

NOTES ON *STIPTOPODIUS* HAROLD, 1871: NUMBER OF TARSAL SEGMENTS OF *S. LONGIPEDIS* BRANCO, 1991, AND DESCRIPTION OF A NEW SPECIES FROM ZAMBIA (COLEOPTERA, SCARABAEIDAE)

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Abstract: *Stiptopodius longipedis* Branco, 1991, a seemingly rare species until now only known by the holotype, is recorded from Kenya and Tanzania. Evidence is presented suggesting that this species has only three segments in the middle and hind tarsi. The middle and hind tarsi are illustrated. *Stiptopodius granulosus* sp. nov. is described on two females from Zambia, and its head, fore tibia, middle and hind tarsi are illustrated. An updated key to the species of *Stiptopodius* Harold, 1871 is presented.

Key words: Scarabaeidae, Onthophagini, *Stiptopodius*, number of tarsal segments, new species, Zambia, key to species.

Notas sobre *Stiptopodius* Harold, 1871: número de segmentos tarsales de *S. longipedis* Branco, 1991, y descripción de una nueva especie de Zambia (Coleoptera, Scarabaeidae)

Resumen: *Stiptopodius longipedis* Branco, 1991, una especie aparentemente rara solo conocida hasta hoy por su holotipo, es citada de Kenia y Tanzania. Se ilustran los tarsos medios y posteriores de esta especie, los cuales solo poseen tres artejos. Se describe además una nueva especie del mismo género, *Stiptopodius granulosus* sp. nov., a partir de dos hembras colectadas en Zambia, ilustrándose su cabeza, tibia anterior, tarsos medios y posteriores. Por último, se incluye una clave actualizada para las especies de *Stiptopodius* Harold, 1871.

Palabras clave: Scarabaeidae, Onthophagini, *Stiptopodius*, número de artejos tarsales, especie nueva, Zambia, clave para especies.

Taxonomy/taxonomía: *Stiptopodius granulosus* sp. n.

1. Number of tarsal segments in the middle and hind tarsi of *Stiptopodius longipedis* Branco, 1991

Stiptopodius longipedis Branco, 1991 was described on a single old male in the Muséum National d'Histoire Naturelle, Paris, labelled "ex-musaeo E. Harold" and "Znzibr." (Branco, 1991). "Znzibr." stands, presumably, for Zanzibar. In Harold's lifetime (1830-1886) Zanzibar referred to the Sultanate of Zanzibar which included not only the island of that name but also a strip of the coast of nowadays Kenya and Tanzania.

Recently, I had the opportunity to examine three more specimens of this seemingly rare species, two males from Kenya: Eastern, Mwingi env., 4.xii.1997, M. Snížek legit (in my collection), and Eastern, Sosoma, 26.iv.2008, M. Snížek legit (in J.-F. Josso collection, Muzillac, France), and a female from Tanzania: Mkomazi Game Reserve, Ndea Hill, *Acacia senegal*, pitfall trap, 22-23.xi.1994, J.G. Davies legit (in the Natural History Museum, London). The female differs from the male only in the shape and size of the pygidium and sixth abdominal sternite.

An outstanding feature of the species of *Stiptopodius* Harold, 1871 is the shape of the middle and hind tarsi. In the ten species (Branco, 1992 and present note) of *Stiptopodius* other than *longipedis*, segments I to IV of both middle and hind tarsi are wide, slightly longer than wide to wider than long, and strongly lobed at the upper and lower tips of the distal edge which is, thence, strongly concave. Segment V is small, elongate, almond-shaped to cylindrical, and bears a pair of tiny claws not longer than the width of that segment (Branco, 1991: figs. 1-2, 6-13, and figs. 5-6 of this note).

In the holotype of *longipedis* segments I and II of middle and hind tarsi are much longer than wide, strongly lobed at the upper and lower tips of the distal edge, and segment III is very small. Unfortunately, the holotype is slightly damaged, particularly segment III of the middle and hind tarsi has the tip eroded (Branco, 1991: fig 13). In the female from Tanzania segment III has the tip eroded in both middle tarsi, and is missing in both hind tarsi. Fortunately, the two males from Kenya have the tarsi intact or almost intact, enabling confirmation of the unusual configuration of the middle and hind tarsi of this species. In the male from Sosoma the right middle tarsus has the tip of the second segment broken off, but the other tarsi are intact. The male from Mwingi has all its tarsi intact, particularly segment III of both middle and hind tarsi does not have its tip eroded. In both middle tarsi (Fig. 1) and hind tarsi (Fig. 2) segment III is very small, almost cylindrical, only slightly longer than the lower distal lobe of segment II, its distal end is round and does not show ($\times 100$) any point of attachment of either a fourth segment or claws. It is worth noting here that segment III of middle and hind tarsi of *longipedis* is similar in shape and relative size to segment V of middle and hind tarsi of all other species of *Stiptopodius*. This strongly suggests that *Stiptopodius longipedis* Branco, 1991 has three-segmented middle and hind tarsi, having lost two segments and the claws on those tarsi. However, confirmation of this observation in more specimens would certainly be welcome.

A word about the fore tarsi seems pertinent here. In *longipedis* like in all other species of *Stiptopodius*, they are small, as long as or shorter than the apical external tooth of the fore tibiae, their segments I to IV are short, and segment

V is nearly as long as the first four together and bears a pair of small claws.

It should be noted, in connection with the above, that Péringuey (1901) in the description of his genus *Saproecius*, a synonym of *Stiptopodius* Harold, 1871, wrote: «intermediate and posterior tarsi short, the segments are fused, and vary in number from two to five; there is no trace of claws». Péringuey (1901) included two species in his new genus, *Saproecius singularis* Péringuey, 1901, currently *Stiptopodius singularis*, and *Saproecius optatus* Péringuey, 1901, currently *Eusaproecius optatus*. Péringuey (1901: 307), referring to *Stiptopodius singularis*, wrote: «Intermediate tibiae with five segments, the ultimate one, however, is hardly discernible, posterior ones four-segmented, but the segments are not free, and the apical one is obliquely truncate at tip». For my revision of the genus (Branco, 1991) I have examined the holotype of *Stiptopodius singularis*, a female and the only individual on which Péringuey described the species. Its fore tarsi were both broken off, as well as the claws on the left middle and hind tarsi, and segment V on the right middle and hind tarsi. Other specimens with their tarsi intact present the normal 5-segmented tarsi, and claws (Branco, 1991: fig. 6). Therefore, I thought (Branco, 1991: 268) and still think that Péringuey's assertions were the result of a defective observation on individuals with partly damaged tarsi. It is worthy of note, nevertheless, that amongst the specimens that I have examined, a female of *Stiptopodius gaillardi* (Boucomont, 1923), from northern Nigeria, in the Natural History Museum, London, has the first and second segments partially coalesced in the middle left tarsus and in both hind tarsi (Branco, 1991: fig. 14). The complete coalescence of those two segments, were it to happen, would result in a first segment very similar in size and shape to that of *Stiptopodius longipedis*. Could that be suggestive of the process by which the number of tarsal segments in middle and hind tarsi of *longipedis* were reduced to three, i.e., the coalescence of segments I and II yielding a long first segment, and the coalescence of segments III and IV yielding a long second segment? It has to be said, however, that besides the purely speculative nature of this suggestion, it does not explain the loss of the claws. Moreover, the female of *gaillardi* referred to above is the only specimen of *Stiptopodius* with that kind of teratology amongst the 230 specimens, including 11 of *gaillardi*, that I have so far examined. Hence this kind of teratology is certainly not common amongst the *Stiptopodius*.

2. Description of a new species from Zambia

Since the last revision (Branco, 1991) of the genus *Stiptopodius* Harold, 1871, only one species has been described (Branco, 1992). With the new species described below the number of species is brought to 11.

The *Stiptopodius* are exclusively Afrotropical. They are widespread from Ethiopia to Senegal, and southwards to Mozambique, South Africa (Transvaal and Natal), Zimbabwe, Zambia and Angola. No species has yet been recorded from southwestern Africa: Namibia, Botswana and the Cape Province.

According to the labels on the specimens that I have examined, they can be found throughout the year, but virtually nothing is known of their ethology. Most specimens

have been collected at light, and labels on the vast majority of specimens in the collections are void of any ethological information. Two exceptions, both in the Natural History Museum, London, are a male of *Stiptopodius singularis* (Péringuey, 1901) found in a termites nest, and a female of *Stiptopodius longipedis* Branco, 1991 collected in a pitfall trap in an *Acacia senegal* wood. However, in the case of *singularis* it could simply have taken refuge in the termites nest, and in the case of *longipedis* no indication is given as to the bait used in the trap, thus not much knowledge can be derived from these two pieces of information.

The new species is described on two females. In some species the carinae and/or tubercles on the head may be weaker in females than in males. Otherwise, secondary sexual dimorphism is restricted to the shape and size of pygidium and sixth abdominal sternite.

Stiptopodius granulatus sp. n. can be easily distinguished from all other species by its entirely and densely granulate head, and by the extremely rugose integument of the sides of pronotum. The only other species with granules on the head is *S. glabricollis* Müller, 1942 but the granules are confined to the clypeus and sparse, whereas in *granulatus* sp. n. they cover the whole head (Fig. 3). As for the pronotum, it may be more or less densely and strongly punctate laterally, but in no other species is it strongly rugose like in *granulatus* sp. n.

Stiptopodius granulatus sp. n.

TYPE MATERIAL: **Holotype** female, in the private collection of Jean-François Josso (Muzillac, France), 5.0 mm long (from tip of clypeus to extremity of pygidium), glued to a mounting card, with two labels as follows (slashes separating lines of text): 1) white, printed: NW ZAMBIA / NORTH WESTERN PR. / 66 KM N KABOMPO / 14.-15.12.2007 1100 M / A. KUDRNA JR. LGT.; 2) red, printed: *Stiptopodius / granulatus* / HOLOTYPE / T. Branco 2009.

Paratype female, same data and in the same collection as the holotype.

ETYMOLOGY: Latin meaning the granulate *Stiptopodius*.

DESCRIPTION: Entirely pilose dorsally, black, shining, with a weak metallic dark purple sheen; sides of head, tibiae and tarsi reddish brown; antennae yellowish brown; underside and femurs dark brown. Body length 4.9-5.0 mm (measured from tip of clypeus to extremity of elytra); body width 2.4-2.5 mm (measured across humeral angle of elytra).

Head (fig. 3) with fore edge bidentate, sides not sinuate at clypeo-genal junction; genae strongly protruding from eyes, their outer edge angulate. Surface of head entirely and densely granulate, except on a narrow band along fore edge, with setiferous punctures sparsely set amidst the granules; clypeo-frontal carina absent, clypeo-genal sutures finely engraved; vertex with a shallow carina imperceptibly (holotype) to clearly (paratype) interrupted in the middle, situated slightly behind the fore edge of the eyes and occupying approximately half the distance between them.

Antennae 8-segmented, the first segment widened from basis to apex, the point of attachment of second segment situated on the hind angle of its distal edge. Labial palpi with first segment dilated on the inner side, almost quadrangular; second

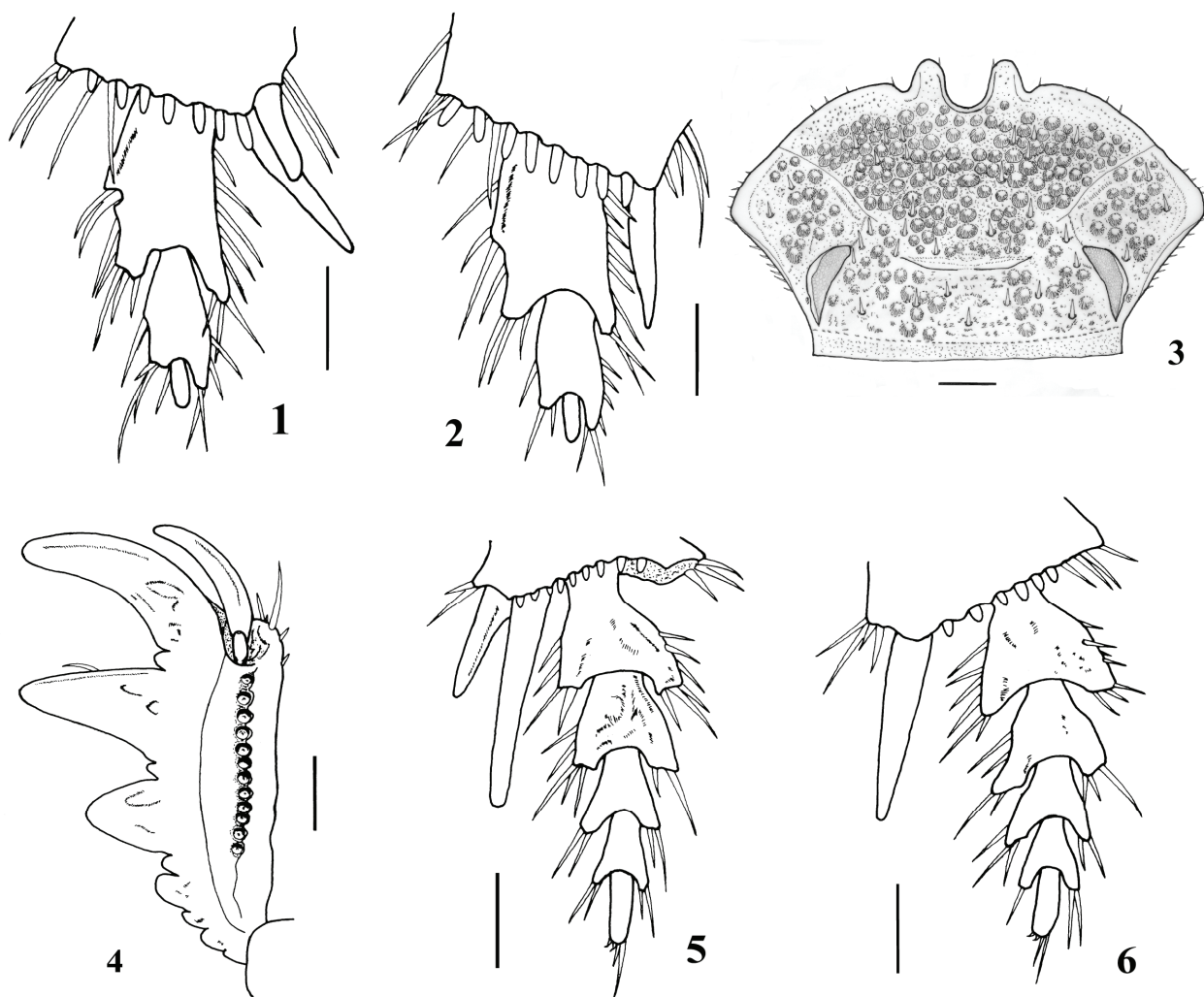


Fig. 1-2. *Stiptopodius longipedis* Branco, 1991, Kenya: Eastern, Mwingi env., 4.xii.1997, M. Snížek legit. **1.** Right middle tarsus, ventral view. **2.** Right hind tarsus, ventral view. Scale line 0.2 mm.

Fig. 3-6. *Stiptopodius granulatus* sp. n., Holotype. **3.** Head. **4.** Right fore tibia, ventral view. **5.** Left middle tarsus, ventral view. **6.** Left hind tarsus, ventral view. Scale line 0.2 mm.

segment nearly orbiculate, as long as first segment; third segment tiny.

Pronotum wider than long, regularly convex but somewhat flattened on disc, strongly sinuated (lateral view) before postero-lateral angles, its perimeter entirely thinly marginate; entirely and densely punctate, the punctures bearing short setae; towards the sides and anteriorly the punctures have their edges strongly raised resulting in a strongly rugose surface.

Elytra with narrow, shallowly engraved, shallowly punctate striae; interstriae slightly convex, fairly strongly and densely punctate, every puncture bearing a short seta; on interstriae II to VI the punctures are aligned in two rows along the sides, leaving the middle of the interstria impunctate; punctures misaligned on the other interstriae; all interstriae starting from the basis of elytra except interstria VII which starts from the middle of the umbone.

Pygidium moderately convex, fairly strongly and densely punctate, each puncture bearing a short seta.

Prosternum with the anterior angles sloping forwards and inwards but not excavated.

Mesosternum dull, glabrous, with closely set large but very shallow, partly rimmed punctures; integument of bottom of punctures as well as around them wrinkled, punctures' rim smooth.

Metasternum shining, gibbose anteriorly then sloping forwards; disc flat, fairly densely punctate, the punctures irregular in size, the larger ones setiferous, the setae short on disc, long on anterior slope and on sides.

Abdominal sternites shining, sternites II to V with a row of setiferous punctures close to their fore edge; sternite VI as long as IV and V together (female), with sparsely set, irregularly distributed setiferous punctures; all setae long.

Fore femurs fairly strongly and densely punctate, the punctures bearing long setae; upper fore edge crenulated by closely set punctures bearing very long stiff setae; lower fore edge strongly marginate; hind edge not marginate.

Middle and hind femurs sparsely, fairly strongly punctate and with a row of fairly strong punctures between the upper and lower hind edges, all punctures bearing long setae; fore and lower hind edges not marginate, upper hind edge thinly marginate.

Fore tibiae (Fig. 4) with four teeth on the outer edge, crenulate between the basis and the first tooth and between the teeth; basal tooth only slightly larger than basal crenellations, the apical one very strong; ventrally with two carinas, a median one smooth, running nearly parallel to the outer edge, the other close to the inner edge, crenulated by setiferous closely set punctures. Spur long, curved outwardly, parallel to the apical edge of the tibia. In the holotype, as well as in the paratype, both fore tarsi are reduced to the first segment; that the last four segments have been broken off exactly in the same way in both fore tarsi of both specimens seems a little too much of a coincidence, moreover since neither specimen shows any other damage. However, the first segment presents ($\times 100$) on its tip what appears to be the point of attachment of a second segment. Therefore, I am inclined to think that, like in all the other species of the genus, the fore tarsi have five segments but the exam of more specimens would be necessary to be absolutely certain. Middle and hind tibiae strongly widened towards apex. Middle (fig. 5) and hind tarsi (fig. 6) with segments I to IV triangular, widened from basis to apex, lobed at the upper and lower angles of the distal edge which is, thence, strongly concave; segment V long and thin, nearly cylindrical, bearing at its tip a long seta and one or two short ones, and a pair of claws so small as to be hardly discernible ($\times 100$).

3. Key to the species of *Stiptopodius* Harold, 1871

Stiptopodius Harold, 1871 is part of a heterogeneous group of Afrotropical genera of Onthophagini that share a more less strongly bidentate clypeus (Fig. 3). The representatives of these genera which were known to him were ranged by d'Orbigny (1913) in his first group of the African *Onthophagus* Latreille, 1802. Recently, I provided an updated key for the separation of these genera from each other (Branco, 2003); d'Orbigny's 1913 key can still be used for their separation from all other African Onthophagini. The eleven species of *Stiptopodius* can be identified with the help of the following key.

Notes to the key: a) Length is measured from the tip of clypeus to the tip of abdomen, and it is intended only to give an idea of the body size of the different species; b) Countries are listed from north to south and from east to west.

1. Sides of pronotum (lateral view) weakly sinuate before postero-lateral angle2
 - Sides of pronotum (lateral view) strongly sinuate before postero-lateral angle3
2. Body elongate, parallel-sided. Pronotum quadrate, much shorter than elytra. Head with two oblique tubercles on the vertex, often obsolete. Segments I to IV of middle and hind tarsi wider than long. Length 3.9 - 5.7 mm. Ethiopia, Somalia, Kenya, Sudan, Uganda, Chad, Niger, Nigeria, Mali, Burkina Faso *doriae* Harold, 1871
 - Body short and wide. Pronotum with sides arcuate, only slightly shorter than elytra. Head with two transversely aligned weak tubercles on vertex. Segments I and II of middle and hind tarsi much longer than wide, segment III small and not bilobed, segments IV and V as well as

claws absent. Length 4.5 - 5.2 mm. Kenya, Tanzania...
..... *longipedis* Branco, 1991

3. Head with two clearly separated tubercles on vertex4
 - Head with a carina on vertex, entire or shortly interrupted in the middle but never divided in two clearly separated tubercles5
4. Cephalic tubercles approximately equidistant from each other and the inner edge of eyes; space between tubercles flat or very slightly depressed. Length 5.4 - 7.6 mm. Eritrea, Ethiopia, Somalia, Kenya, Tanzania
..... *patrizii* Boucomont, 1923
 - Cephalic tubercles much closer to inner edge of eyes than to each other; space between tubercles strongly depressed (male; female unknown). Length 7.3 mm. Kenya *krausei* Branco, 1991
5. Clypeal punctation not granulose, double, some punctures small and simple, others large and ocellate6
 - Clypeal punctation at least partly granulose10
6. Second elytral interstria with the punctation aligned alongside the striae, the middle impunctate. Head and pronotum of metallic colour or with a metallic shine7
 - Second elytral interstria with punctation irregularly distributed over all its surface. Head and pronotum black or brown, without metallic shine8
7. Basal half of disc of pronotum glabrous, with uniform punctation, dense and medium-size. Frontal carina most often obsolete. Length 4.5 - 6.0 mm. Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, RSA (Transvaal and Natal), Angola *singularis* (Péringuey, 1901)
 - Basal half of disc of pronotum pilose, with sparsely set double punctation, the larger punctures setiferous. Frontal carina most often strong. Length 5.3 - 6.6 mm. Kenya, Tanzania, Malawi *nitidus* (Boucomont, 1923)
8. Disc of pronotum glabrous, with uniform punctation, the punctures fine to medium-size. Dorsal elytral interstriae either pilose or glabrous9
 - Disc of pronotum pilose, with double punctation, the larger punctures fairly strong, ocellate and setiferous. Elytra always entirely pilose. Length 6.5 - 7.3 mm. Niger, Nigeria, Cameroon *gaillardi* (Boucomont, 1923)
9. Frontal carina strong. Upper surface entirely glabrous, except sometimes narrowly on the sides of pronotum and on the eighth elytral interstria. Length 6.0 - 7.2 mm. Sudan *glaber* Branco, 1992
 - Frontal carina obsolete. Pronotum always pilose on the sides. Dorsal elytral interstriae either pilose or glabrous. Length 4.8 - 6.5 mm. Nigeria, Benin, Burkina Faso, Ghana, Senegal *nodieri* (Boucomont, 1923)
10. Clypeal punctation only partly granulose; genae and vertex not granulose. Integument of pronotum not rugose. Head and pronotum of bronze colour. Length 4.5 - 5.9 mm. Somalia *glabricollis* Müller, 1942
 - Head entirely granulose. Integument of pronotum strongly rugose laterally. Black with a weak metallic dark purple sheen. Length 4.9-5.0. Zambia *granulosus* sp. n.

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