narrow longitudinal impunctate line bisects depression and extends from near base to anterior extent of discal depression; surface of depressed area moderately, irregularly punctate and surface between punctures nearly glabrous, with elongate, white recumbent setae each with more or less anterior orientation; area of disk laterad to depression much more sparsely punctate, punctures smaller and finer, area between punctures finely rugose; lateral portion of disk, from lateral third to margin carina, moderately punctate and setose. Scutellum small, oblong, surface microreticulate, with very slight greenish reflection. Elytra as wide as pronotum opposite humeri; humeri very feebly elevated; epipleura moderately expanded; lateral margins subparallel to about apical third, then narrowing moderately to preapical acute
projecting dorsoventral paired teeth, then serrate to sutural costal tooth which is slightly apicolateral and dorsal to acuminate apical tooth; apices obliquely irregularly truncate, diverging separately; disk more or less longitudinally costate; interstices punctate, punctures with semirecumbent elongate setae. Underside with recumbent setae moderately dense on lateral portions of sterna and on external face of femora and tibiae; apical margin of sternum 2 broadly strongly posteriorly arcuate medially, sternum 3 broadly vaguely arcuate medially; last visible sternum triangulate, bluntly pointed at apex with weak, vaguely serrate submarginal ridge laterally near apex. Aedeagus as illustrated in Fig. 5.

**Allootype, ♀:** 10.7 × 3.8 mm; same as male except the acuminate apical elytral tooth is weakly evident; apical margin of sternum 2 with very shallow arcuation, sternum 3 truncate medially; last visible sternum more broadly triangulate; ovipositor elongate, narrow, membraneous.

**Variation.** Males (n = 4) vary in size: length, 10.5–12.8 mm, width, 3.5–4.2 mm; females (n = 3): length, 10.7–13.2 mm, width, 3.8–4.3 mm. The median line of the pronotum varies in both length (from only indicated basally to distinct from just anterior of base to just posterior apex) and degree of elevation (obsolete to carinate). There is some range in variation of the ventral reflected coloration from the red-purple of the holotype to a feeble aenous reflection in the largest female paratype. Females have apical elytral dentition, particularly the inner apical teeth, less pronounced. The scutellum varies from irregularly ovoid to almost round.

**Type specimens.** **Holotype, ♂ (UNAM):** Puebla, 6 km SW Acatepec, 1950 m, 18.1°37'N, 97.37°W, 1.XI.1990, R. L. Westcott/ton dead twig of morning glory tree (h); **Allootype, ♀ (RLWE):** same data as holotype, except dead branch asteraceous shrub; 5 **Paratypes, 3♂, 2♀,** as follows: 1♂, same data as holotype; 1♂, 1♀, Oaxaca, 6 km SE Huajuapan de Leon, 27, 28.X.1990, C. L. Bellamy/beating Prospis; 1♂, 1♀, Oaxaca, 5.2 km S S. Fco. Huapanapan, 1830 m, 18.06°N, 97.40°W, 29.X.1990, C. L. Bellamy, R. L. Westcott/beaten from dead mesquite branch. Paratypes deposited in CLBC and RLWE.

**Etymology.** The choice of specific epithet reflects a superficial similarity to species of the South American genus Tylauchenia.

**Comments.** As mentioned above, this taxon comes nearest to species currently placed in *Tyndaris (Paratynndaris)*, but is immediately recognizable by the large size and broadly depressed (basin-like) pronotum, with discrete regular punctation. The photograph presented in Fig. 6 shows the type of locality and adult host of the holotype, an arborescent species of the large genus *Ipomaea* (Convolulaceae), ‘morning glory tree’. A single, badly damaged specimen (i.e. missing the head, most legs and last abdominal sternum) was found among unsorted buprestid specimens in the California Academy of Sciences but is not included in the type series. It is, however, mentioned to further the distributional and phenological data: Puebla, Highway 190, 3 miles S. of Chila, XII.13.1948/H. B. Leech collector.

**Phylogenetic relationships**

We examined taxa from seven of the eight subtribes Holyński (1993) placed in the tribe Thrincopygini LeConte; *Perucola* Théry (Perucolina Cobos) was not available for
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Table 2. Taxa examined to construct character state matrix; classification follows Holyński (1993) with adjustments from present cladistic analysis.

**BUPRESTINAE** Leach

**Anthaxiini** Gory and Laporte
- Trachkelina Holyński
  - *Trachykele blondelii* Marseul

**Acmaeoderni** Kerremans
- Acmaeoderina
  - *Acmaeoderia barri* Cazier

**Thrinicopygini** LeConte
- Nothomorphina Cobos
  - *Nothomorpha verrucosa* (Gory and Laporte)
  - *Nothomorphoides irishi* Holm
  - *Paracmaeoderoides callystromorion*, n. gen. & sp.
- Xyroscelidina Cobos
  - *Xyroscelis crocata* (Gory and Laporte)

**Paratrachydina** Cobos
- *Paratrachys hederae* Saunders
- *Sponsor raffrayii* Théry
- Ptosimina Kerremans [ = Acmaeoderoidina Cobos]
  - *Ptosima undecimmaculata* Herbst
  - *Acmaeoderoides distincta* Nelson
- Mastogeniina LeConte and Horn
  - *Ankareus natalensis* Bellamy
- Thrinopygina
  - *Thrinicopyge alacris* LeConte
- Polyctesina Cobos
  - *Polyctes magnifica* Waterhouse
- Agaeocerina Nelson
  - *Agaeoceral scintillans* Waterhouse
  - *Mixochlorus suturalis* Waterhouse

**Tyndarini** Cobos
- Tyndarina
  - *Tyndaris (Paratyndaris) olneyae* Skinner
  - *Pelycothorax tylauchenoides*, new genus and species
- Acherusina Cobos
  -('Acherusia (Nelsonila) triitis' Thomson
  - *Hayekina dispar* (Kerremans)
- Tylaucheniina Cobos
  - *Tylauchenia crassicollis* (Laporte and Gory)

**Prospheerini** Cobos
- *Prospheeris aurantiopicta* Laporte and Gory
- *Euleptodema leopardum* Fisher

**Astraeina** Cobos
- *Astraeus* (s. str.) *crassus* van de Poll
- *Bults bivittata* (F.)

In addition, to help define polarity we included taxa from each of the subtribes of the two putatively related tribes Acmaeoderini Kerremans and Tyndarini Cobos (Table 2). *Trachykele* Marseul (*Trachykelina Holyński, Anthaxiini Gory and Laporte*) was selected as the working outgroup due to earlier comments by Holyński (1988) where he said that *Trachykele*, along with *Nascio* Laporte and Gory (Nascionina Holyński), ‘both these subtribes seem to represent relatively little modified offsprings of the ancient stock, ancestral to all the Buprestinae’ and because all remaining taxa had putative apomorphic character states in common with others of the included taxa.
Table 3. Characters and character states examined: 0 = plesiomorphic; 1, 2, 3, etc. = apomorphic.

1. Frontovertex: evenly convex or slightly depressed (0), swollen between eyes (1).
2. Eyes: small, not ‘touching’ pronotal margin (0), large, ‘touching’ pronotal margin (1).
3. Eyes, inner margins: converging dorsally or subparallel (0), diverging dorsally (1).
4. Mandibles: robust, coarsely punctate laterally (0), slender, sparsely or impunctate laterally (1).
5. Anteclypeus: visible (0), not visible (1).
6. Antenna: serrate from antennomere 3 or 4 (0), 4 expanded distally (1), serrate from 5 (2), serrate from 6 (3).
7. Last antennomere: truncate (0), oblong, rounded (1).
8. Pronotum: irregular, with several large depressions (0), disk entire, flat to convex (1), with single median depression (2).
9. Pronotum: widest portion: median (0), base (1).
10. Pronotal basal foveae: present, deep (0), present, shallow or feebly indicated (1), absent (2).
11. Pronotal basal foveae: one medial, two lateral (0), only two lateral.
12. Pronotal basal margin: more or less entire, transverse (0), strongly biacuate on either side of median posteriorly produced lobe (1).
13. Pronotal basal margin: no marginal carinae, only apical teeth (0), longitudinal carinae, apical teeth (1), entire (2).
14. Pronotal lateral carina: partial, not reaching apical margin (0), entire (1).
15. Epipleural lobe: absent (0), present (1), secondarily lost with suite of elytral adaptations (1).
16. Epipleural lobe: carinate (0), entire (1).
17. Epipleural lobe covering metepisternum: completely (0), partially (1).
18. Epipleural lobe: rounded (0), with sharp angulate posterior margin (1).
19. Scutellum: absent, not visible (0), slightly beyond pronotal base (1).
20. Scutellum: touching pronotal base (0), slightly beyond pronotal base (1).
21. Elytra: not fused (0), fused (1).
22. Elytra surface: punctate (0), costate with interstitial punctures (1), carinate (2).
23. Elytral surface: more or less even (0), with pronounced sinuous carina (1).
24. Elytral punctures: without setae (0), with single seta projecting (1).
25. Elytral sutural margin, at least apically: entire (0), sub serrate or serrate (1).
26. Elytral lateral margin, at least apically: entire (0), sub serrate or serrate (1).
27. Elytral apices: simple, truncate, or with one or two spines (0), complex, with various teeth on two dorsal ventral planes (1).
28. Pygidium: apex hidden beneath elytral apex (0), projecting well beyond elytral apex (1).
29. Prosternum, anterior margin: more or less entire, not projecting forward (0), strongly projecting medioanteriorly to partially hide mouthparts (1).
30. Prosternal disc: medially gibbose (0), entire, even (1).
31. Sternal cavity: within mesosternal margins (0), projecting into base of metasternum (1).
32. Hypomera: entire (0), with scrobes to receive fore- and mid-legs (1).
33. Abdomen: suture between sterna 2 and 3: even, entire (0), with posteriorly convex median lobe (1).
34. Last visible sternum: apex truncate or broadly rounded (0), apically strongly attenuate (1), with apical spine or peg (2).
35. Femora: fasiiform (0), sides more or less subparallel (1).
36. Tibiae: round in x-section (0), explanate (1).
37. Metacoxae, lateroapical margin: evenly rounded (0), emarginate (1), with acute tooth (2).
38. Tarsal pulvilli: on four basal tarsomeres (0), only on tarsomeres 3 and 4 (1).
39. Tarsal claws: simple, base slender (0), simple, base swollen (1), appendiculate (2).
40. Ovipositor: elongate (0), very short (1).
41. Ovipositor: glabrous or sparsely setose (0), heavily setose (1).
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Therefore, polarity decisions and the apomorphic assignation to character states in Table 3 was based entirely upon assigning the plesiomorphic reciprocal to all character states observed in *Trachykele*. In addition to seeking resolution for the placement of *Paracmaeoderoides* and *Pelycothorax*, we thought it would be interesting to see whether the analysis supported the classifications proposed by Holm (1986) or Holynski (1993) or neither.

The character states in Tables 3 and 4 have plesiomorphic character states coded as 0, progressively apomorphic states as 1, 2, etc. and a question mark (?) used for missing data. These missing data are mostly the result of character states that are missing or moot from a previously coded character. For example, character 10 (Table 3) presents three possible states for basal pronotal foveae: deep, (0), present, shallow or feebly indicated (1), or absent (2). The next character, 11, presents an additional two choices for the pronotal foveae, either one medial, two lateral (0) or only two lateral (1); if these foveae were lacking from certain taxa in character 10, then there is no state present for character 11 and this is coded as missing. In other cases, the data are missing because they might be sexual or because dissections were required on unique or insufficient material.

Neither the taxa nor the characters were considered ordered. Due to the size of the matrix (Table 4), 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, xs w, routine. The m*; bb*; xs w; option calculated 15 equally parsimonious cladograms of 256 steps; slightly shorter than the three cladograms of 266 steps produced by the h; bb; option. A consensus tree (nelsen) was calculated, but was rejected as it simply represents an average of the 15 trees and is therefore the least informative. Table 5 lists the statistics for this tree.

We have chosen to present only a single tree, tree 13 of the original 15. The major differences in these 15 trees are in the branching and pairing of taxa in the clade defined for *Acmaeodera, Paratrachys, Ptosima, Acmaeoderoides, Sponsor, Nothomorpha, Nothomorphoides* and *Paracmaeoderoides*; however, in no instance did the pairing of *Nothomorphoides* and *Paracmaeoderoides* change. Since the intent of this paper was only to place these two new taxa described herein and not to completely redefine the ‘local’ classification around their relatives, we are content to use this single tree.

In terms of deciding between the classifications of Holm (1986) of Holynski (1993) discussed earlier, some comments are in order. Holm proposed that *Acmaeoderoides* be placed in the same tribal-level taxon as *Nothomorpha* and *Nothomorphoides*; presumably *Paracmaeoderoides* belongs to this same group. Holynski rather placed *Nothomorpha* and *Xyroscelis* together in the same subtribe, Nothomorphina; *Paratrachys* and *Sponsor* were placed in the *Paratrachydina* Cobos; *Ptosima* and *Acmaeoderoides* were placed in the *Ptosimina* Kerremans and Agaeocera and *Mixochlorus* were placed in the *Agaeocerina* Nelson. The cladogram presented herein supports the definition of Ptosimina by Holynski, but refutes the other three subtribal combinations as well as the synonymy of Acmaeoderoidina under Nothomorphina by Holm. *Xyroscelidina* Cobos must be resurrected from the synonymy proposed by Holynski and the cladogram shows that there is reason to reconsider the grouping of *Paratrachys* and *Sponsor* as well.

Holynski’s classification also combined the South African taxon *Bulis* Laporte and Gory with the large Australian genus *Astraeus* Laporte and Gory; subtribal status for *Bulis* is indicated for this monotypic relict (Bellamy, 1995). Holynski also failed to
Table 4. Character state matrix: plesiomorphic = 0, apomorphic = 1, 2, etc., missing data = ?.

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place *Hayekina* Cobos within the Acherusina Cobos, as Cobos (1980) had done, but the cladogram supports this grouping.

From the original aim of this analysis, we are confident of the defined placement for the two new genera described in this paper. *Paracrnaeoderoides* is placed within the Nothomorphina with *Nothornorpha* and *Nothomorphoides*. It is still as confounding a taxon from the biogeographical perspective as it was during Holm’s earlier discussion (1986). *Pelycothorax* is placed in the Tyndarina and will await further resolution when the revision of *Tyrzdaris* is complete. Table 1 shows the taxa considered for this analysis and the somewhat restructured tribal scheme from the discussed results.

**Acknowledgements**

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