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NOTES ON AFRICAN BOLBOCERATINI (COLEOPTERA, GEOTRUPIDAE)

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ABSTRACT

The study of a collection of African *Bolboceras*, s. l., showed that 5 new genera had to be erected to include the known species. Since only a few of the species are known to the authors, the majority of the species are left unplaced. The new genera are *Microbolbus*, gen. n. (type-species, *Microbolbus decoratus*, sp. n.) *Mimobolbus*, gen. n. (type-species, *Bolboceras ornatellum* Peringuey), *Bolboceroides*, gen. n. (type-species, *Bolboceras capense* Klug), *Bolbaffer*, gen. n. (type-species, *Bolboceras princeps* Kolbe) and *Bolbocaffer*, gen. n. (type-species, *Bolboceras sansibarium* Kolbe).

According to Cartwright (1953) the old genus *Bolboceras* was restricted to holarctic species, since the type-species of *Bolboceras* Kirby and *Odontaeus* Klug are the same species. For this reason the various species from other parts of the world, described as *Bolboceras*, have to be transferred to different genera.

Howden (1954) raised to generic level some of Boucomont's subgenera, described to include some Australian, Asiatic and American species, leaving almost all the Neotropical, Asiatic and the totality of the African species, unplaced.

Having received some African specimens of Geotrupidae for determination, and based on the above reasons, we describe five new genera for some species of the African Continent. We have seen very few specimens, representing only a few species; however, we judge that many African species, included up to now in *Bolboceras*, will have to be included in some of these new genera.

KEY TO THE NEW GENERA OF AFRICAN BOLBOCERATINI

1. Pronotum without basal margin 2
- Pronotum with complete basal margin 3

1. Departamento de Zoologia, Secretaria da Agricultura, São Paulo. With help of the Conselho Nacional de Pesquisas.

2. Investigador de la Carrera. Consejo Nacional de Investigaciones Científicas y Técnicas; adscrito al Comando Militar Argentino.

2. Sternellum flat, small, unarmed; metasternum as wide as long and without sulcus between intercoxal area
 *Microbolbus*, gen. n.
 Sternellum keeled and toothed; metasternum with intercoxal area longer than wide and sulcate *Mimobolbus*, gen. n.
3. Front border of pronotum only marginate; sternellum flat or with a small, longitudinal ridge and a denticle in front of it *Bolboceroides*, gen. n.
 Front border of pronotum with a strong and raised keel; sternellum not flattened, and produced posteriorly into a strong longitudinal keel; pronotum alike in both sexes 4
4. Ninth antennite with a smooth and well delimited area on lower face; mesosternum with four longitudinal, smooth areas; upper surface of labrum without transverse carina; second elytral stria beginning behind base of elytra; strong sexual dimorphism *Bolbaffer*, gen. n.
 Ninth antennite completely pilose and without smooth area; mesosternum without the four longitudinal, smooth areas; upper surface of labrum with transverse carina; second elytral stria beginning at base; inconspicuous sexual dimorphism *Bolbocaffer*, gen. n.

Microbolbus, gen. n.

Allied to *Bolbocaffer*, gen. n. and *Bolbaffer*, gen. n., and easily recognized by the following characters: basal border of pronotum immarginate; prosternum not raised, and without longitudinal carina on post-coxal area; a different metasternal process between middle coxae; pronotal sculpture inconspicuous.

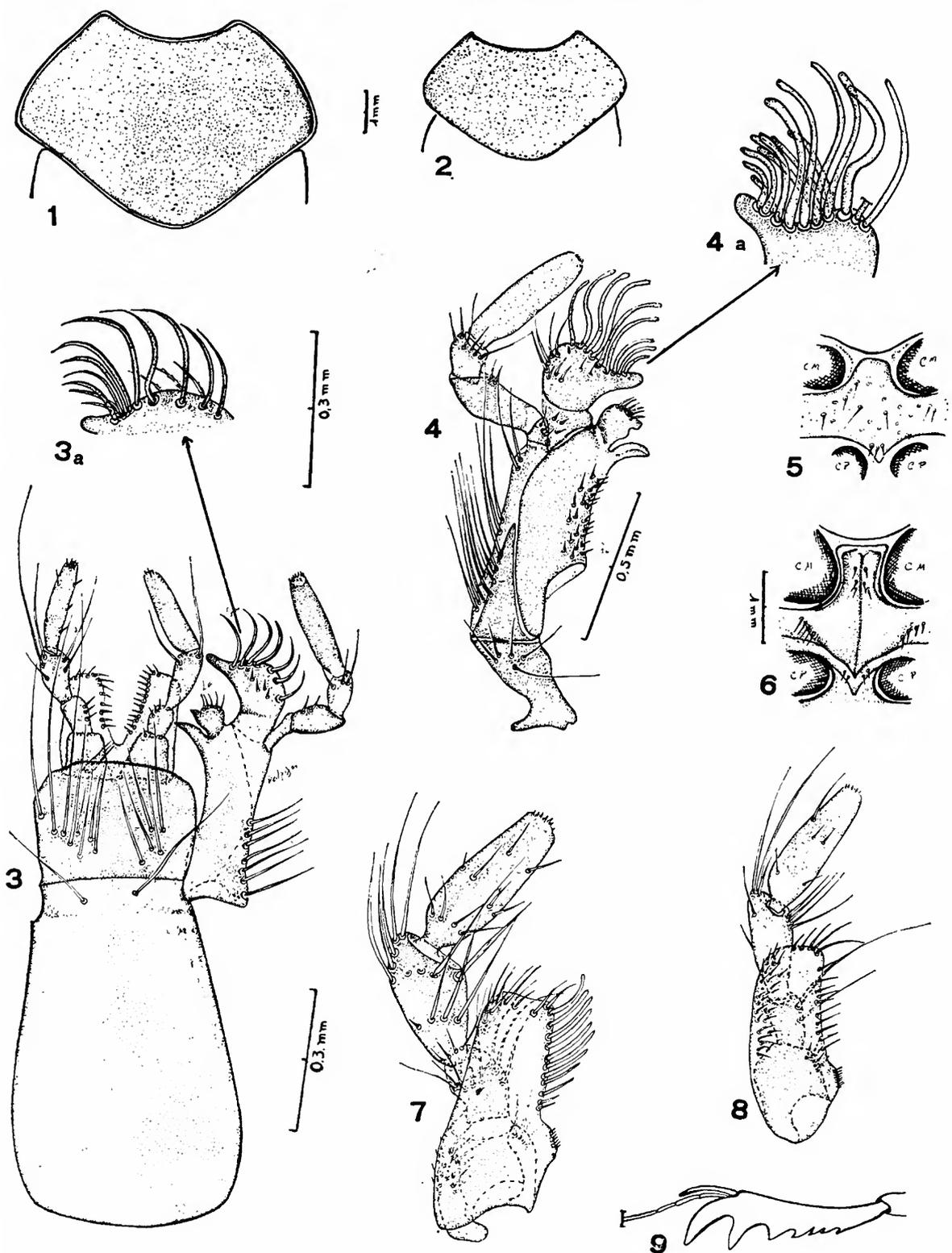
This genus is well differentiated from other genera, having only some similarities with the Australian *Blackburnium* Boucomont and *Bolborhachium* Boucomont, with which it has in common an identical number of elytral striae between the suture and the humeral callus; but differing by the cordiform central area of the metasternum; the mesosternum wide in the middle and hollowed between the middle coxae; pronotum regularly convex and without raised or depressed areas. It differs from the Asiatic *Bolbochromus* Boucomont, by the not completely divided eyes and the sutural elytral stria which does not reach the base of elytra. There is no relation with the American genera.

Head trapeziform; anterior margin of clypeus raised, the margins convergent at sides and straight in front; with rounded angles; clypeo-frontal suture sulcate, inconspicuous and almost straight; frontal region bituberculate behind, laterally with a thin carina formed by the prolongation of the clypeal borders and disappearing in the occipital region; ocular canthus large and lobuliform, reaching the middle of the eyes; antennae with long and claviform, slightly curved, right-angled scape, truncate at apex; second antennite subcordiform; 3-6 short and campanuliform; 7-8 disciform (the seventh irregularly so); 9-11 long and lentiform; the ninth

glabrous in the central-basal portion, and the eleventh covered with thin and dense setae on lateral surface. Maxillae (fig. 3) elongate, with securiform galea, which has a small and stout process in the middle, its free margins with robust and well chitinized setae (fig. 3a); subgalea forming a sharp and laminiform tooth in the inner-apical portion: lacinia small, laminiform and with an obtuse and flat tooth in the median-distal region; maxillary palpi (fig. 3) 4-segmented, with the first article small, cylindrical, subclaviform and obliquely truncate at apex; third cylindrical and smaller than second; fourth the largest, fusiform, dressed with micro-setae and with membranous apex; labium (fig. 3) with quadrangular mentum scarcely wider than long, front margin arched and with a small incision on each side, the lateral borders rounded, and the hind border straight; labial palpi 3-segmented, the first article twice as long as wide, the second twice as long as wide at base, with truncate apex; paraglossae long and almost reaching the median portion of the second article of the labial palpi and with a file of spiniform setae on inner and apical margins; submentum short, with a transverse sulcus; gula convex and longer than wide; mandibles alike, the left one with the lateral margin regularly rounded, the median margin sinuous in basal half and with clear and small incision at distal half, and the apex forming two small denticles; the right mandible with rounded lateral margin, slightly sinuous in basal half, with a large, dentiform process at distal half, forming an apical and an inner submedian tooth, both sharp and conspicuous; labrum wider than long, with anterior margin slightly elevated in the middle.

Pronotum transverse and regularly arched thinly emarginate on anterior and lateral borders; hind border marginated only up to the humeral region of the elytron; front border sinuous; lateral border rounded and incised on each side of the hind border, arched in the middle; anterior angles obtuse or almost right, hind angles completely rounded. Prosternum with front border arched in the pre-coxal region, and with two short, longitudinal and cariniform lines and the middle, which are contiguous with the coxal keels and surround a depressed area; post-coxal portion flattened and unarmed; pre-episternum thin and long. Scutellum slightly longer than wide, with convergent borders and arched distally, forming a semicircle with the opposite margin. Elytra with thin and punctate striae; with 7 striae between suture and humeral callus, the first one not reaching the base; 2-7 touching elytral base; the others (except the marginal one) far from the margins, with a file of punctures in distal half, between the tenth and ninth striae; interstriae wide and convex; elytral suture with a thin margin; epipleurae large, long and narrowed posteriorly, with weakly keeled margins, and surface with hair-bearing punctures. Mesosternum very broad and long; anterior margin thickened in the middle, depressed behind and between the coxae. Metasternum with cordiform and unkeeled disc; broad in front and well separated between the middle coxae; with straight meso-metasternal suture; lateral area forming a wide triangle; metaepisternum cuneiform.

Front tibiae flat, arched and apically enlarged (fig. 9), with 7 marginal teeth (progressively increasing in size), the apical one being the largest; calcares very large, flat and cuneiform, as wide



Bolbocaffer sansibaricum (Kolbe): 1, dorsal view of pronotum. *Mimobolbus ornatellus* (Peringuey): 2, dorsal view of pronotum; 4, maxillae and maxillary palpi; 4a, detail of galea; 6, metasternum; 7, labial palpi and paraglossa. *Microbolbus decoratus*, sp. n.: 3, gula, mentum, labial palpi, paraglossae, maxillae and maxillary palpi; 3a, detail of galea; 5, metasternum; 8, labial palpi and paraglossae; 9, front tibiae and tarsi.

as the inner side of the apex of the tibia; front tarsi filiform, almost as long as tibia, with the first tarsomeron shorter than the second; tarsomera 2-4 of the same size; the fifth the largest, with long, thin, arched and sharp claws; onychium formed by two setae. Middle legs oblique and transverse, completely separated by the metasternal process; trochanteres thin and cuneiform; middle femora thin, slightly convex in front and arched behind; middle tibiae shorter than femora, slightly arched and thickened distally, with an oblique keel and a salient denticle on ventral side of the lateral margin; with apex truncate at right angle and a dentiform angle in the ventral side; with small and irregular denticles above the keel of the lateral-ventral border; calcares large and longer than the first tarsomeron, the upper one spiniform, larger and almost straight, the lower one shorter and arched; middle tarsi almost as long as tibiae, with the first tarsomeron very large, almost twice long as the second; 3-4 decreasing in size, the fifth slightly shorter than the first; claws similar to those of anterior tibiae. Hind coxae transverse, sulcate ventrally; hind femora slightly longer than those of the median pair, with front and hind borders slightly arched; hind tibiae longer than the median ones, slightly arched and similarly sculptured; calcares almost equal but more thickened and flattened; hind tarsi almost like the median ones.

Abdomen membranous and completely covered with hairs; the five first sternites almost of the same size, the sixth slightly larger; pygidium small, semicircular.

Type-species: *Microbolbus decoratus*, sp. n.

We presume that many other species, at present included in *Bolboceras*, s. l., will have to be transferred to this new genus; according to descriptions, f. ex., *Bolboceras nigropiceum* Felsche and *B. sedhiounense* Paulian.

***Microbolbus decoratus*, sp. n.**

(Figs. 3, 5, 8, 9)

Colour reddish dark brown, with mouthparts, calcares and tarsi lighter; head, scutellum and clypeal suture dark; pronotum, margins excepted, reddish brown; body covered with golden hairs.

Head with strongly punctured clypeus, with long hair along front margin, labrum and canthus; dorsal portion swollen in the middle, and with strong, transverse ridges, not touching the margins; frons short and broad, with a slight, transverse and depressed sulcus, and two small, spine-like median elevations on the hind-central part of the vertex; sculpture, with strong and coalescent punctures, which are rugose on anterior-lateral area; vertex with slightly smooth surface and very few, strong punctures, mixed with small and very dense punctures on hind and lateral borders; ocular canthus with some strong punctures on upper surface, immediately behind the keel, and all free borders marginate, with long and dense pilosity; lower surface dressed with dense and thin hair;

antennae with a tuft of long and thin hairs on distal area of the scape.

Pronotum with sparse, strong punctures, denser on disc, the median sulcus, indicated only by smaller punctures, not touching the hind border; entire surface covered with minute punctures mixed with a few strong ones, and with small and foveiform impression on each side of the disc on the median-lateral margins; prosternum with thin hairs on anterior half, surrounding the borders and surface of the proepisternum. Scutellum punctured along two short, median files on the discal area, which, however, do not reach the apex. Elytra with 14 striae (including the lateral one), strongly punctured, with smooth intervals; intervals 2-7 more widened towards the apex, and the first one widened along its whole length; epipleurae prominent on lateral margins, sulcate and covered with thin hairs along the lateral stria. Mesosternum with sparse punctures, glabrous on the thickened anterior portion, and densely pilose in remaining areas; mesoepisternum with punctures and hairs longer than those of the mesosternum. Metasternum (fig. 5) without median sulcus, and with some sparse setae; with the borders of the posterior half with a thin keel; surface smooth and glabrous, with strong punctures and hairs discally as well as in proximal half; metaepisternum entirely covered with strong hairs.

Front femora covered with micro-punctures on lower surface, with long and thin hairs, and only a very small, smooth and glabrous patch along anterior border, with a thin, cariniform margin on the front-lower border; front tibiae only longer than femora, with lateral teeth increasing in size towards apex, the lower face with a longitudinal, slightly sinuous keel in the middle, with long hairs; this carina and borders somewhat enlarged in the middle; dorsal face with a pilose sulcus ending at the base of the distal tooth, as well as the median border, and with spine-like calcares. Middle legs with trochanteres pilose on lower and hind faces; femora with files of hair-bearing punctures on front border and with a small area of minute, hairy punctures which are stouter behind, the first with short and the second with long hairs; tibiae dressed with long hairs and spine like calcares. Hind legs with almost glabrous trochanteres, with only some long hairs along hind border; femora with smooth and glabrous area in the middle of lower surface, with minute punctures and long hairs on front and hind borders; tibiae like in the middle pair, as well as the tarsi, which have the apex of the segments covered with minute hairs.

Abdomen with minute and dense punctures with long and thin hairs.

Length 6.5 mm; width 4.5 mm.

Holotype ♀: Kawasbilenga (700 m), Congo (ex Belgian Congo), Mission C. F. de White 829a col., 14-25.X.1947 (Musée Royal de l'Afrique Centrale, Tervuren, Belgium).

Mimobolbus, gen. n.

Allied to *Bolbocaffer*, gen. n., and *Microbolbus*, gen. n. Differing from the former by the following characters: pronotum with

immarginate base, head with complete clypeo-frontal carina, pronotum without tubercles on anterior margin; from the latter by the following characters: head with clypeo-frontal carina, post-coxal area of prosternum with a longitudinal keel, lateral borders of the front tibia with more numerous teeth, and by the different labial and maxillary palpi, as well as the different paraglossae (fig. 7).

Head with very thinly marginate clypeal border, continued posteriorly, curving and disappearing in the vertex; with clypeo-frontal suture present or not, if present, thin and complete, arched and laterally fused with the lateral borders, and with a nodiform tubercle in the middle; frons slightly depressed; vertex anteriorly with or without short, transverse keel or tubercle; ocular canthus reaching the middle of the eyes, with the front and lateral sides weakly marginate; labrum dorsally with a more or less evident transverse keel; anterior margin widely incised in the middle; ventrally with a longitudinal, median keel; with setae on the borders and hair-bearing punctures on the rest; antennae with claviform and robust scape, the second antennite forming a short and truncate cone; 3-8 discoidal; 9-11 lentiform, the ninth with smooth and glabrous area near base, on lower face; maxillae elongate, with the free borders of galea covered with very well differentiated, cylindrical and hyaline setae (fig. 4a); subgalea prominent with a laminiform, stout tooth on distal-median region; maxillary palpi (fig. 4) with the first segment moniliform, second long and forming an irregular cone with obliquely truncate apex; mentum wider than long, with prominent anterior margin which is arched in the middle, the lateral margins almost straight, except anteriorly, where they are arched and fused with the front borders, but not forming a clear angle; hind border arched and slightly curved; labial palpi (fig. 7) 3-articulate, with large and quadrangular palpiger, with first article 1.5 times longer than wide, the second with truncate apex and three times longer than wide basally, with membranous apex; paraglossa (fig. 7) large, reaching the apex of the second article of the labial palpi, and having on its inner face eleven long, broad and cylindrical setae; submentum short, broad and transversely excavated; gula convex and much longer than wide; mandibles different from each other, similar to those of *Microbolbus*, gen. n., but the right one with the inner tooth of the dentiform process triangular.

Pronotum wider than long, convex, with more or less triangular impression anteriorly, and another foveiform impression laterally; front and side borders marginate, the lateral one almost straight; hind margin with a sulcus prolonged to the level of the humeral callus; in the center this sulcus disappears and is represented only by a file of minute punctures; front angle right or almost so, hind angles rounded; prosternum with impressed, longitudinal sulcus on frontal-median region and margined on each side by an arched, cariniform line which does not reach the arched, anterior border; post-coxal area with longitudinal cariniform

line in the middle, not touching hind border; proepisternum narrow in the middle, widened in front and behind the coxae. Scutellum tongue-shaped. Elytra with 7 well impressed striae between suture and humeral callus, the first one not reaching elytral base, which is immarginate; 2-7 reaching base; 8-10 originating behind the humeral callus; eleventh originating in distal half; 11-12 united basally; fourteenth originating near thirteenth, in the anterior fourth of elytra, fused with the lateral border in posterior half; interstriae weakly convex; elytral apex slightly angulate before its junction with the elytral suture, which is thinly marginate, forming a weak lateral carina. Mesosternum wide and short, depressed behind and in the middle, between the coxae; meso-metasternal suture dark, very thin and slightly angulate in center; mesoepisternum quadrangular and widened. Metasternum narrow and produced between the separated, median coxae, with a median sulcus and a patch of setae near hind coxae; intercoxal process with fine carina converging towards front area, surrounding the median cotyloid cavities; discal plate arched and with a dark longitudinal line in the middle; lateral areas with borders convergent or angulate anteriorly; metaepisternum cuneiform and elongate.

Front femora normal; front tibiae flattened and widened distally, with 6-10 lateral teeth, increasing in size towards apex, the distal one digitiform and pointing forward; ventral face with a strong carina in basal half, and another one, weaker and sinuous ending behind the insertion of the calcares; the dorsal face with a longitudinal median sulcus and with flat, long spiniform calcares; front tarsi almost as long as front tibiae, with tarsomera 1-4 slightly decreasing in size, the 5th the largest and weakly arched, with strong, curved and sharp claws. Middle legs with wide and cuneiform trochanteres; middle femora with almost straight front margin, enlarged distally and slightly arched ventrally with a transverse carina, inconspicuous distally; with sharp and lobiform ventral-lateral posterior border, with distal apex obliquely truncate, and sharp apical borders with stout and spine-like calcares, which are slightly arched and sinuous; middle tarsi shorter than tibiae, with very long first tarsomeron, at least twice as long as the 2nd; 2-4 decreasing in size, the 5th slightly arched and twice as long as the 4th; claws similar to those of preceding pair, but slightly longer. Hind legs with sharp, cuneiform and arched trochanteres; hind femora with arched front border; hind border straight, sometimes arched only in the apical portion, and slightly surpassing the sides of elytra, but not larger than the median pair, more flattened, with the keel of the lateral face more arched and the lateral-ventral border irregularly toothed above the keel, with prolonged apex, as a ventral lobe in the middle, just before the insertion of the spiniform calcares; the ventral one smaller and more arched than the dorsal one, both almost straight; hind tarsi shorter than tibiae and similar to those of the median pair.

Abdomen completely membranous, covered by the elytra; pygidium short and broad, with arched borders.

Type-species: *Bolboceras ornatellum* Peringuey, 1901.

KEY TO KNOWN SPECIES

1. Vertex unarmed; clypeo-frontal suture inconspicuous
 *M. interruptus* (Kolbe), comb. n.
 Vertex armed with keel or tubercles 2
2. Vertex with two small and well separated tubercles; pronotum
 with strong and sparse punctures on each side of the disc.
 *M. congolensis* (Paulian), comb. n.
 Vertex with a short and weakly bituberculate keel; pronotum
 with moderate and dense punctures on side of disc
 *M. ornatellus* (Peringuey), comb. n.

Bolboceroides, gen. n.

Related to *Bolbocaffer*, gen. n., differing by the form of the cephalic armature in both sexes; by the 9th antennite with a large, smooth and glabrous area on ventral face; by the arched mandibles, which are slightly toothed distally on median border; by the lacinia with bidentate apex; by the fore tibiae with a sinuous inner margin on apical region; by the strong middle and hind tibiae, with robust teeth on lateral borders, and by the spine-shaped hind trochanteres.

Head broader than long; clypeus with anterior carina continued posteriorly into margins, forming a small denticle near the clypeo-genal suture, and then surrounding the front and inner borders of the eyes, and finally disappearing in the occipital region; clypeo-frontal suture weakly delimited; front and vertex unarmed; ocular canthus short and widened, not surpassing the middle of the eye, with front and lateral borders elevated into weak keel, antennae typical, with strong, long and claviform scape, slightly arched and truncate distally, with antennites 3-8 discoidal (median area of 5-8 obtusely angulose); 9-11 lentiform, 9th with large, shining, smooth and glabrous area in the lower face; mandibles fal-ciform, and different from each other, the left one with a large, median incision on the inner border, slightly toothed apically; with sharp apex and the outer margin regularly curved; the right mandible with an irregular and thin incision on basal half of the median border; just above the middle of the margin with a tooth-shaped process, with sharp apex and a strong tooth in the middle, with arched lateral borders and tuberculiform apex; labrum with anterior margin more or less strongly incised, the irregular upper face with an inconspicuous transverse carina in the middle; maxillae similar to those of *Bolbocaffer*, gen. n.; galea weakly sinuous on front border; lacinia bidentate; maxillary palpi with first article small and triangular, the 2nd obliquely truncate at apex, third shorter than preceding, cylindrical, slightly arched and thickened distally, 4th fusiform, almost equal to 2nd, with membranous apex; mentum broad, with lateral borders slightly convergent in front, the front border sinuous; the hind one straight, with inconspicuous

anterior angle; labial palpi with articles increasing in size, the first very short, shaped as a truncate cone, the 2nd claviform, the 3rd fusiform with membranous apex, and slightly longer than the preceding; gula longer than wide; submentum short and transverse concave.

Pronotum wider than long, convex, with inconspicuous impression on anterior half; completely marginate with widely incised front border; lateral border arched and progressively confused with the slightly sinuous hind border; front angles straight and slightly salient, hind angles inapparent. Prosternum with a strong impression on median, pre-coxal region, which does not touch the anterior border, marginate laterally by a strong carina the front border salient and forming a wide lobe; post-coxal region scutiform, with a slightly longitudinal, dentiform or bigibous carina in the middle; proepisternum narrow in the middle, without a longitudinal cariniform line on the inner face of hind angles.

Scutellum tongue-shaped, as wide as long. Elytra with 14 more or less irregular striae, 7 placed between suture and humeral callus; the first one not reaching base, the 14th inconspicuous and almost disappearing laterally; all erased apically; the first interstria very broad; epipleurae wide in front, narrowing backwards; elytral suture thinly keeled. Mesosternum with a shining and smooth area on front-median portion, which is projected backwards, forming two median and thin files; with an inconspicuous sulcus in the middle; meso-metasternal suture inapparent; mesoespisternum oblique, elongate and almost twice as wide as long.

Front tibiae slightly arched and widened distally, with 6 lateral teeth on lateral border; the median margin sinuous and reflected on discal apex which is dentiform in the inner corner; front tarsi filiform and shorter than tibiae, with the first tarsomeron as long as the 2nd or slightly shorter; 2-4 decreasing in size, the 5th largest, slightly arched and thickened apically. Middle legs separated by the metasternal process; trochanteres enlarged, with sharp and arched margins; median femora short with slightly incised front border, the hind border arched and the lateral one denticulate, with a strong tooth on lateral-lower border and a transverse and short keel on the lateral border; apex almost truncate at right angle, with sides projecting into a small tooth; calcares spiniform, the lower one slightly arched; middle tarsi as long as tibiae, with the first tarsomeron only smaller than 2-4 together, those decreasing in size, the 5th as long as the first, subclaviform and slightly arched; claws sharp and curved. Hind legs with widened trochanteres, projected posteriorly into a small tooth; hind femora claviform and slightly larger than the median ones, slightly arched and denticulate laterally, the keel of the lower face forming an inconspicuous tooth on each side, the apex projected in the middle into a salient lateral-ventral dentiform lobe; calcares sinuous and spine like; hind tarsi similar to those of the median pair.

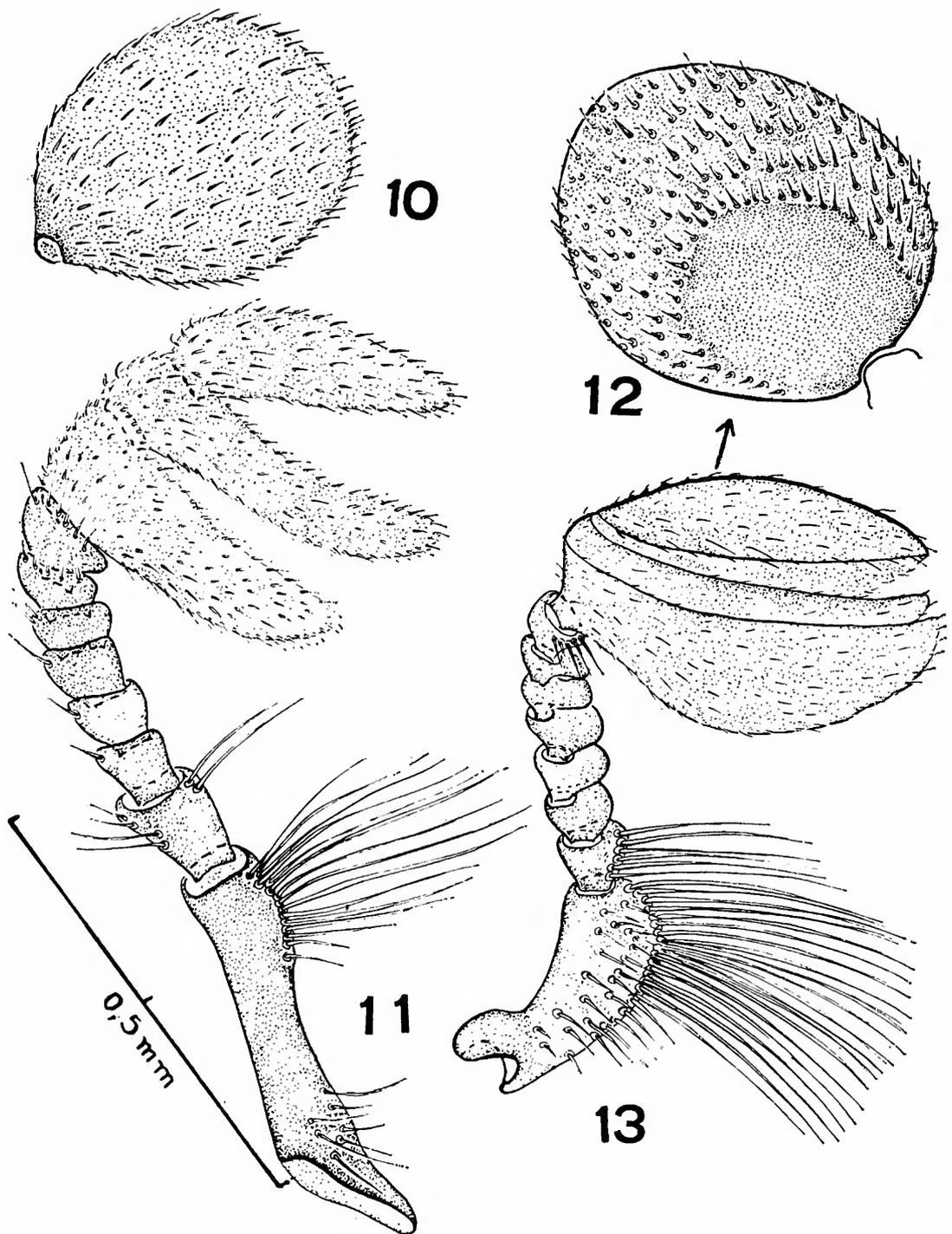
Abdomen membranous; pygidium only slightly wider than long.

Type-species: *Bolboceras capense* Klug, 1843.

Bolbaffer, gen. n.

Allied to *Bradycinetulus* Cockerell, *Bolbocerastes* Cartwright and *Zefevasia* Martinez; differing from the first by the hind tibiae protruded into a lobuliform process, similar to a fixed calcar, by the present hind prosternal process, by the pronotal anterior border keeled in the middle, and by the presence of the metasternal plate; from *Bolbocerastes* by the simple, elongate and cariniform prosternal spine, not bituberculate or transverse, by the front border of the pronotum elevated and cariniform in the middle, by the male abdomen with sternites 5-6 differently conformed in relation to the females, by the presence of tubercles on hind border of the pronotum, and by lacking a transverse carina in the females; from *Zefevasia* by the presence of the prosternal process, by the hind tibiae without a lobuliform process, by the pronotum unarmed behind the anterior border, and in the females by lacking a median transverse carina.

Head irregularly pentagonal; clypeus with a narrow, transverse and complete carina on front border, passing laterally over the lateral borders until reaching the hind margin of the occipital region; in the males there is another transverse keel on the clypeus, just behind the first one, touching the lateral borders; the females have the transverse carina toothed laterally, the front and lateral borders marginate by a thin and cariniform line; ocular canthus short, enlarged, not dividing the eyes, only reaching the middle of the eyes; antenna with 11 antenites, the scape the largest, and claviform; the 2nd short, shaped as a truncate cone, broader at distal base; 3-6 decreasing in length, each slightly enlarged in the middle and narrowed towards apex; 7-8 clearly lentiform; 9-11 lamelliform, the 9th with a large, smooth and glabrous area with borders delimited irregularly in the inner face, the remaining parts covered with micro-punctures as the 11th antenite, the 10th smaller and enclosed by the 9th and 11th; labrum short, lobuliform and enlarged, with a declivous area on each side of anterior upper face and a cariniform line in the middle of the lower one; mentum subcordiform, convergent and narrowed anteriorly, with anterior border truncate at right angle; prementum inconspicuous; maxillae with galea and lacinia pointed at base, narrow, elongate and membranous; stipes protruded into a flat tooth; galea and lacinia lobuliform; the lacinia small, enlarged, sharp in the middle, with bidentate apex; maxillary palpi 4-segmented, with the first article very short, the 2nd very long and slightly narrowed distally, the 3rd much smaller than the preceding and with the shape of a truncate cone, enlarged distally; the 4th largest, with almost parallel sides and membranous apex, labial palpi with 3 articles, excluding the palpiger; first article small and slightly longer than large, arched and widened distally; 2nd almost twice as long as the preceding, subfusiform and narrower with membranous apex; submentum and gula without clear delimitation, the gula regularly convex and the submentum with a transverse depression; mandibles different from each other, the left one falciform, with the



Bolbocaffer sansibaricum (Kolbe): 10, internal face of 9th antennite; 11, antenna. *Bolbaffer princeps* (Kolbe): 12, internal face of 9th antennite, showing smooth area; 13, antenna.

outer side arched and slightly sinuous, the median border irregularly incised and angulose in the distal third, with a sharp tooth in the junction with the outer border; the right mandible forming an irregular lobe, with stout apex, and with a salient, dentiform process in distal third of median border.

Pronotum wider than long, with the lateral and hind borders marginate, the front border cariniform and elevated in the middle, the lateral borders arched, with front angles salient at a more or less right angle; hind angles rounded; the hind margins confused with the hind border which is also regularly arched and with a feeble longitudinal sulcus in the middle; males with flattened pronotum, declivous in the distal region, the declivity delimited behind and at sides by a corniform process, with or without 2-3 nodiform tubercles on pre-scutellar area, and with an inconspicuous longitudinal sulcus; the pronotum of females convex with a transverse keel on disc, which is shorter than the width of the central portion of head; without nodiform processes and the median longitudinal sulcus represented only by a thin longitudinal patch; prosternum cuneiform in anterior half, between the coxae, and depressed laterally, with posterior half narrowed and protuded into a tubercle keeled longitudinally in the middle; proepisternum forming an irregular semicircle and hollowed anteriorly. Scutellum wider than long, with arched and convergent sides. Elytra very convex, each elytron longer than wide and completely marginate; the 7 striae between suture and humeral callus not touching the base; 1-5 originating behind the front border of the elytron; 8-12 beginning far from humeral callus; striae slightly convex, the sutural one much wider; humeral callus inconspicuous; epipleurae reflected and narrowed backwards. Mesosternum broader than long, with a median impression behind. Metasternum with irregular plate with thin, longitudinal sulcus between the middle coxae, the lateral areas very broad; metaepisternum elongate.

Front tibiae elongate, slightly arched distally and with 5 teeth on lateral borders; distal tooth the largest and lobuliform, with obliquely truncate apex; calcares very long and slightly narrowed at the end, in the males with a pediform and oblique apex; front tarsi elongate. Middle coxae contiguous; the middle tibiae arched, with a salient, lateral keel on ventral border; the lateral borders with some denticles just above the transverse carina of the upper and lower faces; calcares elongate, spine-like, longer than the first tarsomeron, and of different shape, one straight and the other one curved; with two strong and sharp claws. Hind femora different in both sexes; hind tibiae similar but much longer than the median ones and with the transverse carina, tooth and denticles weaker, and the lateral lower apex without a tooth; calcares elongate, flattened slightly sinuous and sharp at the end; hind tarsi similar to the median ones.

Abdomen membranous, clearly chitinized, broader than long, convex and with very distinct sexual differences.

Type-species: *Bolboceras princeps* Kolbe, 1894.

Bolbocaffer, gen. n.

Allied to *Elephastomus* Kirby by the linear conformation of the metasternum between the contiguous coxae; differing from it by the following characters: metasternal plate differently shaped and unkeeled posteriorly; shape of head also different, with the front border similar in both sexes; absence of sexual dimorphism; labrum salient, with a visible, transverse carina just on the anterior border of dorsal face; prosternum without a salient post-coxal process; front margin of pronotum with bituberculate margin almost in the middle; abdominal sternites different.

Head enlarged, slightly convergent in front, with anterior margin truncate almost at right angle and elevated into a feeble carina; clypeus bituberculate behind and in front, at each side with an erased keel on occipital region, thinly carinate up to hind border; canthus enlarged, lobuliform and almost reaching the middle of the sphaeric eyes; antennae 11-articulate, with a short and claviform scape; 2nd antennite cylindrical, irregular and much smaller than the preceding one; 3-6 similar to the 2nd but shorter, the 4th slightly larger; 7th irregularly campanuliform and narrowed in the median border; 8th lentiform with a sharp median border; 9-11 forming the long and lentiform lamellar process with the median face of the 9th and the lateral face of the 11th covered with dense and recumbent pile (fig. 10); labrum short, enlarged, with the anterior border slightly emarginate, the transverse and salient keel of the dorsal face slightly arched behind, the front border and lower face with longitudinal, median carina; mentum subquadrangular and lobuliform; paraglossae membranous, semicircular; maxillae with elongate palpifer, stipes with strong teeth on medial-distal region; galea lobuliform, with flat tooth on median-distal region; maxillary palpi 4-articulated, with the first article very small, the 2nd subclaviform and slightly arched, the 3rd securiform and shorter than the preceding, the 4th the largest, fusiform and slightly arched, with membranous apex; labial palpi 3-articulate, excluding the palpiger, with the first article small and short, the 2nd subclaviform and equal to the 3rd, which is subclaviform, with membranous apex; submentum short, with transverse excavation, the suture between the submentum and mentum almost straight; the suture between mentum and gula only delimited by a file of setigerous punctures, without evident separation; gula very broad and long, convex and smooth, except on anterior region, where setigerous punctures appear; mandibles different from each other, with upper face concave and lower face convex; the left mandible falciform, with the lateral margin irregularly arched and the median border angulate, with a membrane with long and thin pile in the middle of basal half; the right mandible irregularly lobuliform, with stout apex, and median border with a salient process, arched laterally and toothed in the middle, with the border behind the process marginate by thin and dense pile, very similar to that of the left mandible.

Pronotum wider than long and entirely marginate, with median part of the front border elevated or feebly bituberculate, the emargination sometimes effaced on pre-scutellar area; front angles more or less salient or almost right-angled, the hind ones rounded, with lateral borders arched and the hind margin forming a sinuous arch, with an inconspicuous lobe in the middle; surface

more or less irregular in front, with a depression and a median longitudinal sulcus posteriorly and a circular depression on each side; prosternum with an elongate, median depression, marginate in anterior half by a thin keel laterally proespisternal sutures salient and cariniform with hind portion small and convex, with median longitudinal, spine-like carina, or a depressed tooth; proepisternum narrow, forming an irregular circle. Scutellum tongue-like as wide as long basally. Elytra convex, each one longer than wide, emarginate, the basal emargination interrupted only in a small area before the humeral callus; with 14 narrow striae, 7 between the suture and the callus; 2-7 beginning immediately behind the anterior border, the first on the margin of the scutellum; 8-11 originating behind the inconspicuous humeral callus; interstriae slightly convex; epipleurae reflected and narrowed posteriorly. Metasternum with a rhomboid plate protruded frontwardly between middle coxae, like a narrow and thin process, slightly widened apically, depressed in the middle, and with the lateral borders elevated and cariniform, dividing symmetrically the discal area.

Front tibiae with 6-7 lateral teeth increasing in size towards apex; calcares spiniform and sharp; front tarsi filiform and as long as tibiae, the first article as long as the 2nd; 2-4 slightly decreasing in size, the 5th the largest, slightly arched and ending by two long, arched and sharp claws. Middle coxae separated by the metasternum; median tibiae arched, with transverse carina apically, protruded over lateral face, lobuliform and laminiform in front and with discal apex truncate at right angle, and slightly toothed dorsally; calcares spiniform; middle tarsi shorter than tibiae, with the first tarsomeron almost equal to 2-4 together; these small and decreasing in size; 5th smaller than first, arched, with strong, curved and sharp claws. Hind tibiae slightly longer than the middle ones, and very similar to those, but less arched, and the dorsal keels and lateral teeth less evident; calcares longer and stronger than the median ones, but sinuous, the dorsal one longer than the ventral one and with stout apex; hind tarsi similar to the median ones, also larger.

Abdomen completely membranous, with 6th sternite longer than the preceding one; pygidium small, semicircular; wider than long, with hind margin feebly incised in the middle.

Type-species: *Bolboceras sansibaricum* Kolbe, 1894.

The following species are included in this new genus: *Bolboceras gautieri* Boucomont, *rugiferum* Kolbe and *senegalense* Castelnau. Of course many other African species, unknown to us, will have to be transferred to it.

KEY TO KNOWN SPECIES

1. Elytra with shining and smooth interstriae 2
Elytra with opaque and coriaceous interstriae 3
2. Pronotum with a triangular depression anteriorly; depression with punctures of three different types: minute and scarce ones all over the surface, simple and thin ones in the depression and longitudinal sulcus, and strong and scarce ones on the borders of the depressions; basal margin more

- or less effaced on pre-scutellar area; head with scarce punctures behind the clypeo-frontal tubercles
 *B. senegalense* (Castelnau), comb. n.
- Pronotum without excavation, file of punctures on median sulcus; only with two types of punctures: scarce micropunctures mixed with other strong ones on surface; basal margin complete; head with rugose punctures behind the clypeo-frontal tubercle *B. rugifer* (Kolbe), comb. n.
3. Head smooth and only with few and scarce punctures behind the clypeo-frontal tubercles; scutellum with strong punctures on basal half; elytra with very narrow striae and with normal punctures
 *B. gautieri* (Boucomont), comb. n.
- Head with strong rugosity and punctures, evanescent on vertex, behind clypeo-frontal tubercles; scutellum smooth; elytral striae sulcate, with strong punctures
 *B. sansibaricum* (Kolbe), comb. n.

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