Scorpions of the Horn of Africa (Arachnida, Scorpiones). Part XVIII. *Gint banfasae* sp. n. from Somaliland (Buthidae)

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Scorpions of the Horn of Africa (Arachnida, Scorpiones). Part XVIII. *Gint banfasae* sp. n. from Somaliland (Buthidae)

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**Summary**

*Gint banfasae* sp. n. from Somaliland is described and compared with other species of the genus. Additional information is provided on the taxonomy and distribution of the genus *Gint*, fully complemented with color photos of specimens of both sexes of the new species, as well as of their habitat. Included is a key for *Gint*.

**Introduction**

The genus *Gint* Kovařík, Lowe, Plišková et Šťáhlavský, 2013 with the type species *Gint gaitako* Kovařík, Lowe, Plišková et Šťáhlavský, 2013 was described and compared with genus *Buthacus* Birula, 1908 in 2013 (Kovařík et al., 2013). Subsequent research in the Horn of Africa, especially in Somaliland and Kenya, led to the discovery of a number of other species (Kovařík et al., 2015, 2018, and Kovařík, 2018). Herein is described another new species from Somaliland.

**Methods, Material & Abbreviations**

Nomenclature and measurements follow Stahnke (1971), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974).

*Depository:* FKCP (František Kovařík, private collection, Prague, Czech Republic).

**Systematics**

**Family Buthidae** C. L. Koch, 1837

*Gint* Kovařík, Lowe, Plišková et Šťáhlavský, 2013 (Figs. 1–62, Table 1)

*Gint* Kovařík et al., 2013: 1–18, figs. 1–4, 6–71; Kovařík & Mazuch, 2015: 1–23, figs. 1–89; ? Ros-

**Diagnosis.** Total length up to 25 mm (male) or 50 mm (female); carapace trapezoidal, in lateral view preocular area not distinctly inclined towards anterior margin, level with or higher than postocular area; surface of carapace densely granular, with only anterior median carinae developed; ventral aspect of cheliceral fixed finger with two denticles (Fig. 51); tergites densely granular, with three carinae of which lateral pair on I and II are inconspicuous; sternites III–VI with finely micro-denticulate posterior margins, lacking larger non-contiguous denticles; pectinal tooth number 19–31; pectines with fulcra, hirsute; hemispermatophore with flagellum separated from a 3-lobed sperm hemiduct, and with a projecting, scoop- or hook-like basal lobe; metasomal segments I–III with 8–10 carinae; metasoma I ventrally smooth, lacking ventromedial carinae; metasoma V with enlarged ‘lobate’ dentition on ventrolateral carinae which may be reduced; telson rather elongate (except for *G. maidensis*), vesicle with moderate posterior slope, not sharply inclined or truncated, lacking subacicular tubercle, aculeus shorter than vesicle; all segments of metasoma and pedipalps sparsely...
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Figures 1–4: *Gint banfasae* sp. n. Figures 1–2. Holotype male, dorsal (1) and ventral (2) views. Figures 3–4. Paratype female, dorsal (3) and ventral (4) views. Scale bar: 10 mm.

hirse, with long setae in both sexes, dentate margin of movable finger of pedipalp with 8–10 rows of granules, each with one external and one internal accessory granule, 5–6 terminal granules (4–5 subterminal and one distal terminal); trichobothrial pattern orthobothriotaxic type A; dorsal trichobothria of femur arranged in β-
Figures 13–32: Gint banfasæ sp. n. Figures 13–21. Holotype male. Pedipalp chela, dorsal (13), external (14), and ventrointernal (15) views. Pedipalp patella, dorsal (16), external (17), and ventral (18) views. Pedipalp femur and trochanter, internal (19), ventral (20) and dorsal (21) views. Figures 22–32. Paratype female. Pedipalp chela, dorsal (22), external (23), and ventrointernal (24) views. Pedipalp patella, dorsal (25), external (26), and ventral (27) views. Pedipalp femur and trochanter, internal (28), ventral (29) and dorsal (30) views. Pedipalp chela, movable (31) and fixed (32) fingers dentate margin. The trichobothrial pattern is indicated in Figures 14–17, 19, 21 (white circles).
configuration; pedipalp patella with 7 external trichobothria; patella trichobothrium \( d_3 \) internal to dorsomedian carina; tibial spurs present on legs III–IV.

**SUBORDINATE TAXA.** *Gint amoudensis* Kovařík et al., 2018; *Gint banfasae* sp. n.; *Gint calviceps* (Pocock, 1900); *Gint childsi* Kovařík, 2018; *Gint dabakalo* Kovařík et Mazuch, 2015; *Gint gaitako* Kovařík et al., 2013; *Gint gubanensis* Kovařík et al., 2018; *Gint maidensis* Kovařík et al., 2018; *Gint puntlandus* Kovařík et Mazuch, 2015. For species described by Rossi (2015) see Kovařík et al. (2018: 12).

**Gint banfasae** sp. n.
(Figs. 1–62, Table 1)

**TYPE LOCALITY AND TYPE DEPOSITORY.** Somaliland, Shanshade vill., 08°39’35”N 45°55’49”E, 790 m a.s.l.; FKCP.

**TYPE MATERIAL EXAMINED.** Somaliland, Shanshade vill., 08°39’35”N 45°55’49”E, 790 m a.s.l. (Locality No. 18SJ), 29–31.VIII.2018, 6♀6♂4juvs. (holotype and paratypes, Nos. 1530, 1531, 1532, 1533, 1534), FKCP, 2♂ GLPC. leg. F. Kovařík et al.

**ETYMOLOGY.** Named after Huda Ali Banfas from Har-geisa, Somaliland. For the last years, Huda has been working with both local and international non-governmental organizations specialized in the area of children and human rights. Huda is a freelance landscape photographer and is devoted to taking photos during her off days and in 2018 her unique book of photos of Somaliland nature, people and animals “Kayd Dee-gaan” in the second edition was published.

**DIAGNOSIS.** Total length 25–29 mm (males) to 32–34 mm (females); chelicerae yellow with reticulation in anterior part or uniformly yellow; carapace densely granulated with only anterior median carinae developed; anterior margin of carapace straight; pectine teeth 21–26 in males and 21–25 in females; sternites III–VI lacking carinae; sternite VII with four weakly indicated carinae, lateral surface granulated; metasomal segment V length/width ratio 2.35–2.38 in male; metasomal segment II–IV intercarinal surfaces granulated in both sexes; metasomal segment IV bears 8 carinae that are complete and granulate in both sexes; metasomal segment V of both sexes has only ventromedial and ventrolateral carinae that in posterior halves bear several lobate granules; dorsal surface of segment V smooth and lateral surface may be weakly granulated (more so in males); all metasomal segments sparsely setose; metasomal segment V bearing ca. 48 long setae in both sexes; telson elongate, more elongated in male than in female, aculeus slightly shorter than vesicle in both sexes; legs I–III with tarsal bristle combs composed of 5 to 10 long, thin setae; movable finger of pedipalp with 9 or rarely 8 rows of granules, with external and internal accessory granules.

**DESCRIPTION.** Adult males are 25–29 mm long and the adult females are 32–34 mm long. For position and distribution of trichobothria of pedipalps see Figs. 14–17, 19, and 21. Sexual dimorphism is noticeable. Males are substantially smaller, with more elongated telson. Pedipalp patella and femur are granulate and matte in males, smooth and glossy in females.

**COLORATION** (Figs. 1–4, 58–59). Basic color is yellow to orange with very weak dark patterning. The carinae on the metasoma can be dark. Metasomal segment V is darker than the other metasomal segments. The chelicerae are yellow with reticulation in the anterior part or uniformly yellow; dentition is reddish.

**CARAPACE** (Figs. 5–6, 41). The surface is densely granulated. The anterior margin is straight and bears 8–10 macrosetae. Anterior median carinae are coarsely granular. There are 5 lateral eyes on each side (3 larger, 2 smaller).

**MESOSOMA** (Figs. 1–8, 41–42). The tergites bear three coarsely granular carinae, of which the lateral pair on tergites I–II are inconspicuous. All tergites with dense coarse and fine granulation. The pectinal tooth count is 21–26 (mean 23.01) in males and 21–25 (mean 23.38) in females. The marginal tips of the pectines extend from the third quarter to the end of sternite IV in females, and from the end of sternite IV to the first quarter of sternite V in males. The pectines have 3 marginal lamellae and 8–11 middle lamellae. The lamellae bear numerous dark setae, three to six on each fulcrum. Sternites III–VI lack carinae, their surfaces are smooth in females and wrinkled with finely shagreened lateral areas in males. Sternite VII has one to two pairs of poorly indicated carinae and is weakly granulated in the area outside the lateral carinae, more so in males. All sternites bear several long macrosetae on their surfaces and margins.

**HEMISPERMATOPHORE** (Figs. 53–57). Flagelliform, trunk long and slender, capsule relatively short. Flagellum with short pars recta bearing a fin-like expansion along proximal anterior margin, and long, hyaline pars reflecta extending up to halfway from capsule to foot. Capsule with 3+1 lobe structure, sperm hemiduct separated from flagellum, trilobate with posterior lobe longest, median lobe shortest and apically acuminate, anterior lobe of intermediate length and apically tapered. Posterior margin of median lobe overhanging the posterior lobe, the two lobes fused along a dark suture or carina. Basal lobe well developed as a low, rounded scoop. Morphology was consistent across 9 hemisper-
Figures 33–40: *Gint banfasae* sp. n. Figures 33, 38–40. Holotype male, metasoma V and telson lateral view (33), metasoma and telson, lateral (38), ventral (39), and dorsal (40) views. Figures 34–37. Paratype female, metasoma V and telson lateral view (34), metasoma and telson, lateral (35), ventral (36), and dorsal (37) views. Scale bar: 10 mm (35–40).

Matophores examined from 5 males (1530, 1531, 1532, 1533, 1534).

**Metasoma and Telson** (Figs. 33–40, 43–45). Metasoma I–III bear 10 carinae, the ventromedial carinae on metasoma I are present but smooth. Median lateral carinae are complete or almost complete on I–III. Ventromedial and ventrolateral carinae on metasoma II–III are granulated, with larger granules posteriorly, and strong granulation. Metasoma IV bears 8 carinae that are complete and granulate in both sexes. Metasoma V of both sexes has only ventromedial and ventrolateral carinae, which in posterior halves bear several lobate granules. Intercarinal surfaces of segments II–IV are granulated in both sexes. The ventral aspect of metasoma I is sparsely, faintly granulated or smooth in both sexes. Dorsal and lateral surfaces of this segment are granulated in both sexes, lateral surfaces densely and dorsal surfaces moderately or sparsely. The lateral anal arch consists of three or four lobes in both sexes. All segments are sparsely setose; the fifth segment has ca. 48 long setae in both sexes. The telson is rather elongate, more so in males. The aculeus is slightly shorter than
Figures 41–42: *Gint banfasae* sp. n. paratype male, carapace and tergites (41), coxosternal area and sternites (42). UV fluorescence. Scale bar: 1 mm.

The vesicle in both sexes. The surface of the telson is smooth, sparsely hirsute, without a subaculear tubercle.

**LEGS** (Figs. 9–12). The tarsomeres bear two rows of macrosetae on the ventral surface and numerous macrosetae on the other surfaces, which on legs I–III form bristle combs with 5–10 bristles. The macrosetae are
thin in both sexes. The femur and patella may bear four to six carinae. The femur bears only solitary macrosetae.

**PEDIPALPS (Figs. 13–32, 46–49).** The femur and patella are matte and granulated in males, and smooth and glossy in females. The femur bears four granular carinae in both sexes. The patella bears seven coarsely granular carinae, in females dorsal and ventral carinae may be either smooth or missing. The chela is smooth in both sexes, with only traces of incomplete obsolete carinae. All pedipalp segments including the trochanter are sparsely hirsute, with long, dark macrosetae in both
Figures 50–57: *Gint banfasae* sp. n., paratype males. **Figures 50–52.** Right chelicera, dorsal (50) and ventral (51) views, and ventral view under UV fluorescence (52). Scale bar: 400 µm. **Figures 53–57.** Paratype 1531. Left hemispermatophore: capsule region in posterior (53), convex compressed (54), convex (55) and anterior (56) views; whole hemispermatophore, convex view (57). Scale bars: 200 µm, 500 µm.

sexes. The dentate margin of the movable finger has nine or rarely eight rows of granules, each with one external and one internal granule, and 5 terminal granules (4 subterminal and one distal terminal). The fixed finger has nine rows of granules, with one external and one internal granule.

**Comments on localities and life strategy.** The type locality, 18SJ is red sandy semidesert (Figs. 60–61). The types of *Gint banfasae* sp. n. were recorded as the dominant scorpion species at night during UV collecting together with *Hottentotta* sp., *Lanzatus somali-landus* Kovařík et Lowe, 2016, and two *Parabuthus* species. The first author (F.K.) visited the locality on 29–31 August 2018 and recorded maximum daytime temperatures of 40 °C and a minimum nighttime temperature of 23 °C. The recorded humidity was between 24% (minimum at day) and 65% (maximum at night).

**Key to species of genus Gint**

1. Total length 31.5–36.43 mm in males, respectively 39–48.2 mm in females. Pectinal tooth count 27–31 in males, 25–29 in females. Ventral surface of metasomal segment IV of male smooth without granules and car-
Figures 58-59: *Gint banfasae* sp. n., two male paratypes in vivo habitus, photograph of animal on natural substrate in the field at the collection site (58), and image taken in the laboratory with dark contrast stone background (59).
Table 1: Comparative measurements of adults of Gint banfasae sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

<table>
<thead>
<tr>
<th>Dimensions (MM)</th>
<th>♂ holotype</th>
<th>♂ paratype</th>
<th>♀ paratype</th>
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<tbody>
<tr>
<td>Carapace</td>
<td>L/W</td>
<td>L/W</td>
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<tr>
<td>Mesosoma</td>
<td>L</td>
<td>L</td>
<td>L</td>
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<tr>
<td>Tergite VII</td>
<td>L/W</td>
<td>L/W</td>
<td>L/W</td>
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<td>Metasoma + telson</td>
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<td>Segment I</td>
<td>L/W/D</td>
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<td>Segment II</td>
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<td>Segment III</td>
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<td>Segment IV</td>
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<td>Segment V</td>
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<td>Telson</td>
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<td><strong>Total</strong></td>
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| L/W/D                  | 28.58      | 25.75      | 33.10      |

Table 1: Comparative measurements of adults of Gint banfasae sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

2. Telson exhibiting an annular ring at the vesicle/aculeus juncture (fig. 146 in Kovařík et al., 2018). Metasoma V with enlarged ‘lobate’ dentition on ventrolateral carinae reduced .................................................... G. puntlandus Kovařík et Mazuch, 2015

3. Metasoma elongate, metasomal segment V length/width ratio 2.40–2.48 in males (figs. 122–123, Table 3 in Kovařík et al., 2018) .................................................... 4

4. Central, posterior median and lateral carinae of carapace developed and dark colored. Patella of leg IV very finely granulated .... G. gubanensis Kovařík et al., 2018

5. Telson narrow, telson length/depth ratio 3.38–3.60 in male ......................... G. calviceps (Pocock, 1900)

6. Metasomal segment IV ventrally granulated in both sexes .................................................... 7


COMMENTS ON KEYS TO SPECIES. The taxonomic positions of most Gint species are supported mainly by DNA and karyotype analysis. However, the species key is created strictly according to morphological characters.
Figures 60–61: Gint banfasae sp. n., type locality.

which we verified from the specimens examined in this study. The key could be used for a quick orientation in conjunction with the distribution data (see Fig. 62). There is a possibility that additional specimens may show intraspecific variability in some characters used in this key for separation at the species level.
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References


