New sub-genera and species of Afrotropical *Acmaeodera* Eschscholtz (Coleoptera: Buprestidae)

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Two new sub-genera, *Acmaeodera* (*Cavacmaeodera*) and *Acmaeodera* (*Bellacmaeodera*) are described. Ten new species of *Acmaeodera* are described, nine by Holm: *Acmaeodera* (*Acmaeodera*) *marki* sp. nov., *A.* (*Acmaeotethya*) *namaquensis* sp. nov., *A.* (*A.*) *altae* sp. nov., *A.* (*A.*) *wittmeri* sp. nov., *A.* (*A.*) *maraisi* sp. nov., *A.* (*Rugacmaeodera*) *curlettii* sp. nov., *A.* (*R.*) *purpurescens* sp. nov., *A.* (*Cavacmaeodera*) *haubaas* sp. nov., and *A.* (*Ptychomus*) *vogtorum* sp. nov., and one by Westcott: *A.* (*Bellacmaeodera*) *bellamyi* sp. nov. *Acmaeodera* (*Acmaeotethya*) *nodieri* Holm, *A.* (*A.*) *dumbrodyensis* Holm, and *A.* (*A.*) *knobeli* Holm are elevated to full species status from subspecies of *A.* (*A.*) *ngamensis* Obenberger. The system of generic and sub-generic classification of Afrotropical *Acmaeodera* is discussed and a key to sub-genera is presented.

INTRODUCTION

Since the appearance of the last monograph of Afrotropical *Acmaeodera* Eschscholtz, 1829 (Holm 1978), a few novelties have been described (*vide* Holm 1985, 1986a; Levey & Volkovitsh (1996)). Recently a surprising number of new species have been collected, most of which appear to represent geographically limited relicts. It would, therefore, seem that this genus is much richer in relict species than previously assumed, and many more undiscovered species may be expected to occur, especially in the montane habitats of Africa.

One reason for the discovery of so many new species seems to be the application of varied collecting techniques. While members of this genus were previously collected singly off flowers, the new material was mostly beaten from vegetation, or else was collected in yellow traps and pitfall traps. It would seem that whole species-groups within *A.* (*Acmaeotethya*) Volkovitsh, 1979 rarely visit flowers, and are only now being sampled. The discovery of so many new species, together with the comments of Volkovitsh (1979) and Volkovitsh & Bellamy (1992), necessitate a review of the generic classification of Holm (1978). To that purpose we must first outline our views on and criteria for genera and sub-genera.

CRITERIA AND CONSIDERATIONS ON ERECTING GENERA

1. It is generally accepted that the matter of ranking above the species level is more or less subjective. There are, however, a number of criteria which taxonomists do apply more or less consistently, and to which we owe the fact that genera are more often agreed upon between workers than not. Some of the more widely accepted norms are the following:

1.1 Overall similarity between members of a genus should be greater than between genera of any given group.

1.2 A genus should be defined by at least one, but preferably more, recognisable and unique apomorphic characters.

1.3 A genus should constitute a monophyletic group.

1.4 Phylogenetic and/or phenotypic distances between genera should be approximately of the same magnitude in

different taxonomic groups. An objective measure of distance is obviously impossible, but there is a traditional agreement on approximate limits for the genus.

2. Formal taxonomic names and classifications have to satisfy three often conflicting requirements (*vide* e.g. Hull 1970). They should ideally be consistent with the phylogeny of the group (but at least should not contradict it); they should ideally be stable (but must of course be corrected if incorrect); and they should be practically useful for the purpose of identification. All these criteria are most crucial at the generic level, since genera are the closest phylogenetic groups and generic stability also affects species names (through homonymy). Therefore, the genus is the rank which should be handled most conservatively of all. Certainly there should be compelling phylogenetic reasons and/or an unambiguous unique definition before a new genus is erected.

3. Authors often justify complex higher classifications on the argument that information is lost if such taxonomical edifices are not erected. This is simply not the case. A phylogenetic tree or cladogram can convey the (often very putative) relationships without resorting to taxonomic names for each and every branch. In the case of species-groupings, there is moreover the very useful sub-generic rank to identify related species-groups without affecting stability of genera or species names. We have used the sub-genus in cases where the genus seems inappropriate:

3.1. Mosaic evolution, i.e. disjunct distribution of apparently homologous character states.

3.2. Diagnostic character states consistent but grading, weak, or difficult to identify.

3.3. Paraphyletic groups, i.e. clearly defined specialized groups which split off from an unspecialized group which is then defined by plesiomorphic features only.

These concepts were previously applied in work on Scarabaeidae: Cetoniinae (e.g. Holm 1992, 1994); Scarabaeidae: Scarabaeinae (e.g. Holm & Scholtz 1979) and Buprestidae of various subfamilies, e.g. Julodinae (Holm 1979a, 1979b); Polycestinae (Holm 1982); Acmaeoderinae (Holm 1978, 1986b). On the whole there has been little criticism, although Hołyński (1993) regarded the system of genera for the Julodinae as extremely "split", reducing six genera and two sub-genera to two genera only. The treatment of the Acmaeoderini, on the other hand, elicited the opposite response from Volkovitsh (1979) and Volkovitsh & Bellamy (1992). Where only the genus *Acmaeodera* was recognized (with sub-genera *Acmaeodera* Eschscholtz, 1829, *Ptychomus* Marseul, 1866, *Paracmaeodera* Théry, 1946 and *Rugacmaeodera* Holm, 1979) in the Afrotropical Region, Volkovitsh & Bellamy (1992) recognize *Acmaeodera* (with sub-genera *Acmaeodera*, *Acmaeotethya* Volkovitsh, 1979, *Cobosiella* Volkovitsh, 1979, *Rugacmaeodera*, *Paracmaeodera* and *Ptychomus*), *Xantheremia* Volkovitsh, 1979 and *Brachmaeodera* Volkovitsh & Bellamy, 1992.

CRITICISM OF THE ACMAEODERINI - GENERA OF HOLM (1978)

The criticism the latter authors levelled at the system of Holm (1978) is partly justified: as stated in that work, the *Acmaeodera s. str.* category was "rather heterogeneous". The author refrained from creating new generic subdivisions in the full knowledge that his information on faunas of other zoogeographical regions, where relatives and radiation of this 'sub-genus' are

much more abundant, was inadequate. He also refrained from fixing the type-species, which was established one year later by Volkovitsh (1979). In principle we have no objection to further subdivisions within the heterogeneous '*Acmaeodera* (*s. str.*)', particularly not on sub-generic level, as explained above. The fact that few of the Afrotropical *Acmaeodera* (*s. str.*) would remain in *Acmaeodera* (*s. str.*) is not a mistake (as implied by Volkovitsh & Bellamy (1992)), but a logical consequence of the subsequent type designation and erection of the sub-genus *Acmaeotethya*. Similarly, the species which were then indicated as atypical for Afrotropical '*Acmaeodera* (*s. str.*)' and placed in the '*Acmaeoderella*' species-group (incidentally, positions in keys are not phylogenetic statements, contra to Volkovitsh & Bellamy (1992)), are now placed in *Xantheremia* and *Brachmaeodera*: genera erected subsequently by respectively Volkovitsh (1978) and Volkovitsh & Bellamy (1992).

THE PRESENT STATUS OF THE AFROTROPICAL GENERA AND SUB-GENERA OF ACMAEODERINI

Finally our view of the genera and sub-genera of Afrotropical Acmaeoderini needs to be addressed. We shall treat the taxa separately.

a. Sub-genera *Rugacmaeodera*, *Paracmaeodera* and *Ptychomus*

There appears to be no disagreement as to the status of these three sub-genera, their status below genus level being primarily due to intermediates between them. It is impossible to separate them unambiguously, as illustrated by the polythetic key of Holm (1978). Further subdivisions as intimated by Volkovitsh & Bellamy (1992) are discussed in the summary below.

b. Sub-genus *Acmaeotethya*

The absence of a key in the treatment of genera and sub-genera by Volkovitsh (1979) mirrors the dilemma we faced with subdivisions of Afrotropical species. While Volkovitsh (1979) states that most species of "*Acmaeodera s. str.*" *sensu* Holm (1978) belong to the sub-genus *Acmaeotethya*, and mentions such aberrant species as have already been pointed out (Holm 1978), as being possible candidates for further sub-genera, or even genera. There are in fact many more species that do not conform at all to one, or more of the characters he provides. We fail to see the similarity of male genitalia (Figures 43-50 in Volkovitsh (1979)), on which he places such emphasis, to the exclusion of other characters which are considered to be the result of parallel evolution (without explaining why this parallelism is impossible in genitalia). In fact, a short ovipositor does, for instance, re-occur twice within the sub-genus *Ptychomus*, and convergent or parallel male genitalia types occur in species placed in *Ptychomus*, *Rugacmaeodera* and *Paracmaeodera*. One gets the impression that *Acmaeotethya* has become the undefined 'dumping ground' *Acmaeodera* (*s. str.*) formerly was.

To make this taxon, as presently defined, relevant in the Afrotropical fauna, the following groups must at least be excluded:

- *affabilis* Kerremans, 1909; *rubidiplagis* Obenberger, 1928 (but with transition: *luteopicta* Boheman, 1851).
- *nodieri* Holm, 1978; *knobeli* Holm, 1978; *dumbrodyensis* Holm, 1978; *lugubrina* Boheman, 1860; *ngamensis* Obenberger, 1928; *altae* sp. nov. (but with transition: *virgo* Boheman, 1860; *amoenula* Boheman, 1851) (= *Microacmaodera*?).
- *coeruleonigra* Obenberger, 1928; *liessnerae* Holm, 1986; *namaquensis* sp. nov.; *mwengwensis* Holm, 1986; *maraisi* sp. nov.;

fasciata (Roth, 1851); *convoluta* (Klug, 1829) (poorly separated from primitive *Rugacmaeodera*).

- *obsti* Kerremans, 1907 (either separately or exceptional within previous group)
- *glabella* Obenberger, 1924
- *signifera* Boheman, 1851; *bifasciata* (Thunberg, 1787): *bistriguttata* Gory, 1840; *wittmeri* sp. nov.

We doubt the wisdom of separating all these groups into sub-genera, let alone genera. Without doing so, however, the strictly defined sub-genus *Acmaeotethya* is just one group randomly selected, and therefore meaningless. All the above groups, however, have more in common with each other than with *Acmaeodera* (*s. str.*) as now defined. It is probably the best option to retain this sub-genus with a much wider definition than that proposed by Volkovitsh (1979), as a heterogeneous collection of undefined radiations, which could later be defined as species-groups, but based on phylogenetic analysis.

c. Sub-genera: *Acmaeodera* and *Brachmaeodera*

In the definition of Volkovitsh & Bellamy (1992) only *A. swammerdami* Obenberger, 1928 and *A. pica* are defined as belonging to *Acmaeodera* (*s. str.*) within the Afrotropical fauna. While we are not familiar with the latter species, we certainly find that *A. chaetosoma* Obenberger, 1928 conforms precisely to the definition of *Acmaeodera* (*s. str.*). Levey & Volkovitsh (1996) describe a new species closely related to *A. chaetosoma*, but place the species in the genus *Acmaeotethya*. As Volkovitsh (1979) stresses the variability of this sub-genus and its propensity for aberrant relictual isolates, it is somewhat surprising that Levey & Volkovitsh (1996) erected the genus *Brachmaeodera* for *A. (A.) tantilla* Kerremans, 1907. If the definition of *Acmaeodera* (*s. str.*) (Volkovitsh, 1979) is taken into account, we find little reason in not regarding *Brachmaeodera* as a specialization of this line. With the exception of the small and shortened overall shape, the differences outlined are essentially all affirmed (to a lesser degree) in *A. (A.) chaetosoma* (being: extended metacoxal apex and posterolateral pronotal corners; depressions on venter of legs; broadened protibia; concavity of frons; and scoop-like ventral apodeme of tegmen). For all these character states there is a gradient from *A. swammerdami* through *A. (A.) chaetosoma* and *A. (A.) marki* sp. nov. to *A. (A.) tantilla*, with some characters transformed to the extreme in the last named species. There is further a remarkable similarity in sculpture, elytral striation, pronotal shape and fossae, within the four species. Only the tarsal claws are strikingly aberrant in *Brachmaeodera*, but this reduction may well be size-related and re-occurs in other apomorphic species, as stated by Volkovitsh & Bellamy (1992). The general aspect of the tegmen of these four species conforms to one form: parameres rounded and widely separated apically. This is, in combination with other character states, a convincing argument for monophyly. In Volkovitsh (1979), Holm (1978) is misquoted as stressing that the aedeagus is less important than external characters in defining species. The comment was firstly clearly referring only to the species level, and secondly to selective species and species-groups of *Acmaeodera*. In all previous studies of Holm, genital characters were used extensively, but never regarded in isolation as an absolute character. The art of interpreting aedeagal characters is the same as with any other character; one must be able to recognize transformation series, and to interpret differences and similarities in basic structure, rather than in superficial plasticity. In this context we can see a convincing difference between *Acmaeodera* (*s. str.*) (including *Brachmaeodera* and perhaps *Xantheremia*) on the one hand, and the remaining African sub-genera on the other. Whether this distinction can be maintained with the rest of the world fauna, remains uncertain.

d. *Xantheremia*

The African members of this group (*fasciata*; *flavipennis* (Klug, 1829); and *convoluta*) are clearly intrusions from the Mediterranean region, and are unrelated to other Afrotropical groups. We cannot assess their generic status, as our knowledge of that fauna is inadequate for the purpose. The African species belonging to this group lack some characters outlined by Volkovitsh & Bellamy (1992), such as the presence of carina on vertex, and exhibit variation in others.

SUMMARY OF GENERIC DECISIONS

We are of the opinion that *Brachmaeodera* does fit the criteria for acceptance as a valid genus, as we earlier defined (*vide* 1.1 to 1.4 Introduction). We are unable to give an interpretation of *Xantheremi*, and we do not have access to further genera erected by Volkovitsh (1979) for the Palaearctic fauna. For future dialogue it would be helpful if a phylogenetic analysis, or at least a key, could be provided. In practice we fail to separate the African species convincingly at the generic level, and shall, therefore, provisionally use the name in the sub-generic sense.

The distinction between *Acmaeodera* (*s. str.*) and the sub-genus *Acmaeotethya* is valid in the African *Acmaeodera*, and the sub-genera of *Acmaeodera* are of apparently equal status in sub-Saharan Africa (*vide* 3.1 & 3.2 Introduction). These sub-genera are the following: *Acmaeodera* (*s. str.*); *Acmaeotethya*; *Rugacmaeodera*; *Paracmaeodera*; *Xantheremia* and *Ptychomus*. Although *Acmaeotethya* is the most diverse (*vide* species-groups under "b" Introduction), species-groups of similar divergence may be found in the other named sub-genera (i.e. *Rugacmaeodera*, *Paracmaeodera*, and *Ptychomus*).

In some species-groups there is an additional criterion for distinction (*vide* 3.1 Introduction), related to the identifiability requirement (*vide* 2 Introduction). Apart from those criteria employed for the sub-genera above, they may exhibit an extreme state of apomorphic character transformation series within a certain genus or sub-genus, that they answer to generic criteria 1.1 and 1.2 (in Introduction), while at the same time they are obviously paraphyletic derivatives. They may show phenotypic distance (1.4 in Introduction) of a magnitude comparable to or exceeding that of the presently recognized sub-genera or even genera, without the corresponding phylogenetic distance. While these species or species-groups can obviously not be recognized as separate genera, they do indicate extreme biological deviations from the norm and constitute possible adaptive radiations. There may be merit in naming these as sub-genera, although it must be understood that sub-genera then lose their (vague) phylogenetic meaning and become purely a matter of convenient distinction. In this sense, *Brachmaeodera* (but including *A. chaetosoma*) can serve a purpose as a sub-genus, and two more similar extremes, one apparently related to the *A.* (*Acmaeotethya*) *grata* Boheman, 1851 group (sub-gen. *Bellacmaeodera*, sub-gen. nov.) and one a derivative of the *A.* (*Rugacmaeodera*) *stellata* Marseul, 1867 group (sub-gen. *Cavacmaeodera* sub-gen. nov.) are described below. We stress that these three sub-genera constitute paraphyletic derivatives, and we have no qualms if they should not find acceptance.

The institutions abbreviated used in the text are as follows: BMNH – Natural History Museum, London, United Kingdom; MNCI - Museum d'Histoire Naturelle, Carmagnole, Italy; MNHN – Museum National d'Histoire Naturelle, Paris; NMPC - National Museum (Nat. Hist.) Prague, Czech Republic; RLWE – R. L. Westcott collection, Salem, Oregon, U.S.A; SAMC - South African Museum, Cape Town, South Africa; SANC - National Collection of Insects, Pretoria, South Africa; NMWN - National Museum of Namibia, Windhoek, Namibia; TMSA - Transvaal Museum, Pretoria,

South Africa; ZMAS - Zoological Museum, Russian Academy of Science St. Petersburg, Russia.

SYSTEMATICS

KEY TO THE AFROTROPICAL REPRESENTATIVES OF SUB-GENERA OF *ACMAEODERA*.

1. Antennal groove on proepisternum well developed; epistomal groove well developed; pronotum evenly rounded, with basal fossae small and sides blade-like; shape strongly gibbose ..... 2.
- Antennal groove on proepisternum absent; epistomal groove absent or present; pronotum variable; shape variable ..... 3.
2. Protibia thin; metacoxa without angular posterodistal corner; colour uniformly black to metallic; meso- and meta-legs not held in repose ..... *A.* (*Ptychomus*)
- Protibia spatulate; metacoxa with angular postero-lateral, corner; colour black with yellow markings on elytra; meso- and meta-legs embedded in sharp-rimmed cavities .. .. *A.* (*Cavacmaeodera*) sub-gen. nov.
3. Basal pronotal fossae obsolete; elytra 4.5 times as long as pronotum; pronotal sides blade-like; metacoxa with median angular projection on posterior margin .... *A.* (*Bellacmaeodera*) sub-gen. nov.
- Basal pronotal fossae distinctly visible; elytra less than 4.5 times as long as pronotum; pronotal sides variable; metacoxa variable 4
4. Interstices flat to costulate but never grooved near apex; epistomal groove rounded or absent; colour black with or without yellow to orange ornaments, never completely metallic 5
- Interstices grooved, flat or costulate near apex; epistomal groove sharply rimmed; colour variable, often metallic 8
5. Metacoxa distally covering metatibio-femoral joint in folded position; tegmen with widely separated and rounded apices on parameres 6
- Metacoxa not overhanging legs in folded position; aedeagus variable 7
6. Pronotal base laterally distended to cover pro- and mesolegs in folded position; protibia spatulate; frons concave ..... *A.* (*Brachmaeodera*)
- Pronotum not laterally distended; protibia thin; frons weakly rounded .... *A.* (*Acmaeodera*)
7. Tegmen as in 5; at least venter with setae broadly squamose; posterior metacoxal margin straight ..... *A.* (*Xantheremia*)
- Tegmen otherwise; setae thin but if squamose then with posterior metacoxal margin concave in distal half .... *A.* (*Acmaeotethya*)
8. Metacoxa with a sharp angular process posterodistally; pronotum with cross-shaped depression on disc more or less developed, often roughly sculptured and rugose; colour rarely entirely iridescent .... *A.* (*Rugacmaeodera*)
- Metacoxa never with a sharp process posterodistally; pronotum rounded, with a longitudinal groove on disc; colour always entirely iridescent dorsally, never with yellow or orange markings ..... *A.* (*Paracmaeodera*)

NEW SUB-GENERA AND SPECIES OF *ACMAEODERA*

***Acmaeodera* (*Bellacmaeodera*)** Holm **sub-gen. nov.**

Type-species: *Acmaeodera* (*Bellacmaeodera*) *bellamyi* Wescott sp. nov.

GENERIC DIAGNOSIS: Setae thin on elytra, thinly squamose on the venter, pronotum and head. Epistome with genal scrobes entire, with a rounded epistomal groove. Pronotum evenly rounded, with blade-like sides, with basal fossae

obsolete, with umbilicate sculpture. Elytra extremely elongated (4.5 x pronotal length), with flat interstices and fine strial punctures. Antenna with fourth segment partially dilated. Tibiae thin, posterior metacoxal margin concave in distal half. Male genitalia of the *A.* (*Acmaeotethya*) type.

DISCUSSION: This monotypic sub-genus clearly represents a geographic and phylogenetic relict. Most of the material on which the description is based originated from a specific montane habitat, where the surrounding area has been reasonably well collected. The species may, however, have a wider distribution, as indicated from material originating from much further east. The limited colour variation for an *Acmaeodera* is also indicative of a small gene pool.

The general shape, epistome, metacoxa, pronotal sides, and slightly bicoloured iridescence between pronotum and elytra, are all common to the *A.* (*Acmaeotethya*) *grata* species-group. This group is also the closest to the *sanguineosignata* Laporte & Gory, 1835 species-group in the sub-genus *Rugacmaeodera*. The latter is in turn very close to the more conservative *A.* (*Paracmaeodera*) species. *Acmaeodera* (*Bellacmaeodera*) appears, therefore, to be most closely related to the conservative elements in these three sub-genera. As *A.* (*Ptychomus*) is a secondary specialisation of *A.* (*Paracmaeodera*), it may be concluded that *A.* (*Bellacmaeodera*) is the most conservative of all the Afrotropical sub-genera. The elongate elytra, squamose setae, epistome, metacoxa, and umbilicate sculpture exhibit a combination of character states that only reoccur in the *A.* (*Acmaeotethya*) *liessnerae* species-group. There have been problems relating this group to other Afrotropical *Acmaeodera* groupings, and *A.* (*Bellacmaeodera*) now indicates a possible relation to the *A.* (*Acmaeotethya*) *grata* group for these species. *Acmaeodera* (*Bellacmaeodera*) cannot, however, be considered as part of the *A.* (*Acmaeotethya*) *liessnerae* species-group as the blade-like pronotal sides and fine elytral sculpture are very dissimilar in this group. Finally the autapomorphic character of extreme reduction of the basal pronotal fossae places this sub-genus apart from all other sub-genera.

ETYMOLOGY: The sub-genus is named in honour of Dr. C. L. Bellamy of the Transvaal Museum, South Africa.

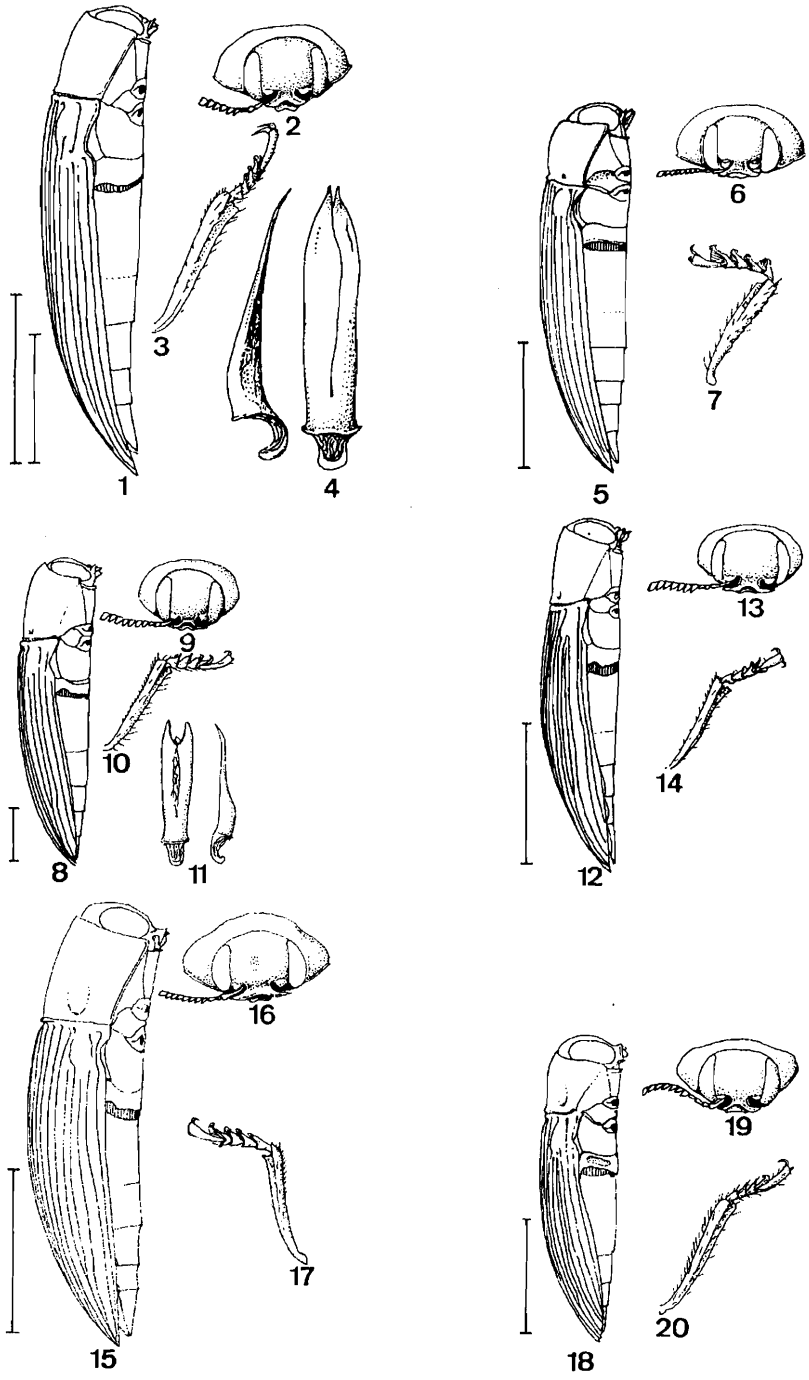
Acmaeodera* (*Bellacmaeodera*) *bellamyi Westcott **sp. nov.**

Figures 1-4 & 36i

MATERIAL:Holotype, ♂ SOUTH AFRICA, Northern Province, Geelhoutbosch Farm, NW Waterberg, 24°22'S, 27°34'E, 15-19.xii.1995, R. L. Westcott (TMSA); 68 Paratypes, 4 ♂♂, 6 ♀♀ same data, except one male coll. C. L. Bellamy; 1 ♀ same locality, 09.xi.1995, C. L. Bellamy (Paratypes deposited: 9 RLWE, 2 TMSA); 18 ♂♂, 12 ♀♀ same data, except, 15-18.xii.1997, C. L. Bellamy & S. Bily (Paratypes deposited: 1 BMNH, 1 MNHN, 7 NMPC, 1 SANC, 19 TMSA, 1 ZMAS); 18 ♂♂, 7 ♀♀ same data, except 29-30.xi.1998, C. L. Bellamy & D. Macfadyen; 2 ♂♂ N. Prov. 5 km SE Skukuza, 24°59'S, 31°35'E, 10.xii.1997, C. L. Bellamy.

DESCRIPTION: Size: Length 7.4 - 11.7 mm, width 2.3 - 3.8 mm (average length male 9.1 mm, female 10.5 mm).
Head: Frons flattened above, slightly convex below, parallel-sided. Sculpture coarsely densely reticulately punctate. Setae hair-like, suberect, moderately long, densely placed, white. Epistome with lateral lobes slightly less than half as wide as long, broadly deeply roundly incised, transversely depressed at base which is slightly more than one-third width of frons. Supra antennal tubercles absent.

Pronotum: Disc strongly convex, with a poorly defined small depression at middle, sides steeply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Figures 1-4 *Acmaeodera (Bellacmaeodera) bellamyi* sp. nov. 1, lateral details; 2, frontal details; 3, right protibia and tarsus (enlarged); 4, aedeagus, right-lateral and dorsal view (enlarged). Scale bar represent length of ovipositor (left) and aedeagus (right) relative to lateral details.

Figures 5-7 *Acmaeodera (Acmaeodera) marki* sp. nov. 5, lateral details; 6, frontal details; 7, left protibia and tarsus (enlarged). Scale bar represents length of ovipositor relative to lateral details.

Figures 8-11 *Acmaeodera (Acmaeotethya) namaquensis* sp. nov. 8, lateral details; 9, frontal details; 10, right protibia and tarsus (enlarged); 11, aedeagus, right-lateral and dorsal view (enlarged). Scale bar represents length of aedeagus relative to lateral details.

Figures 12-14 *Acmaeodera (Acmaeotethya) maraisi* sp. nov. 12, lateral details; 13, frontal details; 14, right protibia and tarsus (enlarged). Scale bar represents length of ovipositor relative to lateral details.

Figures 15-17 *Acmaeodera (Acmaeotethya) altae* sp. nov. 15, lateral details; 16, frontal details; 17, left protibia and tarsus (enlarged). Scale bar represents length of ovipositor relative to lateral details.

Figures 18-20 *Acmaeodera (Acmaeotethya) wittmeri* sp. nov. 18, lateral details; 19, frontal details; 20, right protibia and tarsus (enlarged). Scale bar represents length of ovipositor relative to lateral details.

sloping. Sculpture similar to head, punctures larger laterally, somewhat confused at middle. Setae nearly as on head, but becoming more spatulate and subrecumbent at sides. Anterior margin broadly arcuate-emarginate, shallowly lobed at middle. Base truncate, basal fossae absent. Lateral margins not visible from above, sharply defined and diverging from subtriangular apical angles to basal fourth then obsolete and rather sharply constricted to obtuse hind angles.

Elytra: Sides slightly constricted immediately behind base then parallel to apical two-fifths where they gradually converge to the rather bluntly rounded apex. Humeral angles subquadrate. Lateral margins strongly constricted below prominent shiny humeral callus, coarsely and more or less indistinctly serrate at approximately one-sixth of their length. Base with a finely striate collar. Sutural area vaguely depressed back of base, suture not carinate. Interstices similarly wide (except 11th much narrower), equally and slightly elevated, 1st-4th rather smooth, finely and discretely punctate, lateral interstices becoming more coarsely punctate and rugose. Humeral interval smooth, strongly elevated. Striae finely punctured near suture, becoming coarsely punctured laterally, discal striae finely impressed on apical half. Setae similar to those on head, but much less densely covered.

Underside: Shining black, all setae white, thorax with setae subrecumbent to recumbent, narrowly (internally on metacoxae) to broadly spatulate. Prosternum coarsely densely punctate, front margin strongly retracted from front angles of pronotum, shallowly evenly arcuato-emarginate, narrowly decumbent and with a fine basal groove, without antennal incisions. Proepisternum flattened, shallowly depressed internally, more coarsely punctate than remainder of thorax except metasternum, hind margin sinuato-emarginate. Suture between mesepisternum and mesepimeron very fine yet distinct. Metacoxae with hind margin sinuate,

punctures much finer internally. Abdomen finely densely punctate which becomes coarser laterally, especially on first visible sternite where it is subequal to metasternum. Sternites 1-4 with setae subrecumbent and densely placed, particularly near apical margins where they are partially overlapping giving the appearance of being much longer, narrowly to moderately spatulate except basolaterally on sternite 1 where they are as wide as those of metasternum. Sternite 1 with a subglabrous apicolateral area bearing short hair-like setae. Sternites 3-4 glabrous in basolateral angle. Sternum 5 broadly rounded apically, less distinctly punctate, setae hair-like, denser and finer along margin.

Appendages: Black, setae of legs white, spatulate similar to those near pronotal margin, hair-like ventrally on all tibiae and dorsally on metatibia. Antennae subequal to (female), or about 1.3 x (male) length of pronotal side, abruptly and boldly serrate from 5th-10th segment (less so in female), 11th segment more or less obovate.

NOTES: The elytral pattern is quite uniform, notable variation is as follows: The median marking usually extends to the 2nd interval, but may extend to the 1st or only to the 5th. On one side of one specimen this marking is broken internally less than the width of an interval. The apical marking reaches either the first or second interval and is transversely oblong, with the exception of one specimen, on which they are oblique. At the sides the ground colour may be orange-brown between the markings, usually only between the humeral and median ones, however, on one specimen the latter are clearly connected.

BIOLOGY: Specimens were collected by beating the foliage of *Terminalia sericea* Burch. Ex DC (Combretaceae), and were beaten from *Rhus pyroides* Burch. (Anacardiaceae) from brushwood heaps within a fire break near the base of the Waterberg. Beating from dead piles of twigs and branches of recently cleared *Dichrostachys cinerea* (L.) Wight & Arn, *Grewia* sp. (Tiliaceae), *Combretum imberbe* Wawra (Combretaceae), and *Acacia* spp. (Mimosoideae) yielded further material. The material sampled at Skukuza resulted from beating the foliage of *Acacia exuvialis* Verdoorn (Mimosoideae).

ETYMOLOGY: This species is dedicated to Dr. Charles L. Bellamy who collected the first specimen, and whose expertise has greatly increased world knowledge of Buprestidae systematics.

***Acmaeodera* (*Acmaeodera*) *marki* Holm, sp. nov.**

Figures 5-7 & 36j

MATERIAL: Holotype, ♀ TANZANIA (Iringa), Miloa, 19.i.1996, G. Curletti leg. (MNCI).

DESCRIPTION: Size: Length 8.7 mm, width 2.7 mm.
Head: Frons as wide as long between eyes, sides very slightly converging to front (Figure 6), with shallow umbilici of which about 14 fit across middle of length, with long dense, downcurved light brown setae. Epistome broadly incised below, with slightly upturned lower rim, without supra-epistomal groove. Supra- antennal tubercles distinct. Eyes normal.

Pronotum: Weakly rounded on sides, widest at base, with disc evenly rounded. Sculpture fine sparse punctures on disc, becoming shallow and ill-defined umbilici on sides. Setae long, dark brown, curved forward on disc but shorter, light brown on sides. Anterior margin weakly bisinuate, vaguely grooved on sides only. Basal fossae very small, without surrounding depressions. Base straight. Sides with a short but complete, straight carina (Figure 5), this carina visible from above but obscured by setae.

Elytra: Widest at humeri, sides then subparallel to two thirds of their length, from there tapering

rather straightly to distinctly but only terminally serrate apex. Interstices equal, flat, hardly discernible on disc. Striae very fine and shallow punctures on disc, becoming coarser on sides and fine grooved in apical third. Setae in uniserial rows of fine punctures on each interstice, longer than width of interstice, curved backward, brown on disc but straw-coloured towards sides. Base strongly, roundedly upturned in scutellar area. Humeral calli rounded, prominent, shiny. Suture flat.

Underside: Black, with small, very densely placed umbilici but large and well spaced on pro-episternum. Setae moderately long, inclined backward, dense, straw-coloured. Metacoxa straight on posterior margin, this margin upturned, shiny. Anterior margin of prosternum slightly concave, with a thin upturned rim. Pro-episternum deeply impressed to accommodate foreleg in folded position (Figure 5).

Appendages: with colour and setation as on underside. Protibia carinate on outside, but not spatulate (Figure 7). Setal brushes on insides of pro- and mesotibia and outside of metatibia slightly darker. Antenna longer than pronotal disc, fourth segment partly dilated.

NOTES: This species represents a further *Acmaeodera* (*s. str.*) record from Africa, closest to *A.* (*A.*) *chaetosoma.* It is easily distinguished from the other African members of the subgenus by its black colour and fine dorsal sculpture.

BIOLOGY: The biology of this species is not known.

ETYMOLOGY: The species is named in recognition of our respected colleague Mark Volkovitch, expert on Palearctic *Acmaeodera*, who kindly informed us of the proper relationship between Palearctic and Ethiopian *Acmaeodera* (*s. str.*).

Acmaeodera* (*Acmaeotethya*) *namaquensis Holm, **sp. nov.**

Figures 8-11 & 36g

MATERIAL: Holotype, ♂ SOUTH AFRICA, Cape Province, Eselsfontein, 460 m, 29°42'S, 17°13'E, 16-17.ix.1984, C. L. Bellamy (TMSA); 2 Paratypes, same data (TMSA); 2 Paratypes, Arkoep Farm nr. Bouersdorp, 30°19'S, 17°56'E, ix.1990, C. D. Eardley (SANC); 1 Paratype, SOUTH AFRICA, Cape, 7.5 km ESE Hondeklipbaai, 30°20'S, 17°21'E, 130 m, 3.ix.1986, D. S. Verity & C. L. Bellamy (TMSA); 1 Paratype, Kammieskroon, Namaqualand, Museum Staff, Sept. 1930 / *conspersa* Thunb. var? (handwriting of Andrea) (SAMC).

DESCRIPTION: Size: Length 5.3 - 7.8 mm, width 1.3 - 2.2 mm.
Head: Frons as long as wide between eyes, sides parallel (Figure 9), with umbilicate sculpture of which ten fit across middle of length, with white setae moderately long and curved downward. Epistome deeply and roundedly incised below, with upturned lower rim. Supra-antennal tubercles obsolete. Eyes normal.

Pronotum: Rounded but depressed along midline. Sculpture umbilici which form semi-confluent longitudinal rows, characteristically each with a central setiferous puncture, about 20 umbilici fit into length of disc. Basal fossae pronounced, basal rim upturned. Anterior margin moderately pointed in middle, without groove. Lateral carina in posterior half of length only, not visible from above. Pronotum cylindrical, with sides parallel or widest in anterior third, wider than elytra at humeri. Setae as on head, erect, curved forwards and inwards.

Elytra: Sides attenuating behind humeri but widening in apical third and then bluntly rounded at apex. Apex finely serrate. Interstices

equally elevated, rounded, but 9th slightly protuberant. Striae deep, elongated punctures, about one third width of interstices, semi-confluent but more so near apex and sides at which point they form grooves. Setae on interstices light, erect, longer than width of one interstice, in single rows of small punctures on every interstice, well spaced. Base very mildly bisinuate, nearly straight, upturned. Humeral calli short but well pronounced. Suture not raised.

Underside: Black with distinct purple reflections as on head and pronotum, sculpture rather small and deep umbilici, but shallower toward abdominal apex. Metacoxa with distal invagination on posterior margin, but not sharply angular (Figure 8). Anterior prosternal margin straight, grooved, laminate, nearly reaching level of pronotum in front. Proepisternum flat with larger umbilici. Lateral depressions on abdominal sternites well developed. Setae white, recumbent, shorter and more densely placed than on dorsum.

Appendages: With colour and setation as on underside. Setal brushes on tibiae white in colour, with a few brownish setae adjacent to tibeal apices. Antenna as long as pronotal disc, having the fourth segment dilated, but not equal in width to the fifth. Male unknown.

NOTES: This species belongs to the *A. coeruleonigra-liessnerae* group, which is characterized by elongated elytra, incised rear margin of metacoxa, long (sometimes pectinate) setae and often umbilicate sculpture. It differs significantly from both these species in coloration and sculpture. Superficially it resembles *A. gentilis* Péringuey, 1888, but the metacoxa and pronotal sculpture are entirely different.

BIOLOGY: The biology of this species is not known.

ETYMOLOGY: The species is named after the Namaqualand region, which appears to be the centre of distribution for this species-group.

Acmaeodera (*Acmaeotethya*) *maraisi* Holm, **sp. nov.**

Figures 12-14 & 36e

MATERIAL: Holotype, ♀ NAMIBIA, Boomrivier, 28°00'S, 17°03'E, 12.xi.1992, E. Marais (NMWN).

DESCRIPTION: Size: Length 8.1 mm, width 2.5 mm.
Head: Frons wider than long between eyes, wider in middle, with a slight median depression (Figure 13), with shallow, closely placed umbilici of which twelve fit across middle of length, with moderately long setae strongly curved inward and downward. Epistome with lower margin shallowly and angularly incised (Figure 13) very slightly upturned but more so on sides, without epistomal groove. Supra-antennal tubercles clearly defined. Eyes normal.

Pronotum: Weakly rounded at sides, widest at mid length, depressed along median line and pre-basally. Sculpture large umbilici with rounded common rims of which approximately twenty fit into length of disc, each umbilicus bearing a white curved seta as on head. Anterior margin very weakly bisinuate, nearly straight, without distinct groove. Basal fossae distinct, in depressions. Base mildly bilobate. Sides with sharp but short carina along whole length, this carina visible from above and slightly arched as seen from side.

Elytra: With outline and sculpture as in *A. namaquensis*, but elytra longer in apical third (3.2 x pronotal length). Prebasal depression in scutellar area only. Setae as in *A. namaquensis*, but shorter, as long as width of one interstice.

Underside: Dark brown as on dorsum, sculpture well spaced umbilici which become small and puncture-like on abdominal sternites. Metacoxa with distal invagination on posterior margin. Proepisternum, lateral depressions and setation as in *A. namaquensis*.

Appendages: With colour and setation as on underside. Setal brushes on tibiae white in colour, with a few brownish setae adjacent to the tibial apices. Antenna as long as pronotal disc, having the fourth segment dilated, but not equal in wide to the fifth. Male unknown.

NOTES: The closest relatives of this species are *A. coeruleonigra* and *A. namaquensis*, differing from both in the form of the epistome and lateral pronotal carina, together with the general coloration and pronotal sculpture. It superficially resembles a number of Namibian *Acmaeodera* species, which are black in colour and have an elongated outline, but none of these have umbilicate pronotal sculpture. Lastly it differs significantly from *A. liesnerae* in having considerably shorter setae.

BIOLOGY: The single specimen was beaten from *Acacia* (Mimosoideae) trees in the Boom river, just north of the Orange River. The locality is an isolated enclave for *Acacia* trees and the species is probably limited to this river course.

ETYMOLOGY: The species is named in honour of Eugène Marais, (Curator of Entomology at the National Museum of Namibia, Windhoek), who collected the first specimen.

Acmaeodera* (*Acmaeotethya*) *altae Holm, **sp. nov.**

Figures 15-17 & 36b

MATERIAL: Holotype, ♀ TANZANIA, (Mbeya) Ujewa, 08-09.i.1996, G. Curletti leg. (MNCI), 1 Paratype, same data (TMSA).

DESCRIPTION: Size: Length 4.5 mm, width 1.4 mm.

Head: Frons wider than long between eyes, sides parallel, slightly depressed medially (Figure 16), with shallow, closely placed umbilici of which twelve fit across middle of frons, rest of surface finely chiselled, with sparse, white, slightly flattened recumbent setae of moderate length. Epistome flat, not upturned below, hardly incised, without supra-epistomal groove. Supra-antennal tubercles indiscernible. Eyes normal.

Pronotum: Gently rounded laterally, widest in posterior third of its length. Disc evenly rounded. Sculpture with punctures and chiselled surface as on head, but deeper and more densely situated, forming faint longitudinal ridges near sides. Setae as on head, inclined forward but inward on sides. Anterior margin virtually straight, without groove. Basal fossae distinct, the lateral ones with large and deep surrounding depressions. Base straight. Lateral carina short but complete, not visible from above.

Elytra: Widest in apical third, from there slightly converging to behind humeri and strongly, rather straightly converging to apex. Apex finely serrate. Interstices equal, very slightly rounded, shiny, uniserially punctured, with white, flattened, erect but backward curved rows of setae originating from these punctures. Setae about as long as width of one interstice. Stria coarse but rounded punctures, about one third width of interstices but larger on sides, sunk into shallow grooves in apical third of length. Base strongly and sharply upturned, more so in scutellar area. Humeral calli prominent, shiny. Suture not elevated.

Underside: Black with bronze sheen, with densely placed umbilici bearing short, white, recumbent setae. Anterior margin of prosternum straight, with a thin, sharp rim, the latter with a small antennal notch near sides. Metacoxa with posterior margin slightly concave, the distal

corner with a deep incision to accommodate folded meta-femur (but without protruding distal process - Figure 15).

Appendages: With colour and setation as on underside, but setae of tibial brushes golden. Protibia thin (Figure 17). Antenna shorter than pronotal disc, with fourth segment fully dilated.

NOTES: *Acmaeodera* (*Acmaeotethya*) *altae* belongs to the group of species near *A. lugubrina.* All are small, invariably black with a metallic sheen, and have an invagination on the metacoxa. Specimens of all except *A. lugubrina,* are rare in collections, probably as *A. lugubrina* is the only floricolous species in the group. Prior to Holm (1978) only *A. lugubrina* Boheman and *A. ngamensis* Obenberger were recognised as belonging to this group, with *A. dumbrodyensis* Holm, *A. knobeli* Holm and *A. nodieri* Holm regarded as subspecies. Extensive new material now suggests that all these taxa represent distinct species. The easiest autapomorphies identifying each of them may be listed as follows (*vide* also Holm 1978: 15):

- (*Acmaeotethya*) *lugubrina* Boheman: V-shaped double rows of very straight setae on elytral interstices.
- (*Acmaeotethya*) *nodieri* Holm **stat. nov.**: spatulate protibia.
- (*Acmaeotethya*) *altae* sp. nov.: deep depressions around lateral pronotal fossae.
- (*Acmaeotethya*) *dumbrodyensis* Holm **stat. nov.**: frons without median depression.
- (*Acmaeotethya*) *ngamensis* Obenberger: epistome short, thin.
- (*Acmaeotethya*) *knobeli* Holm **stat. nov.**: elytral setae in irregular double rows, long, curved.

BIOLOGY: The biology is not known for this species.

ETYMOLOGY: This species is named after Alta Joubert. She assisted on the 1978 revision of this genus and now, nearly twenty years later again agreed to assist with the current update.

Acmaeodera (*Acmaeodera*) *wittmeri* Holm, sp. **nov.**

Figures 18-20 & 36h

MATERIAL: Holotype, ♀ SOUTH AFRICA, 70 km NE Kuruman nr. Lykso, R27, 27°14'S, 24°03'E, Wittmer & Oberprielier (TMSA), 1 Paratype, ♂ same data (NMPC).

DESCRIPTION: Size: Length 8 - 8.2 mm, width 2.7 - 2.9 mm.
Head: Frons as wide as long between eyes, attenuating to front, strongly bulging in middle and mildly depressed along midline (Figure 20). Epistome angularly incised below, without supra- epistomal groove. Sculpture large rounded punctures of which 20 fit across middle of frons. Setae long, thin, light, erect, but curved downward. Supra-antennal tubercles reduced to flat shiny areas. Eyes slightly protruding.

Pronotum: Widest behind middle, sides rounded. Disc mildly depressed along midline. Sculpture as on head with about twelve punctures fitting along length, becoming semi-confluent in concentric grooves and ridges towards sides. Setae as on head, inclined forward. Anterior margin strongly and angularly protracted medially, with groove on sides only. Lateral carina straight, semi obsolete in anterior half, only basal third visible from above. Basal fossae deep and distinct, in a pre-basal transverse depression. Base straight, upturned.

Elytra: With sides parallel and bluntly rounded, with finely but sharply serrate apex. Interstices equal, rounded, the ninth more prominent, with single rows of short, erect, light setae, these shorter than width of interstices. Striae deep rounded punctures, less than half of diameter of interstices, not forming grooves. Humeral calli prominent, shiny. Base roundedly upturned, straight. Suture slightly elevated near apex.

Underside: Black, with an orange spot on first abdominal sternite and proximal parts of metacoxae. Sculpture densely placed punctures with short, straw-coloured, recumbent setae. Anterior prosternal margin straight, with a thin sharp rim. Metacoxa with a setiferous median cavity as in *A. bistriguttata*, and with a straight, upturned rear margin (Figure 18).

Appendages: Legs black with erect, short white setae but golden on tibial brushes. Protibia thin (Figure 20). Antenna longer than pronotal disc, with fourth segment not dilated.

NOTES: It belongs to the *signifera - bifasciata - bistriguttata* group of species, which are characterized by setiferous cavities on the metacoxa. It can easily be distinguished from these three species by colour alone, but also by deep frontal fossae and details of sculpture.

BIOLOGY: This striking species occurs well outside the normal range of the Cape-Namaqualand fauna to which it belongs, well into the savanna veld of the Kalahari.

ETYMOLOGY: The species is named in honour of the late Dr. Walter Wittmer, expert on Afrotropical Malachiidae.

Acmaeodera (Rugacmaeodera) purpurescens Holm, **sp. nov.**

Figures 21-24 & 36c

MATERIAL: ♂ Holotype, SOUTH AFRICA, (Northern Province), Transvaal, Sand River Mt., 24°32'S, 27°39'E, 08-09.xi.1985, Bellamy & Evans (TMSA).

DESCRIPTION: Size: Length 5.6 mm, width 1.8 mm.
Head: Frons wider than long between eyes, with convex sides, mildly depressed in middle (Figure 22). Epistome roundedly incised below, with sharply defined supra-epistomal groove. Sculpture deep contiguous craters with sharp common rims, of which twelve fit across middle of frons. Setae short, white, inclined downward. Supra-antennal tubercles indiscernible. Eyes not protruding.

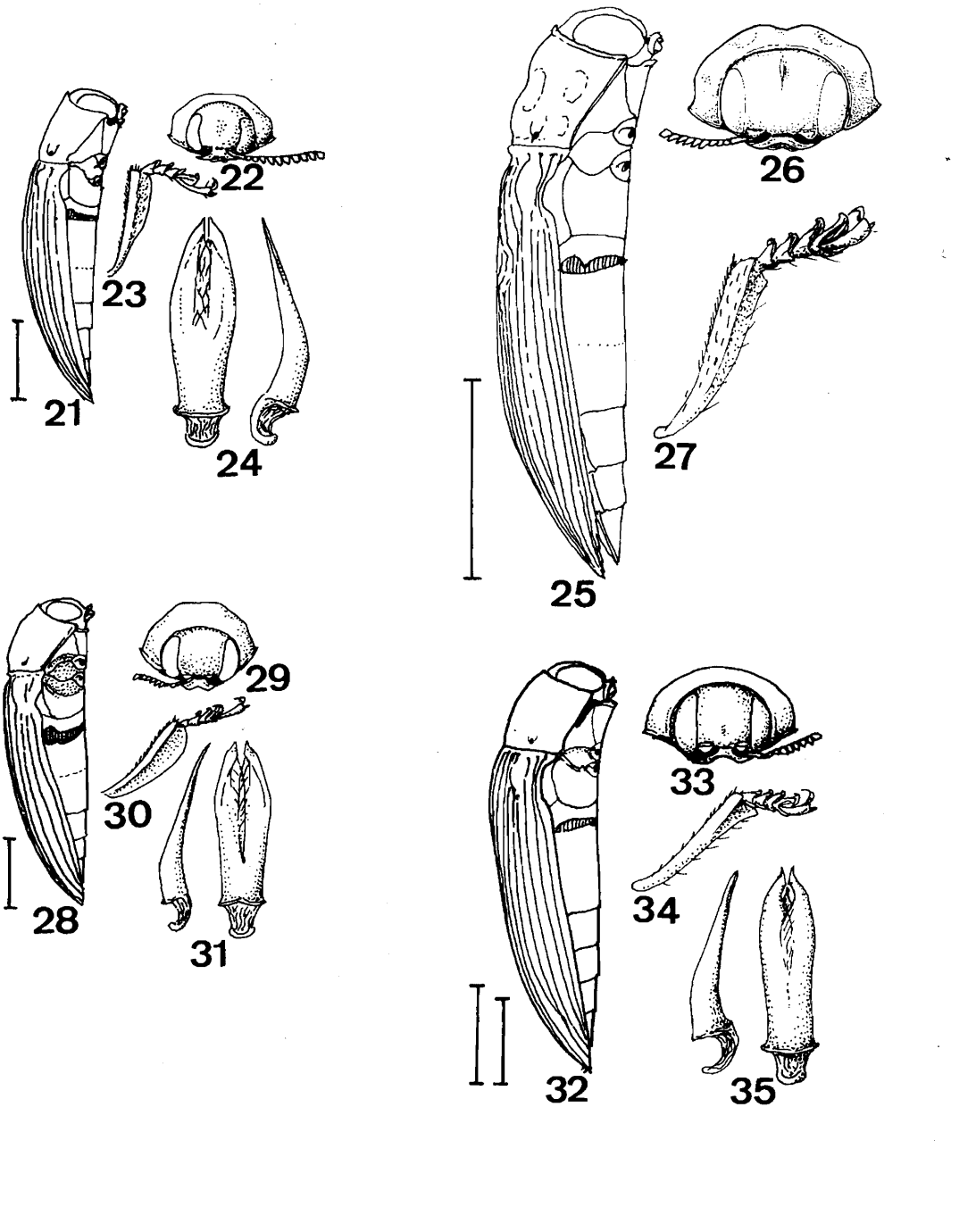
Pronotum: Widest behind middle. Disc with weak cross-shaped depression. Sculpture as on head but common rims of craters forming semi-continuous ridges radiating obliquely forward from midline. Setae very short, white, on sides only. Anterior margin mildly bisinuate with rounded median lobe. Lateral carina mildly arcuate, blade-like, visible from above. Lateral basal fossae in deep surrounding cavities, median one small. Base straight, not upturned.

Elytra: With sides widening from behind humeri to two thirds of length, from there attenuating to finely serrate apex. Interstices subequal, with uneven surface and single rows of fine punctures bearing short, white, erect setae. Striae round punctures near base, becoming elongated and less than half width of interstices in middle, and sunk into grooves in apical third. Humeral calli normal, not shiny. Base weakly upturned. Suture not elevated.

Underside: Black lacking a purple metallic sheen. Sculpture umbilici bearing short, white, recumbent setae. Anterior prosternal margin with deep antennal incision bordered on inside by a prominent denticle. Metacoxa with weak metafemoral incision, without sharp denticle posterodistally (Figure 21).

Appendages: Brownish-black, with short white setae becoming yellow on tibial brushes. Protibia with exterior blade in distal half (Figure 23). Antenna longer than pronotal disc, fourth segment not fully dilated.

NOTES: Known only from a single male, this species is nevertheless quite distinct. The widened protibia distinguishes it from other small montane *Rugacmaeodera* such as *A.*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Figures 21-24 *Acmaeodera (Rugacmaeodera) purpurescens* sp. nov. 21, lateral details: 22, frontal details; 23, right protibia and tarsus (enlarged); 24, aedeagus, right- lateral and dorsal view (enlarged). Scale bar represents length of aedeagus relative to lateral details.

Figures 25-27 *Acmaeodera (Rugacmaeodera) curlettii* sp. nov. 25, lateral details; 26, frontal details; 27, right protibia and tarsus (enlarged). Scale bar represents length of ovipositor relative to lateral details.

Figures 28-31 *Acmaeodera (Cavacmaeodera) haubaas* sp. nov. 28, lateral details; 29, frontal details; 30, right protibia and tarsus; 31, aedeagus, right-lateral and dorsal view (enlarged). Scale bar represents length of aedeagus relative to lateral details.

Figures 32-35 *Acmaeodera (Ptychomus) vogtorum* sp. nov. 32, lateral details; 33, frontal details; 34, right protibia and tarsus; 35, aedeagus, right-lateral and dorsal view (enlarged). Scale bar represents length of ovipositor (left) and aedeagus (right) relative to lateral details.

waterbergensis and *A. kosterae*, while the shape of the prosternum and metacoxa are quite unique.

BIOLOGY: Occurring in montane habitats.

ETYMOLOGY: The name is derived from the purple sheen.

***Acmaeodera* (*Rugacmaeodera*) *curlettii* Holm, sp. nov.**

Figures 25-27 & 36d

MATERIAL: Holotype, ♀ & 1 Paratype ♀ TANZANIA, Madibira, 08.i.1992, G. Curlętti leg.(MNCI); 1 Paratype, ♀ same data (TMSA); 2 Paratypes, ♀♀ TANZANIA, Ujewa, 08-09.i.1996, G. Curletti leg. (TMSA); 1 Paratype, TANZANIA (Dodoma), Kongwa, 17.i.1996, G. Curletti leg. (TMSA).

DESCRIPTION: Size: Length 4.2 - 5.6 mm, width 1.3 - 1.9 mm.
Head: Frons wider than long between eyes, sides sub-parallel, having deep craters with rounded common rims of which approximately fourteen fit across middle of frons, with short, white, slightly squamose setae in anterior half. Epistome broadly, roundedly incised below, with a distinct supra-epistomal groove (Figure 26). Supra-antennal tubercles undiscernible.

Pronotum: Gently rounded at sides, widest behind the middle, disc with depressions across middle and deeper depressions around basal fossae (cavities around lateral basal fossae extend inward, so that pronotal surface extends over these fossae as an overhang). Sculpture very dense, deep craters with sharp common rims, these rims forming semi-confluent longitudinal ridges near anterior margin and sides. Setae limited to sides, white, short. Anterior margin roundedly protracted in middle, with a groove on sides only. Posterior margin straight. Sides with a complete, straight, blade-like rim, this rim entirely visible from above.

Elytra: Widest at apical two thirds of length, with apex finely but sharply serrate. Interstices coarsely punctured, with single rows of short white setae hardly protruding from punctures, deeply and sharply grooved in apical half, 9th interstice extremely protuberant from middle to three quarters of length. Striae deep punctures, becoming grooves in apical half, 8th stria depressed, causing a concave depression from behind humeri to two thirds of length. In the basal third each elytron with a large depression adjacent to suture. Base straight, slightly upturned. Humeral prominent, shiny. Suture elevated between the discal depression.

Underside: With colour as on dorsum. Sculpture small, densely placed umbilici bearing short, recumbent, white, slightly squamose setae. Metacoxa with sharp angular process in posterodistal corner (Figure 25). Anterior margin with a median lobe and groove, laterally replaced by a large antennal invagination.

Appendages: With colour and setation as on underside. Protibia thin (Figure 27). Setal brushes on tibiae very light yellow, nearly white. Antenna shorter than pronotal disc, with segment four not dilated.

NOTES: *Acmaeodera* (*R.*) *curlettii* superficially resembles the dark bronze forms of *A.* (*R.*) *subprasina* Marseul, 1867 and *A.* (*R.*) *obscurata* Ancey, 1882, but may easily be distinguished by the characteristic elytral depressions and by the differing pronotal sculpturation.

BIOLOGY: This curious species is recorded from three localities in Tanzania. All six known specimens are female and this species is one of several for which only females are known. Notwithstanding fair series and diverse localities, it raises the question of whether some *Acmaeodera* species have switched to parthenogenesis - a strategy now known to have occurred in a variety of beetle families, but to our knowledge not within Buprestidae

ETYMOLOGY: The species is named after G. Curletti who collected the type series.

***Acmaeodera* (*Cavacmaeodera*) Holm, sub-gen. nov.**

Type-species: *Acmaeodera* (*Cavacmaeodera*) *krugeri* Holm, 1978.

GENERIC DIAGNOSIS: Epistome with deep supra-epistomal groove. Pronotum with blade-like sides, these visible from above in posterior half but strongly incurved and not visible from above in anterior half. Eyes protruding laterally. Antenna short, with fourth segment not dilated. Protibia, and to a lesser degree meso - and metatibia, spatulate. Metacoxa with angular posterodistal corner. Prosternum with sharp-rimmed antennal groove and profemoral groove, mesepisternum with sharp-rimmed mesofemoral cavity, first abdominal sternite with sharp-rimmed metafemoral cavity.

DISCUSSION: This sub-genus is very obviously derived from *A.* (*Rugacmaeodera*), most probably in a paraphyletic relationship. Tendency towards the flattened tibiae, as well as femoral depressions on venter (albeit not sharp rimmed cavities) are encountered in e.g. *A.* (*R.*) *raffrayi*. The epistome, metacoxa and pronotal sides of *Cavacmaeodera* agree with the typical *Rugacmaeodera* features. The fact that a second species in this group has now been found, however, demonstrates that this represents a phylogenetic radiation and not simply a single aberrant species.

The sub-genus consists at present of *A.* (*C.*) *krugeri* Holm and *A.* (*C.*) *haubaas* sp. nov. Both originate from the north-eastern South African lowveld. It is likely that more species will eventually be found as both species were apparently collected by beating, and not off flowers.

ETYMOLOGY: The name is derived from the deep cavities of the meso- and metafemorae.

***Acmaeodera* (*Cavacmaeodera*) *haubaas* Holm, sp. nov.**

Figures 28-31 & 36a

MATERIAL: Holotype, ♂ SOUTH AFRICA, Transvaal, Blyde River, 18 km WSW Hoedspruit, 24°24'S, 30°47'E, 23.x.1983, Louw, Bellamy, Oberprieler & Scholtz (TMSA); 1 Paratype, same data (TMSA); 1 Paratype, SOUTH AFRICA, D. S. Verity (TMSA); 1 Paratype, SOUTH AFRICA, Tvl., D'Nyala Nat.

res., Ellisras, 23°45'S, 27°49'E, 850 m. 24-6.ix.1990, C. G. Moolman (SANC).

DESCRIPTION: Size: Length 4.1 - 4.9 mm, width 1.4 - 1.6 mm.
Head: Frons as wide as long between eyes with sub-parallel sides. Sculpture large craters with common rims of which ten fit across middle of frons. Setae white, squamose, inclined forward. Epistome long, roundedly incised and slightly upturned below, with deep supra-epistomal groove (Figure 29). Supra-antennal tubercles reduced to flat unsculptured areas. Eyes protruding forward and sideways.

Pronotum: Widest near base, with disc strongly rounded with two very weak bilateral depressions. Sculpture and setation as on head. Anterior margin weakly bisinuate with broadly rounded median lobe, vaguely grooved on sides only. Lateral carina blade-like, arcuate, visible from above in basal half, drawn inward in anterior half. Basal fossae deep but with only small surrounding depressions, base straight, not upturned.

Elytra: With sides parallel in anterior two thirds of length, from there rounded to blunt apex. Interstices rounded, with single rows of very short, thin, white setae, sutural and ninth interstice elevated in apical third. Striae small punctures, one quarter width of interstices, in grooves from middle to apex. Base straight, slightly upturned. Humeri prominent, shiny on top.

Underside: Black, with umbilicate sculpture and recumbent, white, squamose setae. Anterior margin with deep, sharp-rimmed antennal groove. Proepisternum deeply concave to accommodate antenna under folded profemur. Mesepisternum with deep, sharp-rimmed cavity for folded mesotibia. Metacoxa with angular postero-lateral corner. First abdominal sternite with deep, sharp rimmed cavity to accommodate folded metafemur (Figure 28).

Appendages: Black, with setae as on pronotum but thin and dark in tibial brushes. Protibia spatulate (Figure 31), meso- and metatibia with shorter external blades. Antenna short, with fourth segment not dilated.

NOTES: The species is easily recognised by its sub-generic characters, which shares only with *A. krugeri*. From the latter it may be distinguished by coloration, squamose setation and differing pronotal sculpture.

BIOLOGY: The biology of this species is not known.

ETYMOLOGY: The name is a South African vernacular expression of surprise.

***Acmaeodera* (*Ptychomus*) *vogtorum* Holm, sp. nov.**

Figures 32-35 & 36f

MATERIAL: Holotype, ♂ & 10 Paratypes, NAMIBIA, Boomrivier Canyon, 28°02'S, 17°04'E, 01-04.xii.1996, beating on *Acacia karoo*, Vogt wedding exp. (NMWN); 10 Paratypes, same data (TMSA; SANC; NMPC; BMNH all ex NMWN); 1 Paratype, NAMIBIA, Boomrivier, 28°00'S, 17°03'E, 12.xi.1992, E. Marais (NMWN).

DESCRIPTION: Size: Length 5.4 - 7.2 mm, width 2.1 - 2.6 mm.
Head: Frons as wide as long between eyes, parallel-sided, mildly depressed in middle. Sculpture umbilici of which about 10 fit across middle, but a few deeper asetose punctures in median depression. Setae long, white, curved downward. Epistome with thin lateral lobes, deeply incised, with supra-epistomal groove (Figure 33). Supra-antennal tubercles small but distinct. Eyes normal.

Pronotum: Widest near base, with sides evenly rounded. Disc evenly and strongly rounded.

Anterior margin very weakly bisinuate, weakly grooved in lateral corners only. Lateral carina very short, slightly arcuate near base, just visible from above. Sculpture evenly spaced small punctures on disc, of which about fifteen fit into pronotal length, but deeper and larger towards sides. Setae as on head, inclined forward on disc but downward near sides. Basal fossae small, the median one hardly discernible, the lateral ones surrounded by small, shallow depressions.

Elytra: Widening slightly from behind humeri to two thirds of length, from there tapering to a rather pointed, terminally finely serrate apex. First three interstices shiny, flat, other interstices transversely rugulose. All interstices finely, uniserially punctured with short, white, recumbent setae originating from these punctures. Striae near suture fine punctures in grooves, becoming larger and as wide as interstices near sides but last two striae fine again. Humeral calli not very prominent, but shiny. Base straight, not upturned. Suture mildly elevated in apical third.

Underside: Metallic green, with umbilicate sculpture becoming fine sparse punctures along midline. Setae as on head, recumbent. Anterior pronotal margin thinly rimmed, receding backward into antennal groove. Rear margin of metacoxa weakly concave (Figure 32).

Appendages: Black with weak metallic sheen, with stiff white setae, also in tibial brushes. Protibia with protruding anterodistal angle (Figure 34). Antenna as long as pronotal disc, with fourth segment not dilated.

NOTES: This typical *Ptychomus* species is the only species, with the exception of *A. foudrasii* Solier, 1833 occuring in Southern Africa and belongs to the small, more derived group of species. The ovipositor is short (as in *A. foudrasii*), but not as short as in *A. cupreosuturata* Obst, 1903. It may easily be distinguished from *A. foudrasii* on coloration alone, but also on account of coarser lateral elytral striae and ventral sculpture. It most resembles the east African *A. katonai* Holm, 1978 in colour (including a coppery sheen on sutural interstices), but differs markedly in the shape of the protibia.

BIOLOGY: The host of adults is *Acacia karoo* Hayne (Mimosoideae), off which all the known specimens were beaten, while none were collected in yellow trays or buckets - suggesting that the species does not visit yellow flowers. The distribution is probably limited to the banks of the lower Orange River, being surrounded by desertic mountains.

ETYMOLOGY: The species is named after Mr. and Mrs. Vogt, as the majority of the type series was collected on the occasion of their wedding in the Boom River in 1996.

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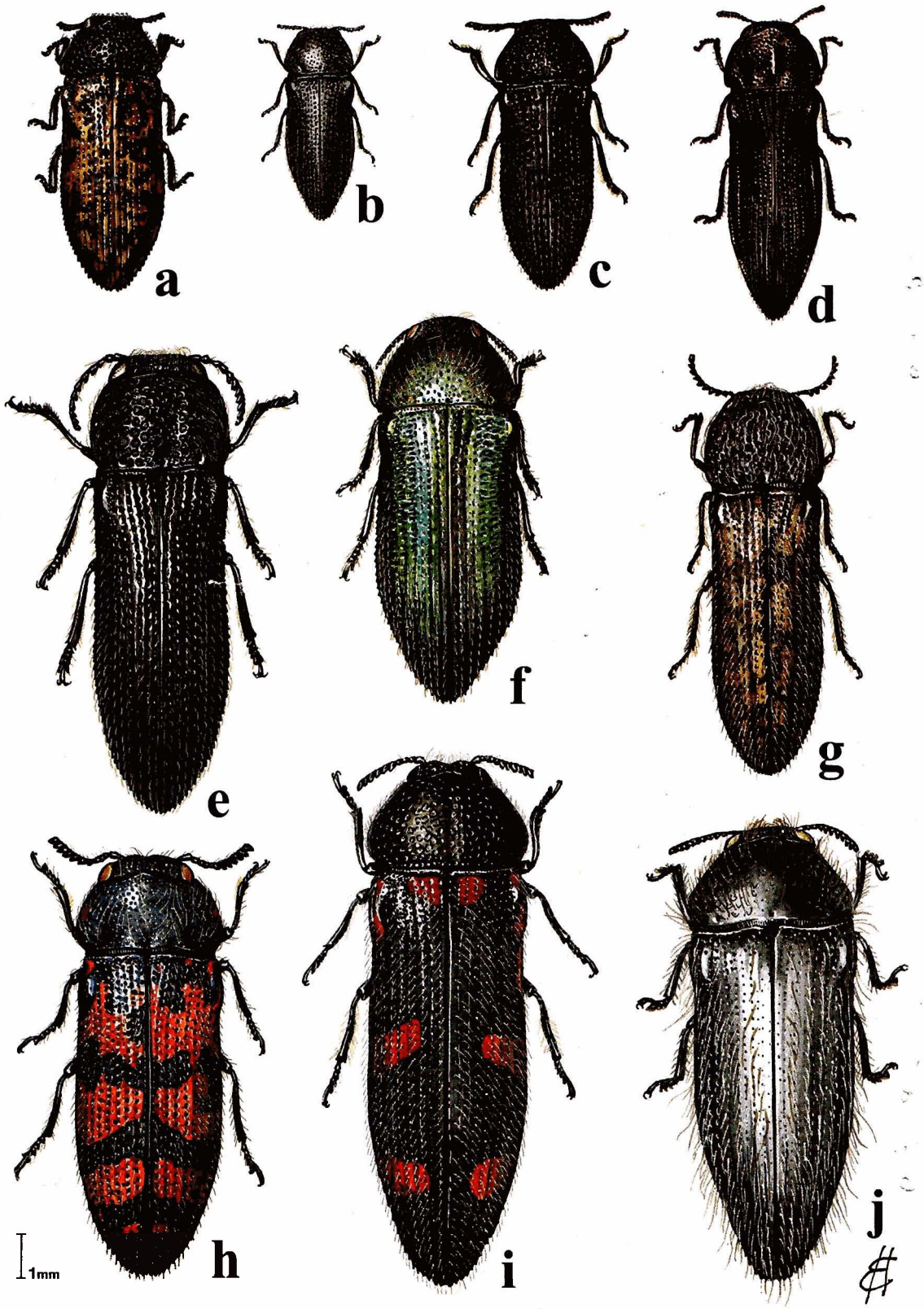
Figure 36 (on following page) Dorsal aspects of new *Acmaeodera* spp., a, *Acmaeodera* (*Cavacmaeodera*) *haubaas*; b, *Acmaeodera* (*Acmaeotethya*) *altae*; c, *Acmaeodera* (*Rugacmaeodera*) *purpurescens*; d, *Acmaeodera* (*Rugacmaeodera*) *curlettii*; e, *Acmaeodera* (*Acmaeotethya*) *maraisi*; f, *Acmaeodera* (*Ptychomus*) *vogtorum*; g, *Acmaeodera* (*Acmaeotethya*) *namaquensis*; h, *Acmaeodera* (*Acmaeotethya*) *wittmeri*; i, *Acmaeodera* (*Bellacmaeodera*) *bellamyi*; j, *Acmaeodera* (*Acmaeodera*) *marki*. Scale bar represents 1 mm.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