

**A Contribution to knowledge of *Goliathopsis* Janson, 1881
(Coleoptera: Scarabaeidae: Cetoniinae),
with descriptions of three new species**

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Abstract. Representatives of cremastocheiline genus *Goliathopsis* Janson, 1881 are studied and compared with three species new to science. Largest member of the genus *Goliathopsis krali* sp. nov. is described from Thailand and it is compared with its relatives occurring in Thailand, Laos, Vietnam and Cambodia. *Goliathopsis meridionalis* sp. nov. is described from South Vietnam, currently southernmost point of the distribution of *Goliathopsis* Janson, 1881. *Goliathopsis karenicus* sp. nov. is described from Shan State in Myanmar and Northwestern Thailand. All three new species are depicted and differential diagnosis with their congeners is provided. Dichotomical key for all known species belonging to the genus *Goliathopsis* Janson, 1881 is updated.

INTRODUCTION

Genus *Goliathopsis* was established by Janson in 1881. Type species *Goliathopsis despectus* (Westwood, 1873) was subsequently designated by Arrow (1910). First revisional work was presented by Antoine (1991), who provided illustrations of male genitalia of all known species (excepting only *Goliathopsis cervus* Janson, 1881). Recently was genus very studied in details and revised by Xu & Qiu (2020), authors presented complete information about types and repositories of all currently known species and key to all members belonging to the genus. Authors synonymised three species described formerly from China and designated lectotypes for four *Goliathopsis* Janson existing species.

Most of species are distributed in transitional zone between the Palaearctical and the Oriental Regions. Comparing with other genera of Cremastocheilini and also with other genera of different tribes of Cetoniinae, distribution of *Goliathopsis* Janson is limited to rather small area. It encompasses mainly northern parts of Thailand and Laos, which seems to be evolutionary centre of the group. Other three species can be found in southwestern part of China (Yunnan, Guangxi, Hunan and Guizhou Provinces) and northern part of Vietnam. One species is recorded from northern Cambodia and one from western Myanmar.

After detailed revision of Xu & Qiu (2020), purpose of this work is to add some informations about the studied genus. Key to all representatives of the genus provided by Xu & Qiu (2020) is slightly modified. New species from Thailand with nearly immaculate dorsum and large-sized body is described from Thailand. Second new species is described from south Vietnam, rather far to the south of the recently known distribution of the genus. Third species is described from specimens collected in Shan State in southwestern Myanmar and northwestern Thailand.

MATERIAL AND METHODS

The following codens of institutional and private collections are used in the text:

MYNU Insect Collection of Mianyang Normal University, Mianyang, China;

SJCP Stanislav Jákł private collection, Praha, Czech Republic.

Specimens of newly described species are provided with red and yellow printed labels, red for HOLOTYPUS, yellow for PARATYPUS. Each holotype or paratype label is provided with sex symbol, number of paratype (in paratype label) and words St. Jákł det. Label data are cited for the material examined, individual labels are indicated by a double slash (//), individual lines by a single slash (/).

TAXONOMY

Goliathopsis karenicus sp. nov.

(Figs. 1-5)

Type locality. Myanmar, SW Shan State, Taunggyi.

Type material. Holotype (♂) (SJCP) labelled: Burma, SW Shan State / TAUNGGYI / 1.-18.VI. 1997 / J. Kaláb leg. Paratypes: (No. 1 ♂) (SJCP) labelled: the same data as holotype; (No. 2 ♂) (SJCP) labelled: NW THAI, 19N 97. 59E / Mae Hong Son; 1992 / Huai Sua Tao, 11. – 17. V. / L. Dembický, leg; (No. 3 ♂, No. 4 ♀) (SJCP) labelled: NW Thailand, 19. 19 N 97. 59 E / Mae Hong Son, 1991 / Ban Huai Po. 1600-2000 m / 17. – 23. 5., L. Dembický leg; (No. 5 ♂, Nos. 6-7 ♀♀) (SJCP) labelled: Thailand / Shaphet Nan / 12. 8. 1989.

Description of holotype. Black, dorsal side completely covered with black tomentum. Coloration of abundant ornament ochre to light brown. Setation long, dark yellow to light brown. Body size 11.2 mm (excluding pygidium).

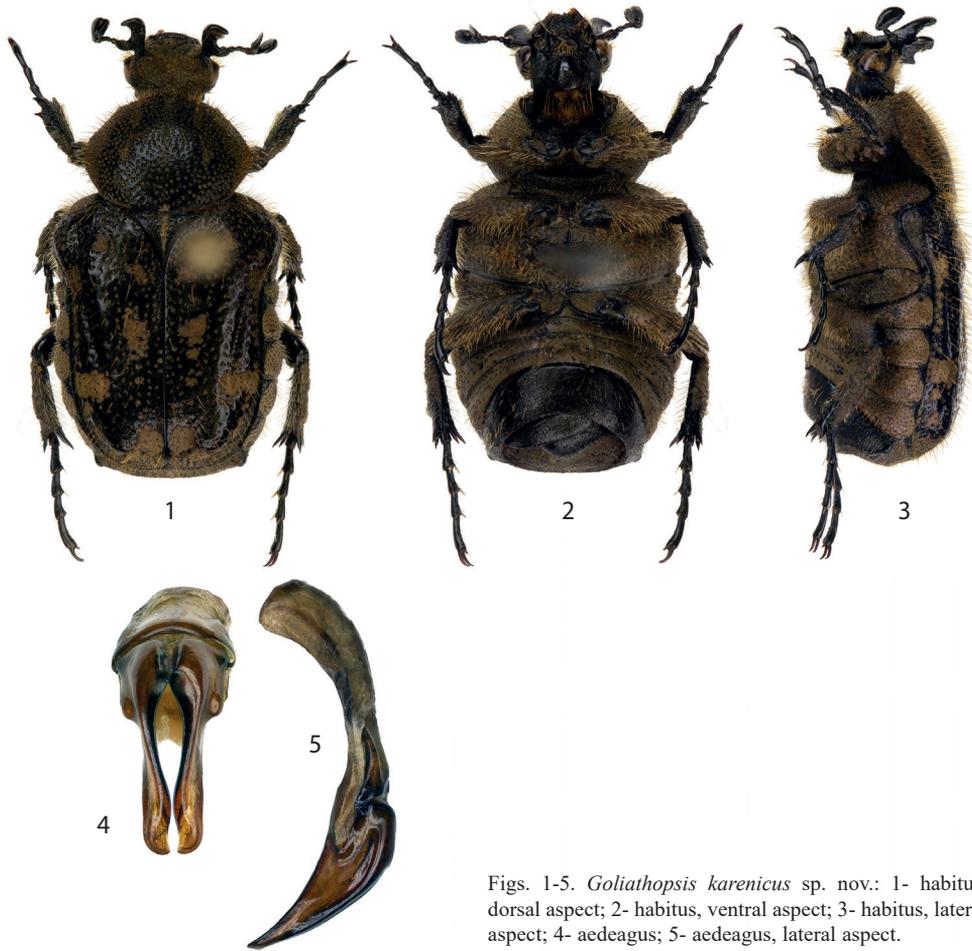
Head. Black, excepting apex of clypeus with cover of ochre to brownish ornament. Setation in frons long and dense, in clypeus sparser and shorter. Apex of clypeus rounded and bordered. Cephalic horns black, short, running nearly in parallel. Inner sides of cephalic horns without tomentum.

Pronotum. Black, with cover of blackish tomentum. Punctuation dense, specially on sides. Punctures horse-shoe shaped, mostly with cover of ochre to light brown patch of ornament. Setation long and dense, its coloration dark yellow to brownish. Disc with three incomplete, longitudinally running lines of ornament. Sides completely covered with ornament.

Scutellum. Black, approximately as wide as long. Ochre middle line running throughout total length. Basal half with dense horse-shoe shaped punctuation.

Elytra. Black, with complete cover of black tomentum and rich ochre to light brownish ornament. Both halves of elytron with six large to very large patches of ochre ornament and few smaller, irregularly shaped maculae placed in sides. Concentration of horse-shoe shaped punctures highest in elytral disc and part of base, rest with sparser punctuation. Most punctures with cover of ochre ornament. Setation long and dense. Sutural ridge and both calli flat.

Pygidium. Black, excepting apex, with cover of ornament. Pygidial punctuation moderately dense.



Figs. 1-5. *Goliathopsis karenicus* sp. nov.: 1- habitus, dorsal aspect; 2- habitus, ventral aspect; 3- habitus, lateral aspect; 4- aedeagus; 5- aedeagus, lateral aspect.

Ventrum. Completely covered with ochre to brownish ornament, excepting only black anal segment and mentum. Punctuation moderately dense, most of setose punctures horse-shoe shaped. Setation yellow to dark yellow, rather dense and long. Mesometasternal process small its apex with border. Abdomen constricted.

Legs. Coxae black, femora and large parts of tibiae with cover of ochre ornament. Tarsi black. Protibia bidentate. Meso- and metatibia with obtuse carina in posterior half. Femora and tibia with rather long setation.

Genitalia. Compared to other species, simple and small, in apex not expanding to sides, but running nearly in parallel (Figs. 4-5).

Variability. Body size 11.0-11.8 mm. Dorsal ornament in specimens from Thailand less developed, specially in elytral maculation.

Sexual dimorphism. Size of females 11.0-11.7 mm. Cephalic horns absent. Antennae shorter. Ventral ornament much less developed. Abdomen arched. Protibia bidentate, but wider and shorter.

Differential diagnosis. Newly described species can be confused with *Goliathopsis cervus* Janson, 1881 or with *Goliathopsis despectus* (Westwood, 1873). From the first species it can be distinguished by larger size 11.0-11.8 mm, but 9.5-10.5 mm in *G. cervus* Janson, 1881; by black to dark brown dorsal tomentum, which is much paler in its congener; by absence of tomentum on inner sides of cephalic horn of male; by very abundant dorsal maculation, which is much sparser in congener; by long and dense dorsal setation, which is short in its congener and by differently shaped aedeagus. From the second species it can be distinguished by black to dark dorsal tomentum which is much lighter in *G. despectus* (Westwood, 1873); by long and very dense setation, which is short and sparser in its congener and by simply structured aedeagus of male (with apical expansion in its congener).

In Thailand newly described species occurs together with *Goliathopsis duponti* Antoine, 1991 and both species are externally rather similar. But elytral and pronotal punctures in newly described species always with ochre ornament, but immaculate in *Goliathopsis duponti* Antoine, 1991. Structure of male genitalia is very different, simply and parallel developed in new species, but with apical expansion in its congener.

Etymology. Name of newly described species refers to land inhabited by Karen people (Shan State in southwest of Myanmar and part of northwestern Thailand).

Distribution. Myanmar: southwest of Shan State; northwestern Thailand.

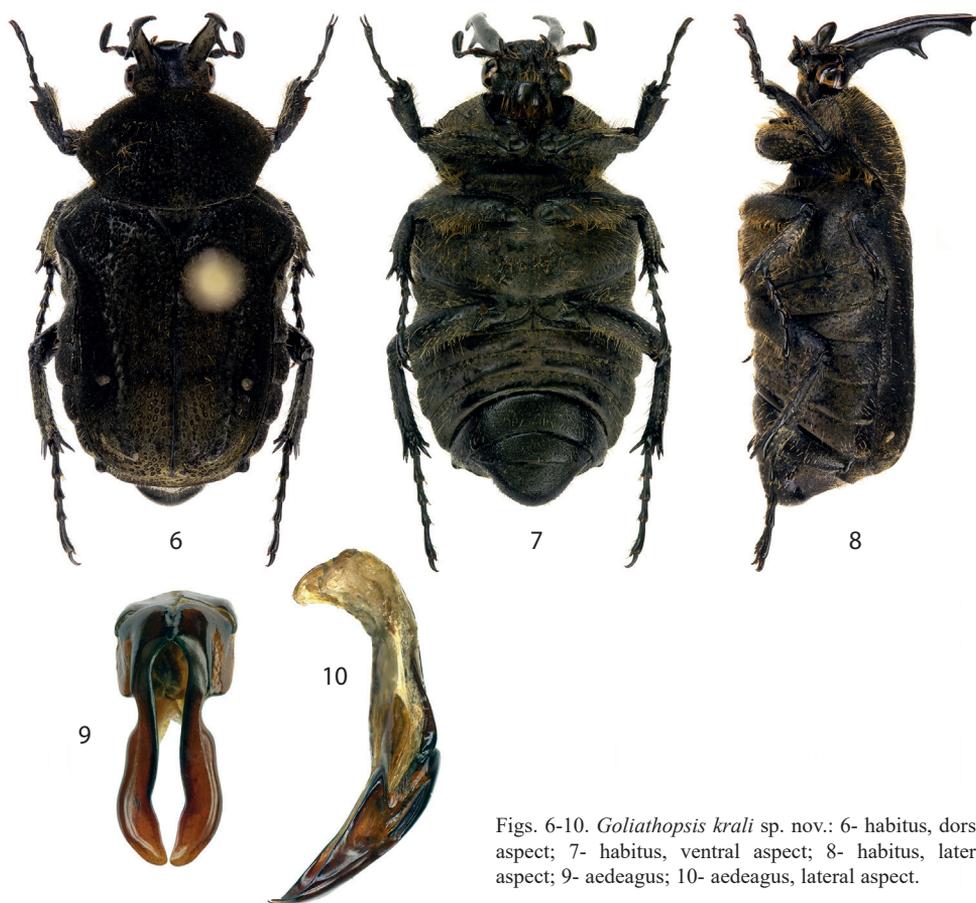
***Goliathopsis králi* sp. nov.**
(Figs. 6-10)

Type locality. Northern Thailand, Chiang Dao, 1000m, Thanon Thong Chai.

Type material. Holotype (♂) (SJCP) labelled: THAI, 17. – 24. V. 1991/ CHIANG DAO, 1000 m / 19°25' N 98°52' E/ Vít Kubáň leg // Thailand 91 / “ Thanon Thong Chai“ / D. Král & V. Kubáň.

Description of holotype. Large species with body size 13.4 mm (excluding horns and pygidium). Pronotum and elytra with cover of khaki tomentum. Dorsal side nearly immaculate, excepting three tiny, white patches of ornament in apex of each elytron.

Head. Coloration black, frons with cover of blackish tomentum, clypeus glabrous, shining. Frons moderately punctured to shortly striolated, clypeus impunctate. Apical margin of clypeus rounded and slightly bordered. Sides of frons with rather long, beige setation, in clypeus setation absent. Cephalic horn black and long with bifurcate apex, anterior half with long and sharp branch heading back, base with rather sharp tubercle heading back. Inner side of horn with cover of khaki tomentum. Antennae short, club shorter than stalk. Coloration of antennal club and scape black, rest of antennal stalk brown.



Figs. 6-10. *Goliathopsis krali* sp. nov.: 6- habitus, dorsal aspect; 7- habitus, ventral aspect; 8- habitus, lateral aspect; 9- aedeagus; 10- aedeagus, lateral aspect.

Pronotum. Coloration black, with complete cover of blackish to khaki tomentum. Punctuation moderately dense, in sides denser. Most of pronotal punctures horse-shoe shaped. Beige to yellowish setation rather long distributed regularly throughout total length. Widest point in middle length. Sides dentate, without border. Patches or ornament not developed.

Scutellum. Black with cover of khaki tomentum. Distinctly wider than long, base with few punctures, rest of scutellum impunctate.

Elytra. Black with complete cover of khaki tomentum. Apical third of elytron with three tiny, white patches of ornament, one slightly larger, placed between lateral ridge and lateral margins, second on apical callus, third between apical callus and posterolateral margin, rest of elytra immaculate. Punctures horse-shoe shaped in basal third, more or less drop shaped in elytral rest. Lateral rib clearly developed, specially in apical half. Subhumeral emargination rather sharp, sutural ridge flat throughout total length. Setation sparser than in pronotum, but present throughout total length.

Propygidium. Black, completely covered with khaki tomentum. Punctuation rather dense with circularly shaped diameters. Spiracles black, moderately long.

Pygidium. Base, part of disc and sides with cover of khaki tomentum, rest black, finely but densely punctured and shining.

Ventrum. Black, first four abdominal segments and nearly whole rest of ventral side with cover of khaki tomentum. Abdomen constricted, abdominal impression not developed. Metasternum and prosternum with long, yellowish setation, abdominal setation sparser and shorter. Mesometasternal process completely reduced. Punctuation moderately dense, most of punctures horse-shoe shaped or drop shaped. Punctuation of last two abdominal segments (segments without cover of tomentum) very fine and dense. Prementum black, rugosely punctured, its posterior margin deeply incised.

Legs. Short, black. Parts of femora and tibiae with cover of tomentum. Protibia bidentate, meso- and metatibia carinate in posterior half. Femora and inner sides of meso- and metatibiae with yellowish setation.

Genitalia. Male parameres longer than in other congeners, its structure very different (Figs. 9-10).

Variability and sexual dimorphism. Hitherto only holotype male known.

Differential diagnosis. Newly described species can be easily separated from all other species by larger size (13.4 mm), by khaki tomentum of elytra and pronotum, nearly immaculate dorsal side and very differently shaped male aedeagus.

Ethymology. Named after my friend and colleague, David Král (Praha, Czech Republic), famous specialist in Scarabaeidae beetles.

Distribution. Thailand, Chiang Dao.

***Goliathopsis meridionalis* sp. nov.**

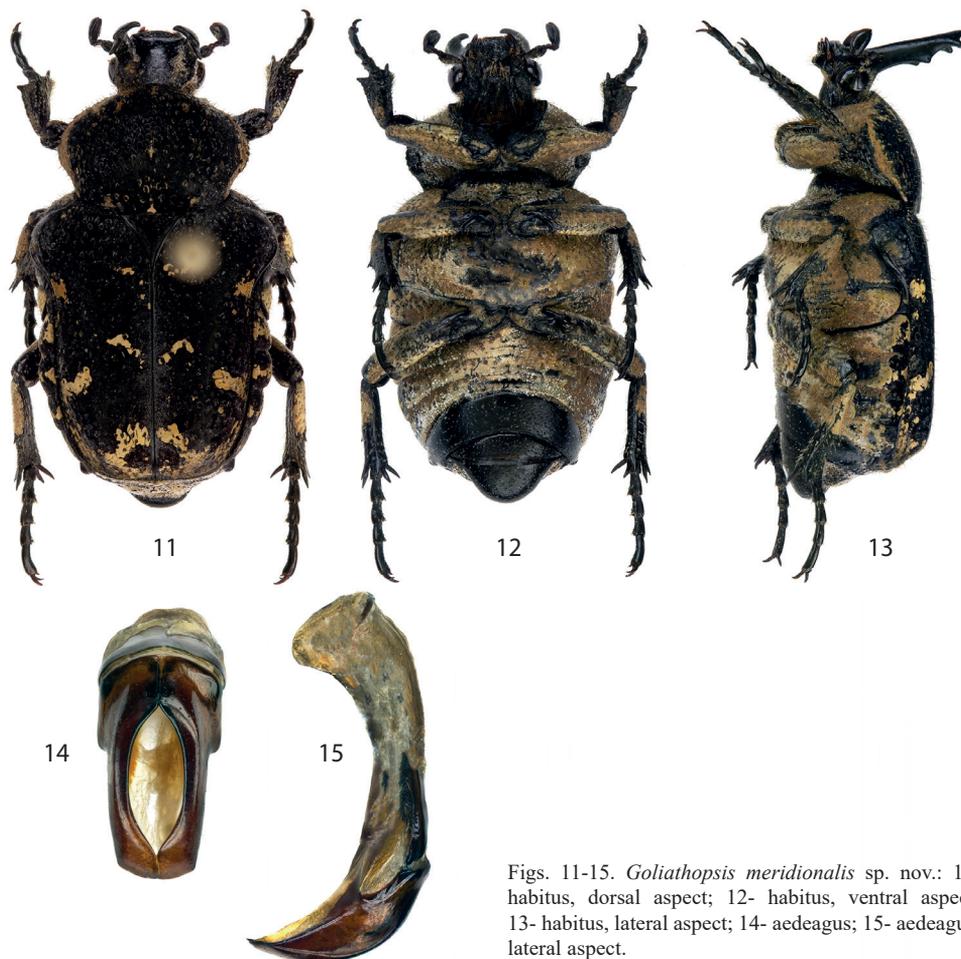
(Figs. 11-15)

Type locality. South Vietnam, Bao Loc Province, Lam Dong.

Type material. Holotype (♂) (SJCP) labelled: S. VIETNAM/ Bao Loc prov. / LAM DONG, V. 2018 / local collector leg. Paratypes: (No. 1 ♂) (SJCP) labelled: the same as holotype; (No. 2 ♂) (SJCP) labelled: Buon Ma Thout / S. Vietnam / II. V. 1991 / M. Ito leg; (No. 3 ♀) (SJCP) labelled: Bao Loc / S. VIETNAM / 01-07. MAY 1999 / Masao Itoh leg; (Nos. 4-5 ♂♂) (MYNU) labelled: S. Vietnam / Lam Dong / Bao Loc / V. 2018.

Description of holotype. Dorsal side black with cover of black tomentum (excepting glabrous clypeus) and rather rich ochre to beige ornament. Cephalic horns semioval. Body size 12.2 mm (excluding horns and pygidium).

Head. Large part of frons and clypeus glabrous, impunctate, shining, coloration black. Base of frons punctured and covered with black tomentum and small patches of ochre ornament, this part setose. Apex of clypeus rounded and bordered. Cephalic horn rather long with bifurcate apex and one branch in apical third. Base of horn not constricted. Inner side



Figs. 11-15. *Goliathopsis meridionalis* sp. nov.: 11- habitus, dorsal aspect; 12- habitus, ventral aspect; 13- habitus, lateral aspect; 14- aedeagus; 15- aedeagus, lateral aspect.

of horn with cover of ochre ornament. Apical third of horn curved to inner side. Scape and antennal club black, rest of stalk and tip of club brownish. Club shorter than stalk.

Pronotum. Black with cover of black tomentum and numerous ochre to beige patches of ornament. Sides and anterolateral margins also covered with ornament. Punctuation horse-shoe shaped, rather dense. Setation yellowish, moderately long and dense.

Scutellum. Black with cover of tomentum. Base with few large punctures, rest impunctate. Length and width approximately same.

Elytra. Black, covered with black tomentum and numerous, more or less transversally shaped patches of ochre ornament in both elytral halves. Apex and posterolateral angles nearly completely with cover of ochre ornament. Punctuation horse-shoe shaped throughout total length. Sutural ridge flat. Elytral disc merging gradually to lateral ridge, elytral ribs not developed. Apical and humeral calli flattened.

Propygidium. Black, nearly completely covered with beige ornament. Spiracles rather short.

Pygidium. Apex black, finely punctured, rest of pygidium with cover of ornament.

Ventrum. Coloration black, excepting last two abdominal segments and metasternal disc, with cover of ochre ornament and rather short beige setation. Last two abdominal segments black, medially shining, finely punctured. Mesometasternal process completely reduced. Prementum black, moderately punctured, its posterior margin incised.

Legs. Black, short. Femora and parts of tibiae with cover of ochre ornament. Protibia bidentate, meso- and metatibia carinate in posterior half. Terminal spurs rather short and robust, moderately sharp.

Genitalia. Simply developed, parameres running nearly in parallel, apex of each paramere rim slightly and gradually widening (Figs. 14-15).

Variability. Size 11.0-12.5 mm. Pattern of ochre ornament very similar or same. Punctuation and setation same.

Sexual dimorphism. Female similar to males, but missing horns, abdomen arched and abdominal ornament reduced. Density and structure of punctuation and other characters similar or same as in males.

Differential diagnosis. Long and apically bifurcate, semioval horns, abundant ochre maculation of pronotum and elytra, horse-shoe shaped punctuation throughout total length of pronotum and elytra and simply developed male parameres separate newly described species from all its congeners.

Etymology. Named after southernmost area of distribution of newly described species.

Distribution. South Vietnam, Lam Dong Province.

DICHOTOMICAL KEY TO SPECIES OF THE GENUS *GOLIATHOPSIS*

- 1 (10) Pronotum and elytra with cover of light brown, brown, light grey or khaki tomentum.
- 2 (5) Disc of elytra mostly with drop-shaped punctures. Pronotum and head with cover of brownish to grey or khaki tomentum.
- 3 (4) Dorsal tomentum brown to olive/grey. Cephalic horns of male rather short, slightly open to outer side and constricted in base. Size 12-13 mm.....*Goliathopsis velutinus* Pouillaude, 1913
- 4 (3) Dorsal tomentum khaki. Cephalic horns of male very long, semioval, at base not constricted. Size over 13 mm 13.4 mm..... *Goliathopsis krati* sp. nov.
- 5 (2) Disc of elytra with horse-shoe shaped punctures. Pronotum and head covered with light brownish or light grey tomentum.
- 6 (9) Elytral and especially pronotal setation long or very long. Inner side of male horn without tomentum. Size 11.5-12.5 mm.
- 7 (8) Setae in elytra medially long, punctures on pygidium sparse, but large..... *Goliathopsis despectus* (Westwood, 1873)
- 8 (7) Setae in elytra very long, punctures on pygidium dense, but small..... *Goliathopsis ferreroi* Antoine, 1991
- 9 (6) Elytral and specially pronotal setation short. Inner side of male horn with tomentum. Smallest species in genus with body size 9.5-10.5 mm..... *Goliathopsis cervus* Janson, 1881

- 10 (1) Pronotum and elytra with cover of very dark brown to black tomentum.
- 11 (14) Pronotal and elytral ornament yellow to chalky white. Disc of elytra with drop shaped punctures. Lateral macula of elytra large.
- 12 (13) Large laterally placed macula of elytra extended backwards, disc of elytra usually with small patches of ornament *Goliathopsis esquiroli* Pouillaude, 1913
- 13 (12) Large laterally placed macula of elytra more or less circular. Disc of elytra without small patches of ornament *Goliathopsis lameyi* Fairmaire, 1893
- 14 (11) Pronotal and elytral ornament light brownish to beige. Disc of elytra with horse-shoe shaped punctures or with mixture of horse-shoe shaped and drop-shaped punctures. Lateral macula of elytra smaller.
- 15 (18) Setiferous punctures of elytra with patches of ornament. Size 11.0-12.5 mm.
- 16 (17) Dorsal setation short, its coloration white to yellow. Cephalic horns of male long, slightly opening to outer sides, in base constricted *Goliathopsis gressitti* Ruter, 1978
- 17 (16) Dorsal setation long, its coloration dark yellow to brown. Cephalic horns of male short, running in parallel, in base not constricted *Goliathopsis karenicus* sp. nov.
- 18 (15) Setiferous punctures of elytra without patches of ornament. Size 11.5-13.0 mm.
- 19 (20) Dorsal setation long. Cephalic horns of male medially long, slightly and gradually opening to outer sides. Inner side of horn without tomentum *Goliathopsis duponti* Antoine, 1991
- 20 (19) Dorsal setation short. Cephalic horns of male very long, semiovally shaped. Inner side of horn with tomentum *Goliathopsis meridionalis* sp. nov.

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