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New species of Dryinidae from the Afrotropical Region

(Insecta, Hymenoptera, Chrysidoidea)

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Six new species of Dryinidae from the Afrotropical region are described: *Anteon haladai*, *Anteon zambianum* and *Gonatopus zambianus*, from Zambia; *Anteon tetense*, from Mozambique; *Bocchus piceus*, from Guinea; *Gonatopus natalensis*, from South Africa. The previously published keys to the Afrotropical *Anteon*, *Bocchus* and *Gonatopus* species are modified.

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Introduction

Dryinidae (Hymenoptera: Chrysidoidea) are parasitoids of Hemiptera Cicadomorpha and Fulgoro-morpha (Guglielmino & Olmi 1997, 2006, 2007). The Dryinidae of the Afrotropical region were studied in the last thirty years by M. Olmi. The results were published in numerous works (see Olmi, 2006, 2007 for references). However, in spite of the above papers, they can still be considered insufficiently known. In 2007 I received for study an interesting collection of unidentified dryinids from some African countries. The study of this material resulted in the discovery of six new species described below.

Material and Methods

The descriptions follow the terminology used by Olmi (1984, 1994, 1999). The measurements reported are relative, except for the total length (head to abdominal tip, without the antennae), which is expressed in millimetres. In the descriptions POL is the distance between the inner edges of the two lateral ocelli; OL is the distance between the inner edges of a lateral ocellus and the median ocellus; OOL is the distance from the outer edge of a lateral ocellus to the compound eye; OPL is the distance from the posterior edge of a lateral ocellus to the occipital carina; TL is the distance from the posterior edge of an eye to the occipital carina.

The material studied in this paper is deposited in the following collections:

- OLML Oberösterreichisches Landesmuseum, Linz, Austria.
- MOLC Massimo Olmi's collection, c/o Department of Plant Protection, University of Tuscia, Viterbo, Italy.
- SAMC Iziko South African Museum, Cape Town, South Africa.

Subfamily Anteoninae

Anteon haladai, spec. nov.

Fig. 1

Types. Holotype: ♀, Zambia, Central Province, 15 km S Kapiri Mposhi, 16-17.I.2003, J. Halada coll. (OLML).

Description

♀. Fully winged; length 4.1 mm. Head black, except mandibles, clypeus and anterior region of face near clypeus and along inner margin of eyes testaceous. Antennae testaceous. Propleura brown, except posterior half and part of sides testaceous. Pronotum brown, except anterior margin, sides and posterior tubercles testaceous; rest of mesosoma black, except posterior third of scutum, part of lateral regions of scutum, scutellum and part of metanotum ferrugi-

nous. Gaster brown to testaceous. Legs testaceous. Antennae clavate; antennal segments in the following proportions: 20:7:10:9:7:7:8:8:7:10.5. Head dull, reticulate rugose. Frontal line absent. Face with two lateral keels around orbits and directed towards the antennal toruli. Occipital carina complete. POL=5, OL=3, OOL=5, OPL=6, TL=5. Greatest diameter of posterior ocelli as long as OL. Pronotum shiny, strongly crossed by transverse keels, posterior third smooth, finely punctate, without sculpture among punctures, posterior surface shorter than scutum (14:18). Pronotal tubercles reaching tegulae. Scutum shiny, smooth, finely punctate, without sculpture among punctures, with many large punctures situated near anterior margin. Notauli incomplete, reaching approximately $0.7 \times$ length of scutum. Scutellum and metanotum shiny, smooth, slightly punctate, without sculpture among the punctures. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose; posterior surface with 2 longitudinal keels, median area as rugose as lateral areas. Forewing hyaline, without dark transverse bands; distal part of stigmal vein much shorter than proximal part (4.5:19). Fore tarsal segments in following proportions: 10:3.5:6:17:30; segment 4 of fore tarsi much longer than basal part of segment 5 (17:8). Enlarged claw (Fig. 1) with proximal prominence bearing 1 long bristle. Segment 5 of fore tarsus (Fig. 1) with basal part shorter than apical part (8:22), with 2 rows of 22 (short) + 12 (long) lamellae; distal apex with a group of 5 lamellae.

♂. Unknown.

Remarks. The species is named after the collector of the holotype, Mr J. Halada. *Anteon haladai* is similar to *A. agile* Olmi, 1984, and *A. traorei* Olmi, 1995, for the following characters: fully winged female, segment 4 of fore tarsus longer than basal part of segment 5 (17:8), posterior surface of propodeum sculptured by two longitudinal keels. The main difference among these three species regards the sculpture of the head (reticulate rugose in *A. haladai*; punctate and without sculpture among punctures in *A. traorei* and *A. agile*). The female of *A. haladai* can be included in the key to the females of the Afro-tropical *Anteon* (Olmi 2006) by replacing couplet 4 as follows:

- 4 Head reticulate rugose *A. haladai*, spec. nov.
- Head punctate, without sculpture among punctures, not reticulate rugose 4'
- 4' Body totally testaceous *A. traorei* Olmi, 1995
- Body black, except pronotum reddish or brown *A. agile* Olmi, 1984

Anteon zambianum, spec. nov.

Fig. 2

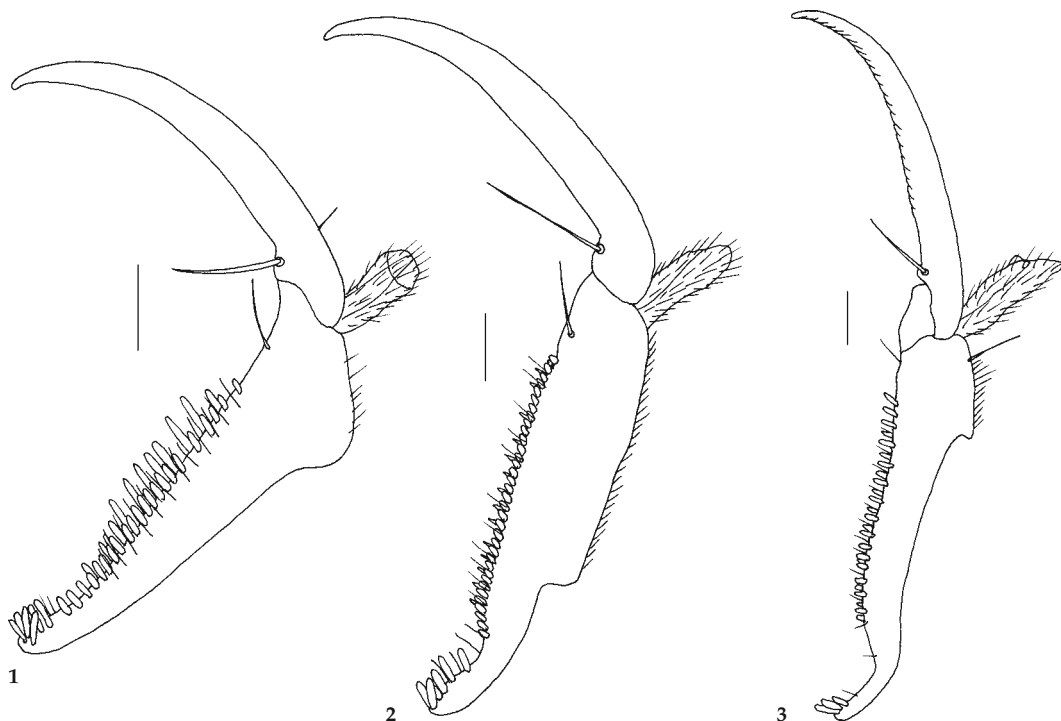
Types. Holotype: ♀, Zambia, Central Province, 15 km S Kapiri Mposhi, 16-17.I.2003, J. Halada coll. (OLML).

Description

♀. Fully winged; length: 3.5 mm. Black. Mandibles testaceous. Clypeus black, with ferruginous spot. Antennae testaceous, with segments 5-10 darkened. Tegulae testaceous. Gaster brown. Legs yellow. Antennae clavate; antennal segments in the following proportions: 13:8:15:12:11:10:10.5:10:10:14. Head slightly convex, shiny, punctate, without sculpture among punctures, with anterior two thirds of face dull and reticulate rugose. Vertex with many short longitudinal keels situated around occipital carina; frontal line complete. Face with two lateral keels around orbits and directed towards the antennal toruli. Occipital carina complete. POL=5.5, OL=4.5, OOL=5, OPL=5, TL=4.5. Greatest diameter of posterior ocelli shorter than OL (3.5:4.5). Pronotum with anterior surface dull and strongly transversely striate. Posterior surface shiny, smooth, finely punctate, without sculpture among punctures. Pronotal tubercles reaching tegulae. Posterior surface of pronotum much shorter than scutum (10:21). Scutum, scutellum and metanotum shiny, smooth, finely punctate and without sculpture among punctures. Notauli incomplete, very long, almost reaching posterior margin of scutum. Mesopleura with anterior surface rugose and posterior surface smooth, punctate and without sculpture among punctures. Metapleura strongly transversely striate. Propodeum with transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose; posterior surface with two complete longitudinal keels, median area mostly smooth, with some keels around margins, and lateral areas rugose. Forewing hyaline, without dark transverse bands; distal part of stigmal vein much shorter than proximal part (7:13.5). Fore tarsal segments in following proportions: 12:4:4:7:25; segment 3 of fore tarsus produced into hook. Enlarged claw (Fig. 2) with proximal prominence bearing 1 long bristle. Segment 5 of fore tarsus (Fig. 2) with 2 rows of 36 (large) + 14 (slender) lamellae; distal apex with a group of about 9 lamellae. Basal part of segment 5 of fore tarsus longer than distal part (16:9) and than segment 4 (16:7).

♂. Unknown.

Remarks. *Anteon zambianum* is similar to *A. hova* Benoit, 1953, for the following characters: fully winged female, segment 4 of fore tarsus at most 0.5 as long as basal part of segment 5 (7:16), posterior



Figs 1-3. Chelae of holotypes: 1. *Anteon haladai*, spec. nov. 2. *Anteon zambianum*, spec. nov. 3. *Anteon tetense*, spec. nov. Scale bars: 1: 0.14 mm, 2: 0.09 mm, 3: 0.08 mm.

surface of propodeum sculptured by two longitudinal keels. The female of *A. zambianum* can be included in the key to the females of the Afrotropical *Anteon* (Oلمي 2006) by replacing couplet 42 as follows:

- 42 Posterior surface of propodeum with median area mostly smooth, with keels only around margins 42'
- Posterior surface of propodeum with median area completely rugose, with numerous keels also in central region..... 43
- 42' Segment 5 of fore tarsi with proximal and medial bristles, in addition to distal group of lamellae (Fig. 247 in Oلمي, 1984); notauli reaching approximately 0.4-0.5 × length of Scutum
..... *A. hova* Benoit, 1953
- Segment 5 of fore tarsi with proximal and medial lamellae, in addition to distal group of lamellae (Fig. 2); notauli almost reaching posterior margin of scutum *A. zambianum*, spec. nov.

Anteon tetense, spec. nov.

Fig. 3

Types. Holotype: ♀, Mozambique, Tete Province, 20 Km N Tete, 16°02'S 33°35'E, 260 m, 1.XII.2005, J. Halada coll. (OLML).

Description

♀. Fully winged; length 2.6 mm. Head black, except mandibles, clypeus and anterior region of face testaceous. Antennae testaceous. Mesosoma black, except lateral margins of pronotum testaceous. Gaster brown. Legs testaceous. Antennae clavate; antennal segments in following proportions: 11:5.5:6:4.5:5:5:5:4:5:7. Head dull, granulated. Frontal line complete, partly continuing also behind anterior ocellus. Face with 2 lateral keels along orbits and directed towards the antennal toruli. Occipital carina complete. POL=6, OL=5, OOL=5, OPL=5, TL=5. Greatest diameter of posterior ocelli much shorter than OL (2:5). Pronotum smooth, with slight transverse anterior impression; anterior surface shiny, punctate, without sculpture among punctures; posterior surface approximately as long as scutum (12.5:12), dull, granulated, except few transverse

keels situated near anterior margin (these keels form a raised transverse carina). Pronotal tubercles reaching tegulae. Anterior surface of pronotum shorter than posterior surface (7:12.5). Scutum shiny, granulated, without sculpture only medially near anterior margin. Notauli incomplete, reaching about $0.3 \times$ length of scutum. Scutellum and metanotum shiny, smooth, without sculpture. Propodeum with transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose; posterior surface reticulate rugose, with small areolae, without longitudinal keels. Forewing with 2 dark transverse bands; distal part of stigmal vein much shorter than proximal part (3:6). Fore tarsal segments in following proportions: 7:2.5:3.5:12.5:21; fore tarsal segment 2 produced into hook. Enlarged claw (Fig. 3) with proximal prominence bearing 1 long bristle. Segment 5 of fore tarsus (Fig. 3) with 2 rows of 25 lamellae; distal apex very slender, with a group of 3 lamellae. Segment 5 of fore tarsus with basal part shorter than apical part (6:15) and shorter than segment 4 (6:12.5).

♂. Unknown.

Remarks. *A. tetense* is similar to *A. urbani* Olmi, 2006, for the following characters: fully winged female, segment 4 of fore tarsus longer than basal part of segment 5, posterior surface of propodeum reticulate rugose and without longitudinal keels, segment 5 of fore tarsus with inner side curvilinear and with distinct apical region, forewing with distal part of stigmal vein 0.5 as long as proximal part (3:6) and with 2 dark transverse bands, head granulated, mesosoma and head mostly black. The female of *A. tetense* can be included in the key to the females of the Afrotropical *Anteon* (Olmi 2006) by replacing couplet 19 as follows:

- 19 Forewing with 1 dark transverse band.....
*A. dayi* Olmi, 1984
 – Forewing with 2 dark transverse bands.....19'
 19' Segment 5 of fore tarsus with distal apex very slender (Fig. 3); posterior surface of pronotum approximately as long as scutum
*A. tetense*, spec. nov.
 – Segment 5 of fore tarsus with distal apex less slender (Fig. 3 in Olmi, 2006); posterior surface of pronotum much shorter than scutum
*A. urbani* Olmi, 2006

Subfamily Bocchinae

Bocchus piceus, spec. nov. (Fig. 4)

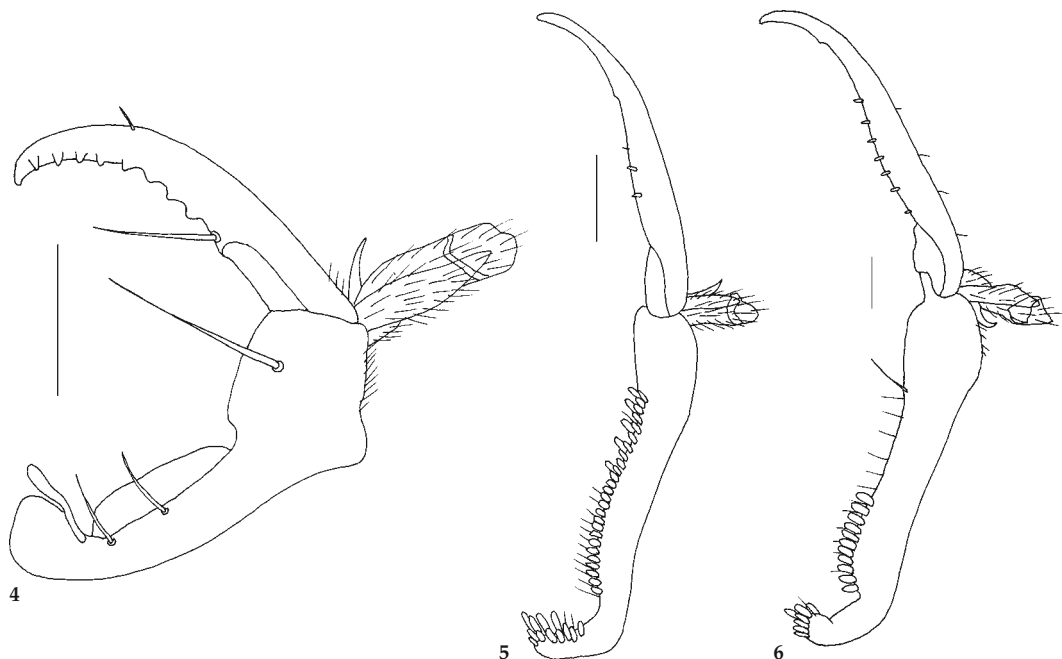
Types. Holotype: ♀, Guinea, 10 km W Mamou, 10° 22.18'N 12°07.75'W, 5.VII.2004, Marek Halada coll. (OLML).

Description

♀. fully winged; length 4.8 mm. Head black, except mandibles testaceous. Antennae testaceous, except segments 6–10 brown. Mesosoma black, with part of lateral regions of pronotum testaceous. Petiole and gaster black. Legs testaceous, except mid and hind coxae, mid and hind clubs of femora and mid and hind tibiae brown. Antennae clavate, short, with antennal segments 5–9 approximately as long as broad (6:5); antennal segments in following proportions: 21:8:14:9:6:6:6:6:9. Head convex, dull, covered with short hairs, completely reticulate rugose. Frontal line complete. Occipital carina complete. POL=6, OL=4, OOL=13, OPL=11, TL=11. Greatest diameter of posterior ocelli shorter than OL (3:4). Pronotum crossed by strong transverse impression, dull, with dorsal region slightly rugose and lateral regions crossed by strong transverse keels. Pronotal tubercles reaching tegulae. Scutum, scutellum and metanotum dull, reticulate rugose. Areolae of metanotum broader than those of scutum and scutellum. Notauli absent. Mesopleura dull, reticulate rugose. Metapleura dull, sculptured by numerous strong transverse keels. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface dull, rugose, with few very large areolae (internal surface of areolae shiny and punctate). Posterior surface of propodeum shiny, with two complete longitudinal keels, with median and lateral areas sculptured by numerous transverse keels. Forewing hyaline, without dark transverse bands; distal part of stigmal vein slightly longer than proximal part (17:15); marginal cell open. Petiole long, much shorter than gaster (13:67). Fore tarsal segments in following proportions: 22:3.5:4:15:20. Enlarged claw (Fig. 4) with 1 row of 8 teeth and 1 bristle. Segment 5 of fore tarsus (Fig. 4) with 1 preapical lamella, 2 bristles, 1 medial prominence and 1 long proximal lamella.

♂. Unknown.

Remarks. *B. piceus* is similar to *B. brooksi* Olmi, 2003, for the following characters: fully winged female, scutum completely reticulate rugose, segment 1 of fore tarsus longer than segment 4 (22:15), antennal



Figs 4-6. Chelae of holotypes: **4.** *Bocchus piceus*, spec. nov. **5.** *Gonatopus zambianus*, spec. nov. **6.** *Gonatopus natalensis*, spec. nov. Scale bars: 1: 0.18 mm, 2: 0.25 mm, 3: 0.06 mm.

segments 5-9 approximately as long as broad, segment 5 of fore tarsus with 1 preapical lamella, forewing without dark transverse bands. The female of *B. piceus* can be included in the key to the females of the Afrotropical *Bocchus* (Olmi 2004) by replacing couplet 6 as follows:

- 6 Segment 5 of fore tarsus without preapical lamella (Fig. 30A in Olmi, 1991); forewing with slightly darkened transverse band*B. botswanensis* Olmi, 1991
- Segment 5 of fore tarsus with preapical lamella (Fig. 4); forewing hyaline, without dark transverse bands6'
- 6' Notauli complete; head and mesosoma testaceous-reddish*B. brooksi* Olmi, 2003
- Notauli absent; head and mesosoma black, except for mandibles and part of lateral regions of pronotum testaceous*B. piceus*, spec. nov.

Subfamily Gonatopodinae

Gonatopus zambianus, spec. nov. (Fig. 5)

Types. Holotype: ♀, Zambia, North-Western Province, NC, 82 Km SSW Solwezi, 3.XII.2004, M. Snizek coll. (OLML).

Description

♀. Apterous; length 5.5 mm. Head black, except mandibles and narrow stripe along margin of clypeus testaceous. Clypeus testaceous, except brown median region. Antennae brown, with ventral side of segment 1 testaceous. Mesosoma and gaster black. Legs testaceous, with coxae, trochanters and clubs of femora brown. Antennae clavate, without rhinaria; antennal segments in following proportions: 15:7:31:22:15:11:10:10:9:12. Head excavated, dull, with short sparse hairs, granulated. Temples distinct, without sharp carina. Frontal line complete. Occipital carina absent. POL=1.5, OL=2, OOL=14. Greatest diameter of posterior ocelli as long as OL. Maxillary palpi with 6 segments; labial palpi with 3 segments. Pronotum dull, crossed by strong transverse impression, strongly granulated, with short sparse hairs. Scutum less than twice as long as broad,

dull, rugose, granulated and sculptured by strong longitudinal keels, without lateral points. Scutellum dull, granulated, inclined. Metanotum hollow behind scutellum, flat, granulated and crossed by strong transverse keel. Metathorax + propodeum dull, with short sparse hairs, with anterior surface granulated and with posterior surface granulated and with tracks of few transverse striae near distal apex. Mesopleura and metapleura dull, granulated, not transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 25:5:7.5:27:43. Enlarged claw (Fig. 5) with small subdistal tooth, with 1 row of 2 peg-like hairs + 1 hair. Segment 5 of fore tarsus (Fig. 5) with 2 rows of 5 (proximal) + 27 lamellae; distal apex with group of about 16 lamellae.

♂. Unknown.

Remarks. *G. zambianus* is similar to *G. upembanus* Olmi, 1984. for the following characters: segment 1 of fore tarsus slightly shorter than segment 4, meso-metapleural suture distinct and complete, temples without sharp carina, scutum less than twice as long as broad and without two lateral pointed prominences, metathorax + propodeum without median furrow, mesopleura without lateral pointed prominence, metanotum hollow behind scutellum, segment 5 of fore tarsus with very short distal apex (Fig. 5), enlarged claw with small subapical tooth, head excavated, mesosoma completely black. The female of *G. zambianus* can be included in the key to the females of the Afrotropical *Gonatopus* (Olmi 2002) by replacing couplet 25' as follows:

- 25' Head flat; mesosoma ferruginous.....
 *G. martellii* Olmi, 2002
 – Head excavated; mesosoma completely black .
 25"
 25" Pleura and posterior surface of metathorax + propodeum granulated and strongly transversely striate *G. upembanus* Olmi, 1984
 – Pleura and posterior surface of metathorax + propodeum granulated, not transversely striate..... *G. zambianus*, spec. nov.

***Gonatopus natalensis*, spec. nov.**
 (Fig. 6)

Types. Holotype: ♀, South Africa, KwaZulu-Natal, Port Edward, along road from R61 to Umtamvuna Nature Reserve, parasitized host collected on 13.IV.2007, cocooning on 17.IV.2007, dryinid adult emerged on 20.V.2007, M. Olmi reared from an adult of *Recilia dola-*

bra Kramer (Cicadellidae) (SAMC). – **Paratype:** 1♀, South Africa, Free State, Royal Natal National Park, 11 Km E of Park Gate along Road from R74 to Park, grass along the road, parasitized host collected on 9. IV.2007, cocooning on 12.IV.2007, dryinid adult emerged on 10.V.2007, M. Olmi reared from an adult of *Recilia dolabra* Kramer (MOLC).

Description

♀. Apterous; length 2.5 mm. Head black, except clypeus, mandibles and anterior third of face testaceous. Antennae brown, except segment 10 whitish and segments 1-2 and proximal third of 3 testaceous. Mesosoma black, except part of scutum testaceous. Gaster black. Legs testaceous, except coxae and clubs of femora partly brown-black. In paratype, hind legs completely testaceous, except stalks of femora brown-black. Head excavated, shiny, hairless, without sculpture. Frontal line complete. Occipital carina absent. POL=1, OL=1.5, OOL=7. Maxillary palpi with 6 segments; labial palpi with 3 segments. Pronotum crossed by strong transverse impression, shiny, smooth, without sculpture. Scutum shiny, with some longitudinal keels, without lateral points. Metanotum transversely striate. Metathorax + propodeum shiny, without sculpture, with posterior surface transversely striate. Mesopleura and metapleura transversely striate. Meso-metapleural suture obsolete. Fore tarsal segments in following proportions: 11:2:3:12:19. Enlarged claw (Fig. 6) with small subapical tooth and 7-8 peg-like hairs (7 in holotype). Segment 5 of fore tarsus (Fig. 6) with inner side proximally not serrate and 1 row of 11-13 lamellae (11 in holotype) situated in distal half of segment; distal apex with a group of 13-15 lamellae (13 in holotype).

♂. Unknown.

Remarks. *G. natalensis* is similar to *G. bekilyanus* (Benoit, 1953), for the following characters: segment 1 of fore tarsus slightly shorter than segment 4, meso-metapleural suture obsolete, scutum less than three times as long as broad and laterally without two pointed prominences, mesosoma almost totally black, posterior surface of propodeum transversely striate, anterior surface of metathorax + propodeum without sculpture. The female of *G. natalensis* can be included in the key to the females of the Afrotropical *Gonatopus* (Olmi 1984) by replacing couplet 17 as follows:

- 17 Anterior surface of metathorax + propodeum dull, granulated, or with numerous slightly distinct longitudinal keels.....
 *G. incognitus* Olmi, 1984

- Anterior surface of metathorax + propodeum shiny, not granulated, without keels.....17'
- 17' Segment 5 of fore tarsus with 1 row of lamellae situated both in proximal and distal half of segment (Fig. 1119 in Olmi, 1984).....
..... *G. bekilyanus* (Benoit, 1953)
- Segment 5 of fore tarsus with 1 row of lamellae situated only in distal half of segment (Fig. 6) .
..... *G. natalensis*, spec. nov.

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