

## Taxonomic notes on *Bolboceras indicum* Westwood and its relatives (Coleoptera: Geotrupidae)

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ABSTRACT. — Within *Mimobolbus* Vulcano et al. a subgenus *Bolboceratops* nov. is proposed for four species hitherto combined with *Bolboceras*, viz *B. indicum* Westwood (type-species), *buxtoni* Paulian, *suaelum* Kolbe, *tenuistriatum* Müller. *Mimobolbus* (*Bolboceratops*) *imitator* sp. nov. (India) is described, illustrated, and compared with *M. indicus* (Westwood). The distribution of the two Indian species is recorded, while the known Africans are included in a checklist. *Bolboceratops* species all share a clypeofrontal ornamentation consisting of only two paramedian tubercles.

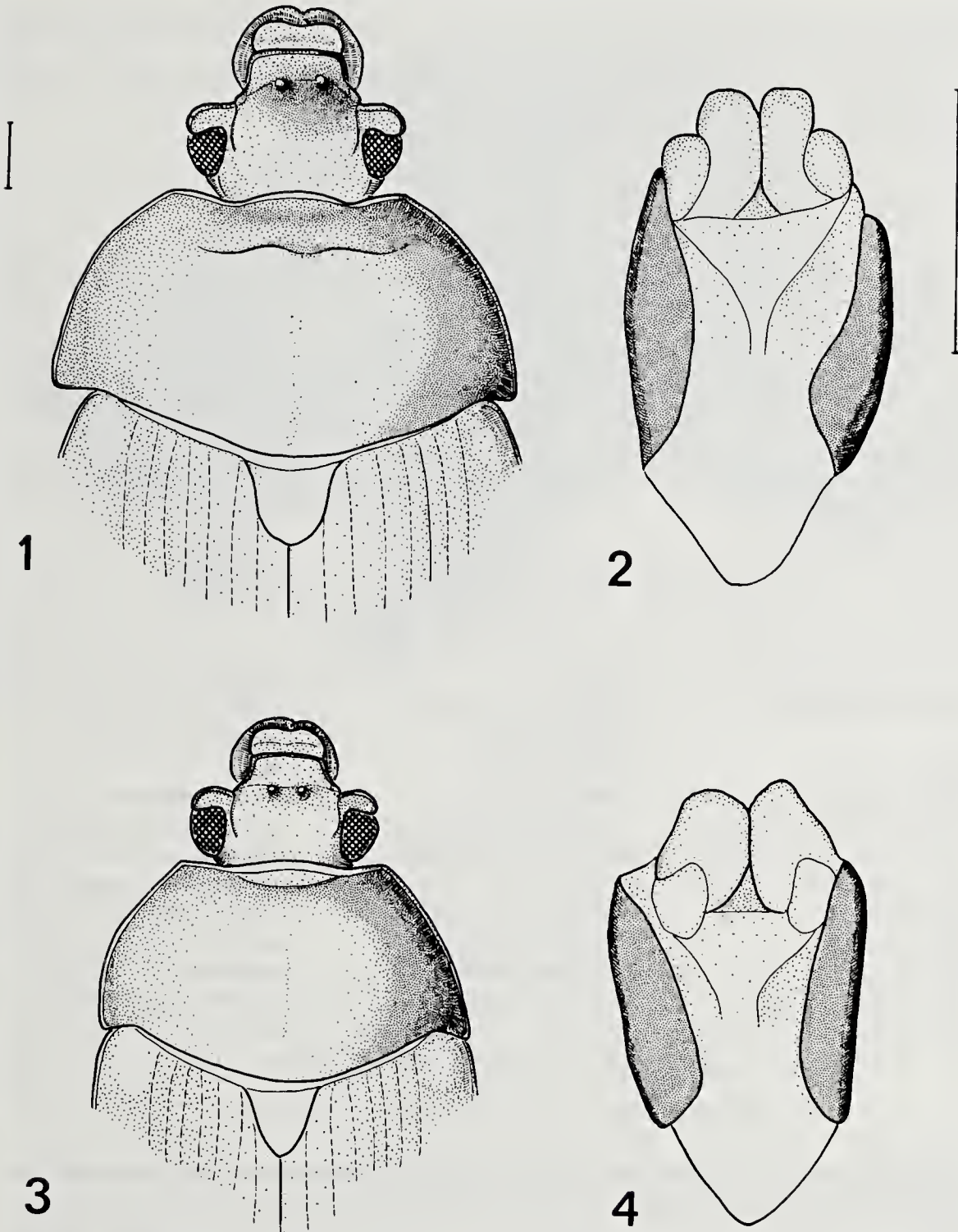
Several of the smaller bolboceratine species of the Asian and African tropics are characterized by the presence of two paramedian protrusions on the clypeofrontal transition. Some Oriental forms have been placed in the genus *Bolbogonium* Boucomont (Krikken, 1977); two other Oriental species, *Bolboceras indicum* Westwood and a closely related novelty, have to be accommodated in another genus, which cannot be *Bolboceras* Kirby, because they have nothing to do with its type-species (Cartwright, 1953: 101). More relatives of *Bolboceras indicum* occur in the Afrotropical Region, some of them undescribed. The three described African species are merely listed here, because I am still searching for more material. My primary intention now is to settle the status of the Asian forms. In my opinion the *indicum* group is sufficiently distinct to justify the present proposal of a new subgenus within a genus erected for a complex of African species.

Genus *Mimobolbus* Vulcano, Martinez & Pereira  
Subgenus *Bolboceratops* nov.

Diagnosis (generic characters included). — Clypeofrontal transition medially (on or against suture, which may be shifted) with a pair of tubercles (see figures); clypeus without further protrusions, frontovertex at most with feeble swelling. Pronotum anteriorly more or less impressed; disc without tubercles; no paramedian and/or lateral cavities. Metasternal disc rhomboid in outline; anterior process separating middle coxae, abruptly retuse in front, lacking spine(s) or any other protrusions; anterior mesosternal declivity more or less concave. Dorsal outline of mandibles symmetrical, arcuate, apart from usual protrusions. Pronotal base usually immarginate, apical margin simple or feebly bituberculate medially. Elytral stria 1 reaching side of scutellum, 2-7 reaching base.

Dorsal outline of clypeus approximately trapeziform; perimarginal ridge variably developed. Anterior margin of eye-canthus arcuate or feebly angulate anterolaterally. Eye-canthus and temporal lobe separated. Scutellum short (median length/maximum width ca 1), with rounded apex and (sub)sinuate sides. Elytral base unmodified. Elytral epipleuron reaching apicosutural angle. Elytral interstriae at most slightly convex, striae scarcely impressed. Antennal club unmodified; proximal side of club segment 1 usually entirely pubescent-punctulate. Anterior paramedian costae of prosternum distinct. Postprosternal swelling with or without small spine. Middle as well as hind tibia with one complete non-apical fossorial elevation, its-crest angulate-emarginate, bidentate or bilobate. Terminal spur of fore tibia long and slender, scarcely tapering. Fore tarsal segment 1 short. Parameres feebly sclerotized, more or less lobiform (see figures). No exoskeletal sexual dimorphism. Medium-sized bolboceratines, total length 6-15 mm. Colour always brown, but uniform colour of fore-body and hind-body may be of different tones.

Type-species. — *Bolboceras indicus* Westwood.



Figs. 1-4. *Mimobolbus* species, fore-body (1, 3) and phallus, dorsal view (2, 4). 1-2, *M. imitator*, holotype; 3-4, *M. indicus*, Coimbatore. Scale lines = 1 mm; 1, 3: same scale; 2, 4: same scale.

Affinities. — There is a strong overall similarity between the species recently united in *Mimobolbus*, *Bolbocaffer* (both of Vulcano & al., 1969), and those of the present subgenus. As a matter of fact, I consider *Mimobolbus* and *Bolbocaffer* scarcely different, and particularly the ridged pronotal base (key couplet 1, Vulcano & al., 1969: 159) cannot be used as an absolute generic character. It seems more realistic to place the species involved, and many of the Africans still left in *Bolboceras auctorum* (cf. Paulian, 1941), in one genus *Mimobolbus*, and to sort out the various species-groups. Certainly some of these should then be attributed

subgeneric rank, like *Bolboceratops*, which stands out by its bituberculate head and the rather simple build of the pronotum.

Distribution. — Thibet, India, northeastern part of Afrotropical Region, possibly also in intervening area and westward to Senegal.

Bionomics. — Unknown; presumably burrowers; collected at light.

Note. — Like *Mimobolbus* the name *Bolboceratops* has to be treated as a masculine noun.

#### CHECKLIST OF *Bolboceratops* SPECIES

*M. buxtoni* (Paulian, 1941: 36; *Bolboceras*), type in London. — Uganda, Somalia (type-loc. not detailed).

*M. imitator* Krikken, present paper, holotype in Munich; ♂ ♀. — India (type-loc. Karikal).

*M. indicus* (Westwood, 1848a: 386, 1848b: 356, 1852: 25; *Bolboceras*), lectotype in Oxford; ♂ ♀. (Syn. *Bolboceras bidentatus* Boucomont). — India (type-loc. Central India), Thibet; northeastern Africa to Senegal.

*M. suahelus* (Kolbe, 1894: 170; *Bolboceras*), type in Berlin. — Kenya (type-loc. Witu).

*M. tenuistriatus* (Müller, 1941: 348; *Bolboceras*), syntypes in Genoa, Triest. — Somalia (type-loc. Obbia-Berbera).

#### TABLE SEPARATING THE ASIAN *Bolboceratops* SPECIES (see figures)

	<i>imitator</i>	<i>indicus</i>
<i>Clypeofrontal tubercles</i>	large, shifted in front of genal angles	small, between genal angles
<i>Eyes</i>	relatively small	large
<i>Derm between eyes</i>	sparsely punctate	densely punctate
<i>Anterior declivity of pronotum</i>	with ill-pronounced base and bisinuate superior crest	with well-pronounced luniform base, lacking superior crest
<i>Parameres</i>	approximately as in fig. 2	approximately as in fig. 4
<i>Colour</i>	of fore-body brown, of elytra yellowish	uniformly yellow to brown
<i>Size</i>	larger, length 9-13 mm	smaller, length 6-10 mm

#### DESCRIPTION, RECORDS, OTHER NOTES

##### *Mimobolbus (Bolboceratops) imitator* sp. nov. (figs. 1-5)

Holotype (male). — Approximate length 12, width 8, height 6 mm. Fore-body and legs reddish brown, elytra and antennal club yellowish brown, shiny; pilosity yellow-brown. Habitus, fig. 5.

Labrum emarginate in front, sides rounded; surface convex, rugulate-punctate, lacking transverse ridge. Cephalic contours, fig. 1. Clypeofrontal suture with pair of discal tubercles on generally convex surface; clypeus, frons around tubercles, and eye-canths, rugulate-punctate; clypeofrontal suture distinct. Frons between eyes, and vertex, sparsely punctate; frontolateral ridge extending from protuberant genal corner to nearly halfway eye; transition from vertex to tempus marked by fine ridge.

Pronotal contours, fig. 1. Anterior declivity of pronotum steep, slightly concave, topped by bisinuate crest; trace of impressed midline; pronotal base opposite elytral interstriae 2-6 and scutellum immarginate; other sections of margin finely ridged. Pronotal punctation double; secondary punctures ( $\times 50$ ) very sparse on disc, elsewhere more or less abundant; primary punctation abundant on lateral declivities and base of anterior declivity, sparse elsewhere;



Fig. 5. *Mimobolbus (Bolboceratops) imitator*, a new species from India.

anterior and lateral declivities microreticulate ( $\times 50$ ). Scutellum (fig. 1) abundantly micropunctate ( $\times 50$ ).

Juxtasutural punctures of elytra subobsolete; elytral striae shallowly impressed, finely, distinctly punctate; punctures of discal striae separated by  $6 \pm 3$  times their diameter. Elytral interstriae scarcely convex, sparsely, indistinctly micropunctate, indistinctly microreticulate ( $\times 50$ ).

Fore tibiae with  $2 + 6$  or  $7$  external denticles, their size decreasing proximad. Middle and hind tibiae each with one complete non-apical fossorial elevation, the one on middle tibia lobate, the one on hind tibia with arcuate-lobate crest; proximal protrusions on external side of middle and hind tibiae small; number of fossorial spines along crests of complete antapical elevations ca 14.

Phallus, fig. 2

Some measurements in mm. Cephalic maximum length (exclusive of labrum and mandibles) 2.2, maximum width 3.4; distance tips clypeal tubercles 0.58. Distance anterolateral angles of pronotum 3.7; median length 3.9, maximum width 6.0. Median length of scutellum 1.2, maximum width 1.3. Number of primary punctures halfway lateral declivity of pronotum 18-23/sq.mm, their diameters ca 0.7 mm.

Variation. — Length 9-13 mm. Although the size of this species shows considerable variation, this is scarcely reflected in the diagnostic characters, e.g. the fourth in the table above. No exoskeletal sexual dimorphism was observed; the genitalia have to be examined to establish sex.

Identification. — *Mimobolbus imitator* is nearest to *indicus*; they are easily separated by means of the table given above. Some other diagnostic features are: Transverse ridge of labrum obsolete due to heavy rugulate-punctate microsculpture. Pronotal base immarginate; apex simple, not bituberculate. Elytra shiny; striae feebly but distinctly impressed.

Material examined. — 53 specimens.

Holotype from India: Karikal, VIII.1964, P. S. Nathan (Zoologische Staatssammlung, Munich).

Paratypes as follows: India: Anamalai Hills, XI.1963 (1 ♂, Leiden), V.1966, 3500 ft (1, Schulze), Nathan; Coimbatore, XI.1963, Nathan, 1400 ft (1, Ottawa), ditto, XI.1964, Nathan (22 ♂ ♀, Munich), ditto, XI.1965, Nathan (1 ♀, Schulze), ditto, XI.1966, Nathan (5, Ottawa, Howden coll.), ditto, XII.1966, Nathan (1 ♂, Howden coll.); Karikal, VIII.1964, Nathan (17 ♂ ♀, Munich, Leiden); Nellore, VII.1969 (1, Howden coll.); Trichinopoly, Paesler (2, Berlin).

*Mimobolbus (Bolboceratops) indicus* (Westwood) comb. nov. (figs. 3-4)

Notes. — This species occurs also in Northeast Africa, whence it was originally described as *Bolboceras bidentatus* Boucomont (1923: 99; 1932: 53); I have seen some of the types. Paulian (1941: 37) recorded *indicus* from several countries in northern Africa. As mentioned in the introduction, I will later deal with African *Bolboceratops* more thoroughly.

Material examined. — 42 specimens.

Lectotype, here designated, with three labels: "Indicus/Hope", "TYPE/WESTWOOD/Ann. Nat./Hist. 1848/Coll. Hope Oxon.", "TYPE COL: 517/Bolboceras/indicus Westw./HOPE DEPT. OXFORD"; length of specimen (not sexed) ca. 10 mm.

Further males and females from the following localities, months, collections:

India: Bandra; Bellary; Calcutta; Coimbatore; Kanara; Karikal; Madras; Nagpur; Sabatoo; Sagoda; Simla; Surat; Assam; Bengal; South Bombay; Sikkim. — Thibet.

Months I (1 specimen), II (1), VII (2), VIII (6), IX (5), X (1), XI (12), XII (2). Collected at light.

Collections Berlin, Dresden, Eberswalde, Leiden, London, Munich, Ottawa, Oxford, Paris, Stockholm; Howden (Ottawa); Schulze (Berlin).

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Our staff artist A. Bos produced the habitus drawing of *M. imitator*.

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CORRECTIE. Tussen het versturen van de goedgekeurde proef van het nummer van 1.XII. 1977 en het afdrukken daarvan blijkt in het artikel van de heer K. Vegter op p. 178, regel 6-10 van boven, iets mis gegaan te zijn, waarop pas onlangs onze aandacht gevestigd werd. Deze regels moeten als volgt luiden:

*A. haemorrhoea* (Fabricius), *barbilabris* (Kirby), *fuscipes* (Kirby), *nigroaenea* (Kirby), *wilkella* (Kirby), *apicata* Smith (= *batava* Pérez), *carantonica* Pérez (= *jacobi* Perkins), *armata* (Gmelin), *!subopaca* Nylander, *varians* (Kirby), *!nigriceps* (Kirby), *cineraria* (Linnaeus), *clarkella* (Kirby), *ruficrus* Nylander, *!fucata* Smith, *!praecox* (Scopoli), *lapponica* Zetterstedt, *ovatula* (Kirby), *tibialis* (Kirby), *saundersella* Perkins, *!angustior* (Kirby), en *!denticulata* (Kirby).

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