Euscorpius

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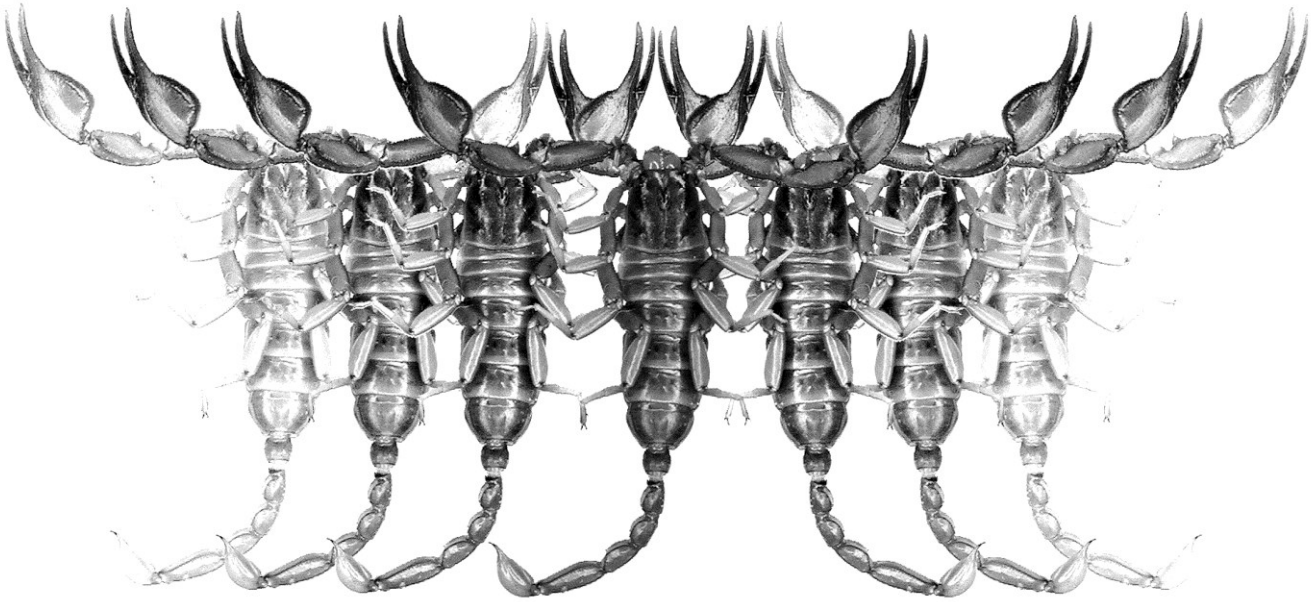

A New Scorpion Genus, *Gint* gen. n., from the Horn of Africa (Scorpiones: Buthidae)

František Kovařík, Graeme Lowe, Jana Plíšková & František Šťáhlavský

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A new scorpion genus, *Gint* gen. n., from the Horn of Africa (Scorpiones: Buthidae)

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Summary

A new scorpion genus is described, *Gint* **gen**. **n**., similar to genera *Buthacus* Birula, 1908 and *Neobuthus* Hirst, 1911 to which it is compared. *Buthus calviceps* Pocock, 1900 is transferred to the new genus, which includes only two species, *Gint gaitako* **sp**. **n**. from Ethiopia and *Gint calviceps* **comb**. **n**. from Somaliland and Somalia (Puntland). Information is provided on the localities and habitats of both species. In addition to morphological analysis we described also karyotype of male paratype of *Gint gaitako* **sp**. **n**., 2n=30.

Introduction

In 1900, Pocock (1900a) described several new scorpions collected from Somaliland by the British big game hunter and naturalist, Charles Victor Alexander Peel (1869-1931). Among these was a small species, *Buthus calviceps*, that was subsequently placed by Birula (1917) into the subgenus *Buthus* (*Buthacus*) (later elevated to genus *Buthacus* by Vachon (1948, 1952)). The taxonomic status of *B*. *calviceps*, and indeed the systematics of Somaliland scorpions in general, was not critically examined again for over 100 years. As part of a series of studies on the scorpion fauna of the Horn of Africa, we analyzed the type of *B*. *calviceps* and found that it closely resembles a new species of small buthid scorpion recently collected by the first author (FK) during an expedition to Ethiopia. These two species share a number of features that set them apart from many *Buthacus*, leading us to place them into a separate genus, *Gint* **gen**. **n**.

Abbreviations

Specimen depositories: BMNH: Natural History Museum, London, United Kingdom; FKCP: collection of the first author; GL: collection of the second author.

Systematics

Gint Kovařík, Lowe, Plíšková et Šťáhlavský, gen. n.

(Figs. 1–4, 6–71)

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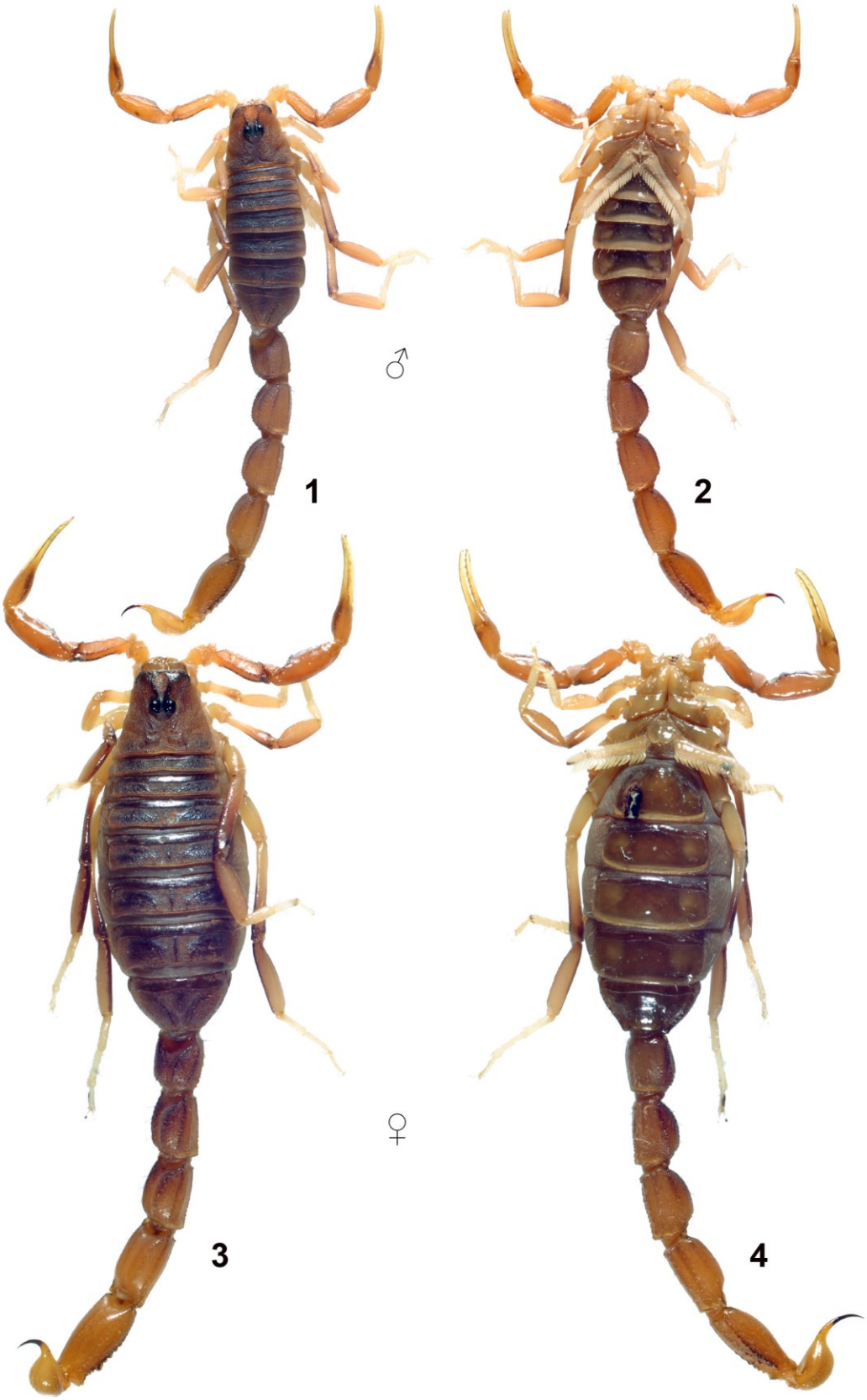
Buthus (*Buthacus*) (in part): Birula, 1917: 21.
Buthacus (in part): Levy, Amitai & Shulov, 1973: 125; Fet & Lowe, 2000: 81; Kovařík, 2005: 1.

TYPE SPECIES. *Gint gaitako* **sp**. **n**.

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

DISTRIBUTION. Ethiopia, Somalia, Somaliland.
Note. We intentionally use the name Somaliland (Hargeysa) for the northern territory corresponding to the former British colony (British Somaliland), which we distinguish from Somalia (Mogadisho). Somaliland has its own currency, a functional government with representation in several countries, and its officials contributed to our safe visit.

DIAGNOSIS. Total length 22 mm (male) to 37 mm (female); carapace trapezoidal, in lateral view preocular



Figures 1–4: *Gint gaitako* **gen**. et **sp**. **n**. **Figures 1–2**: Dorsal and ventral views, ♂ (26 mm) holotype. **Figures 3–4**: Dorsal and ventral views, ♀ (37 mm) paratype.

Figure 5: *Buthacus arenicola* (Simon, 1885), adult female from Egypt.

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; tergites densely granular, with three carinae of which lateral pair on I and II inconspicuous; sternites III–VI with finely micro-denticulate posterior margins, lacking larger non-contiguous denticles; pectines with fulcra, hirsute; metasomal segments I–III with 8–10 carinae; metasoma I ventrally smooth, lacking ventromedial carinae; metasoma II–III with strong dentition on ventromedial carinae, more conspicuous in females; metasoma IV lacking ventromedial carinae; metasoma V with enlarged "lobate" dentition on ventrolateral carinae; telson rather elongate, vesicle with moderate posterior slope, not sharply inclined or truncated, aculeus shorter than vesicle; all segments of metasoma and pedipalps sparsely hirsute, with long setae in both sexes, dentate margin of movable finger of pedipalp with 8 rows of granules, each with one external and one internal accessory granule, 5–6 terminal granules (4–5 terminal and one basal terminal); trichobothrial pattern orthobothriotaxic type A; dorsal trichobothria of femur arranged in β-configuration; pedipalp patella with 7 external trichobothria; pedipalp femur with petite trichobothrium d_2 on dorsal surface; petite d_2 of pedipalp patella present; patella trichobothrium d_3 internal to dorsomedian carina; tibial spurs present on legs III–IV.

SUBORDINATE TAXA. *Gint calviceps* (Pocock, 1900), *Gint gaitako* **sp. n.**

AFFINITIES. In published keys to the buthid genera, the two species of *Gint* **gen**. **n**. are categorized under the genus *Buthacus* Birula, 1908, where *Buthus calviceps* has long resided (Sissom, 1990: 97; Kovařík, 2009: 21–24, couplet 69). Many of the diagnostic characters applied to differentiate *Buthacus* from other genera seem to be plesiomorphic, and the genus is not strongly supported by derived characters. Thus, *Buthacus* is probably a paraphyletic assemblage of taxa and likely contains several distinct lineages. It is beyond the scope of this paper to completely revise and divide *Buthacus*. However, as a first step we establish *Gint* **gen**. **n**. as a separate genus. Most *Buthacus*, including type species *B. leptochelys*, exhibit the following combination of characters: (1) telson with long curved aculeus, longer than vesicle (except *B. buettikeri* Hendrixson, 2006); (2) anterior part of carapace glossy (Fig. 5); (3) movable finger of pedipalp with 9–12 rows of granules; (4) medium to large scorpions, total length 45–90 mm (except *B. villiersi* Vachon, 1949 and *B. clevai* Lourenço, 2001). *Gint* **gen**. **n**. differs in all of these char-

acters, and is further distinguished by its densely granular carapace, tergites, and metasomal segments, and by metasoma I being smooth ventrally with ventromedial carinae obsolete. Loss of carinae on the carapace is possibly a shared derived character that may relate *Buthacus* to *Gint* **gen**. **n**. However, such loss also occurs independently in many other unrelated buthids.

The small size, habitus, behavior, and distribution of *Gint* **gen**. **n**. are similar to that of *Neobuthus* Hirst, 1911, for which it was initially mistaken (see sections on localities and life strategy). However, closer examination revealed key morphological differences between the two genera. In *Gint* **gen**. **n**., both sexes are hirsute with long setae, whereas in *Neobuthus* long setae occur only in females, and males bear short, spiniform setae. The ventral aspect of the cheliceral fixed finger of *Gint* **gen**. **n**. bears two denticles (Figs. 56–57), but in *Neobuthus* only one denticle is present. *Neobuthus* is further differentiated by reductive neobothriotaxy (e.g. frequent loss of d_2 on pedipalp femur or patella), inclined preocular area of carapace, more stout pedipalps, bulbous telson with steeply inclined posterior face of vesicle, and metasoma I with granulated ventral surfaces and distinct ventromedial carinae. Carapace and telson morphology support a closer relationship of *Neobuthus* to *Butheolus*, rather than to *Gint* **gen**. **n**. (Kovařík & Lowe, 2012).

Gint gaitako Kovařík, Lowe, Plíšková et Šťáhlavský, sp. n.

(Figs. 1–4, 6–63)

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TYPE LOCALITY AND TYPE DEPOSITORY. **Ethiopia**: Oromia State, Borana Province, 04°25'31.5"N 38°58'14"E, 1171 m a.s.l. (FKCP).

TYPE MATERIAL EXAMINED. **Ethiopia**: Oromia State, Borana Province, 04°25'31.5"N 38°58'14"E, 1171 m a.s.l. (Locality No. 13EI, Fig. 28), 27-28.VI.2013, 1♂ (holotype), 1♀, 4♀ims., 3juvs. (paratypes) (FKCP), 1♂, 1♀im., 1juv. (paratypes) (GL), UV detection, leg. F. Kovařík.

ETYMOLOGY. *Gaitako* (phonetically, the language does not have a written form) means scorpion in Tsamai, an East Cushitic language spoken by the Tsamai people of southwestern Ethiopia.

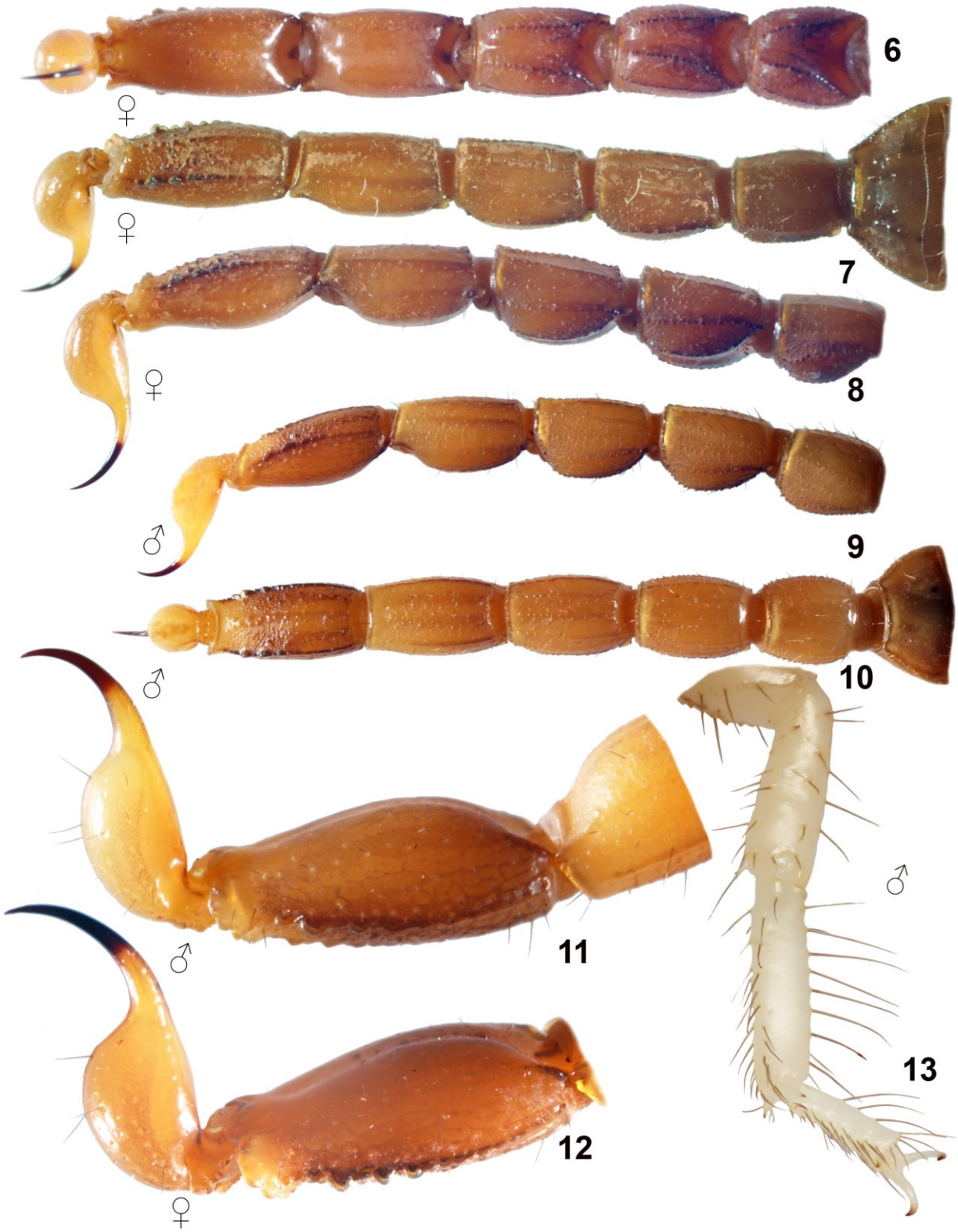
DIAGNOSIS. Total length 22–26 mm (males) and 37 mm (female); carapace densely granulated with only anterior median carinae developed; anterior margin of carapace straight; pectine teeth 20–22; all sternites lacking carinae; sternite VII with four smooth, poorly indicated carinae, may be weakly granulated (mainly in males); metasomal segments I–IV intercarinal surfaces granulated in males, smooth or almost smooth in females; metasomal segment V of both sexes has only ventrolateral carinae that in posterior halves bear several lobate granules; dorsal and lateral surfaces of this segment smooth, without granules and carinae in both sexes; all metasomal segments sparsely setose; metasomal segment V ca. 35 long setae in both sexes; telson rather elongate, aculeus slightly shorter than vesicle in both sexes; legs I–III with bristle combs composed of long, thin setae; movable finger of pedipalp with 8 rows of granules, with external and internal accessory granules.

DESCRIPTION. Adult males are 22–26 mm long and the adult female is 37 mm long. For distribution of trichobothria of pedipalps see Figs. 14–18. Sexual dimorphism is noticeable. Males are substantially smaller, have somewhat longer metasoma and longer pectines than females, and are more granulated, with e.g. the chela of pedipalp granulate and with carinae in males but smooth, without granules in females. First to fourth segments of metasoma are almost smooth in the female (Figs. 6–8) and densely granulate in males (Figs. 9–10). Other differences, such as in metasomal carination, are described below.

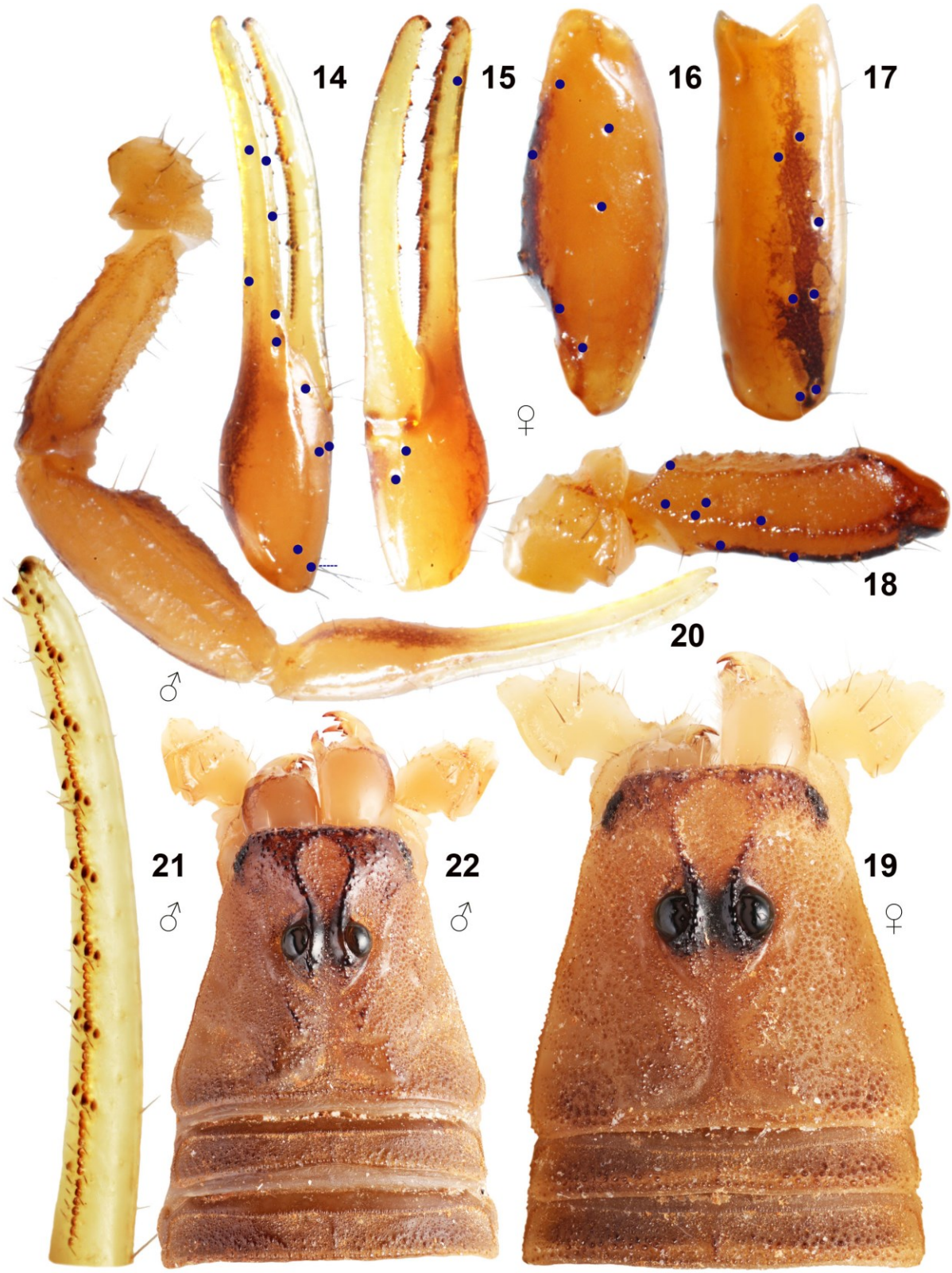
COLORATION (Figs. 1–4, 6–27, 29, 40, 42). Base color is yellow to orange with dark patterning and spots, but expression of colors is quite variable, and some specimens may be described as yellow to white with brown to black overtones. The tergites of immature females may have more obvious symmetrical black spots (Fig. 25). Dorsal and ventral carinae on the metasoma can be dark. Segment V of the metasoma is usually darker than the others, but may also be quite light-colored. The chelicerae are yellow with reticulation only in an-terior and lateral parts; dentition is reddish.

CARAPACE (Figs. 19, 22, 29–30, 40, 42). The surface is densely granulated. The anterior margin is straight and bears six to eight macrosetae. Anterior median carinae coarsely granular. There are 5 lateral eyes on each side (3 larger, 2 smaller).

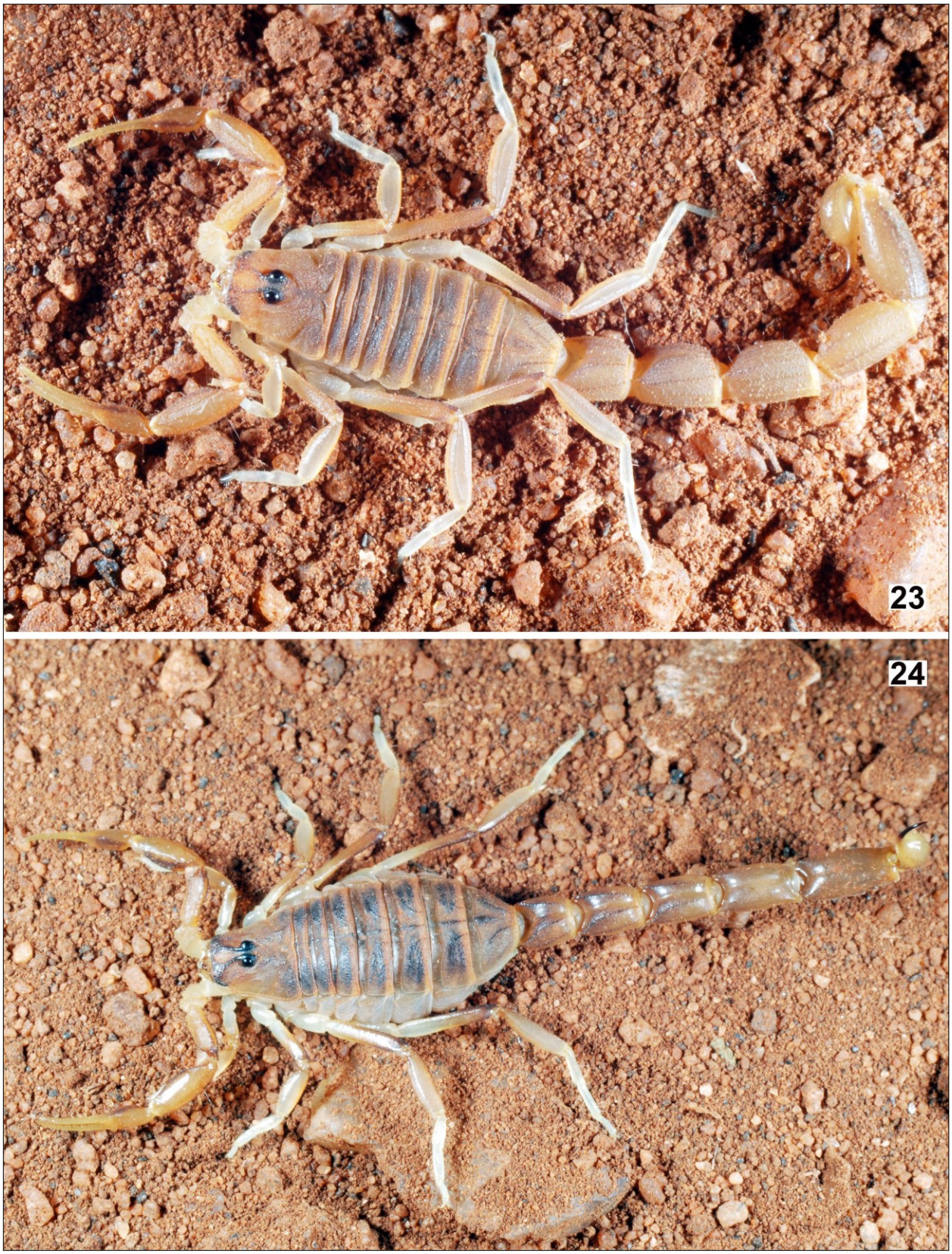
MESOSOMA (Figs. 29–31, 40–45). The tergites bear three coarsely granular carinae, of which the lateral pair on the tergites I–II are inconspicuous. All tergites with dense coarse and fine granulation. The pectinal tooth count is 21–22 (1 × 21, 3 × 22) in males and 20–22 in females (2 × 20, 4 × 21, 7 × 22). The marginal tips of the pectines extend to the anterior quarter of sternite IV in females, and to the anterior half of sternite V in males. The pectines have 3 marginal lamellae and 7–9 middle lamellae. The lamellae bear numerous dark setae, four to six on each fulcrum. Sternites III–VI lack carinae, and surfaces are smooth except for finely shagreened lateral areas on sternite III covered by the pectines. Sternite VII has one or two pairs of smooth, poorly indicated carinae and may be weakly granulated in the area outside the lat-



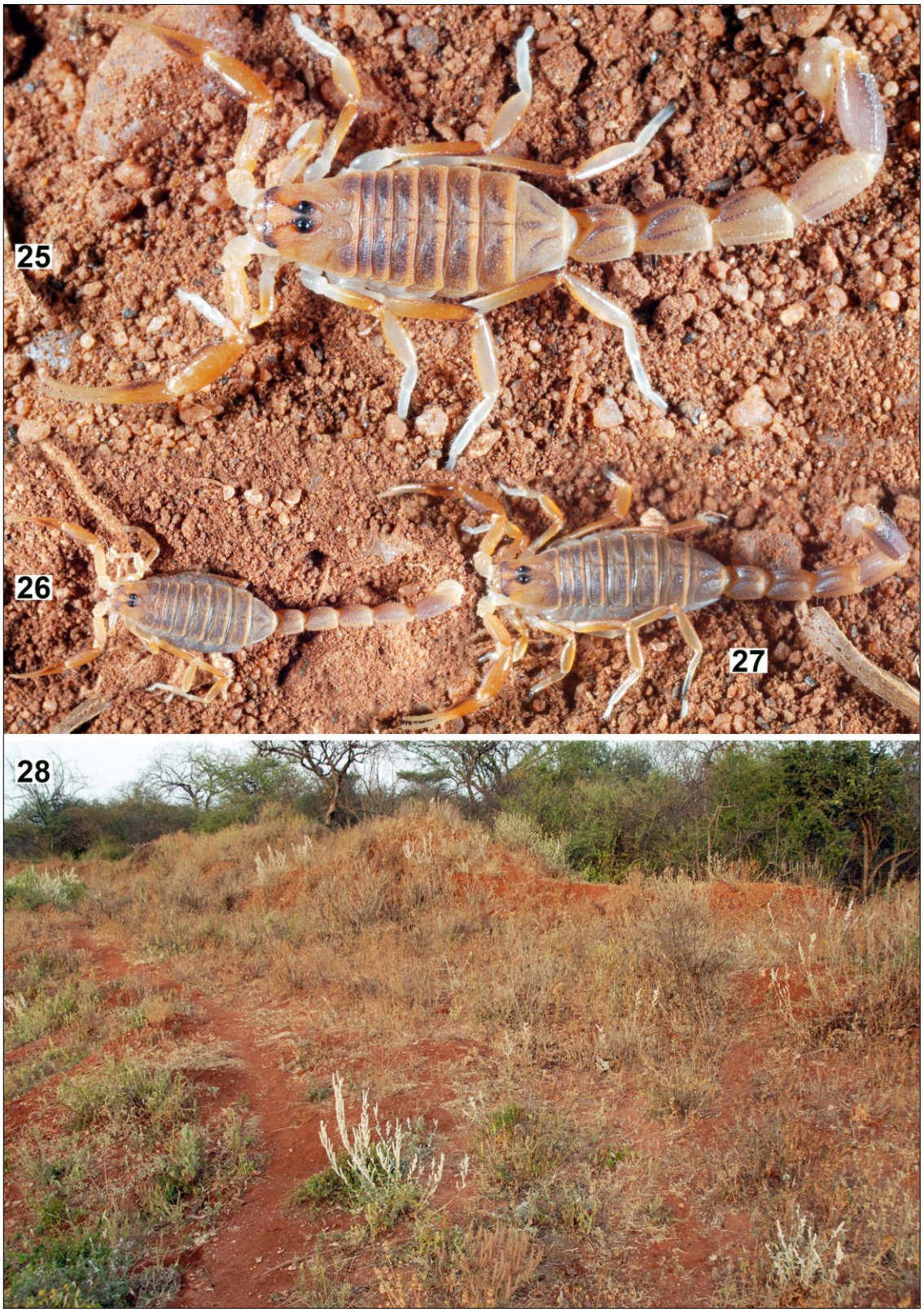
Figures 6–13: *Gint gaitako* **gen**. et **sp**. **n**. **Figures 6–8**, **12**: ♀ (37 mm) paratype, metasoma and telson dorsal aspect (**6**), ventrolateral aspect with sternite VII (**7**), and lateral aspect (**8**), and metasoma V and telson, lateral aspect (**12**). **Figures 9–11**, **13**: ♂ (26 mm) holotype, metasoma and telson lateral aspect (**9**), ventral aspect with sternite VII (**10**), and metasoma V segment and telson lateral aspect (**11**), and tibia and tarsomeres of left leg III, prolateral aspect (**13**).



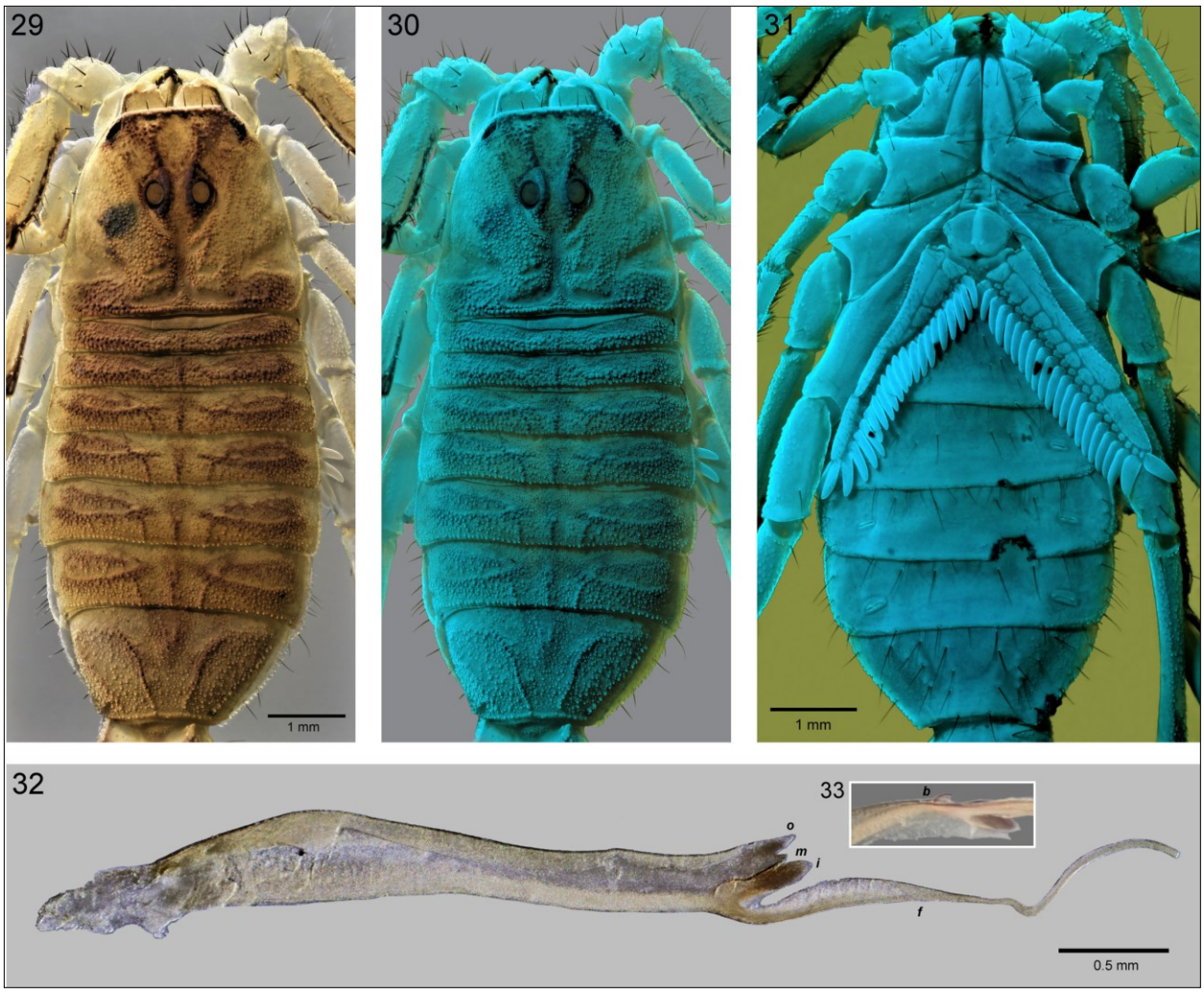
Figures 14–22: *Gint gaitako* **gen**. et **sp**. **n**. **Figures 14–19**: ♀ (37 mm) paratype, trichobothrial pattern (**14–18**) and carapace with chelicerae, trochanter of pedipalps, and tergites I–II (**19**). **Figures 20–22**: ♂ (26 mm) holotype, pedipalp (**20**), movable finger (**21**) and carapace with chelicerae, trochanter of pedipalps, and tergites I–II (**22**).



Figures 23–24: *Gint gaitako* **gen**. et **sp**. **n**., ♂ holotype (**23**) and ♀ paratype (**24**), in vivo, at the type locality in Fig. 28.



Figures 25–28: Figures 25–27: *Gint gaitako* **gen**. et **sp**. **n**., ♀ im. paratype (**25**) and two juvenile paratypes (**26–27**) live at the type locality in Fig. 28. **Figure 28**: The type locality: Ethiopia, Oromia State, Borana Province, 04°25'31.5"N 38°58'14"E, 1171 m a.s.l.

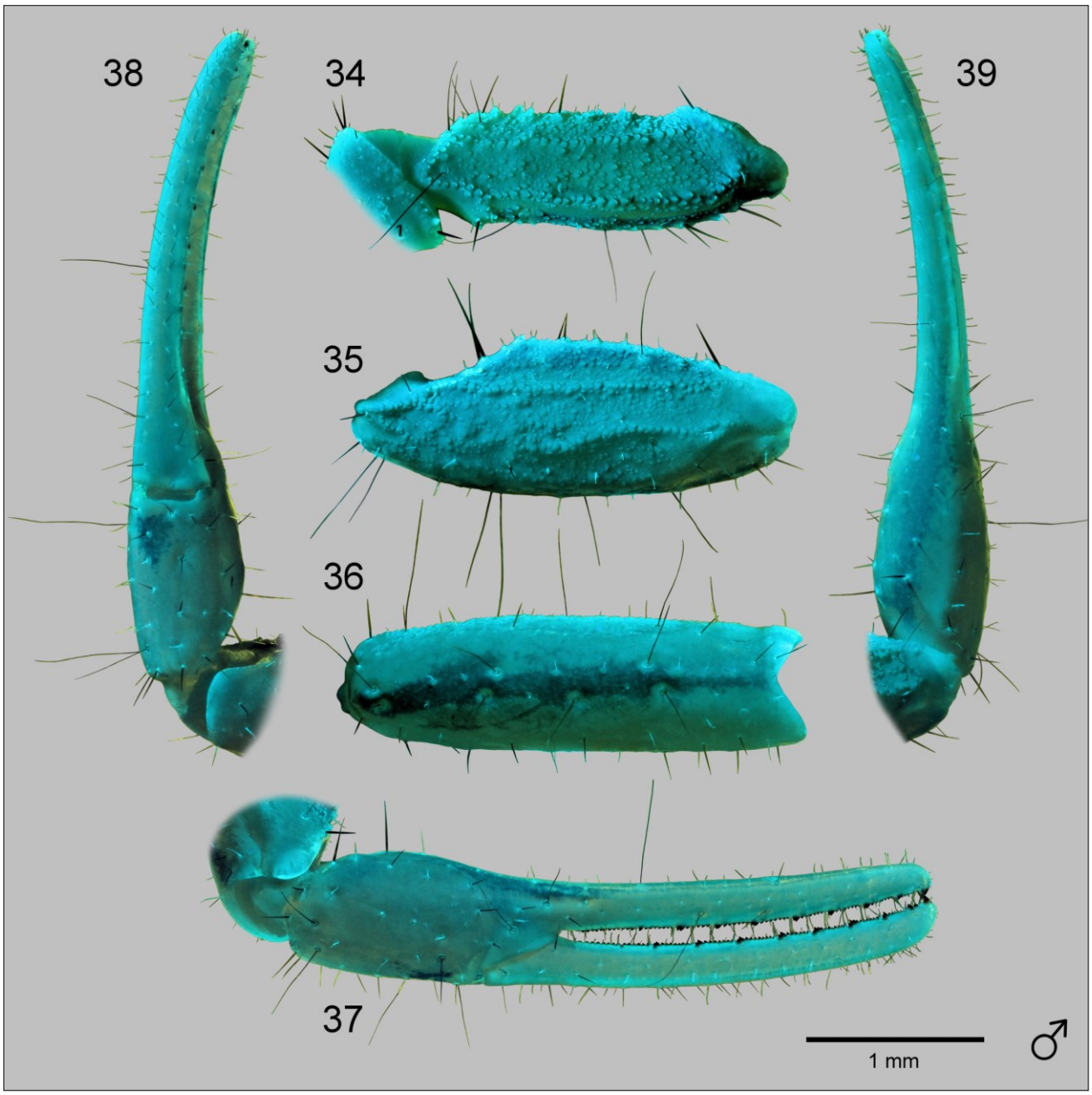


Figures 29–33: *Gint gaitako* **gen**. et **sp**. **n**., ♂ paratype (22 mm); carapace and tergites (**29**–**30**), coxosternal area and sternites (**31**); left hemispermatophore from convex side (**32**), and hemispermatophore lobes from flagellum side (**33**); ***f***, flagellum; ***i***, inner lobe; ***m***, median lobe; ***o***, outer lobe; ***b***, basal lobe; **29**, white light with UV relief; **30**–**31**, UV fluorescence; scale bar in **29** applies also to **30;** black internal lesions in prosoma (**29**), and cuticular damage on the ventral body (**31**; see also Figs. **60**–**61**) appear to be due to fungal infection.

eral carinae, more so in males. All sternites bear many long macrosetae on their surfaces and margins.

HEMISPERMATOPHORE (Figs. 32–33). Long, slender, with a relatively short flagellum. Inner, median and outer lobes well formed, laminate, apically rounded. Inner lobe separated from median and outer lobes, the latter fused. Basal lobe a broad, rounded flange extending over the base of the inner margin of the median lobe (i.e. at the incision separating it from the inner lobe).

METASOMA AND TELSON (Figs. 6–12, 58–61). Metasoma I bears 8 carinae, the ventromedial pair being obsolete. Metasoma II–III bear 10 carinae. 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 in females. Metasoma IV bears 8 carinae that are more complete and granulate in males (ventromedial pair obsolete). In the female, metasoma IV is smooth, without granules (or with only sparse, weak granulation), both ventromedial and dorsal carinae are obsolete, and only ventrolateral carinae are present with only several granules. Metasoma V of both sexes has only ventrolateral carinae, which in posterior halves bear several lobate granules. Granules on the ventral surface of segment V form an irregular median carina in both sexes. Intercarinal surfaces of segments I–IV are almost smooth in the female (Figs. 6–8, 58–59) and densely granulate in males (Figs. 60–61), with granules of approximately equal size, except for the ventral aspect of metasoma I which is smooth in both sexes. Dorsal and lateral surfaces of the fifth segment are smooth, without



Figures 34–39: *Gint gaitako* **gen**. et **sp**. **n**., ♂ paratype (22 mm), pedipalp segments; femur, dorsal aspect (**34**), patella dorsal (**35**) and external (**36**) aspect; chela, external (**37**), ventral (**38**) and dorsal (**39**) aspect; UV fluorescence.

granules and carinae (Figs. 11–12, 59, 61) in both sexes. The anal arch consists of two or three lobes in females, and three lobes in males. All segments are sparsely setose; the fifth segment has ca. 35 long setae in both sexes. The telson is rather elongate. The aculeus is slightly shorter than the vesicle in both sexes. The surface of the telson is smooth, sparsely hirsute, without a subaculear tubercle.

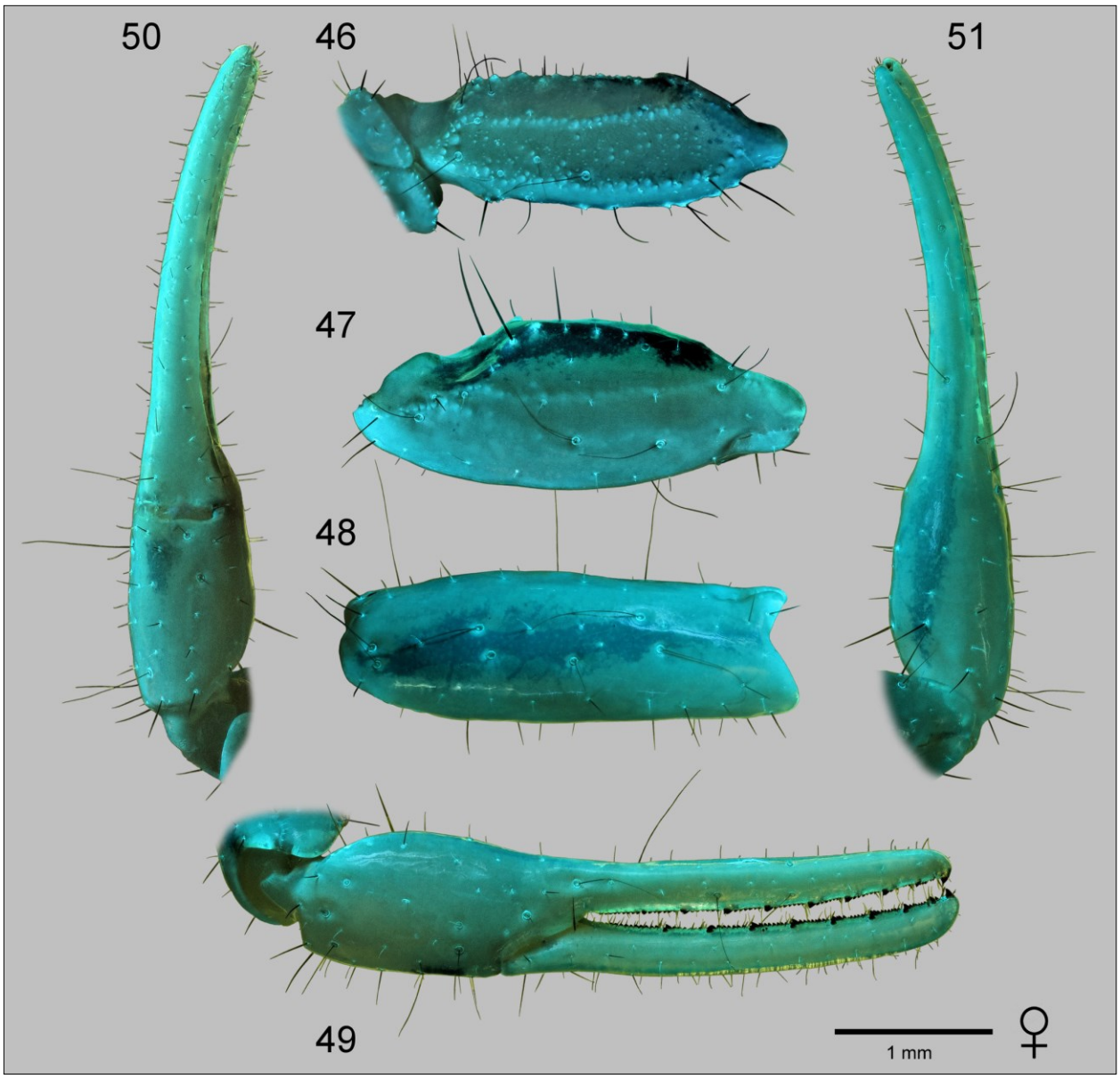
LEGS (Figs. 13, 52–55). The tarsomeres bear two rows of macrosetae on the ventral surface and numerous macrosetae on the other surfaces, which on legs I–III form bristle combs. The macrosetae are thin in both sexes. The femur and patella may bear four to six carinae, which however may be obsolete. The femur bears only solitary macrosetae.

PEDIPALPS (Figs. 14–18, 20–21, 34–39, 46–51). The femur is granulated and bears three to five carinae; the ventroexternal carina is incomplete or absent, the other carinae are granular. The patella is granular, with seven coarsely granular carinae in males and smooth, non-carinate or with only obsolete carinae in females. The chela is smooth, with only incomplete carinae indicated

Figures 40–45: *Gint gaitako* **gen**. et **sp**. **n**., ♀ paratype, subadult (29 mm); carapace and tergites I–III (**40**, **42**), tergites IV–VII (**41**, **43**); coxosternal area and sternites III–IV (**44**); sternites IV–VII (**45**); **40**–**41**, white light with UV relief; **42**–**45**, UV fluorescence; scale bar in **41** applies also to **43**, **45**; scale bar in **44** applies also to **40**, **42**.

in males and smooth, without granules and carinae in females. All pedipalp segments including the trochanter are sparsely hirsute, with long, dark macrosetae in both sexes. The dentate margin of the movable finger (Fig. 21) has eight rows of granules, each with one external and one internal granule, and 5–6 terminal granules (4–5 terminal and one basal terminal). The fixed finger has eight or nine rows of granules, each with one external and one internal granule.

MEASUREMENTS IN MM. *Holotype male*. Total length 26; carapace length 2.75, width 3; metasoma and telson length 16.4; first metasomal segment length 2.05, width 1.825; second metasomal segment length 2.375, width 1.7; third metasomal segment length 2.52, width 1.675; fourth metasomal segment length 2.975, width 1.75; fifth metasomal segment length 3.475, width 1.637; telson length 2.975; telson width 0.975; pedipalp femur length 2.15, width 0.675; pedipalp patella length 2.775, width 0.95; chela length 3.875; manus width 0.725; movable finger length 2.725. *Paratype female*. Total length 37; carapace length 3.65, width 3.9; metasoma and telson length 20.7; first metasomal segment length 2.55, width 2.2; second metasomal segment length 2.95,



Figures 46–51: *Gint gaitako* **gen**. et **sp**. **n**., ♀ paratype, subadult (29 mm), pedipalp segments; femur, dorsal aspect (**46**), patella dorsal (**47**) and external (**48**) aspect; chela, external (**49**), ventral (**50**) and dorsal (**51**) aspect; UV fluorescence.

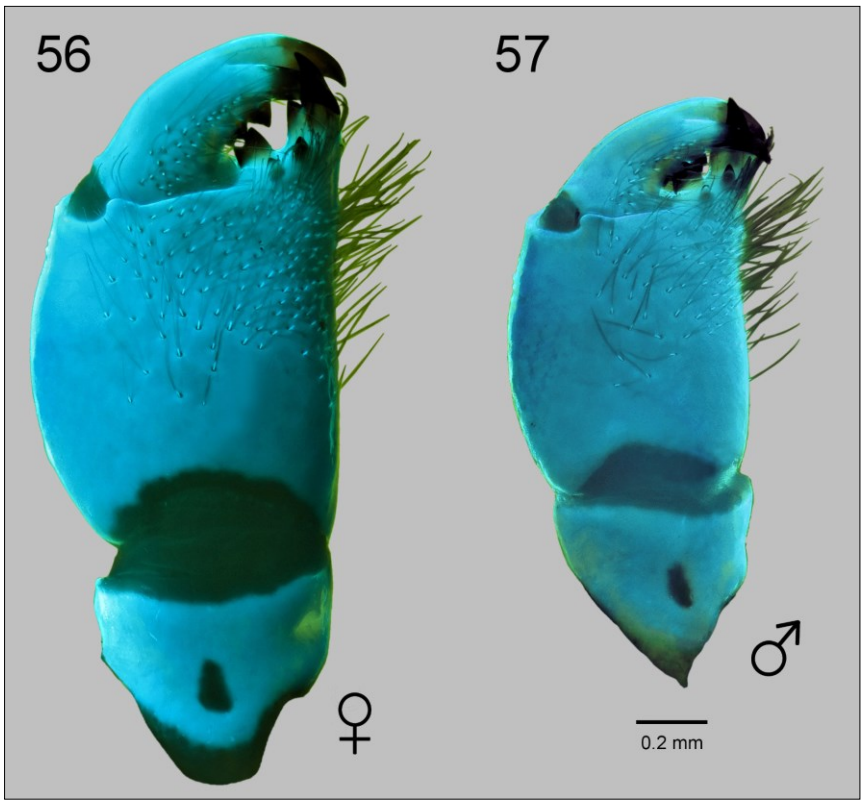
width 1.95; third metasomal segment length 3.15, width 1.9; fourth metasomal segment length 3.65, width 1.9; fifth metasomal segment length 4.15, width 1.95; telson length 4.25; telson width 1.4; pedipalp femur length 2.575, width 0.85; pedipalp patella length 3.425, width 1.2; chela length 4.825; manus width 1.025; movable finger length 3.375.

KARYOTYPE (Figs. 62–63). We analyzed one male paratype of *Gint gaitako* **sp**. **n**. using standard cytogenetic methods (e. g. Kovařík et al., 2009). The diploid complement of this specimen is composed of 30 chromosomes (Fig. 62A). The chromosomes exhibit typical holocentric organization without localized centromere region and achiasmatic behavior during meiosis. These features are typical for buthid scorpions (e. g. Mattos et al., 2013). During meiosis we found a distinct tetravalent in all observed postpachytenes (Fig. 62B). Despite this fact all analyzed metaphases II demonstrate the same number of chromosomes (Fig. 62C) and the holocentric organization probably guarantees equal dispersion of the chromosomes to sister metaphases II. The chromosomes of analyzed specimen gradually decrease in size from 4.93% to 1.88% of the diploid set during postpachytene (Fig. 63A). Only the largest and smallest chromosomes are slightly different from neighboring chromosomes.

Figures 52–55: *Gint gaitako* **gen**. et **sp**. **n**., ♀ paratype, tibiae and tarsomeres of left legs I–IV, respectively, retrolateral aspect.

These slightly different chromosomes belong to the chromosomes that form a tetravalent. Their different sizes probably result from the reciprocal translocation be-tween two pairs of autosomes (Fig. 63B) and this re-arrangement produced a distinct tetravalent (Figs. 62B, 63B–C). This type of chromosomal rearrangement is known in the family Buthidae and the number of chromosomes in multivalents may exhibit intraspecific variability (e.g. Mattos et al., 2013).

AFFINITIES. Males of the new species have sternites III–VII smooth, whereas those of *G. calviceps* **comb**. **n**. have them wrinkled. Metasomal segment IV is ventrally granulated in both sexes of *G. calviceps* **comb**. **n**.,



Figures 56–57: *Gint gaitako* **gen**. et **sp**. **n**., chelicera, ventral aspect; ♀ paratype (**56**), ♂ paratype (**57**); UV fluorescence.

whereas in the new species it is granulated only in males and smooth in females.

COMMENTS ON LOCALITIES AND LIFE STRATEGY. The type specimens were collected in a small area of no more than 100 m^2 (Fig. 28), with substrate consisting of coarse red sand and sparse vegetation of herbs. A much larger adjoining area with denser growth of brush and small trees did not produce any specimens of *Gint gaitako* **sp**. **n**., but instead many *Hottentotta trilineatus* (Peters, 1862) and *Parabuthus pallidus* Pocock, 1895, and less commonly *Parabuthus liosoma* (Ehrenberg, 1828). During night collecting (UV detection), specimens of *Parabuthus pallidus* were found on open ground, whereas those of *Hottentotta trilineatus* remained inside shrubs and often were seen climbing on twigs. These two species, mostly juveniles, were rarely found at the niche inhabited by *Gint gaitako* **sp**. **n**. Specimens of *G. gaitako* were mostly found motionless in sand and remained so when picked up, faking death (similar cataleptic behavior is also observed in all species of *Neobuthus*). We assume during the day that the scorpions are buried in sand near the roots of herbs and shrubs.

At the type locality, the first author (FK) recorded on 27–28 June 2013, shortly after sunset, a temperature of 23.1 ºC, which gradually dropped to 13.8 ºC (minimum temperature) before sunrise. Humidity during the night varied between 74% and 54%. *Hottentotta trilineatus* and *Parabuthus pallidus* became active immediately after sunset (18.39 h), whereas the first specimen of *Gint gaitako* **sp**. **n**. was found only at 22:30 h, and all 12 specimens of the type series were collected between 22:30 h and 01:00 h. Surface activity of this species was relatively sparse, because during the same period we estimate that at least 200 specimens of *Hottentotta trilineatus* and *Parabuthus pallidus* could easily be collected. For comparison, at a similar locality we collected 70 specimens of *Neobuthus* sp. during 90 min.

Gint calviceps (Pocock, 1900), **comb**. **n**.
(Figs. 64–71)

Buthus calviceps Pocock, 1900a: 54; Pocock, 1900b: 57; Moriggi, 1941: 84; Lamoral & Reynders, 1975: 505.
Buthus (*Buthacus*) *calviceps*: Birula, 1917: 214, 224.
Buthacus claviceps [sic]: Probst, 1973: 329; El-Hennawy, 1992: 112.
Buthacus calviceps: Levy, Amitai & Shulov, 1973: 138; Levy & Amitai, 1980: 76; Kovařík, 1998: 105; Fet & Lowe, 2000: 82; Kovařík, 2003: 137; Kovařík, 2005: 10.

TYPE LOCALITY AND TYPE DEPOSITORY. Northwest Somaliland, Berbera or Hargaisa; BMNH.

Figures 58–61: *Gint gaitako* **gen**. et **sp**. **n**., metasoma and telson, ♀ paratype ventral (**58**) and lateral (**59**) aspect; ♂ paratype ventral (**60**) and lateral (**61**) aspect; UV fluorescence.

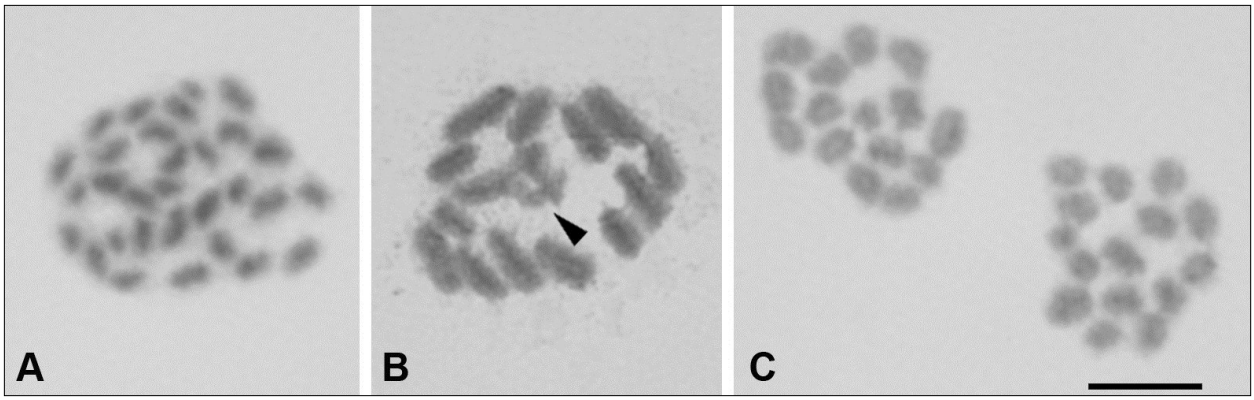


Figure 62: *Gint gaitako* **gen**. et **sp**. **n**., **A)** male paratype spermatogonial metaphase (2n = 30); **B)** postpachytene, arrowhead shows tetravalent; **C)** sister metaphase II. Bar = 10 µm.

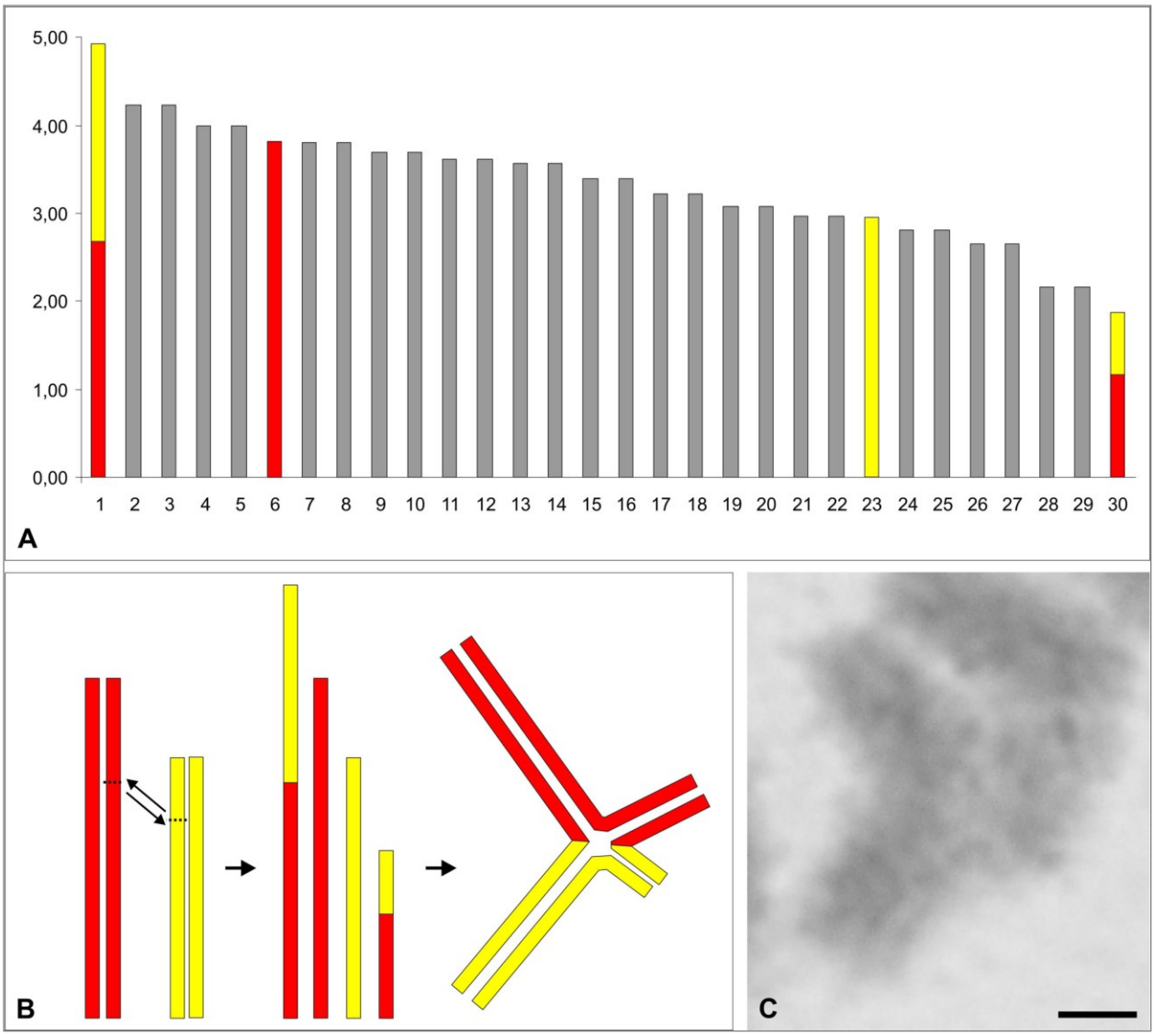
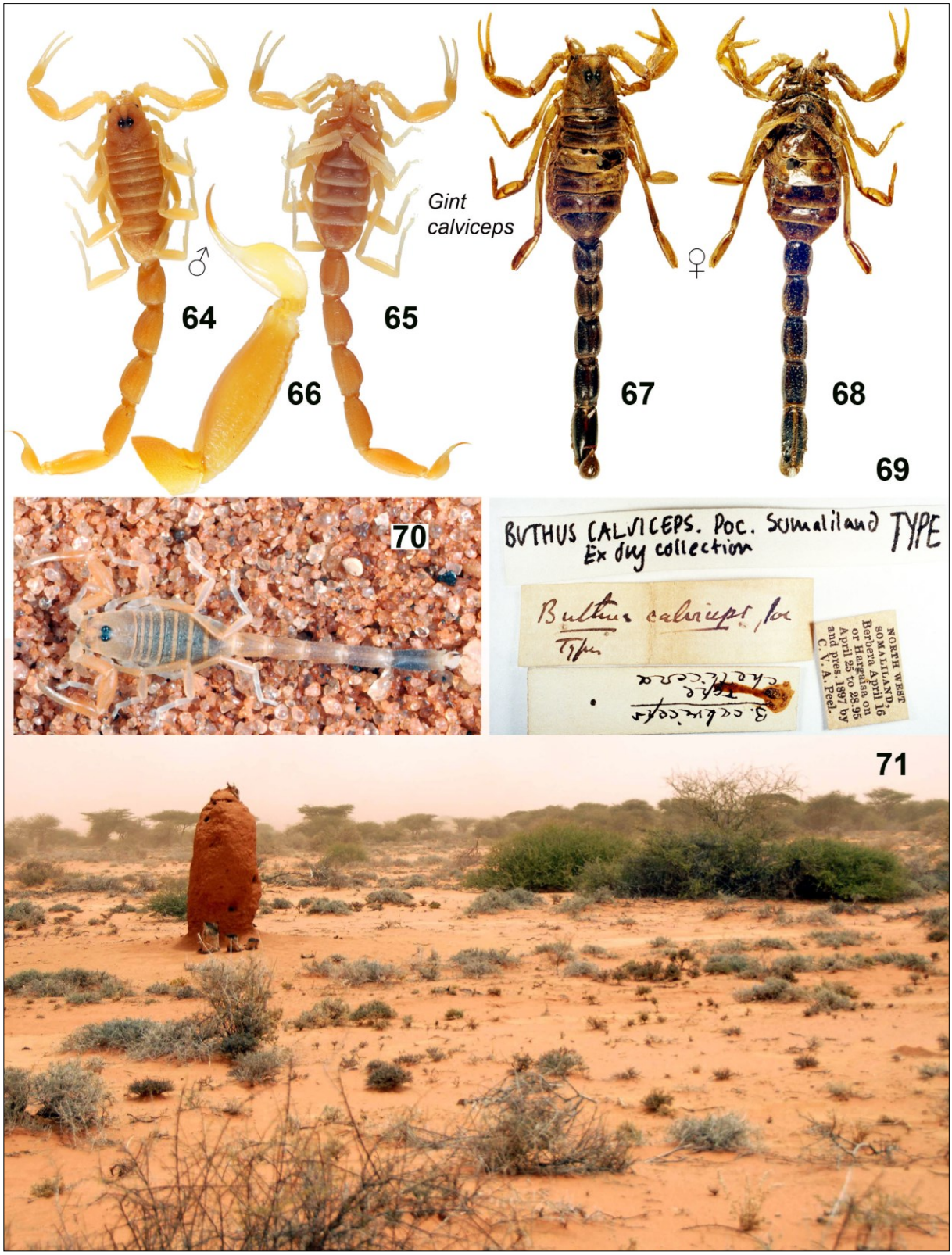


Figure 63: *Gint gaitako* **gen**. et **sp**. **n**., **A)** Idiogram of male paratype based on pachytene, y axis – % of the relative diploid set, red and yellow parts represent proposed ancestral chromosomes; **B)** proposed reciprocal translocations form tetravalent; **C)** postpachytene, detail of tetravalent. Bar = 2 µm.



Figures 64–71: *Gint calviceps* (Pocock, 1900), **comb**. **n**. **Figures 64–66**: Dorsal and ventral habitus, and fifth metasomal segment with telson, lateral aspect, ♂ (32 mm), Somalia (Puntland), near Galgalo, FKCP. **Figures 67–69**: Dorsal and ventral views, and labels, ♀ (31 mm) holotype, BMNH. **Figure 70**: Juvenile (13 mm) at the locality in Fig. 71. **Figure 71**: Collection locality in Somaliland, between Sheikh and Laas Caanood, 09°36'40.1"N 45°29'35.7"E, 1089 m a.s.l.

TYPE MATERIAL EXAMINED. Northwest Somaliland, Berbera, 16.IV.1895 or Hargaisa, 25-28.IV.1895, leg. C. V. A. Peel, 1♀ (holotype), BMNH.
ADDITIONAL MATERIAL EXAMINED. Somalia (Puntland), near Galgalo (10.9667 N 49.0833 E), 1980, 1♂, leg. Dorsak, FKCP. Somaliland, between Sheikh and Laas Caanood, 09°36'40.1"N 45°29'35.7"E, 1089 m a.s.l. (Locality No. 2011L, Fig. 71), 10.VII.2011, 1juv., leg. F. Kovařík, FKCP.

ETYMOLOGY. The specific epithet is a Latin-Greek conjunction meaning 'bald head', a reference to the obsolescence of most carinae on the carapace.

DIAGNOSIS. Total length 31 mm (female holotype) to 32 mm (male); carapace densely granulated, with only anterior median carinae developed; anterior margin of carapace straight; pectinal teeth 26 in male, 21 in female; all sternites lack carinae; sternites III–VII smooth in female, wrinkled in male; metasomal segments I–III between carinae granulated in males, smooth and sparsely punctate in female; metasomal segment IV ventrally granulated in both sexes; metasomal segment V of both sexes has only ventrolateral carinae, which in posterior halves bear several lobate granules; dorsal and lateral surfaces of metasoma V granulated in males (Fig. 66); all metasomal segments sparsely setose; metasomal segment V bearing sparse, long setae in both sexes; telson rather elongate, aculeus slightly shorter than vesicle in both sexes; legs I–III with bristle combs composed of long, thin setae; movable finger of pedipalp with 8 rows of granules, with external and internal accessory granules and four terminal and one basal terminal granules.

COMMENTS. *Buthus calviceps* Pocock, 1900 was based on a single female first kept dry and later relaxed and placed in alcohol (Figs. 67–69). Its taxonomic position was not subsequently studied and its transfer to the genus *Buthacus* was done only formally, without examination of the type. Apart from the female type, which is colorless and damaged, we have had an opportunity to also examine a male and a juvenile (13 mm long, 23 pectinal teeth). All three specimens originate from the same region but different localities. Their transfer to the new genus as *Gint calviceps* (Pocock, 1900) **comb**. **n**. should thus be regarded as provisional. Certain species level characters remain to be determined, e. g. differences between juveniles and adults, and expressions of sexual dimorphism. Additional fieldwork is needed to acquire more adult specimens of both sexes from a single locality.

COMMENTS ON LOCALITIES AND LIFE STRATEGY. The first author collected one juvenile (Fig. 70) at the locality shown in Fig. 71. It was a sizeable area of wind-blown sands with sparse shrubs. Unfortunately, after sunset this area is unsafe for foreigners, and this species is virtually impossible to find during the day. On 10.VII.2011 about one hour after sunset we ventured to collect there for ca. 15 min with UV lights and obtained four specimens of scorpions – three specimens of *Lanzatus somalicus* Kovařík, 2001 and one juvenile of *Gint calviceps* **comb**. **n**. All specimens were found on sand near shrubs.

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References

(BIRULA, A. A.) BYALYNITSKII-BIRULYA, A.A. 1917. *Faune de la Russie et des pays limitrophes fondee principalement sur les collections du Musée Zoologique de l'Académie des Sciences de Russie. Arachnides(Arachnoidea)*. Petrograd, 1(1): xx, 227 pp. (in Russian). English translation: 1965. *Fauna of Russia and Adjacent Countries. Arachnoidea. Vol. I. Scorpions.* Jerusalem: Israel Program for Scientific Translations, xix, 154 pp.

EL-HENNAWY, H. K. 1992. A catalogue of the scorpions described from the Arab countries (1758–1990) (Arachnida: Scorpionida). *Serket*, 2(4): 95–153.

FET, V. & G. LOWE. 2000. Family Buthidae C.L. Koch, 1837. Pp. 54–286 *in* Fet, V., W. D. Sissom, G. Lowe & M. E. Braunwalder. *Catalog of the Scorpions of the World* (*1758–1998*). New York: The New York Entomological Society, 689 pp.

HIRST, S. 1911. Descriptions of new scorpions. *Annals and Magazine of Natural History*, 8(8): 462–473.

KOVAŘÍK, F. 1998. *Štíři* [*Scorpiones*]. Jihlava (Czech Republic): Publishing House "Madagaskar", 176 pp (in Czech).

KOVAŘÍK, F. 2003. Scorpions of Djibouti, Eritrea, Ethiopia, and Somalia (Arachnida: Scorpiones) with a key and descriptions of three new species. *Acta Societatis Zoologicae Bohemicae*, 67: 133–159.

KOVAŘÍK, F. 2005. Taxonomic position of species of the genus *Buthacus* Birula, 1908 described by Eh-

renberg and Lourenço, and description of a new species (Scorpiones: Buthidae). *Euscorpius*, 28: 1–13.

KOVAŘÍK, F. 2009. *Illustrated catalog of scorpions. Part I. Introductory remarks; keys to families and genera; subfamily Scorpioninae with keys to* Heterometrus *and* Pandinus *species*. Prague: Clairon Production, 170 pp.

KOVAŘÍK, F. 2011. *Buthus awashensis* sp. n. from Ethiopia (Scorpiones, Buthidae). *Euscorpius*, 128: 1–6.

KOVAŘÍK, F. & G. LOWE. 2012. Review of the genus *Neobuthus* Hirst, 1911 with description of a new species from Ethiopia (Scorpiones, Buthidae). *Euscorpius*, 138: 1–25.

KOVAŘÍK, F., F. ŠŤÁHLAVSKÝ, T. KOŘÍNKOVÁ & J. KRÁL. 2009. *Tityus ythieri* Lourenço, 2007 is a synonym of *Tityus magnimanus* Pocock, 1897 (Scorpiones: Buthidae): a combined approach using morphology, hybridization experiments, chromosomes, and mitochondrial DNA. *Euscorpius,* 77: 1–12.

LAMORAL, B.H. & S.C. REYNDERS. 1975. A catalogue of the scorpions described from the Ethiopian faunal region up to December 1973. *Annals of the Natal Museum*, 22 (2): 489-576.

LEVY, G. & P. AMITAI. 1980. *Fauna Palaestina*, *Arachnida I. – Scorpiones*. Jerusalem: The Israel Academy of Sciences and Humanities, 132 pp.

LEVY, G., P. AMITAI & A. SHULOV. 1973. New scorpions from Israel, Jordan and Arabia. *Zoological Journal of the Linnean Society*, 52: 113–140.

MATTOS, V.F., D.M. CELLA, L.S. CARVALHO, D.M. CANDIDO & M.C. SCHNEIDER. 2013. High chromosome variability and the presence of multivalent associations in buthid scorpions. *Chromosome Research,* 21: 121–136.

MORIGGI, M. 1941. Gli scorpioni dell'Africa Orientale Italiana. *Rivista di Biologia Coloniale*, 4(1–2): 77–103.

POCOCK, R. I. 1900a. On a collection of insects and arachnids made in 1895 and 1897 by Mr. C. A. V. Peel, F. Z. S. in Somaliland, with descriptions of new species. 9. Chilopoda and Arachnida. *Proceedings of the Zoological Society of London*, 1900: 48–55.

POCOCK, R. I. 1900b. On a collection of insects and arachnids made in 1895 and 1897 by Mr. C. V. A. Peel, F. Z. S. in Somailand, with descriptions of new species. 10. General list of the scorpions of Somaliland and the Boran Country. *Proceedings of the Zoological Society of London*, 1900: 55–63.

PROBST, P. 1973. A review of the scorpions of East Africa with special regard to Kenya and Tanzania. *Acta Tropica*, 30: 312–335.

SISSOM, W.D. 1990. Systematics, biogeography and paleontology Pp. 64–160. *In*: POLIS G. A. (ed.): *The Biology of Scorpions.* Stanford, California: Stanford University Press, 587 pp.

VACHON, M. 1948. Études sur les scorpions (suite). Chapitre III (suite). Description des scorpions du Nord de l'Afrique. *Archives de l'Institut Pasteur d'Algérie*, 26 (4): 441–481, figs. 188–241.

VACHON, M. 1952. *Études sur les Scorpions*. Alger: Institut Pasteur d'Algérie, 482 pp.