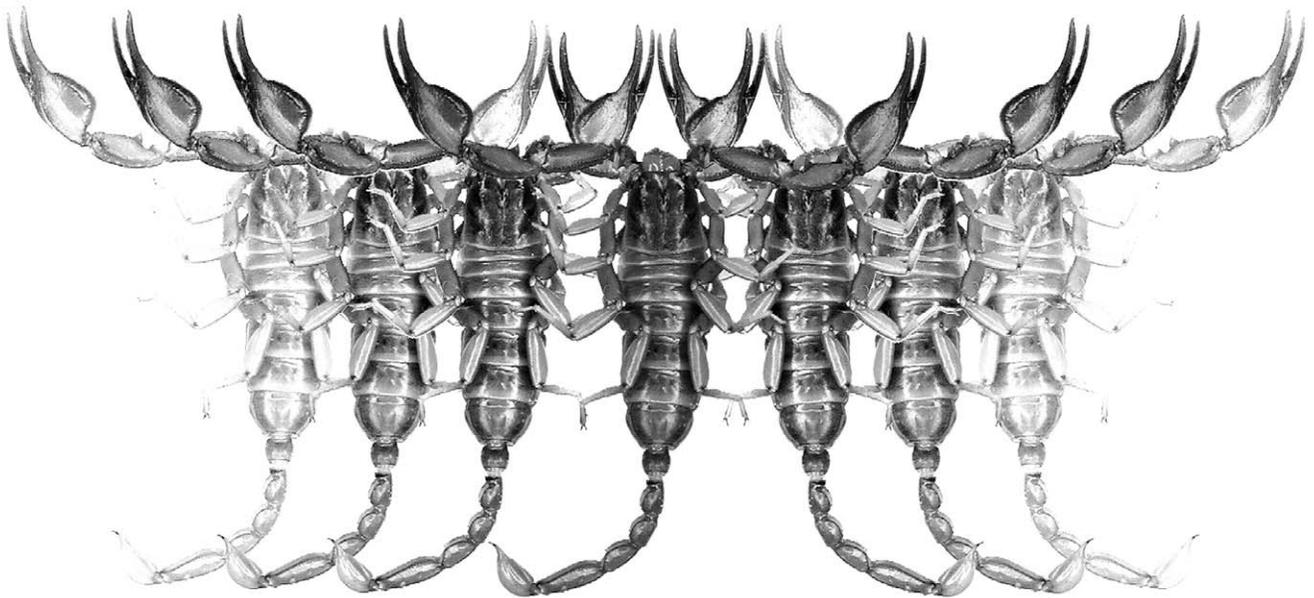


Euscorpius

Occasional Publications in Scorpiology



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

František Kovařík & Graeme Lowe

January 2019 – No. 272

Euscorpius

Occasional Publications in Scorpiology

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Publication date: 2 January 2019

<http://zoobank.org/urn:lsid:zoobank.org:pub:A9686FD3-C977-4383-9EB0-71B1AEF343E8>

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

František Kovařík¹ & Graeme Lowe²

¹P.O. Box 27, CZ - 145 01 Praha 45, Czech Republic; www.scorpio.cz

²Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104-3308, USA

<http://zoobank.org/urn:lsid:zoobank.org:pub:A9686FD3-C977-4383-9EB0-71B1AEF343E8>

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, Plíšková et Šťáhlavský, 2013 with the type species *Gint gaitako* Kovařík, Lowe, Plíšková 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, Plíšková et Šťáhlavský, 2013
(Figs. 1–62, Table 1)

Buthus (*Buthacus*) (in part): Birula, 1917: 21.

Buthacus (in part): Levy, Amitai & Shulov, 1973: 125;
Fet & Lowe, 2000: 81; Kovařík, 2005: 1.

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

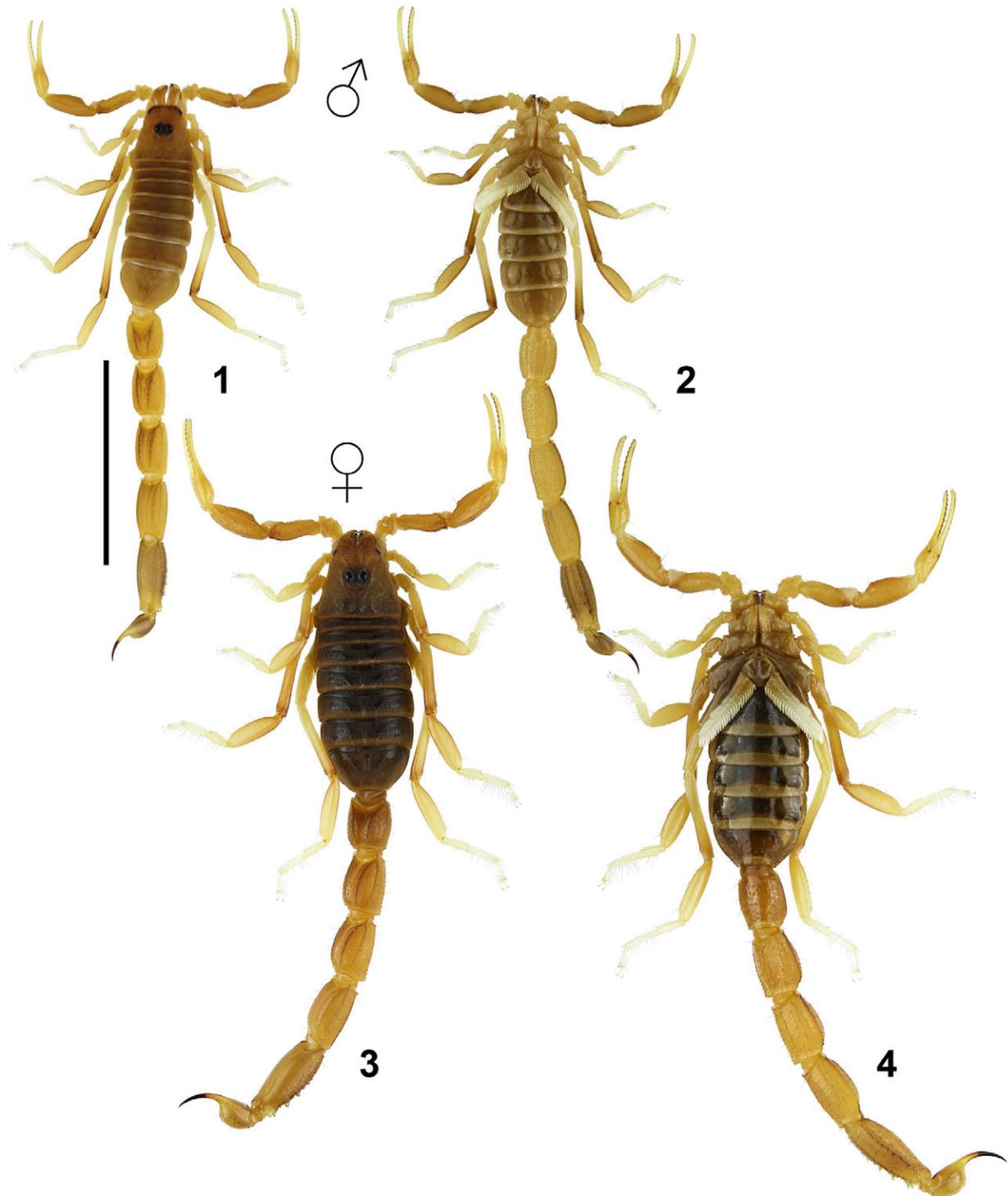
si, 2015: 53–63, figs. 1–10; Kovařík et al., 2018: 1–41, figs. 1–202, tables 1–3; Kovařík, 2018: 1–9, figs. 1–42, table 1.

TYPE SPECIES. *Gint gaitako* Kovařík et al., 2013.

ETYMOLOGY. *Gint* (masculine) means scorpion in Amharian, the official language of Ethiopia.

DISTRIBUTION (Fig. 62). Ethiopia, Kenya, Somalia, Somaliland.

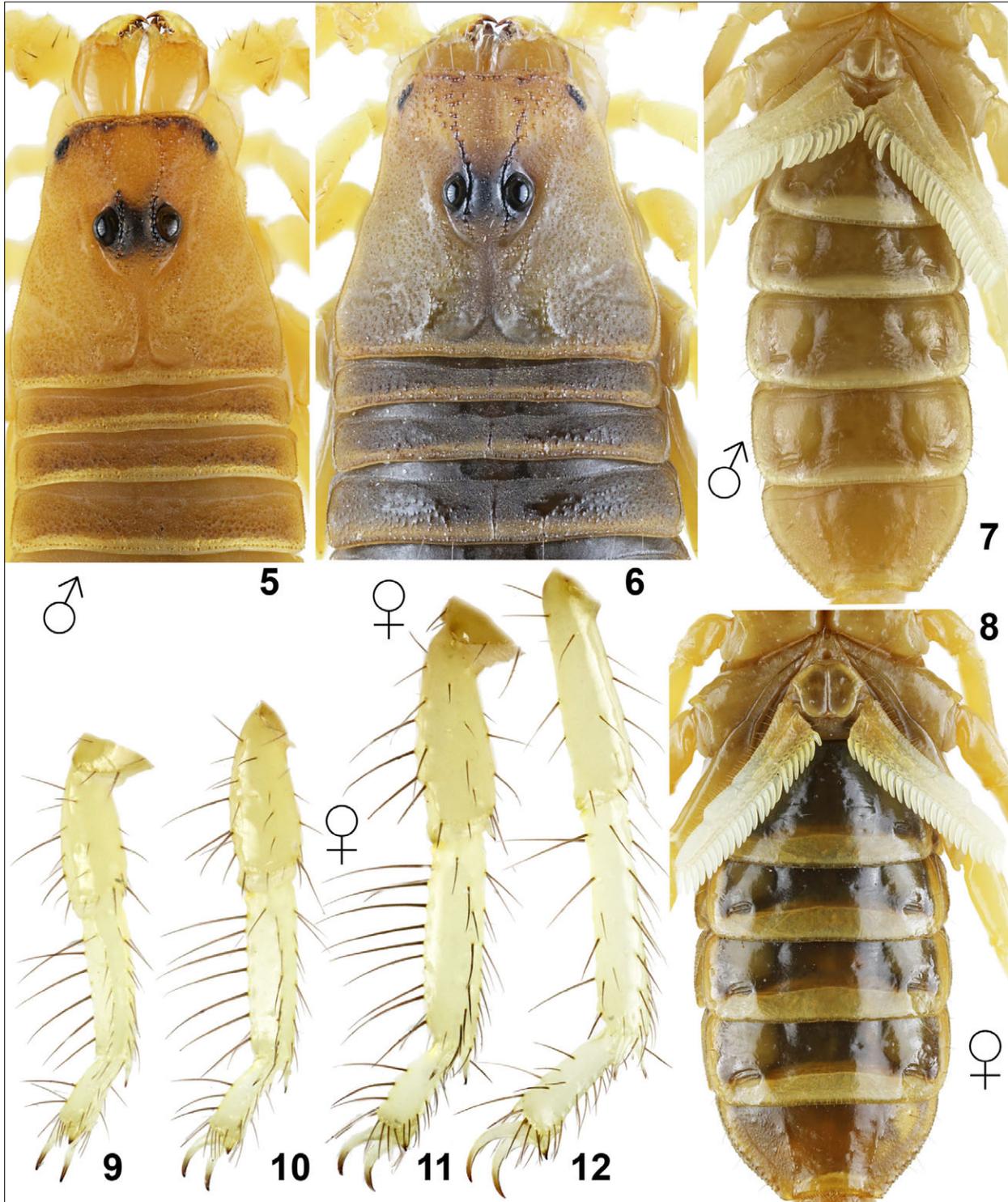
DIAGNOSIS. Total length up to 25 mm (male) or 50 mm (female); carapace trapezoidal, in lateral view preocular area not distinctly inclined towards anterior margin, level with or higher than postocular area; surface of carapace densely granular, with only anterior median carinae developed; ventral aspect 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 subaculear tubercle, aculeus shorter than vesicle; all segments of metasoma and pedipalps sparsely



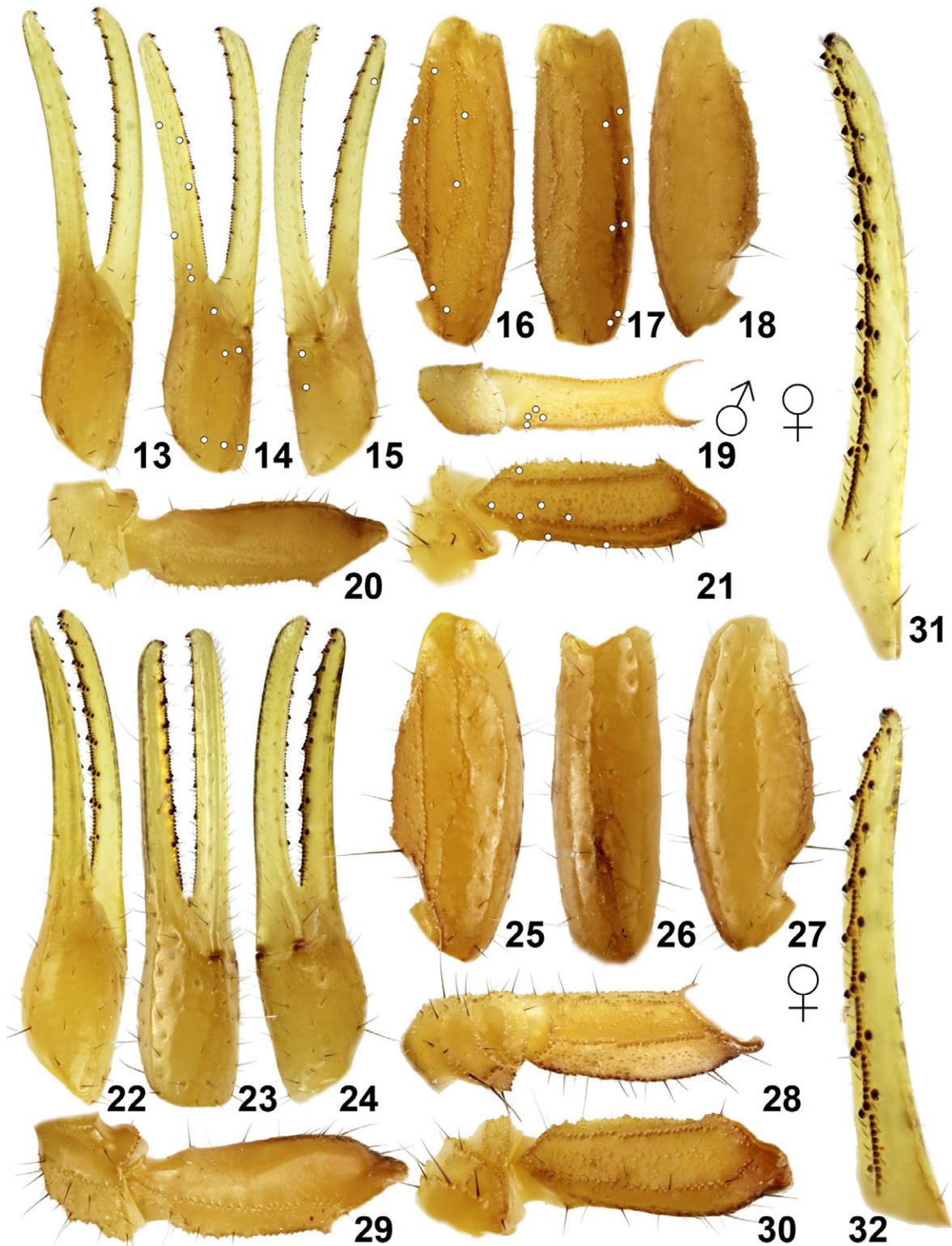
Figures 1–4: *Gint banfasae* sp. n. **Figures 1–2.** Holotype male, dorsal (1) and ventral (2) views. **Figures 3–4.** Paratype female, dorsal (3) and ventral (4) views. Scale bar: 10 mm.

hirsute, 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 gran-

ule, 5–6 terminal granules (4–5 subterminal and one distal terminal); trichobothrial pattern orthobothriotaxic type A; dorsal trichobothria of femur arranged in β -



Figures 5–12: *Gint banfasae* sp. n. **Figures 5, 7.** Holotype male, chelicerae, carapace and tergites I–III (5) and sternopectinal region and sternites (7). **Figures 6, 8, 9–12.** Paratype female, chelicerae, carapace and tergites I–III (6), sternopectinal region and sternites (8), distal segments of right legs I–IV, retrolateral views (9–12).



Figures 13–32: *Gint banfasae* 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 dorso-median 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)

<http://zoobank.org/urn:lsid:zoobank.org:act:92799A-FB-BFBE-4920-AA6B-45C597137D72>

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

TYPE MATERIAL EXAMINED. **Somaliland**, Shansshade vill., 08°39'35"N 45°55'49"E, 790 m a.s.l. (Locality No. **18SJ**), 29–31.VIII.2018, 66♂8♀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 Hargeisa, 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.

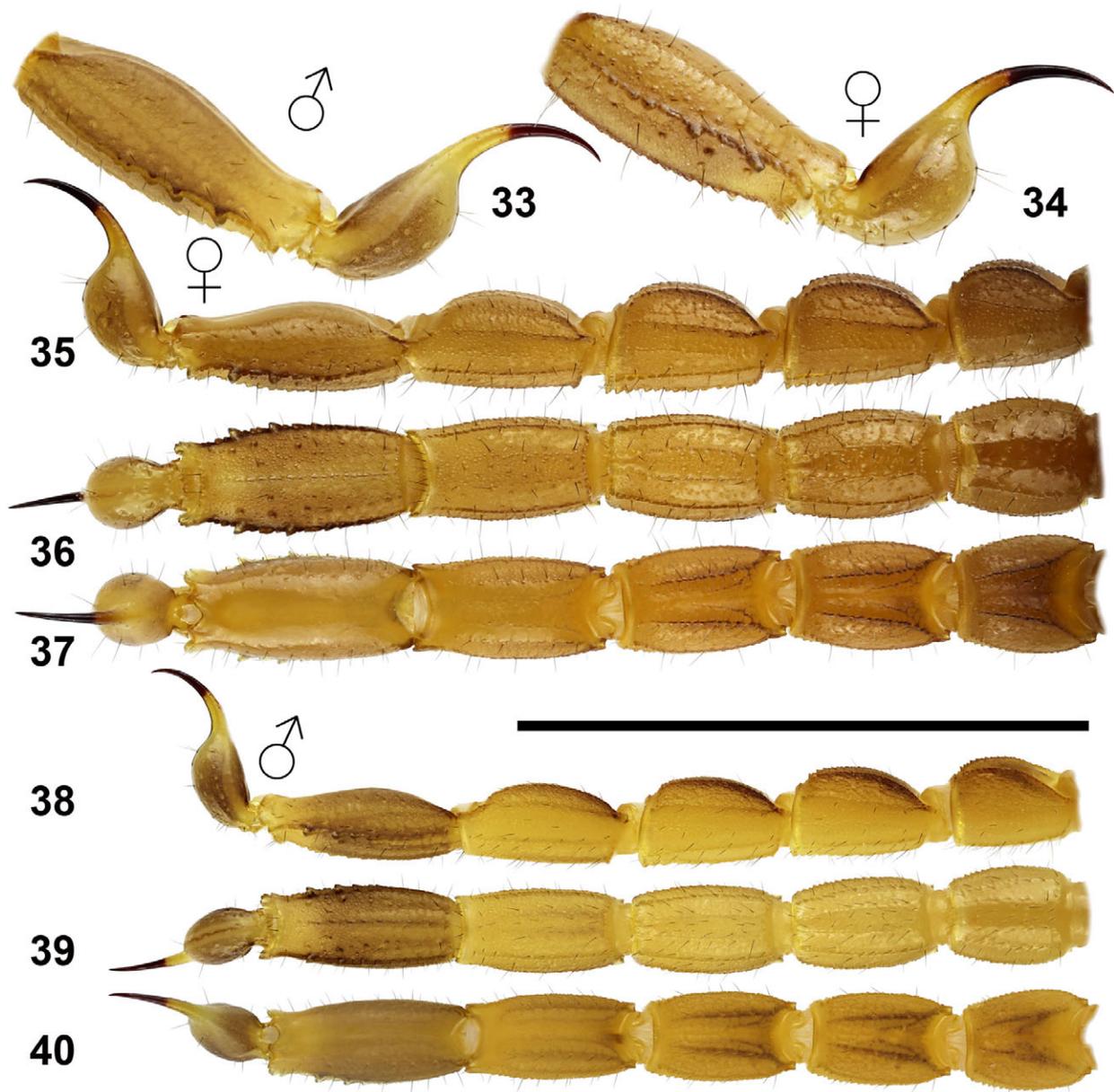
DESCRIPTION. Adult males are 25–29 mm long and the adult females are 32–34 mm long. For position and distribution of trichobothria of pedipalps see Figs. 14–17, 19, and 21. Sexual dimorphism is noticeable. Males are substantially smaller, with more elongated telson. Pedipalp patella and femur are granulate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

HEMISPHERMATOPHORE (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-

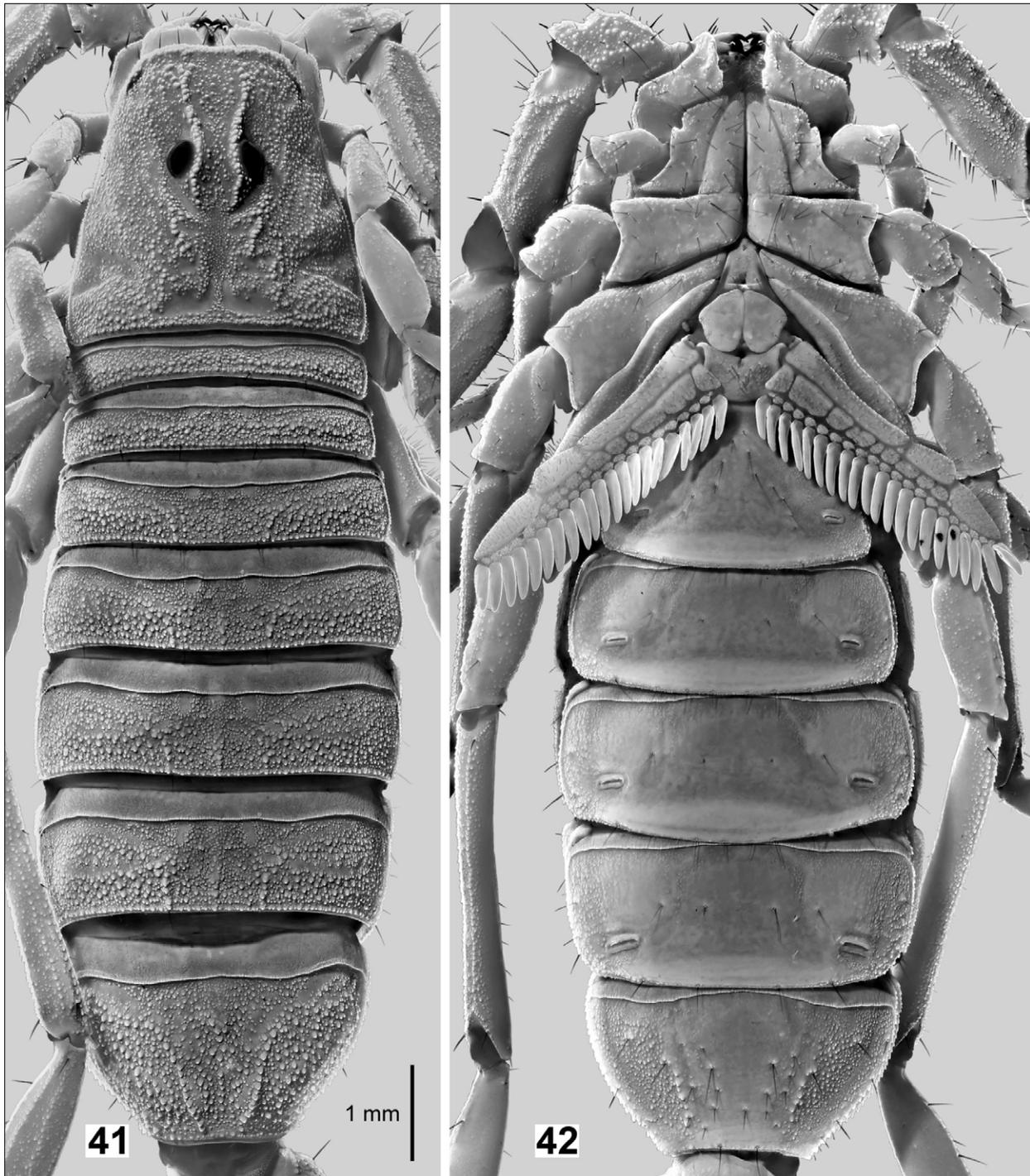


Figures 33–40: *Gint banfasae* sp. n. **Figures 33, 38–40.** Holotype male, metasoma V and telson lateral view (33), metasoma and telson, lateral (38), ventral (39), and dorsal (40) views. **Figures 34–37.** Paratype female, metasoma V and telson lateral view (34), metasoma and telson, lateral (35), 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,

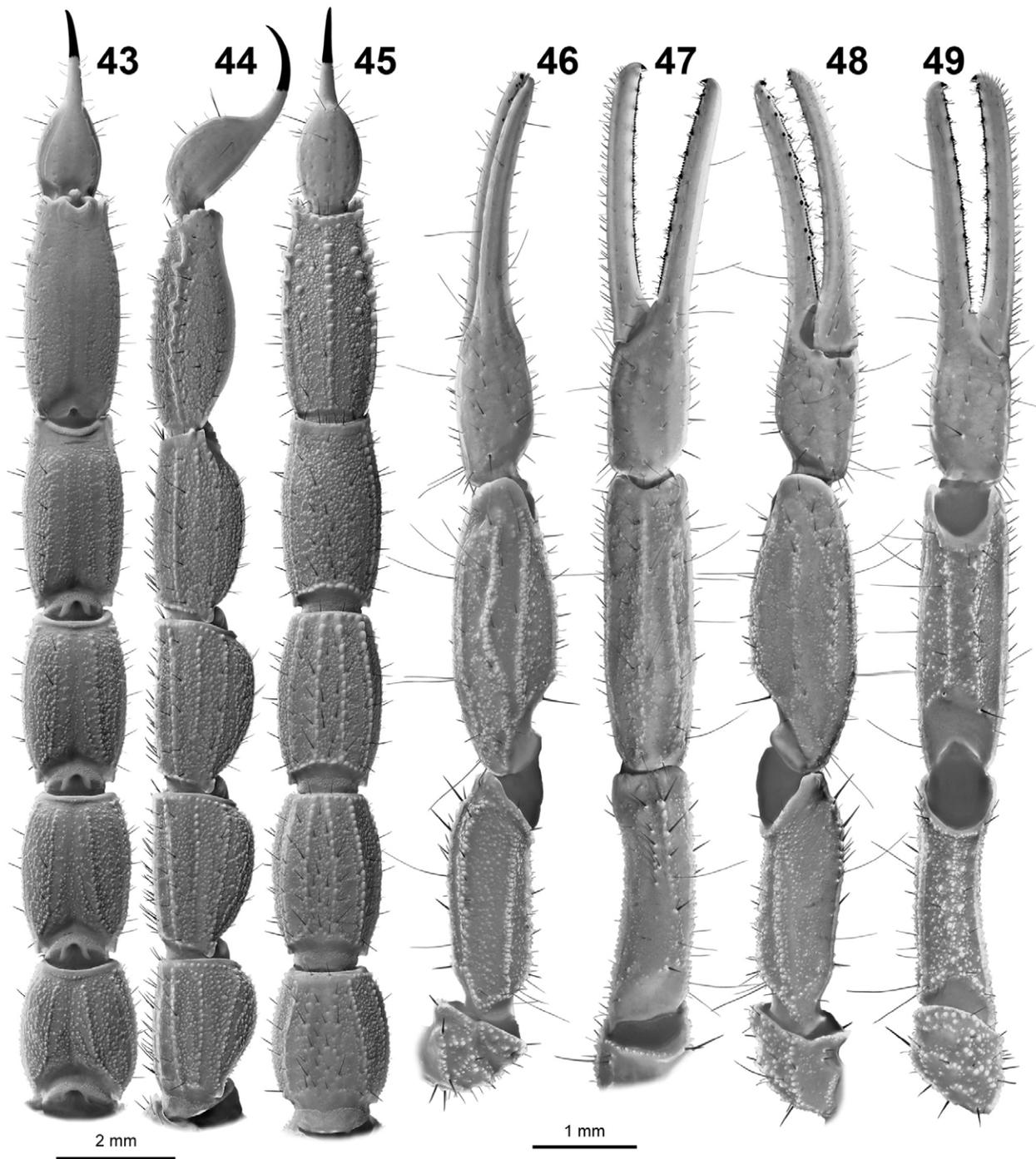
which in posterior halves bear several lobate granules. Intercarinal surfaces of segments II–IV are granulated in both sexes. The ventral aspect of metasoma I is sparsely, faintly granulated or smooth in both sexes. Dorsal and lateral surfaces of this segment are granulated in both sexes, lateral surfaces 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

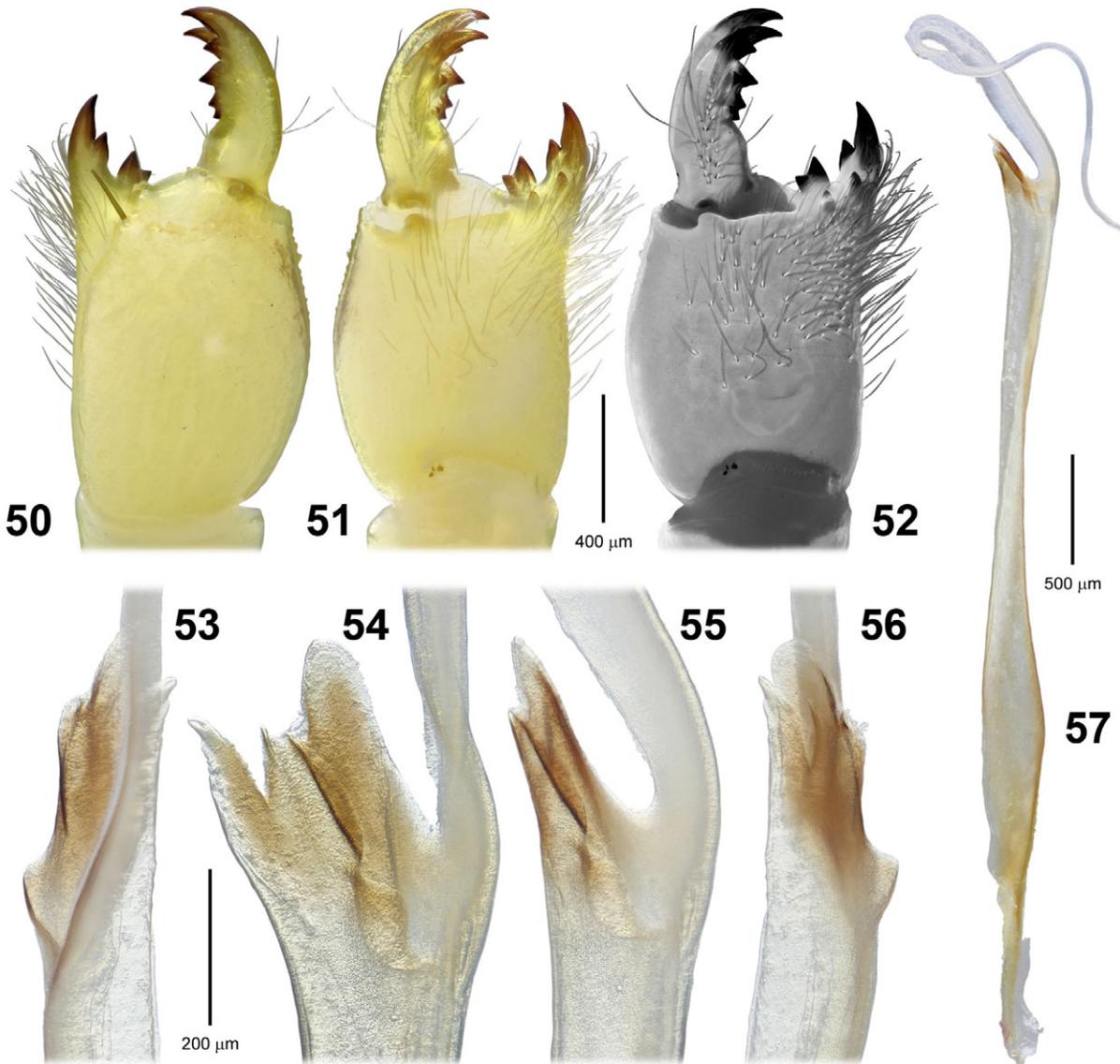


Figures 43–49: *Gint banfasae* sp. n., paratype male. **Figures 43–45.** Metasoma and telson dorsal (43), lateral (44) and ventral (45) views. Scale bar: 2 mm. **Figures 46–49.** Left pedipalp, dorsal (46), external (47), ventral (48) and internal (49) views. Scale bar: 1 mm UV fluorescence.

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 cari-

nae 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 somalilandus* 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).

Dimensions (MM)		♂ holotype	♂ paratype	♀ paratype
Carapace	L/W	2.883 / 3.025	2.775 / 2.925	3.625 / 4.200
Mesosoma	L	7.650	6.650	8.250
Tergite VII	L/W	2.125 / 3.100	1.925 / 2.775	2.375 / 4.225
Metasoma + telson	L	18.045	16.325	21.22
Segment I	L/W/D	2.400 / 1.900 / 1.650	2.075 / 1.783 / 1.683	2.650 / 2.275 / 2.100
Segment II	L/W/D	2.775 / 1.750 / 1.700	2.500 / 1.650 / 1.625	3.125 / 2.125 / 2.025
Segment III	L/W/D	2.775 / 1.700 / 1.625	2.525 / 1.600 / 1.600	3.300 / 2.100 / 2.000
Segment IV	L/W/D	3.200 / 1.600 / 1.500	2.825 / 1.525 / 1.400	3.725 / 1.975 / 1.833
Segment V	L/W/D	3.675 / 1.563 / 1.375	3.375 / 1.425 / 1.235	4.300 / 1.975 / 1.708
Telson	L/W/D	3.220 / 1.100 / 0.983	3.025 / 0.975 / 0.938	4.125 / 1.350 / 1.388
Pedipalp	L	9.165	8.360	10.450
Femur	L/W	2.325 / 0.725	2.075 / 0.688	2.475 / 0.950
Patella	L/W	2.850 / 0.975	2.650 / 0.695	3.275 / 1.250
Chela	L	3.990	3.635	4.700
Manus	W/D	0.775 / 0.763	0.733 / 0.700	1.025 / 1.025
Movable finger	L	2.775	2.500	3.275
Total	L	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).

inae (fig. 145 in Kovařík et al., 2018). Telson length/depth ratio 2.67–2.78 in males. Hemispermatophore with large, tall, subtriangular, hook-like basal lobe *G. maidensis* Kovařík et al., 2018
 – Total length 21–30.85 mm in males, respectively 26–38 mm in females. Pectinal tooth count 20–26 in males, 19–25 in females. Ventral surface of metasomal segment IV of male granulated with median carinae present or indicated (Fig. 39). Telson length/depth ratio 2.98–3.60 in males. Hemispermatophore with small to medium sized, low, rounded, scoop-like basal lobe 2

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
 – Telson without annular ring (Fig. 33). Metasoma V with enlarged ‘lobate’ dentition on ventrolateral carinae present 3

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
 – Metasoma short and wide, metasomal segment V length/width ratio 2.03–2.38 in males (Figs. 38–40, Table 1) 5

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
 – Central, posterior median and lateral carinae of carapace not developed, all granules colored uniformly. Pa-

tella of leg IV smooth
 *G. dabakalo* Kovařík et Mazuch, 2015

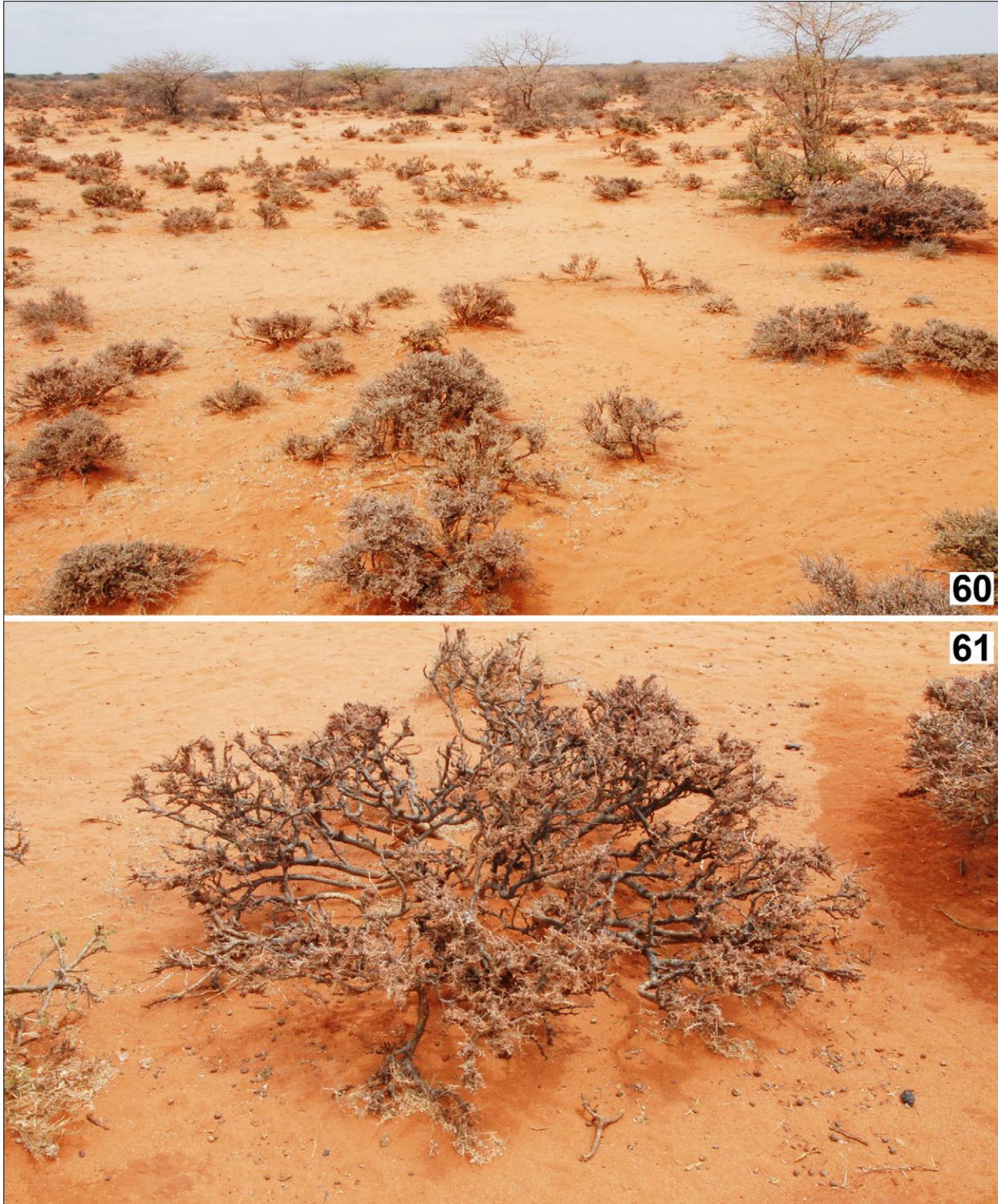
5. Telson narrow, telson length/depth ratio 3.38–3.60 in male *G. calviceps* (Pocock, 1900)
 – Telson length/depth ratio 2.98–3.28 in male 6

6. Metasomal segment IV ventrally granulated in both sexes 7
 – Metasomal segment IV ventrally granulated only in males and smooth in females 8

7. Telson more elongated in male than in female. Metasomal segment V length/width ratio 2.35–2.38 in male. Sternites III–VI wrinkled in males. .. *G. banfasae* sp. n.
 – No sexual dimorphism in the shape of telson. Metasomal segment V length/width ratio 2.06–2.33 in male. Sternites III–VI smooth.
 *G. amoudensis* Kovařík et al., 2018

8. Metasoma very narrow, V length/width ratio 2.33 in male. Sternites bumpy/wrinkled in male. Metasoma III bears 8 carinae. Telson more elongated in male than in female. Pectinal teeth number 22–25.
 *G. childsi* Kovařík, 2018
 – Metasoma V length/width ratio 2.11–2.12 in males. Sternites smooth. Metasoma III bears 10 carinae. No sexual difference in the shape of telson. Pectinal teeth number 19–22. *G. gaitako* Kovařík et al., 2013

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.

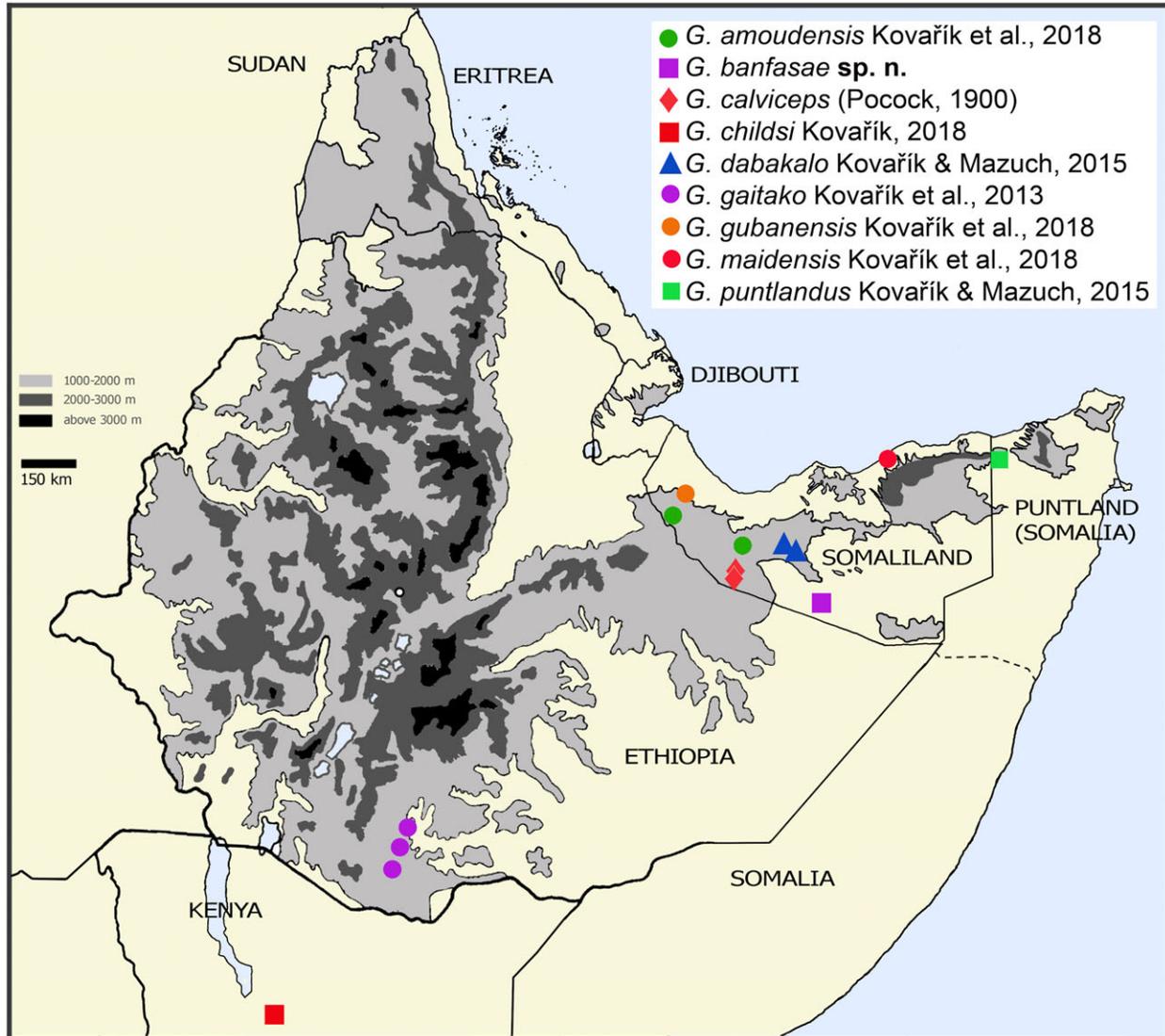


Figure 62: Map showing confirmed distribution of *Gint* spp.

Acknowledgments

Thanks are due to Petra Frýdlová, Daniel Frynta, David Král, Petr Kabátek, and Tomáš Mazuch (Czech Republic), Abdiqaadir Abdilahi and Abdisalaan Shabele (Republic of Somaliland) who participated and helped in the expeditions to Somaliland. Thanks to František Šťáhlavský, Jana Plíšková, and Pavel Just for their help with extraction and cleaning of hemispermaphores and mainly sharing the DNA phylogeny of *Gint* which confirmed the validity of species described here. Special thanks to Mohamud Yousuf Muse (President of University of Hargeisa), Mohamed A. Sulub (Director, Corporate Communication Directorate, University of Hargeisa), Sulieman Ahmed Gulair (President of Amound University), Ahmed A. Boqore (Vice

President, Academic Affairs of Amound University), Shukuri Haji Ismail and Abdinasir Hussein (Ministry of Environment & Rural Development, Hargeisa, Republic of Somaliland), and inhabitants of Shansshade village (Somaliland) for their help. Also thanks to Victor Fet and Michael Soleglad for their help in processing the manuscript. Further, we thank two anonymous reviewers for their comments to the manuscript.

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