

A NEW GENUS AND SPECIES OF NORTH AMERICAN  
COROEBINI BEDEL WITH A DISCUSSION OF ITS  
RELATIONSHIPS WITHIN THE TRIBE  
(COLEOPTERA: BUPRESTIDAE)

R. K. VELTEN AND C. L. BELLAMY

Reprinted from THE COLEOPTERISTS BULLETIN  
Vol. 41, No. 2, June 1987  
*Made in United States of America*

A NEW GENUS AND SPECIES OF NORTH AMERICAN  
COROEBINI BEDEL WITH A DISCUSSION OF ITS  
RELATIONSHIPS WITHIN THE TRIBE  
(COLEOPTERA: BUPRESTIDAE)

R. K. VELTEN

Department of Entomology, University of California,  
Riverside, California 92521, U.S.A.

AND

C. L. BELLAMY<sup>1</sup>

Department of Entomology, University of Pretoria,  
Pretoria, 0002, Republic of South Africa

ABSTRACT

A new genus and species, *Lepismadora algodones* Velten, of the agriline tribe Coroebini is described from southeastern California. The genus is compared with its tribal relatives from North and South America and its apparent closest relative, *Eudiadora* Obenberger, from Argentina.

---

The recent discovery of a strikingly divergent buprestid, in an area of southeastern California that is generally thought to have been well collected, provides us the opportunity to discuss its apparent affinities in relation to current problems in the tribal definitions of Agrilinae.

The spelling of the tribal type-genus, *Coroebus* Gory & Laporte, was emended from the more traditional spelling, *Coraebus*, by Méquignon as cited by Théry (1942). This correction requires the same emendation for the spelling of the tribal name.

The acronyms used for institutions and collections which will receive type specimens are based upon the system of Arnett *et al.* (1986), with the following not found in that work: ACAS—A. Cobos collection, Almeria, Spain; BLCE—B. Levey collection, Walthamstow, U. K.; GAWC—G. A. Williams collection, Lansdowne, N.S.W., Australia; HMCG—Hans Muhle collection, Pfaffenhofen, West Germany; MTCJ—M. Toyama collection, Nishinomiya, Japan; RKVC—R. K. Velten collection, Riverside, California; and TMCC—T. Moore Rodriguez collection, Laja, Chile.

DISCUSSION

The Coroebini Bedel (Agrilinae) has the largest number of genera (150+) of any buprestid tribe. The species have been most successful in the tropical and subtropical regions, with the largest number of regionally endemic taxa found in the Afrotropical, Madagascan, Indo-Oriental and Neotropical regions.

Until now the Coroebini was represented in North America (north of Mexico) only by *Eupristocerus cogitans* (Weber), a monotypic genus with strongest

---

<sup>1</sup> Current address: 2738 Glasgow Drive, Carlsbad, CA 92008, U.S.A.

ties to the Palaearctic tribal fauna, closest perhaps to the type-genus *Coroebus* Gory & Laporte.

Preliminary examination of several species of *Paragrillus* Saunders using characters found to be tribally definitive within the Agrilinae (Bellamy 1986a,b, 1987a,b, unpublished data), i.e., the single lateral carina on the pronotum, subequal lengths of the metatarsal segments and the ovipositor with ventral opposing setal "brushes," show that this genus would probably be better placed in the Coroebini rather than in the Agrilini. *Paragrillus* also possesses characters which point to relationships with the Old World genera currently placed in the Cylindromorphinae Portevin, as well as several genera of Trachyinae Gory & Laporte. It is apparent, however, that the last definition of Nearctic higher taxa (Nelson 1982) did not allow a satisfactory placement for *Paragrillus* and it is hoped that the following key will provide a better view of the relationships of the four North American agriline genera.

#### KEY TO THE GENERA OF NORTH AMERICAN AGRILINAE

1. Pronotum with entire lateral marginal carina and one submarginal carina ..... (Agrilini) . . . . *Agrilus* Curtis
- Pronotum without submarginal carina, sometimes without any lateral carinae ..... (Coroebini) . . . . 2
2. Frons with deep longitudinal groove (Fig. 2); ovipositor with ventral pair of opposing setal "brushes" (Fig. 11); pronotum without lateral carinae (Fig. 7); body covered with squamose setae ..... *Lepismadora* Velten, gen. nov.
- Frons without deep groove, although disc may be longitudinally depressed between eyes; ovipositor without ventral "brushes," more or less similar to dorsal aspect; pronotum with lateral carinae; body only sparsely setose ..... 3
3. Antennae free in repose; anterior prosternal margin very feebly bilobed ..... *Eupristocerus* Deyrolle
- Antennae in repose received in grooves in hypomera ventrad to pronotal marginal carinae; anterior prosternal margin strongly convex medially ..... *Paragrillus* Saunders

#### Genus *Lepismadora* Velten, gen. nov.

Type-species: *Lepismadora algodones* Velten, sp. nov.

DESCRIPTION. Small, length less than 7.0 mm; subcylindrical; elongate ovoid; dorsal surface moderately and ventral surface densely clothed with squamose setae.

*Head* (Fig. 2): Frons flat with deep narrow longitudinal sulcus confluent with angularly arcuate sulcus between supra-antennal prominences, slightly elevated carina parallel to inner margin of eye joining supra-antennal prominence with small angular prominence near upper pole of eye; vertex broadly convex when viewed from front; eyes large, prominently convex, inner margins widely diverging dorsally; antennal cavities small, circular, separated by distance slightly more than twice individual width; frontoclypeus feebly elevated, slightly narrowed between antennal cavities, laterally depressed ventrad to antennae; apical margin arcuately emarginate medially, laterally more or less straight to opposite ventral apex of eye, gena with broadly rounded subacute lobe; labrum slightly wider than exposed length, punctate, distal margin feebly emarginate medially, sparsely clothed with elongate appressed setae. *Antennae* generally covered with squamae; serrate from antennomere 5.

*Pronotum* (Fig. 7): Wider than long; anterior margin slightly arcuate medially; pos-

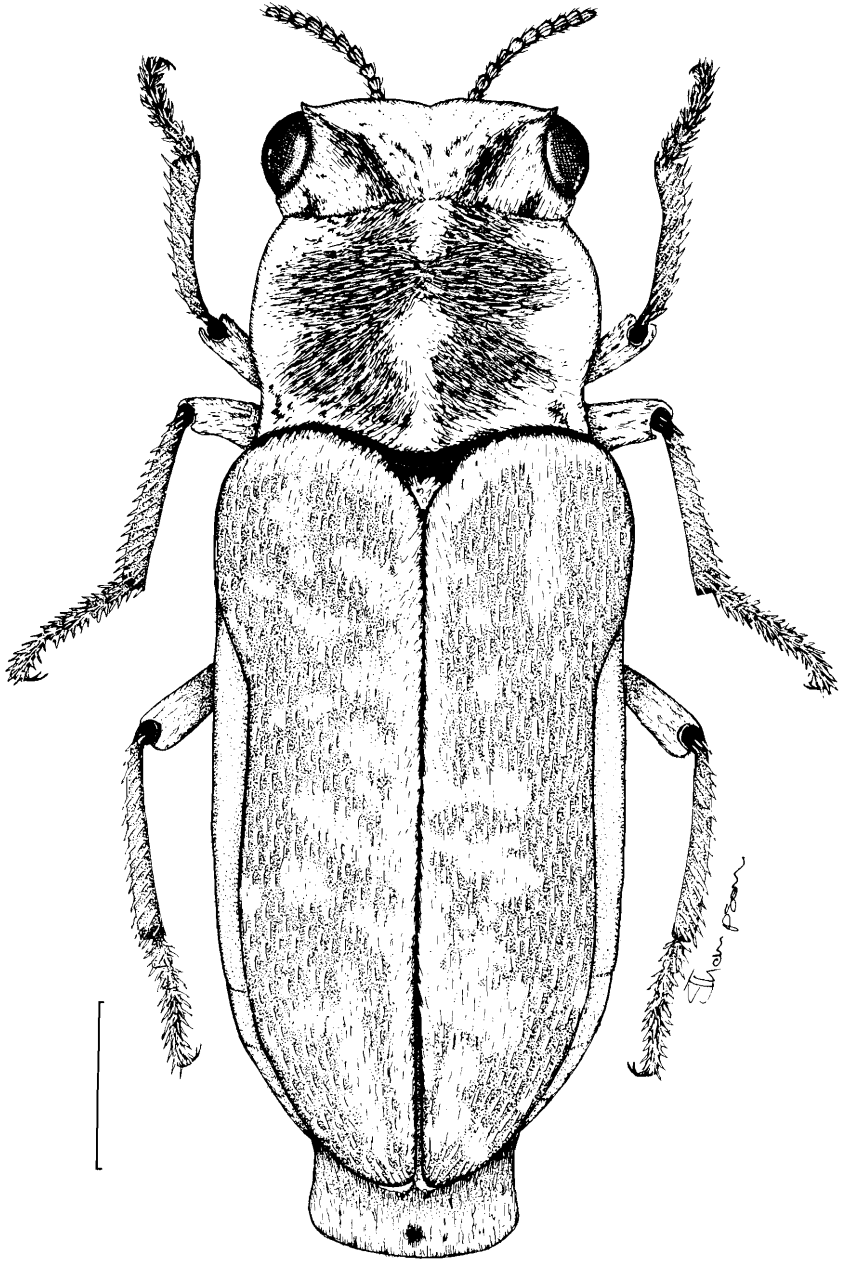


Fig. 1. *Lepismadora algodones* Velten, sp. nov., dorsal habitus (scale bar = 1 mm).

terior margin bisinuate; disc convex, not separated from hypomeron by carina. *Scutellum* triangular.

*Elytra* (Fig. 7): At base wider than pronotum; epipleural lobe slightly deflexed, vaguely differentiated from disc.

*Pygidium*: Partially visible from above.

*Thoracic sternites* (Figs. 4, 7): Prosternum with anterior margin entire, without lobes; prosternal process lateroapically rounded to very narrow acuminate apex; sternal cavity for reception of prosternal process formed by mesosternum laterally and at apex by metasternum; mesosternum partially internally hidden beneath prosternal process when viewed from below; metepimeron partially hidden beneath anterolateral projection of basal abdominal sternite; metacoxal plate with posterior margin broadly arcuately emarginate.

*Legs*: Generally covered with squamae; femora fusiform; protibiae slightly arcuate, meso- and metatibiae straight, all unarmed; tarsomeres subequal in length, 1-4 successively slightly longer, ventral pulvilli increasing in size distad; tarsomere 5 slightly longer than 3 and 4 together, claws stout, deeply bifid with outer tooth slightly longer.

*Abdominal sternites* (Fig. 7): Basal sternites slightly expanded laterally, partially visible from above; suture between sternites and pleurites hidden beneath elytra; suture between sternites 1 and 2 only vaguely indicated laterally beneath squamae; sutures between remaining sternites visible, more or less evenly transverse; sternite 5 with lateral margin rounded, apex subtruncate, with submarginal carina parallel to margin.

ETYMOLOGY. The feminine generic name is a combination of the Greek *Lepos*, referring to the scales, and *dora*, a Greek noun (hide, skin) within the Coroebini to connote relationship to *Eudiadora* Obenberger.

REMARKS. Following Good (1925) and recent comments concerning coroebine wing venation (Bellamy 1986a:100), the metathoracic wing has the typical coroebine configuration observed for Afrotropical relatives, as follows: 1) a two-branched first anal vein ( $1A_1$ ,  $1A_2$ ), a three-branched second anal vein ( $2A_1$ ,  $2A_2$ ,  $2A_3$ ) and a single third ( $3A_1$ ) and fourth ( $4A_1$ ) anal veins and 2) the radiomedial crossvein (r-m) is only vaguely indicated. A significant difference from previously examined tribal relatives (Bellamy 1986a, unpublished data) is that the radial cell (r) is open basally. The ovipositor (Fig. 11) follows the general configuration for the majority of examined tribal relatives (see comments, Bellamy 1987b) by having an asymmetrical dorsal/ventral aspect. The structure is short, with two short apical coxites on the dorsal surface, while the ventral face is lobed laterally with an opposing pair of dense setal "brushes."

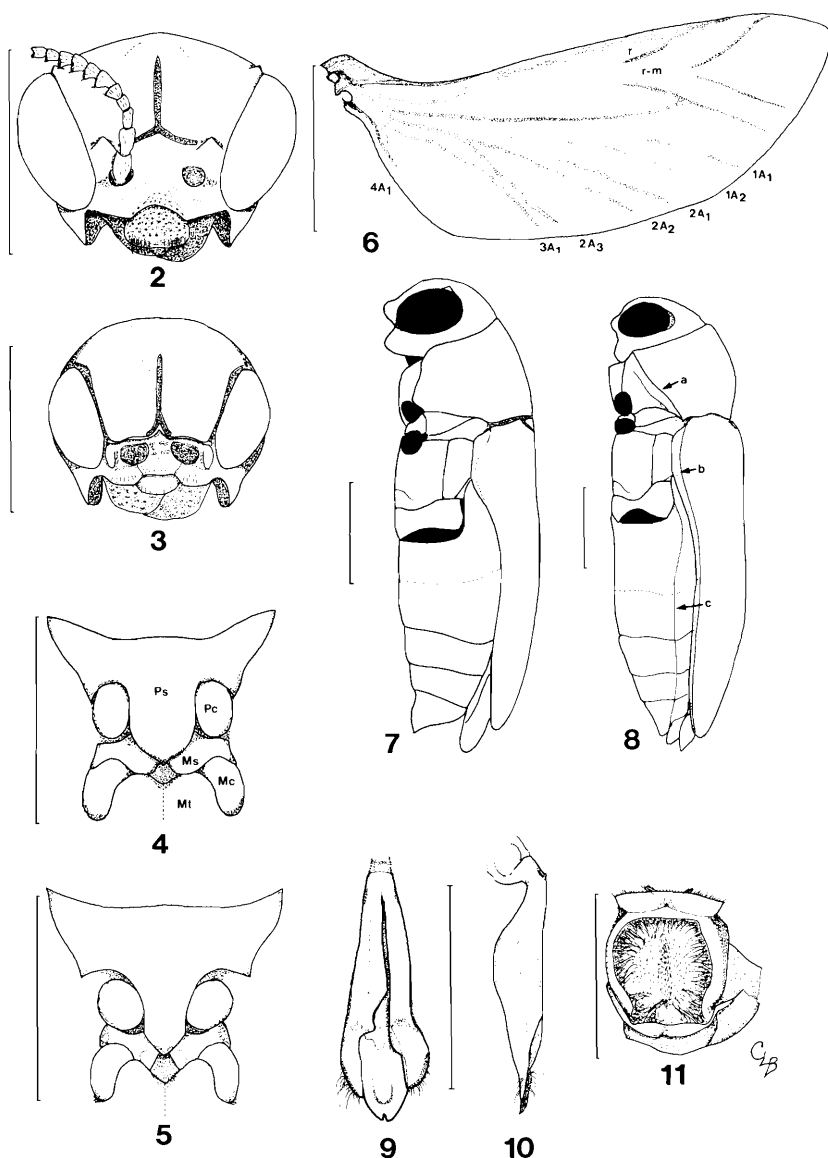
*Lepismadora* differs significantly from most of its tribal relatives including *Eudiadora*, the predicted sister genus, by the presence of the two pairs of prominences on the head (Fig. 2), the absence of lateral marginal carinae on the pronotum (Figs. 7, 8a), the reduced elytral epipleura and the vague carina between the epipleuron and elytral disc (Figs. 7, 8b), the dorsal and subelytral orientation of the carinae between the abdominal pleurites and sternites (Figs. 7, 8c), the male genitalia with asymmetrical parameres (Fig. 9) and the basally open radial cell of the wing (Fig. 6r). The specific generic relationships will be discussed following the species description.

*Lepismadora algodones* Velten, **sp.nov.**

Figs. 1, 2, 4, 6, 7, 9-11

Holotype male. Length 5.2 mm, width 2.0 mm; head, antennomeres, pronotum, scutellum, elytral margin, underside and femora brassy green; elytral disc, tibiae and tarsomeres 1-4 a stramineous color; squamose setal covering dense on head, along midline and lateral portion of pronotum and generally on underside; pronotal disc and elytra with squamae irregular, partially replaced by stout setae as shown in Fig. 1; pronotum coarsely alveolate punctate beneath squamae, surface otherwise more finely punctate.

*Head*, when viewed from above, narrower at widest point than pronotum. *Antenna* with antennomere 1 subgeniculate, swollen; 2 subequal to 1; 3 and 4 subequal, individual length and width about  $\frac{1}{2}$  that of 2; serrate from 5, width



Figs. 2, 4, 6, 7, 9–11. *Lepismadora algodones* Velten. Figs. 3, 5, 8, *Eudiadora pulchra* (Obenberger). 2, 3, head, frontal view. 4, 5, thoracic sternites, ventral view (Mc = mesocoxa; Ms = mesosternum; Mt = metasternum; Pc = procoxa; Ps = prosternum). 6, metathoracic wing, dorsal view (r = radial cell; r-m = radiomedial crossvein; 1A<sub>1</sub> = first branch of 1st anal vein; 1A<sub>2</sub> = second branch of 1st anal vein; 2A<sub>1</sub> = first branch of 2nd anal vein; 2A<sub>2</sub> = second branch of 2nd anal vein; 2A<sub>3</sub> = third branch of 2nd anal vein; 3A<sub>1</sub> = 3rd anal vein; 4A<sub>1</sub> = 4th anal vein). 7, 8, lateral view (a, lateral pronotal carina; b, epipleuron; c, lateral abdominal carina). 9, 10, male genitalia, dorsal and lateral views, respectively. 11, ovipositor, posterior view. Scale bars = 1 mm.

to length ratio slightly increasing distally with 10 narrower than 9; 11 narrower than 10, apex truncate. *Pronotum* ca.  $2.5\times$  as wide as long, widest at apical  $\frac{2}{3}$ ; posterolateral angles acute; lateral margins, when viewed from above, sinuate from base to before middle, then arcuate to apex; *Scutellum* slightly wider than long, basal margin feebly convex, basolateral angles roundly acute, disc slightly depressed. *Elytra* widest opposite humeri, ca.  $1.7\times$  as long as wide; humeri moderately elevated, slightly oblique; lateral margins narrowing past epipleura, more or less subparallel to apical  $\frac{1}{3}$ , then serrulate and gradually attenuate to narrowly, separately rounded apices. *Pygidium* with feebly elevated longitudinal median carina obscured by dense broadly elongate setae; sides feebly widening to rounded lateroapical angles, apical margin broadly arcuate. *Genitalia* (Figs. 9, 10) with parameres asymmetrical, fused from base to past apical  $\frac{2}{3}$  ventrally, only partially fused dorsally; median lobe asymmetrical.

**VARIATION.** The size varies in the type-series: length 4.0–6.5 mm, width 1.4–2.1 mm. Females differ from males by being generally larger and slightly more robust. The color varies both allometrically and sexually in the type series with the smaller males exhibiting a cupreous tint and the larger specimens tending to be a more brassy green. The females tend to be more uniformly brassy with a greenish tint. The color of the squamae also varies somewhat, but this might represent an age factor, which is further exemplified by the variable and irregular covering of the squamae, particularly on the elytra, probably due to abrasion. The last visible sternite is sexually dimorphic, another previously observed trend within the tribe (Bellamy 1986a). The submarginal carina on the male is truncate apically and very feebly serrulate, while on the female the carina is slightly emarginate medially, slightly more strongly serrulate and also more strongly produced posteriorly.

**MATERIAL EXAMINED.** Holotype, male (CASC): U.S.A.: CALIFORNIA: IMPERIAL CO., Algodones Sand Hills, 7.2 mi W. Glamis, 18.VI.1986, R. K. & M. I. Velten, D. S. Verity; 159 paratypes: 49 ex., same data as holotype; 8 ex., same data except, 15.VI.1986; 40 ex., same data except, 21.VI.1986, R. K. Velten and A. J. Mayor; 49 ex., same data except, 27.VI.1986, D. S. Verity; 18 ex., same data except, 1.VII.1986, B. K. Dozier; 5 ex., same data except, 10.VII.1986, B. K. Dozier; 1 ex., same data except, 23.VII.1986, G. H. Nelson. Paratypes are deposited in ACAS, BKDC, BLCE, BMNH, CASC, CDAE, CHAH, CISC, CLBC, DSVC, FMNH, FSCA, GAWC, GCWC, FHNC, HMC, LACM, MTCJ, MNHN, NMPC, RKVC, RLWE, TMCC, VCRC, USNM and WFBC.

**ETYMOLOGY.** The specific name is exactly that of the general type locality, the Algodones Sand Hills of southeastern California.

**REMARKS.** The majority of the type-series was collected by sweeping flowering *Tiquilia plicata* (Torrey) Richardson (Boraginaceae). Adults were active during the hottest part of the day and were observed feeding on the flowers and foliage or at rest on the foliage. Several other adults were observed at rest on dead twigs on the soil surface.

#### RELATIONSHIPS WITHIN THE COROEBINI

The overall morphology of *Lepismadora* is closest to that of two examined species of *Eudiadora* from Argentina, as shown in Figures 2–5, 7, 8. Thus, we predict that *Eudiadora* is the probable sister genus of *Lepismadora* from a very ancient lineage dichotomy.

The cylindrical body and anteroposteriorly compressed prosternum suggest

a possible ancient relationship between *Meliboeithon* Obenberger, *Eudiadora* and *Lepismadora*. These appear to be apomorphic characters that are repeated within several independent lineages of Coroebini and may have some cause/effect on the putative association between at least some of the species and monocot hosts. This has recently been demonstrated in the genus *Lepidoclema* Bellamy and Holm (1985) for two new grass-associated species from the Namib desert, by associations for species of *Paracephala* Saunders and *Meliboeithon* in Australia (Bellamy 1987b) and by comments by M. G. Volkovitsch (*in litt.*) regarding the association of *Clema deserta* Semenov with grasses in the cold deserts of the Soviet Union.

The presence of the deep longitudinal groove on the frons is a character that *L. algodones* shares with species of four Neotropical coroebine genera, *Trypantius* Waterhouse, *Cyphothorax* Waterhouse, *Dismorpha* Gistel (= *Stenogaster* Solier) and *Eudiadora* and three Australian coroebine genera, *Ethon* Gory and Laporte, *Synechocera* Deyrolle and *Meliboeithon*. The presence of the groove on the frons should not be given too much importance, when considered against overall morphology and, indeed, this was recently demonstrated in a cladistic study of the Australian coroebine genera (Bellamy 1987b), with the groove apparently being symplesiomorphic and perhaps atavistic in nature. The same conclusion would seem to be true for the New World coroebines, which possess this groove, as *Trypantius*, *Dismorpha* and *Cyphothorax* all show a number of morphological differences from both *Eudiadora* and *Lepismadora*.

Another character state that seemingly repeats in derived coroebine lineages is that of the male genitalia having, at least partially, fused parameres. This character is found in species of several otherwise apomorphic genera in the Afrotropical region, *Lepidoclema*, *Promeliboeus* Obenberger, *Pseudoclema* Théry and *Anadontodora* Obenberger and in the Australian *Dinocephalia* Obenberger (Bellamy 1987b). The almost entirely exposed pygidium is a character shared by *Lepismadora* and *Lepidoclema* and suggests that a number of the similarities between these two genera are prerequisite adaptations induced independently by similar habitats. This possibility leads us to speculate that *Lepismadora* may have a similar biology with oviposition taking place at the external root-crown/substrate (sand) interface of one of very few dune perennial shrubs or grasses which inhabit the *Algodones* sand hills. An additional apomorphy is the dense covering of squamose setae, which is also found in *Lepidoclema*, although this may be an adaptive character for protection against desiccation in arid regions. It is interesting to note that several unrelated buprestids, *e.g.*, *Acmaeodera ephedrae* Barr, *A. yumae* Knull and *Acmaeoderoides straminea* Nelson, collected at the same general locality and habitat type as *Lepismadora* possess a dense setal covering along with a similar golden stramineous elytral color.

The geographical relationship between *Lepismadora* and *Eudiadora* can best be termed amphitropical, even though Crowson (1980) preferred the term amphipolar, with *Eudiadora* having at least one species found in the Catamarca desert region of northwestern Argentina.

#### ACKNOWLEDGMENTS

We would like to thank the following individuals: firstly, Mimi Velten, for finding the first specimen of this exciting new beetle; D. S. Verity, Botanical Gardens, U.C.L.A., for helping to collect a large portion of the type-series; G.

H. Nelson, College of Osteopathic Medicine of the Pacific, Pomona, Calif., and R. L. Westcott, Oregon Dept. of Agriculture, Salem, for their comments, suggestions and critical review of the manuscript; H. A. Hespenheide, Dept. of Biology, Univ. of Calif., Los Angeles, for comments and suggestions; M. G. Volkovitsh, Soviet Academy of Sciences, Leningrad, U.S.S.R., for his comments; Sue Thomson, Nat. Coll. of Insects, Pretoria, R.S.A., for the excellent dorsal habitus illustration (Fig. 1) and lastly to Prof. E. Holm, Univ. of Pretoria, for his continuing support and encouragement for one of us (CLB).

## LITERATURE CITED

- ARNETT, R. H., G. A. SAMUELSON, J. B. HEPNER, G. M. NISHIDA, J. C. WATT, AND R. E. WOODRUFF. 1986. The insect and spider collections of the world. E. J. Brill, 220 pp.
- BELLAMY, C. L. 1986a. Studies in the African Agrilinae, Coraebini IV. (Coleoptera, Buprestidae). Navors. nas. Mus. Bloemfontein 5:93-167.
- . 1986b. The higher classification of Australian Buprestidae, with the description of a new genus and species (Coleoptera). Aust. J. Zool. 34:583-600.
- . 1987a. A revision of the genus *Synechocera* Deyrolle (Coleoptera, Buprestidae, Agrilinae). Invert. Tax. 1:(in press).
- . 1987b. The classification and phylogeny of the Australian Coraebini Bedel with a revision of *Paracephala*, *Meliboeithon* and *Dinocephalia* (Coleoptera, Buprestidae). Invert. Tax. 1:(in press).
- , AND E. HOLM. 1985. Studies in the African Agrilinae, Coraebini II. (Coleoptera, Buprestidae). J. Ent. Soc. Sth. Afr. 48:129-134.
- CROWSON, R. A. 1980. On amphipolar distribution patterns in some cool climate groups of Coleoptera. Entom. Gen. 6:281-292.
- GOOD, H. G. 1925. Wing venation of the Buprestidae. Ann. Ent. Soc. America 18: 251-276.
- NELSON, G. H. 1982. A new tribe, genus, and species of North American Buprestidae with consideration of subfamilial and tribal categories. Coleopt. Bull. 35(1981): 431-450.
- THÉRY, A. 1942. Faune de France, 41, Coléoptères, Buprestides, la Faculté des Sciences, Paris.

(Received 7 January 1986; accepted 9 January 1987)