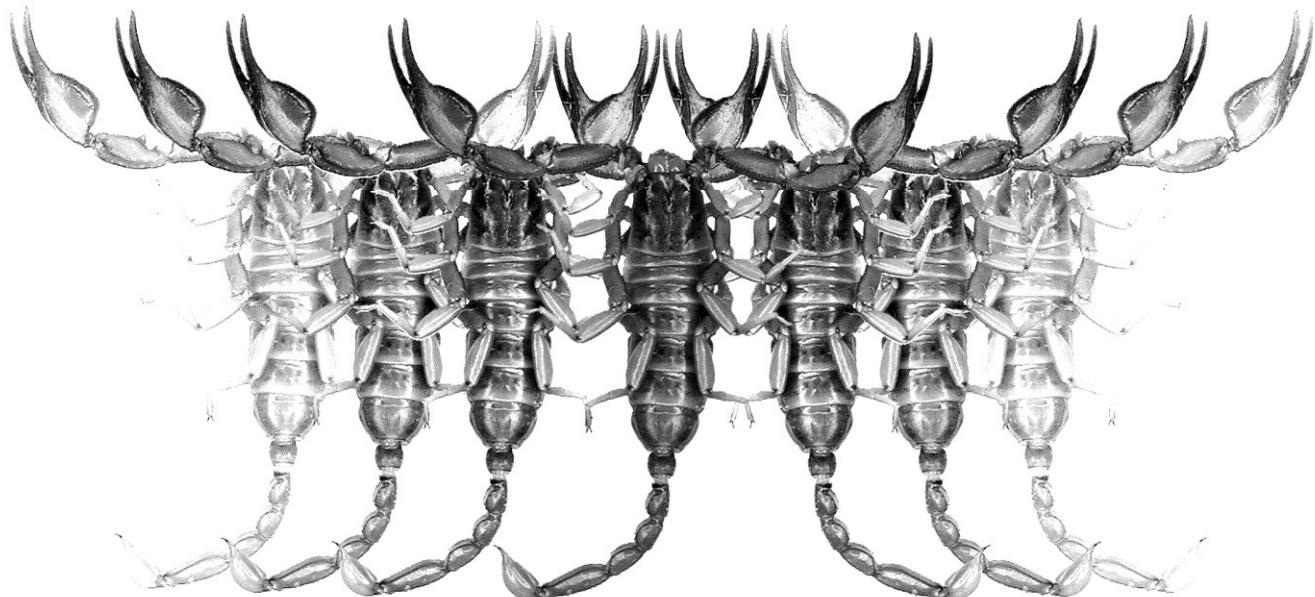


Euscorpius

Occasional Publications in Scorpiology



**Scorpions of Ethiopia (Arachnida: Scorpiones).
Part II. Genus *Babycurus* Karsch, 1886 (Buthidae),
with Description of Two New Species**

František Kovářík, Graeme Lowe, Michael Seiter,
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Scorpions of Ethiopia (Arachnida: Scorpiones). Part II. Genus *Babycurus* Karsch, 1886 (Buthidae), with description of two new species

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<http://zoobank.org/urn:lsid:zoobank.org:pub:EE3FF040-565B-42F5-8D60-C83D7AAD01E7>

Summary

Two new species, *Babycurus dunlopi* sp. n. and *B. sofomarensis* sp. n. from Ethiopia, are described, compared with other species and fully illustrated with color photos of habitus and localities. *B. subpunctatus* Borelli, 1925 is recorded for the first time in Ethiopia, Somali Province. All data about the distribution of *Babycurus* Karsch, 1886 in Ethiopia including photos of all known Ethiopian localities of *Babycurus* are summarized. *B. wituensis taramassoi* Borelli, 1919 is raised back to species status as *B. taramassoi* Borelli, 1919.

Introduction

In 2011–2014, two of the authors (FK and JP) have had an opportunity to participate in expeditions to the Horn of Africa, study scorpions at 68 Ethiopian localities and publish several papers on this fauna (Kovařík, 2011a, 2011b, 2012, 2013, 2015; Kovařík et Lowe, 2012; and Kovařík et al., 2013). This paper is the second in a series concerning the distribution of a particular scorpion genus in Ethiopia.

Scorpions of the genus *Babycurus* are relatively rare in Ethiopia. Only five of 68 examined localities yielded a total of three species of this genus. A fourth species is known only from a juvenile located in MZUF (see below). In the future, we believe that other *Babycurus* species may be discovered in Ethiopia, mainly in the east and northeast.

Methods, Material & Abbreviations

Nomenclature and measurements follow Vachon (1963), Stahnke (1970), Sissom (1990), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974, 1975), and sternum (Soleglad & Fet, 2003).

Specimens studied herein are preserved in 80% ethanol. Depositories: FKCP (František Kovařík, private collection, Prague, Czech Republic); MCSN (Museo

Civico de Storia Naturale "Giacomo Doria", Genoa, Italy); MZUF (Museo Zoologico de "La Specola", Firenze, Italy); ZMHB (Museum für Naturkunde der Humboldt-Universität, Berlin, Germany).

Systematics

Family Buthidae C. L. Koch, 1837

Genus *Babycurus* Karsch, 1886

DIAGNOSIS. Medium to large buthids, adults 22.5–100 mm; carapace granular, lacking distinct carinae, flat, subrectangular with concave anterior margin; median eyes on low ocular tubercle in anterior half of carapace; anterior, central and posterior median furrows distinct, connected by median groove running over ocular tubercle; sternum type 1, triangular in shape; tergites I–VI granular, with single median carina which may be obsolete on I–II; tergite VII with 5 carinae; metasoma elongate, segment I with 10 carinae; segments II–IV with 8 carinae, lacking lateral median carina; metasoma V convex, sometimes dilated, carinae present or obsolete; telson ellipsoidal or pyriform in shape, with distinct subaculear tooth; pectines with fulcra; chelicerae with typical buthid dentition, fixed finger armed with two denticles on ventral surface; pedipalps orthobothriotoxic, type Aβ, femur trichobothrium d_2 internal, patella d_3 ex-



Figures 1–4: *Babycurus dunlopi* sp. n. **Figures 1–2.** Paratype male, dorsal (1) and ventral (2) views. **Figures 3–4.** Holotype female, dorsal (3) and ventral (4) views.

ternal to dorsomedian carina, chela *db* in distal half of fixed finger; chela manus smooth, with carinae reduced or obsolete; dentate margins of chela fingers armed with linear rows of principal denticles; rows non-imbricated or conspicuously imbricated and overlapping, flanked internally by single enlarged accessory denticle, and externally by single or double external accessory denticles; movable finger with two enlarged subdistal internal denticles, flanked externally by short apical row of denticles; pedipalp chelae sexually dimorphic: males with dilated manus, fingers with proximally flexed dentate margins, denticles of proximal rows bicuspid; tibial spurs absent on leg III, present on leg IV, tibia and tarsus III–IV without bristle combs; ventral surfaces of tarsi equipped with two rows of setae; unguis stout.

***Babycurus dunlopi* Kovařík, Lowe, Seiter,**

Plíšková et Šťáhlavský, sp. n.

(Figures 1–23, 29–37, 41–45, 123, Table 1)

<http://zoobank.org/urn:lsid:zoobank.org:act:890A5324-434A-49F1-87A5-AAA31DAFE2B2>

Babycurus wituensis taramassoi (in part): Kovařík, 2000: 258; Kovařík, 2003: 136.

TYPE LOCALITY AND HOLOTYPE DEPOSITORY. Ethiopia, Oromia State, Gemu Gofa region, Arba Minch, 05°59'25.4"N 37°32'24"E, 1261 m a.s.l., FKCP.

TYPE MATERIAL. Ethiopia, Oromia State, Gemu Gofa region, Arba Minch, 2–3.V.1997, 2♂1♀ im. (paratypes), leg. C. Werner, 05°59'25.4"N 37°32'24"E, 1261 m a.s.l. (Figs. 44–45, locality No. 13EY), 8.VII.2013, 3♂ (paratypes) 1♀ (holotype, maturity ecdysis 4.V.2014) (UV detection), leg. and bred by F. Kovařík, FKCP.

ETYMOLOGY. Named after Jason A. Dunlop, the Curator of arachnid, myriapod & stem-group arthropod collection of Museum für Naturkunde, Berlin (ZMHB) and Secretary of the International Society of Arachnology. He has assisted the authors by providing information about old scorpion material cited by old authors as Hemprich & Ehrenberg, Gervais, Peters, Karsch or Kraepelin and he has loaned us important types for more than 15 years. This has helped us to understand the taxonomic positions of many scorpion species and groups.

DIAGNOSIS. Total length 49–55 mm. Coloration yellowish brown to orange with dark spots. Tergites I–VI could be almost black with four symmetrical orange spots of every tergite. Chelicerae yellow strongly reticulate mainly in anterior half. Pedipalp movable fingers with 8 principal rows of denticles and apical row of five denticles. Pectines with 24–28 teeth in both sexes. First metasomal segment has 10 carinae, second through fourth segments have eight carinae. Telson sparsely setose, tuberculate,

with a subaculear tooth 0.35–0.42 mm long (ratio aculeus length to subaculear tooth length 6.72–7.80). Vesicle elongate, ellipsoidal. Aculeus curved, approximately as long as vesicle. Males with posterior margin of sternite V with smooth median patch; chela of pedipalps broader than female, ratio chela length to manus width 4.24 in female, 3.3–3.5 in males; and very slightly broader metasomal segments (length to width ratio 1.7 in female and 1.55–1.58 in males).

DESCRIPTION. Total length 49–55 mm. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 1. Coloration (Figs. 1–4, 41–43) base yellowish brown to orange with dark spots mainly on patella and femur of legs and pedipalps, carapace, mesosoma and dorsal surfaces of metasoma. Tergites I–VI almost black with four symmetrical orange spots on each tergite (Fig. 41). Chelicerae yellow, strongly reticulate mainly on anterior half (Fig. 19). *Sexual dimorphism*: males with chela of pedipalps broader (ratio chela length to manus width 4.24 in female, 3.3–3.5 in males); fingers of pedipalps more flexed proximally (Figs. 30 and 34); slightly broader metasomal segments (length to width ratio 1.7 in female and 1.55–1.58 in males); posterior margin of sternite V with smooth median patch present in males and absent in female.

CHELICERAE (Fig. 19). With dentition typical for the genus, teeth sharp. Tegument basally smooth and shiny without granulation.

PEDIPALPS (Figs. 11–17, 29–34). Femur granulated, with four granulate carinae developed. Patella almost smooth with seven granulate carinae developed. Chela with carinae vestigial to absent, smooth; fingers long (ratio chela length to movable finger length 1.57–1.70 in both sexes), curved, with 8 principal rows of denticles, 7 of them terminating in two external granules; the last (proximal) row has one external granule in the middle of the row. There are also seven internal granules on movable finger and six on fixed finger. Movable fingers bear apical row of five denticles and three terminal accessory denticles.

CARAPACE (Figs. 18–19). Slightly trapezoidal (narrower anteriorly) and slightly wider than long; anterior margin concave, with some short microsetae. Carination absent. Median furrows wide and deep, others vestigial to absent. Tegument densely and coarsely granulose. Median eyes large and raised; five pairs of lateral eyes: three same-sized and aligned along each anterolateral corner, plus two vestigial to absent.

MESOSOMA (Figs. 1–4, 18–19, 22–23). Tergites I–VI bear one conspicuous median carina; tergite VII with five well-defined carinae (median, submedians and laterals), which are long and serrate to crenulate. All tergites are densely and coarsely granulose. Sternum (Fig. 22) standard for the genus: type 1, triangular in shape;



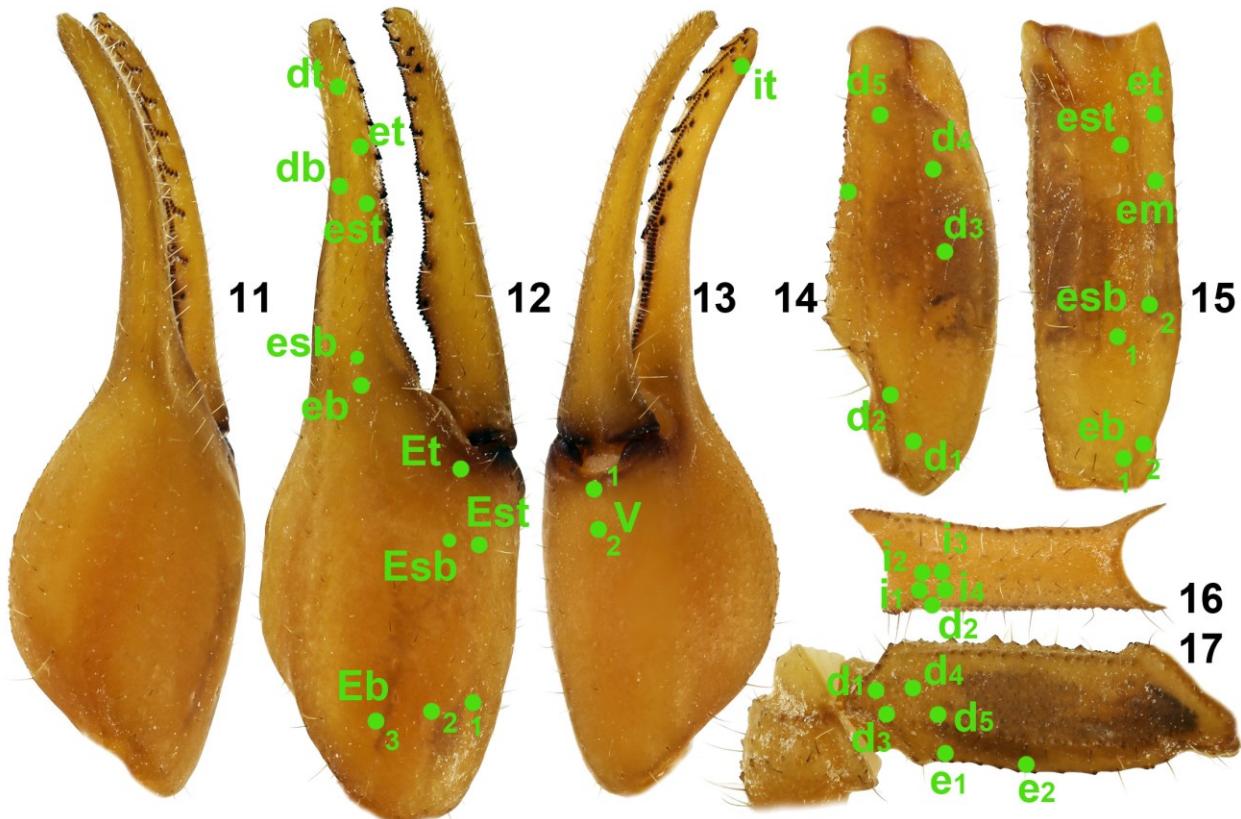
Figures 5–10: *Babycurus dunlopi* sp. n. **Figures 5–7.** Holotype female, metasoma and telson, ventral (5), dorsal (6), and lateral (7) views. **Figures 8–10.** Paratype male, metasoma and telson (8), dorsal (9), and lateral (10) views.

medial depression very large. Pectines standard-sized for the genus (Figs. 22–23): extending to around half of sternite IV in both sexes, setose. Tooth count 24–28 (1x24, 3x25, 4x26, 1x27, 1x28) in males and 25/26 in female. Pectines have 3 marginal lamellae and 8–9 middle lamellae. Sternites lack carinae, surfaces are smooth and sparsely setose, except for sternite III with denser medial setation (Fig. 22). Posterior margin of sternite V with smooth median patch in males.

LEGS (Figs. 20–21). The tarsomeres bear two rows of relatively long macrosetae on the ventral surface and numerous macrosetae on the other surfaces; bristle combs absent. Femur bears only solitary macrosetae. Femur coarsely granulose, femur and patella with cari-

nae developed. Tibial spurs present and long on fourth legs.

METASOMA AND TELSON (Figs. 5–10). All segments with complete granulate carinae developed. The first metasomal segment has a total of 10 carinae, the second through fourth segments have eight carinae, and the fifth segment has five carinae. All metasomal segments are densely granulated laterally and ventrally; dorsal surface more granulated on the fifth segment; the second and the third segments only sparsely granulated and the fifth is dorsally smooth. Metasoma is sparsely hirsute mainly along carinae bearing dark setae. There are 2–4 (segment I) to 10–14 (segment V) setae around every dorsal carina and 6–8 (segment I) to 12–18 (segment V) setae on ven-



Figures 11–17: Paratype male of *Babycurus dunlopi* sp. n. Pedipalp chela, dorsal (11), external (12), and ventral (13) views. Pedipalp patella, dorsal (14) and external (15) views. Pedipalp femur, internal (16) and trochanter and femur dorsal (17) views. The trichobothrial pattern is indicated in Figures 12–17.

tral surface. Telson sparsely setose, tuberculate, with a subaculear tooth 0.35–0.42 mm long (ratio aculeus length to subaculear tooth length 6.72–7.80) (Figs. 36–37). Vesicle elongate, ellipsoidal. Aculeus curved, approximately as long as vesicle.

ANOMALY. Telson with subaculear tooth is a diagnostic character for the genus *Babycurus* (Figs. 36–37). Six of seven types have a 0.35–0.42 mm long subaculear tooth present, but one male paratype lacks a subaculear tooth (Fig. 35). This male was collected together with the female holotype and two other adult male paratypes. We believe that this first known case of the absence of a subaculear tooth in *Babycurus* is only a morphological anomaly which can be ignored in diagnosis of the genus and species.

AFFINITIES. The described features distinguish *B. dunlopi* sp. n. from all other species of the genus. *B. dunlopi* sp. n. seems to be closest to *B. wituensis* Kraepelin, 1913 and *B. taramassoi* Borelli, 1919, which was designated as subspecies *B. wituensis taramassoi* by Kovařík (2000: 258–260). After studying other specimens we believed that both of these taxa are valid species. *B. taramassoi* could represent a complex with more species from Somalia and *B. wituensis* is known from southeast Kenya and Tanzania (Kovařík et al., in

preparation). *B. taramassoi* is usually larger with total length 60–74 mm and *B. wituensis* and *B. dunlopi* sp. n. are 45–57 mm long. *B. dunlopi* sp. n. and *B. wituensis* can be unequivocally separated by: 1) metasomal segments very slightly broader in males of *B. dunlopi* sp. n. (ratio length to width the fifth metasomal segment 1.7 in female and 1.55–1.58 in males) and more broader in males of *B. wituensis* (ratio length to width the fifth metasomal segment 1.85–1.96 in females and 1.35–1.48 in males); 2) subaculear tooth (Figs. 36–37) only 0.35–0.42 mm long in *B. dunlopi* sp. n. (ratio aculeus length to subaculear tooth length 6.72–7.80) and 0.67–0.73 mm long in *B. wituensis* (Figs. 26–28, ratio aculeus length to subaculear tooth length 3.79–4.29).

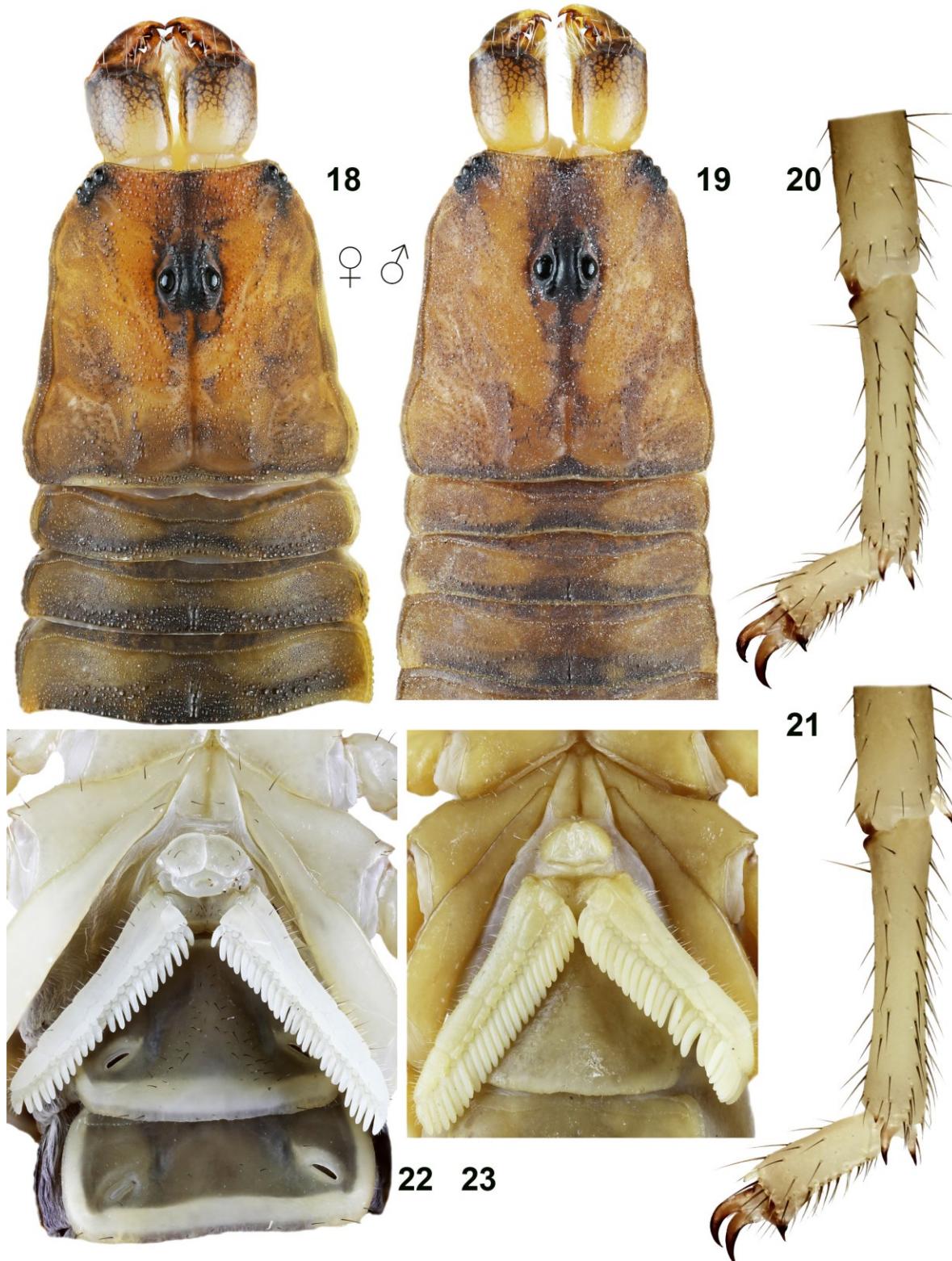
Babycurus sofomarensis Kovařík, Lowe, Seiter,

Plíšková et Šťáhlavský, sp. n.

(Figures 46–55, 58–61, 64–65, 67–77, 87–102, 123, Table 2)

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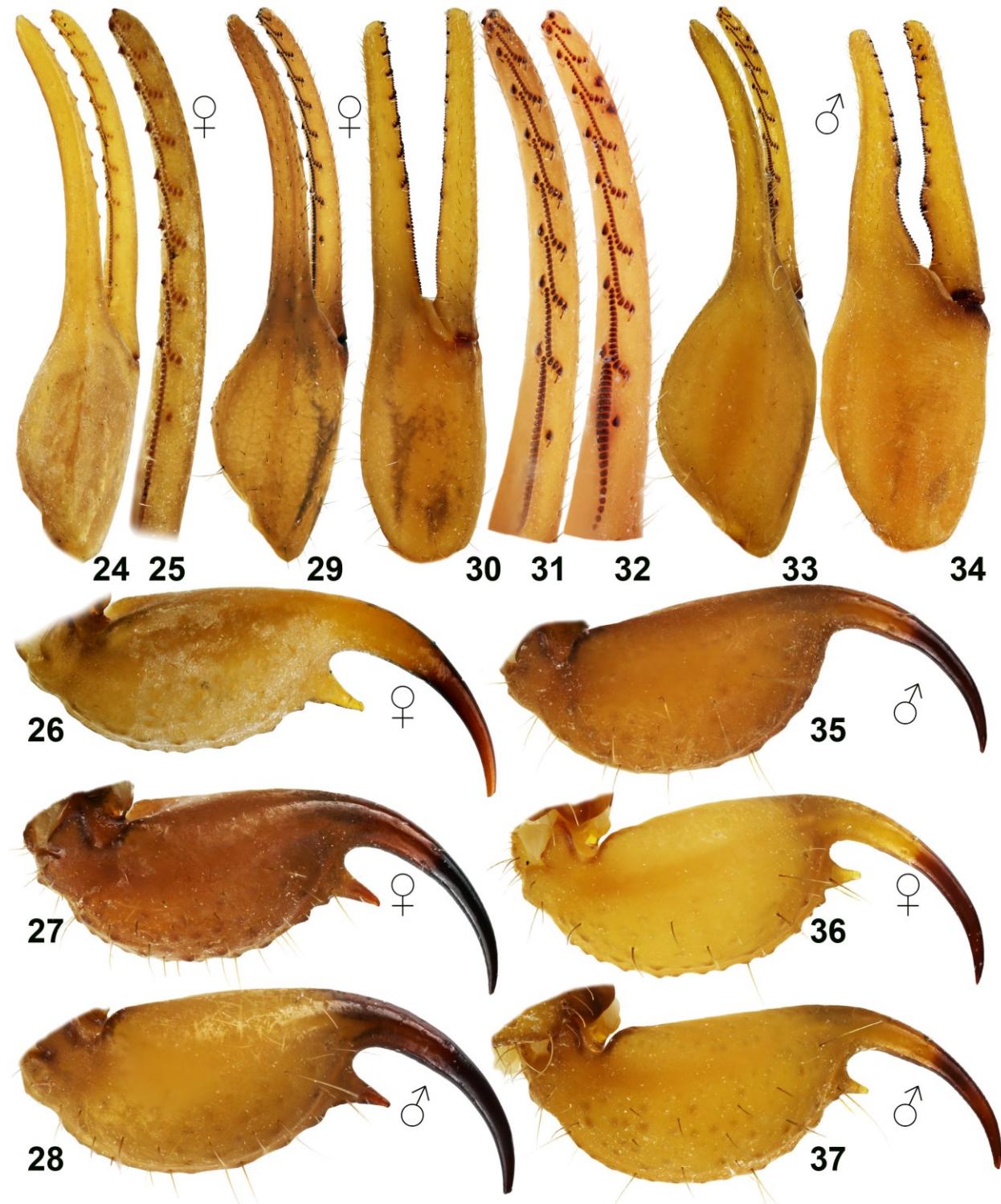
TYPE LOCALITY AND HOLOTYPE DEPOSITORY. Ethiopia, Oromia State, Arsi Province, Sof Omar, 06°54'19"N 40°51'04"E, 1200 m a.s.l.; FKCP.



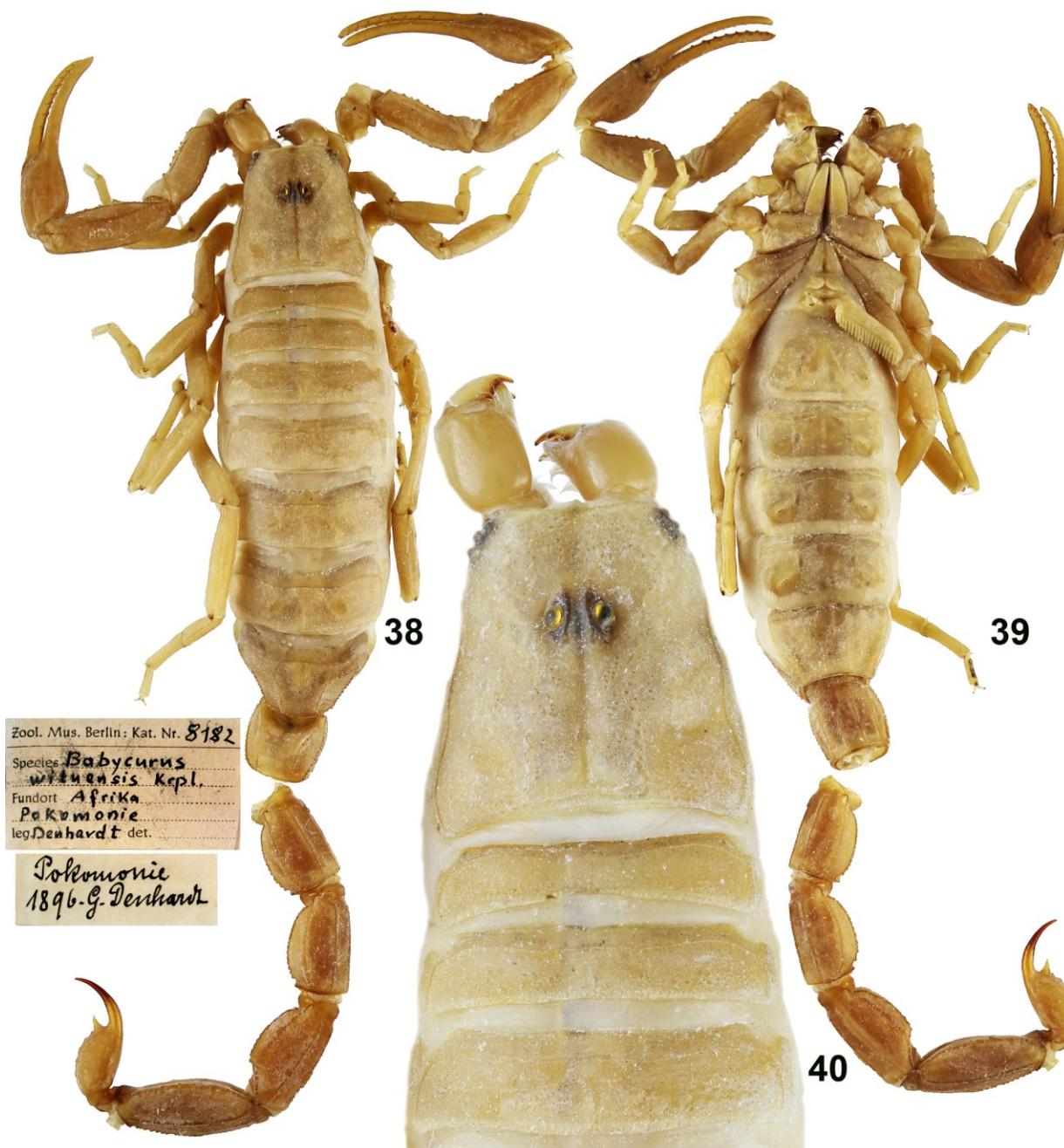
Figures 18–23: *Babycurus dunlopi* sp. n. **Figures 18, 20–22.** Holotype female, chelicerae, carapace and tergites I–III (18), distal segments of legs III (20) and IV (21), retrolateral view, sternopectinal region and sternites III–IV (22). **Figures 19, 23:** Paratype male, chelicerae, carapace and tergites I–III (19), and sternopectinal region and sternite III (23).

DIMENSIONS (MM)	<i>B. wituensis</i>		<i>B. dunlopi</i> sp. n.		
	♀ lectotype	♀ holotype	♂ paratype	♂ paratype	
Carapace	L / W	4.7 / 4.7	5.9 / 6.3	5.75 / 5.8	6.15 / 6.4
Mesosoma	L	16.7	17.7	13.3	17.4
Tergite VII	L / W	3.43 / 5.11	4.1 / 6.2	3.8 / 5.15	4.7 / 6.45
Metasoma and telson	L	23.7	29.55	30.2	31.51
Segment I	L / W / H	2.7 / 2.7 / 2.28	3.35 / 3.40 / 3.0	3.5 / 3.2 / 2.85	3.7 / 3.55 / 2.9
Segment II	L / W / H	3.2 / 2.8 / 2.32	4.1 / 3.5 / 3.05	4.1 / 3.4 / 2.8	4.2 / 3.7 / 2.95
Segment III	L / W / H	3.5 / 2.8 / 2.34	4.5 / 3.65 / 3.4	4.65 / 3.65 / 2.9	4.75 / 4.23 / 3.63
Segment IV	L / W / H	4.1 / 1.5 / 2.47	5.3 / 3.7 / 3.4	5.4 / 3.75 / 3.2	5.7 / 4.33 / 3.85
Segment V	L / W / H	4.9 / 2.5 / 2.21	6.3 / 3.7 / 3.4	6.45 / 4.15 / 3.05	6.66 / 4.2 / 3.3
Telson	L / W / H	4.7 / 1.61 / 1.59	6.0 / 2.65 / 2.35	6.1 / 2.45 / 2.15	6.5 / 2.7 / 2.36
Pedipalp	L	16.5	21.8	21.35	22.1
Femur	L / W	3.9 / 1.3	5.2 / 1.8	5.15 / 1.6	5.15 / 1.8
Patella	L / W	4.6 / 1.7	6.2 / 2.5	6.1 / 2.45	6.2 / 2.4
Chela	L	8	10.4	10.1	10.75
Manus	L / W / H	2.6 / 1.7 / 1.78	3.8 / 2.45 / 2.45	4.15 / 2.9 / 2.75	4.45 / 3.23 / 3.2
Movable finger	L	5.4	6.6	5.95	6.3
Total	L	45.1	53.15	49.25	55.06

Table 1: Comparative measurements of adults of *Babycurus wituensis* Kraepelin, 1913 and *B. dunlopi* sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (H).



Figures 24–37: **Figures 24–28:** *Babycurus wituensis* Kraepelin, 1913. **Figures 24–26.** Lectotype female, pedipalp chela dorsal view (24), pedipalp movable finger, dorsal view (25) and telson, lateral view (26). **Figures 27–28.** Telson, lateral views female (27) and male (28) from Kenya, Mombasa area, 04°13'32.99"N 39°35'13.56"E, leg. Alex Ullrich, FKCP. **Figures 29–37:** *Babycurus dunlopi* sp. n. **Figures 29–31, 36.** Holotype female, pedipalp chela, dorsal (29), external (30), pedipalp movable finger, dorsal view (31) and telson, lateral view (36). **Figures 32–34, 37.** Paratype male, pedipalp movable finger, dorsal view (32), pedipalp chela, dorsal (33), external (34), and telson, lateral view (37). **Figures 35,** paratype male, telson, lateral view.



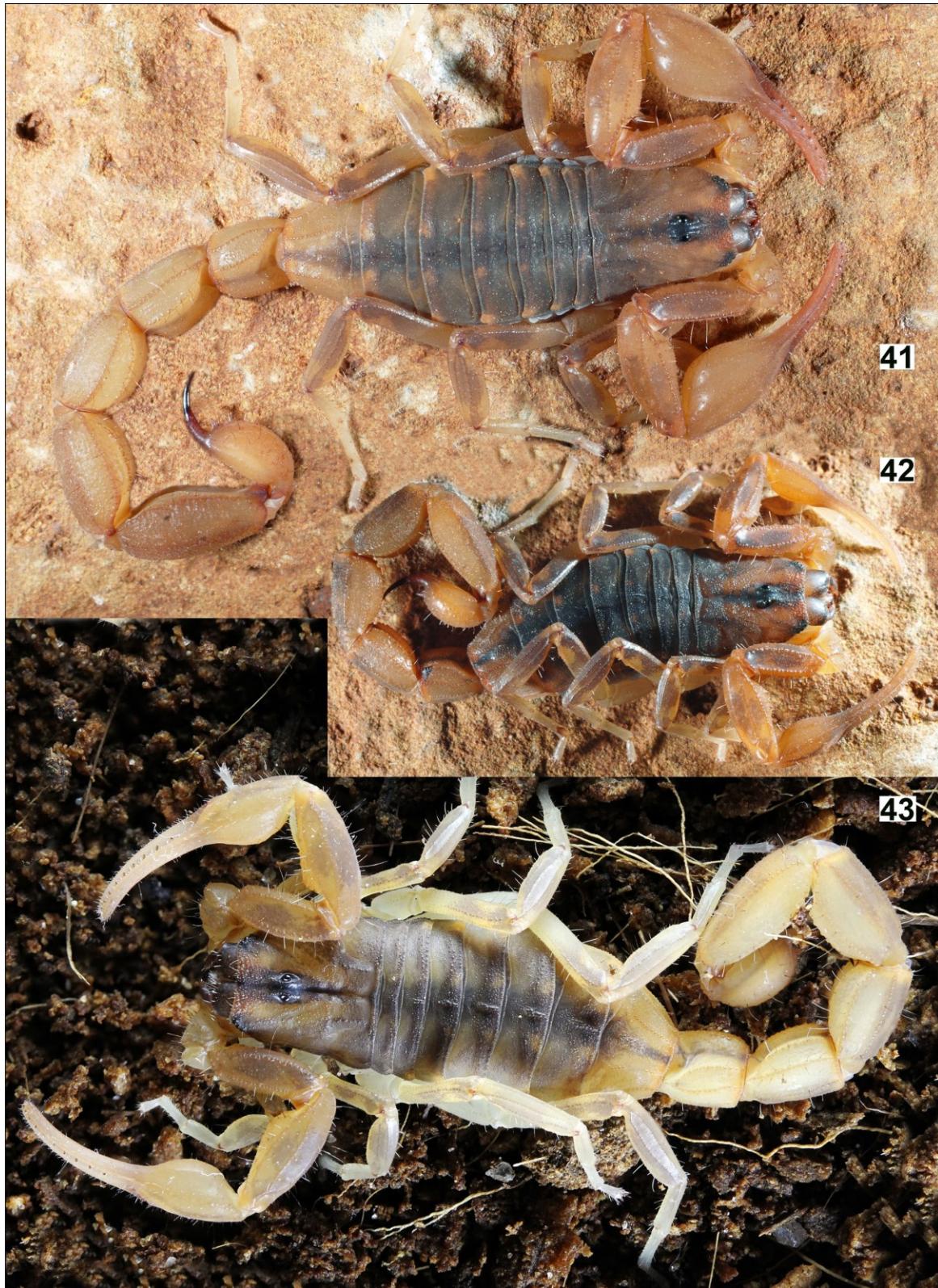
Figures 38–40: Lectotype female of *Babycurus wituensis* Kraepelin, 1913, Pokomonie, Tanganyika, now Tanzania, ZMHB, dorsal (38) and ventral (39) views and chelicerae, carapace and tergites I–III (40). The original labels are also included in the plate.

TYPE MATERIAL. Ethiopia, Oromia State, Arsi Province, Sof Omar, 06°54'19"N 40°51'04"E, 1200 m a.s.l. (Fig. 95, locality No. 13EC), 24–25.VI.2013, 4♂ (paratypes) (UV detection), leg. F. Kovařík, J. Plíšková & P. Novák, 23–24.XI.2014, 2♂ (paratypes) 1♀ (holotype) (UV detection), leg. F. Kovařík; Oromia State, West Harerge, 07°44'37"N 40°42'39.5"E, 1234 m a.s.l. (Fig. 96, locality No. 14EO), 24–25.XI.2014, 1♂ (paratype) (UV detection), Oromia State, West Harerge, 07°46'39.7"N

40°37'12.4"E, 800 m a.s.l. (Fig. 97, locality No. 14EP), 25.XI.2014, 1juv. (paratype). All type specimens are in 80 % alcohol in the first author's collection (FKCP), except for a juvenile paratype which is alive (Fig. 98).

ETYMOLOGY. Named after the type locality.

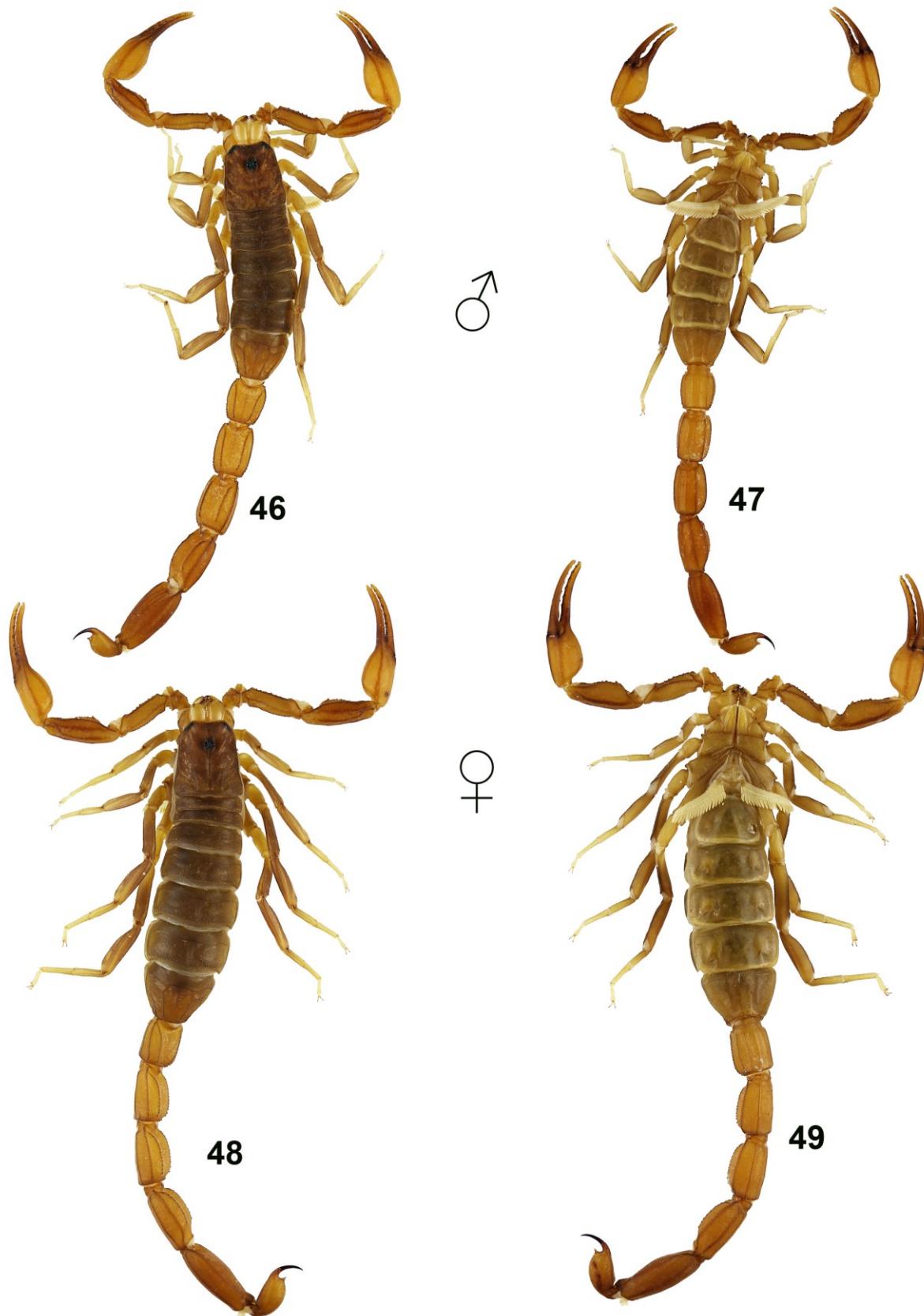
DIAGNOSIS. Total length 32–35 mm (males) and 46 mm (female). Coloration yellowish brown to grey with dar-



Figures 41–43: *Babycurus dunlopi* sp. n., paratype male (41), holotype female before maturity ecdysis (42), holotype female shortly after maturity ecdysis 4.V.2014 (43).



Figures 44–45: *Babycurus dunlopi* sp. n., the type locality (Ethiopia, Oromia State, Gemu Gofa region, Arba Minch, 05°59'25.4"N 37°32'24"E, 1261 m a.s.l.).



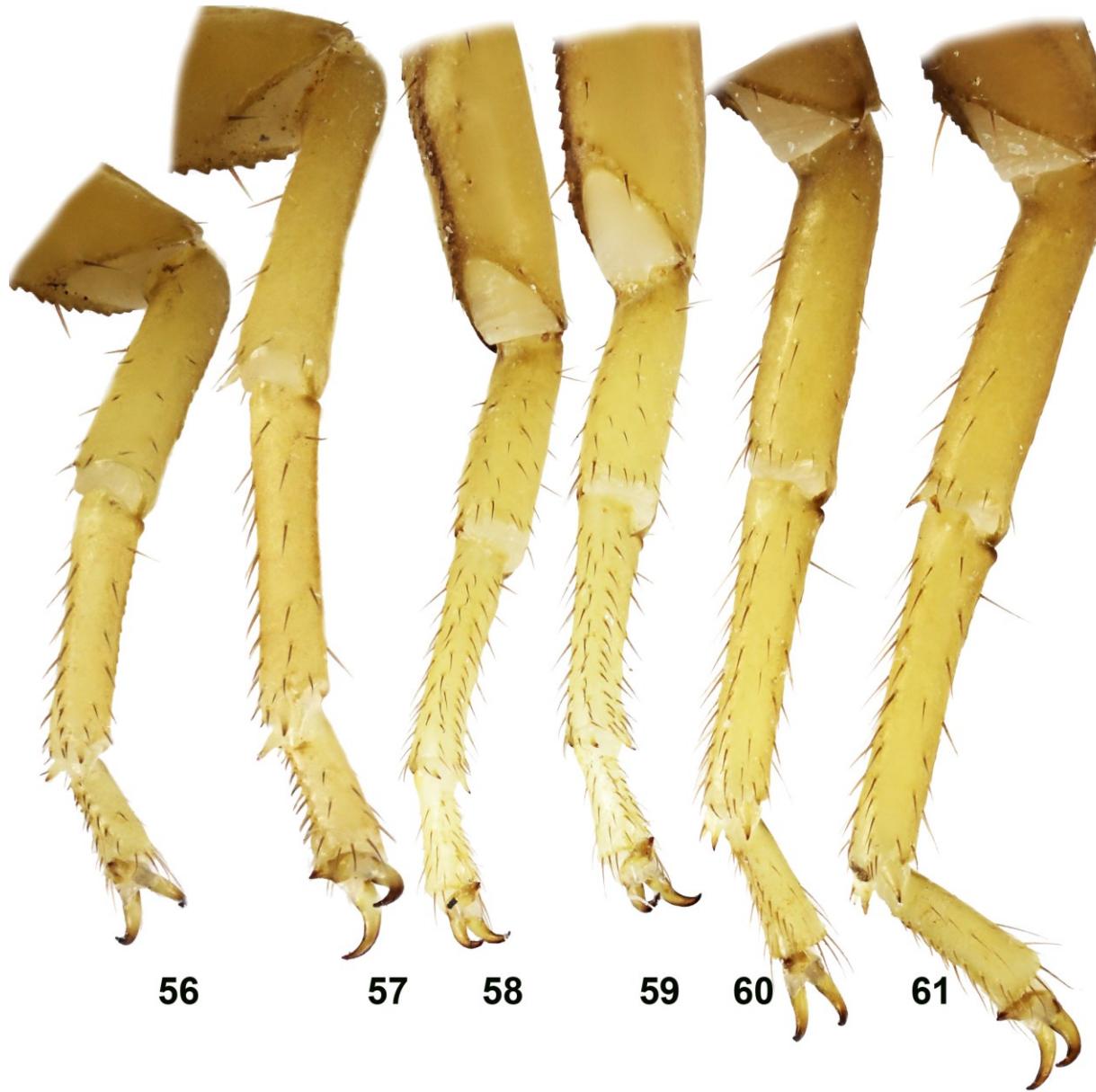
Figures 46–49: *Babycurus sofomarensis* sp. n. **Figures 46–47.** Paratype male from the type locality, dorsal (46) and ventral (47) views. **Figures 48–49.** Holotype female, dorsal (48) and ventral (49) views.



Figures 50–55: *Babycurus sofomarensis* sp. n. **Figures 50–52.** Paratype male from the type locality, metasoma and telson, lateral (50), ventral (51), and dorsal (52) views. **Figures 53–55.** Holotype female, metasoma and telson, lateral (53), ventral (54), and dorsal (55) views.

ker markings. Chelicerae yellow without reticulation. Pedipalp movable fingers with 6 principal rows of denticles and an apical row of four denticles. Pectines with 18–20 teeth in both sexes. First metasomal segment has 10 carinae, second through fourth segments have eight carinae. Telson setose, smooth, with a short and pointed subaculear tooth. Vesicle elongate, ellipsoidal. Aculeus curved, shorter than vesicle. Sexual dimorphism minor, adult males with fingers of pedipalps more flexed proximally and slightly shorter fingers; there is no difference in length and width of chela of pedipalps (ratio chela length to manus width 3.5–3.8 in both sexes) or metasomal segments (ratio metasomal segment V length to width 2.8–3.0 in both sexes); posterior margin of sternite V without smooth median patch in both sexes.

DESCRIPTION. Total length 32–35 mm (males) and 46 mm (female). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 2. Coloration (Figs. 46–49, 62–63) base yellowish brown to grey with darker markings on patella and femur of legs and pedipalps, carapace, and. Tergites I–VI almost grey. Tergite VII, tibia of legs, manus of pedipalps and metasomal segments I–III usually lighter. Chelicerae yellow without reticulation. (Fig. 63). *Sexual dimorphism* minor, adult males with fingers of pedipalps more flexed proximally (Figs. 88 and 90–91) and shorter fingers (ratio chela length to movable finger length 1.56 in female and 1.70–1.75 in males); there is no difference in length and width of chela of pedipalps (ratio chela length to manus width 3.5–3.8 in



Figures 56–61: Figures 56–57. *Babycurus subpunctatus*, female from locality 14EI, distal segments of legs III (56) and IV (57), retrolateral view. Figures 58–61. *Babycurus sofomarensis* sp. n., holotype female, distal segments of legs I (58), II (59), III (60) and IV (61), retrolateral view.

both sexes) or metasomal segments (ratio metasomal segment V length to width 2.8–3.0 in both sexes).

CHELICERAE (Figs. 64). With dentition typical for the genus, teeth sharp. Tegument basally smooth and shiny without granulation.

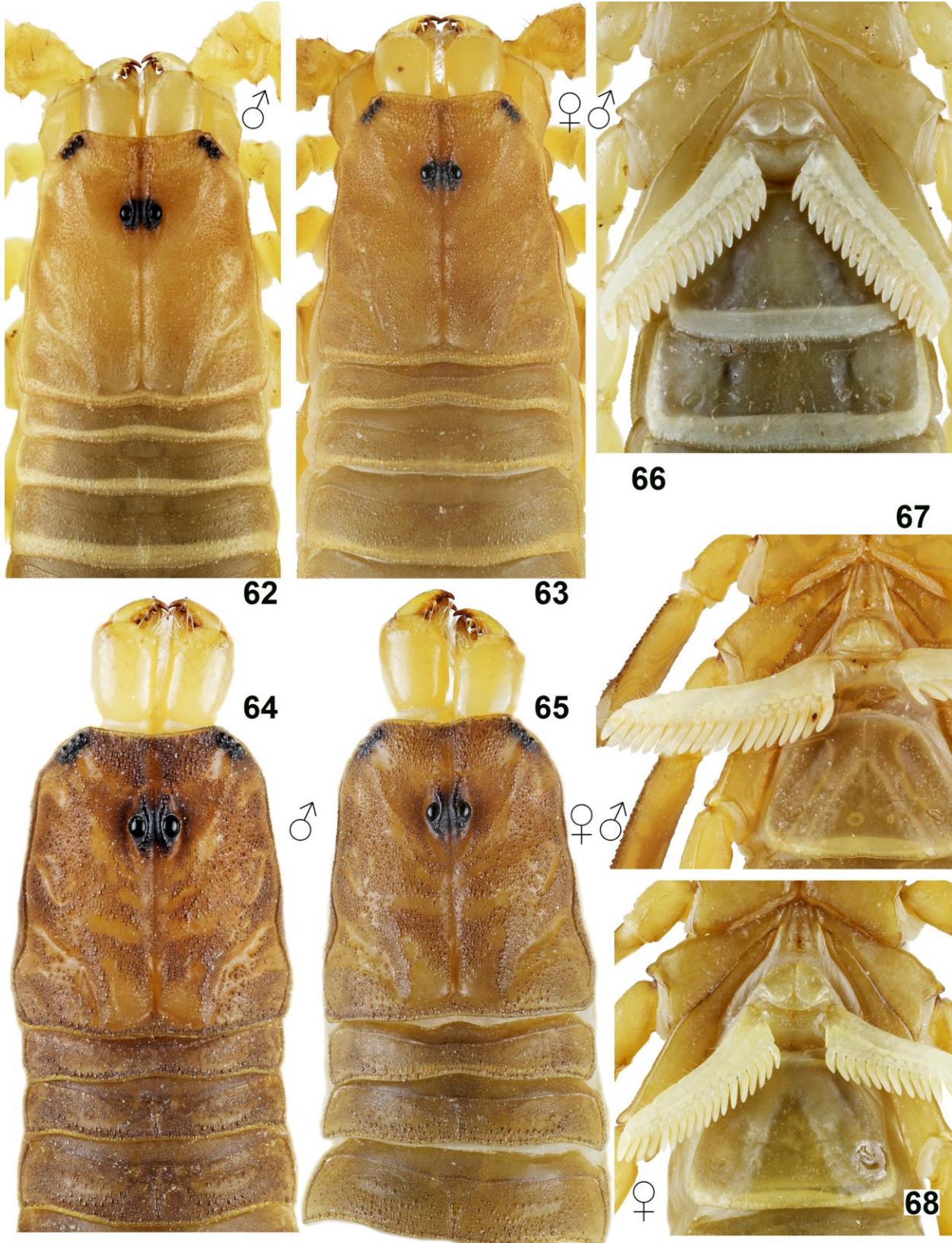
PEDIPALPS (Figs. 69–75). Femur granulated, with five granulate carinae developed. Patella almost smooth with seven granulate carinae developed. Chela with sparsely granulated carinae present, smooth; fingers long (ratio chela length movable finger length 1.56–1.75), curved, with 6 principal rows of denticles, 5 of them terminating in two external granules; the last row has one external

granule in the middle of the row. There are also five or six internal granules. Movable fingers bear apical row of four denticles and three terminal accessory denticles.

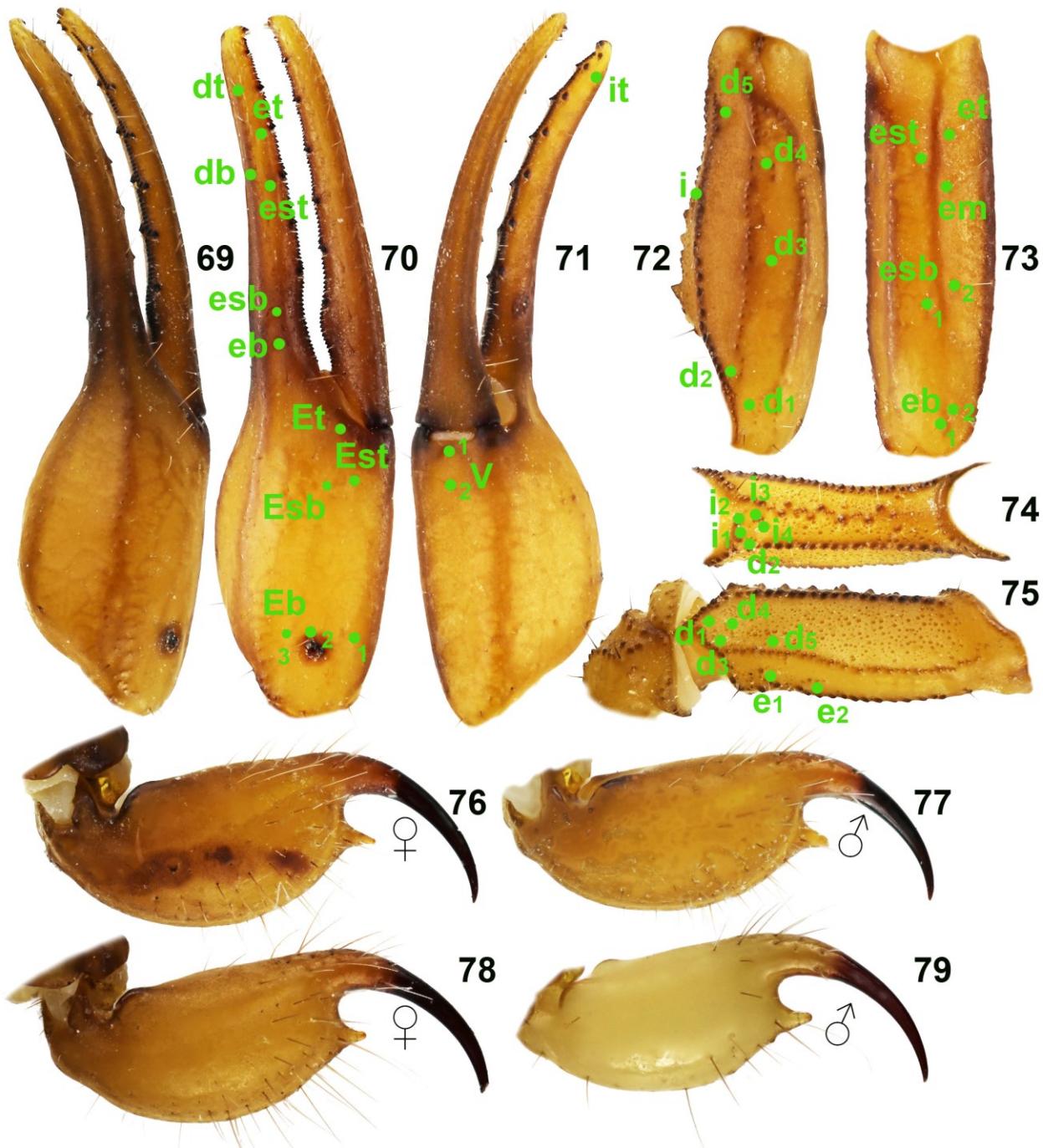
CARAPACE (Figs. 64–65). Slightly trapezoidal (narrower anteriorly) and slightly longer than wide, or as long as wide; anterior margin slightly convex, with some short microsetae. Carination absent. Median and posterior lateral furrows wide and deep, other vestigial to absent. Tegument densely and coarsely granulose. Median eyes large and raised; five pairs of lateral eyes: three same-sized and aligned along each anterolateral corner, plus two vestigial to absent.

Dimensions	<i>B. subpunctatus</i>			<i>B. sofomarensis</i> sp. n.		
	♀ Holotype	♀ 14EI	♂ 14EI	♀ Holotype	♂ 14EN	♂ 14EO
Carapace	L / W	3.4 / 3.2	3.6 / 3.3	2.85 / 2.6	5.1 / 4.9	3.9 / 3.5
Mesosoma	L	10.3	9.9	6.4	15.2	10.6
Tergite VII	L / W	2.17 / 3.33	2.45 / 3.75	1.75 / 2.7	3.7 / 4.7	2.9 / 3.4
Metasoma et telson	L	18.4	18.75	13.2	25.7	20.2
Segment I	L / W / H	2.2 / 1.8 / 1.43	2.3 / 2.0 / 1.7	1.55 / 1.4 / 1.25	3.1 / 2.7 / 2.45	2.45 / 2.25 / 2.0
Segment II	L / W / H	2.6 / 1.6 / 1.37	2.4 / 1.8 / 1.6	1.95 / 1.3 / 1.25	3.65 / 2.5 / 2.4	2.9 / 2.2 / 1.9
Segment III	L / W / H	2.9 / 1.6 / 1.36	3.05 / 1.75 / 1.6	2.05 / 1.25 / 1.2	4.1 / 2.55 / 2.4	3.2 / 2.15 / 1.9
Segment IV	L / W / H	3.2 / 1.5 / 1.36	3.45 / 1.75 / 1.6	2.45 / 1.25 / 1.2	4.6 / 2.45 / 2.4	3.6 / 2.15 / 1.9
Segment V	L / W / H	4.0 / 1.5 / 1.38	4.15 / 1.7 / 1.6	2.85 / 1.15 / 1.1	5.6 / 2.35 / 2.2	4.65 / 2.1 / 1.8
Telson	L / W / H	3.2 / 1.10 / 1.17	3.4 / 1.25 / 1.2	2.35 / 0.8 / 0.93	4.65 / 1.55 / 1.7	3.4 / 1.2 / 1.3
Pedipalp	L	13	13.5	9.75	17.05	14
Femur	L / W	3.0 / 1.0	3.35 / 1.075	2.35 / 0.8	4.2 / 1.35	3.3 / 1.1
Patella	L / W	3.9 / 1.3	4.0 / 1.35	2.8 / 1.05	5.05 / 1.75	4.05 / 1.45
Chela	L	6.1	6.15	4.6	7.8	6.65
Manus	L / W / H	2.2 / 1.3 / 1.3	2.7 / 1.4 / 1.3	1.65 / 0.9 / 0.83	2.8 / 2.05 / 1.95	2.8 / 1.9 / 1.75
Movable finger	L	3.9	3.45	2.95	5.0	3.85
Total	L	32.1	32.25	22.45	46	34.7
						32.37

Table 2: Comparative measurements of adults of *Babycurus subpunctatus* Borelli, 1925 and *B. sofomarensis* sp. n. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (H).



Figures 62–68: Figures 62–63, 66. *Babycurus subpunctatus* from locality 14EI, chelicerae, carapace and tergites I–III of male (62) and female (63), and sternopectinal region and sternites III–IV of male (66). Figures 64–65, 67–68. *Babycurus sofomarensis* sp. n., chelicerae, carapace and tergites I–III of paratype male from the type locality (64) and holotype female (65), and sternopectinal region and sternite III of male paratype from the type locality (67) and holotype female (68).



Figures 69–79: Figures 69–76. *Babycurus sofomarensis* sp. n., holotype female, pedipalp chela, dorsal (69), external (70), and ventral (71) views. Pedipalp patella, dorsal (72) and external (73) views. Pedipalp femur, internal (74) and trochanter and femur dorsal (75) views. The trichobothrial pattern is indicated in Figures 70–75. Telson, lateral view (76). **Figure 77.** *Babycurus sofomarensis* sp. n., paratype male from the type locality, telson, lateral view. **Figures 78–79.** *Babycurus subpunctatus* from locality 14EI, telson, lateral views of female (78) and male (79).

MESOSOMA (Figs. 46–49, 64–65). Tergites I–VI bear one conspicuous median carina; tergite VII with five well-defined carinae (median, submedians and laterals), which are long and serrate to crenulate. All tergites are

densely and coarsely granulose mainly on posterior part. Sternum (Figs. 67–68) standard for the genus: type 1, triangular in shape; medial depression large. Pectines standard-sized for the genus (Figs. 67–68): extending to



Figures 80–92: *Babycurus subpunctatus*. **Figures 80–86.** Holotype female, pedipalp chela dorsal (80), and external (81) views, and pedipalp movable finger, dorsal view (82). **Figures 83–84.** Female from locality 14EI, pedipalp chela dorsal (83), and external (84) views. **Figures 85–86.** Male from locality 14EI, pedipalp chela dorsal (85), and external (86) views. **Figures 87–92:** *Babycurus sofomarensis* sp. n. **Figures 87–88.** Holotype female, pedipalp chela dorsal (87), and external (88) views. **Figures 89–90.** Paratype male from the type locality, pedipalp chela dorsal (89), and external (90) views. **Figures 91–92.** Paratype male from locality 14EO, pedipalp chela external view (91), and pedipalp movable finger, dorsal view (92).



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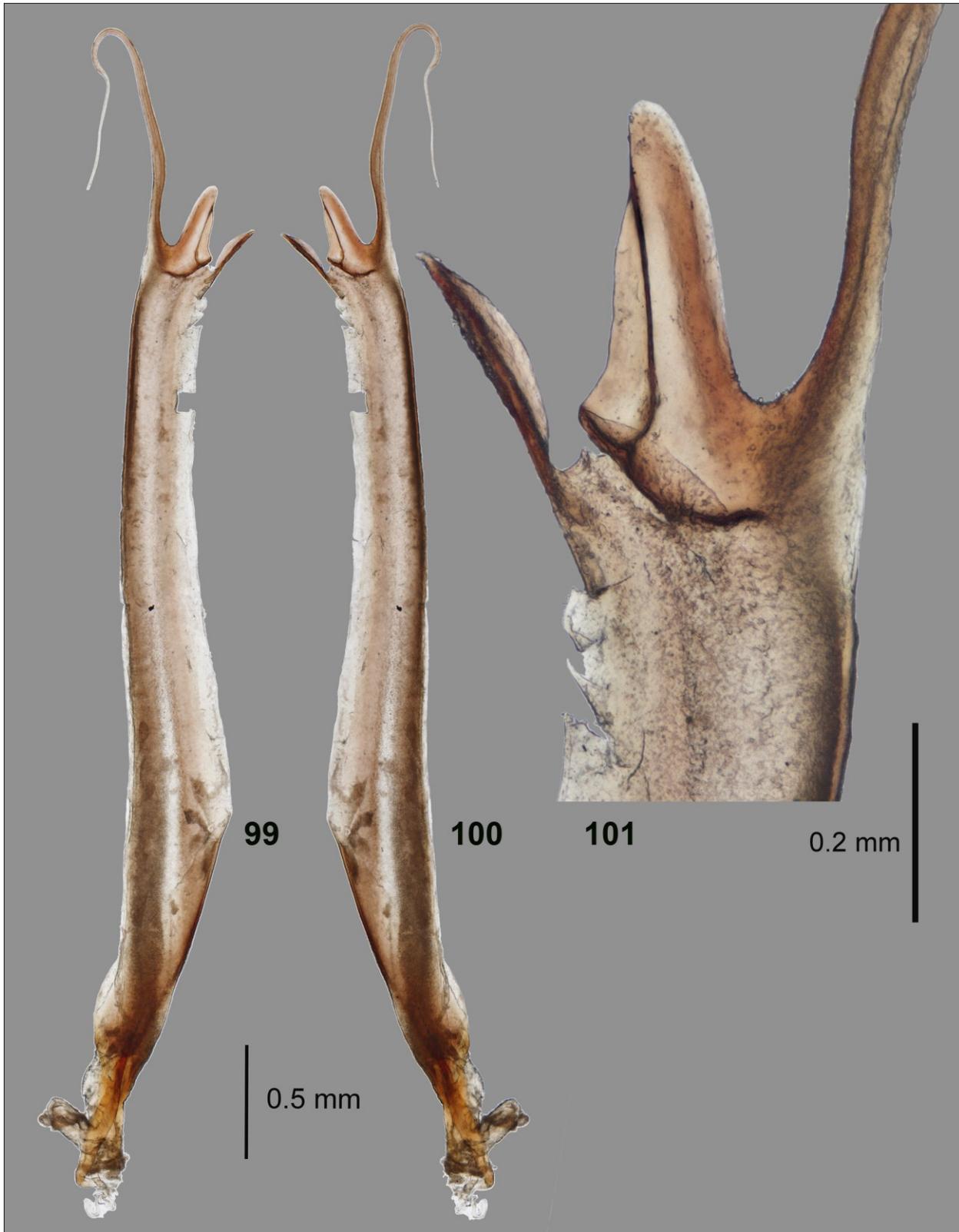
Figures 93–94: *Babycurus sofomarensis* sp. n., male paratype (93) and female holotype at the type locality.



Figures 95–96: Localities of *Babycurus sofomarensis* sp. n. **Figure 95.** The type locality (Ethiopia, Oromia State, Arsi Province, Sof Omar, $06^{\circ}54'19''N$ $40^{\circ}51'04''E$, 1200 m a.s.l.). **Figure 96.** Locality 14EO (Ethiopia, Oromia State, West Harerge, $07^{\circ}44'37''N$ $40^{\circ}42'39.5''E$, 1234 m a.s.l.).



Figures 97–98: Locality of *Babycurus sofomarensis* sp. n. 14EP (Ethiopia, Oromia State, Harerge, 07°46'39.7"N 40°37'12.4"E, 800 m a.s.l.) and paratype juvenile (98) at the locality down at the valley from Figure 97.



Figures 99–101: Left hemispermatophore of paratype male of *Babycurus sofomarensis* sp. n. from the type locality. **Figure 99.** Concave aspect. **Figure 100.** Convex aspect. **Figure 101.** Convex aspect. Enlarged view of lobes at base of flagellum.

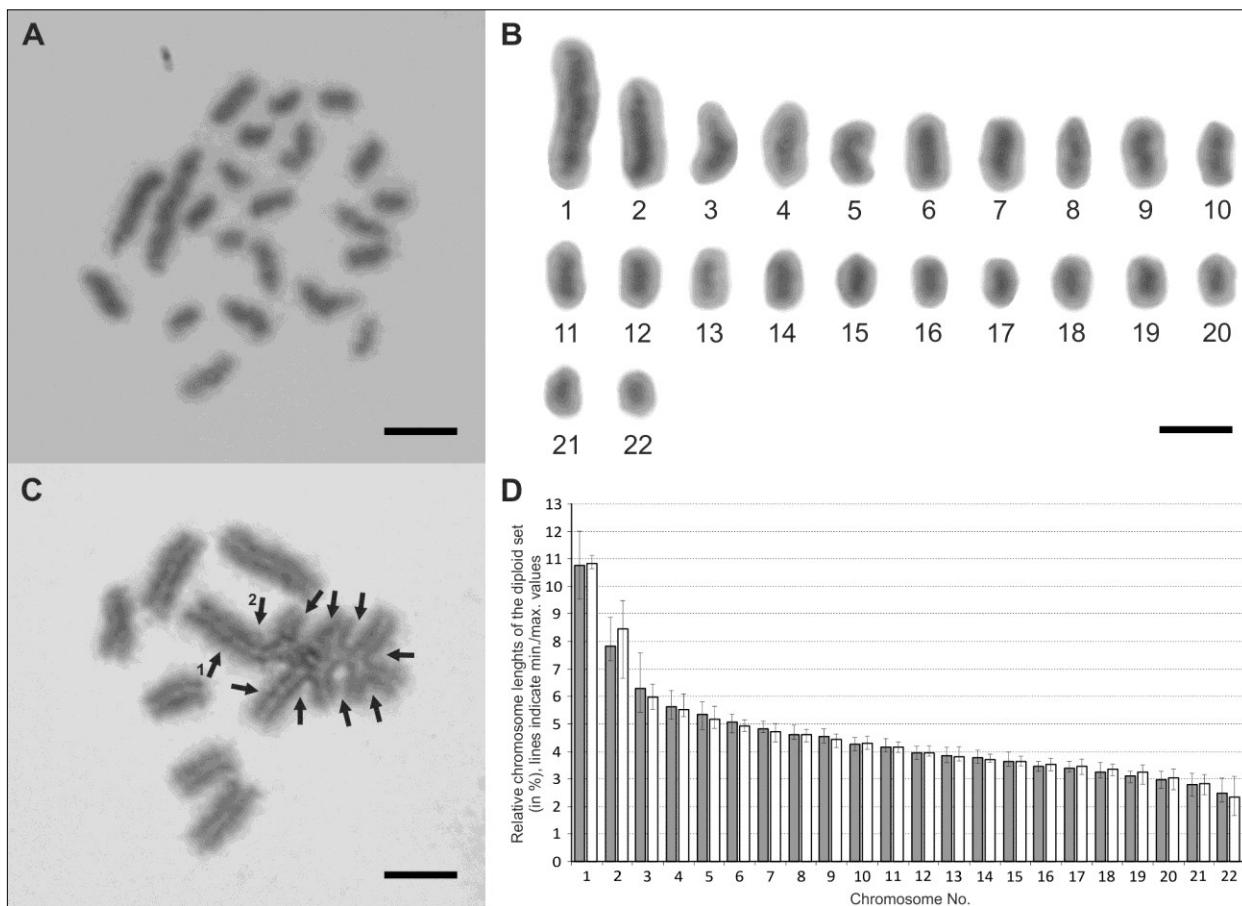


Figure 102: Chromosomes of paratype males of *Babycurus sofomarensis* sp. n. from the type locality ($2n = 22$). **A)** Male mitotic metaphase. **B)** Karyogram based on previous metaphase. **C)** Postpachytene, cell with decavalent - arrows indicate chromosomes of multivalent. The first and second largest chromosomes of karyotype marked as 1 and 2. **D)** Idiograms of the first (grey) and the second (white) analyzed males. Bar = 5 μm .

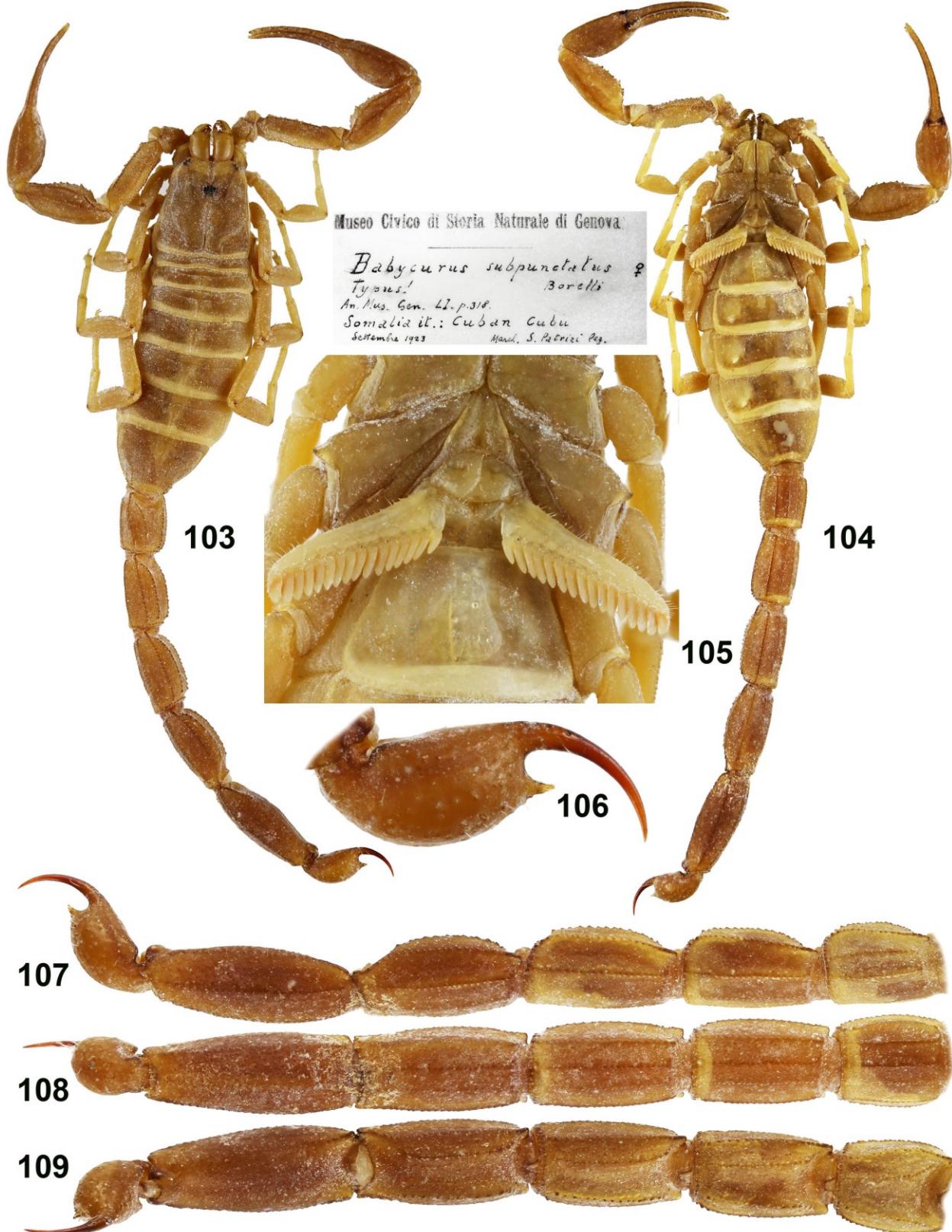
around a quarter of sternite IV in both sexes, setose. Tooth count 18–20 (1x18, 7x19, 5x20) in males and 18/18 in female. Pectines have 3 marginal lamellae and 7 middle lamellae. Sternites lack carinae, surfaces are smooth and sparsely setose. Posterior margin of sternite V without smooth median patch in both sexes.

LEGS (Figs. 56–61). The tarsomeres bear two rows of macrosetae on the ventral surface and numerous macrosetae on the other surfaces; bristle combs absent. Femur bears only solitary macrosetae. Femur coarsely granulose, femur and patella with carinae developed. Tibial spurs present on fourth legs.

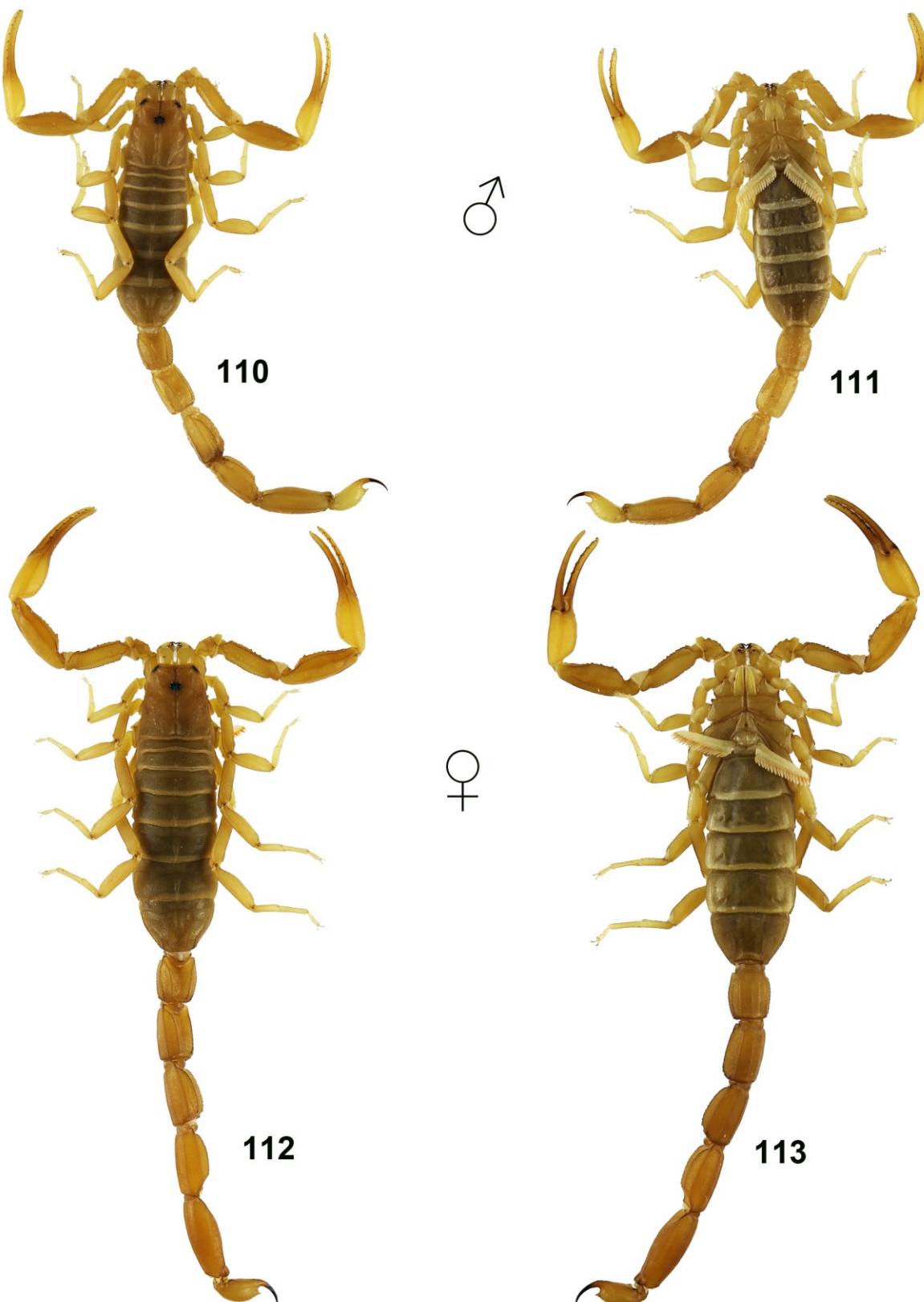
METASOMA AND TELSON (Figs. 50–55). All segments with granulate complete carinae developed except for carinae on segment V in males which are vestigial. The carinae are composed of minute, rounded, equal-sized, and evenly spaced granules. The first metasomal segment has a total of 10 carinae, the second through fourth segments have eight carinae, and the fifth segment has five carinae. All metasomal segments are sparsely granulated. Metasoma is very sparsely hirsute. Telson

smooth with only a weakly indicated ventral carina and a dense cover of long hairs near the subaculear tooth. (Figs. 76–77). Subaculear tooth short and pointed. Vesicle elongate, ellipsoidal. Aculeus curved, shorter than vesicle.

HEMISPERMATOPHORE (Figs. 99–101). Trunk elongate, slender; flagellum short, filiform, pars recta 0.25 times length of trunk; pars reflecta 0.8–1.0 times length of pars recta (measured from left and right hemispermatoophores of paratype male), much smaller in diameter; structure of lobes at base of flagellum similar to that described for *B. exquisitus* (Lowe, 2000), including two elongate, laminate lobes (inner and outer), lacking a third median lobe; inner lobe broad with longitudinal median carina, apex rounded; outer lobe narrow with longitudinal median carina, apex tapered; basal lobe weak, forming obliquely transverse carinae reaching outer basal edge of inner lobe; carina of inner lobe joined with basal lobe carina; measurements: trunk L (to base of flagellum) 3.73 mm, pars recta L 0.98 mm, inner lobe L (from base of flagellum) 0.30 mm, outer lobe L 0.26 mm.



Figures 103–109: Holotype female of *Babycurus subpunctatus* Borelli, 1925, Somalia, Cuban Cubu; MCSN, dorsal (103) and ventral (104) views, sternopectinal region and sternite III (105), telson lateral view (106), and metasoma and telson, lateral (107), ventral (108), and dorsal (109) views. The original label is also included in the plate.



Figures 110–113: *Babycurus subpunctatus* Borelli, 1925 from locality 14EI. **Figures 110–111.** Male, dorsal (110) and ventral (111) views. **Figures 112–113.** Female, dorsal (112) and ventral (113) views.

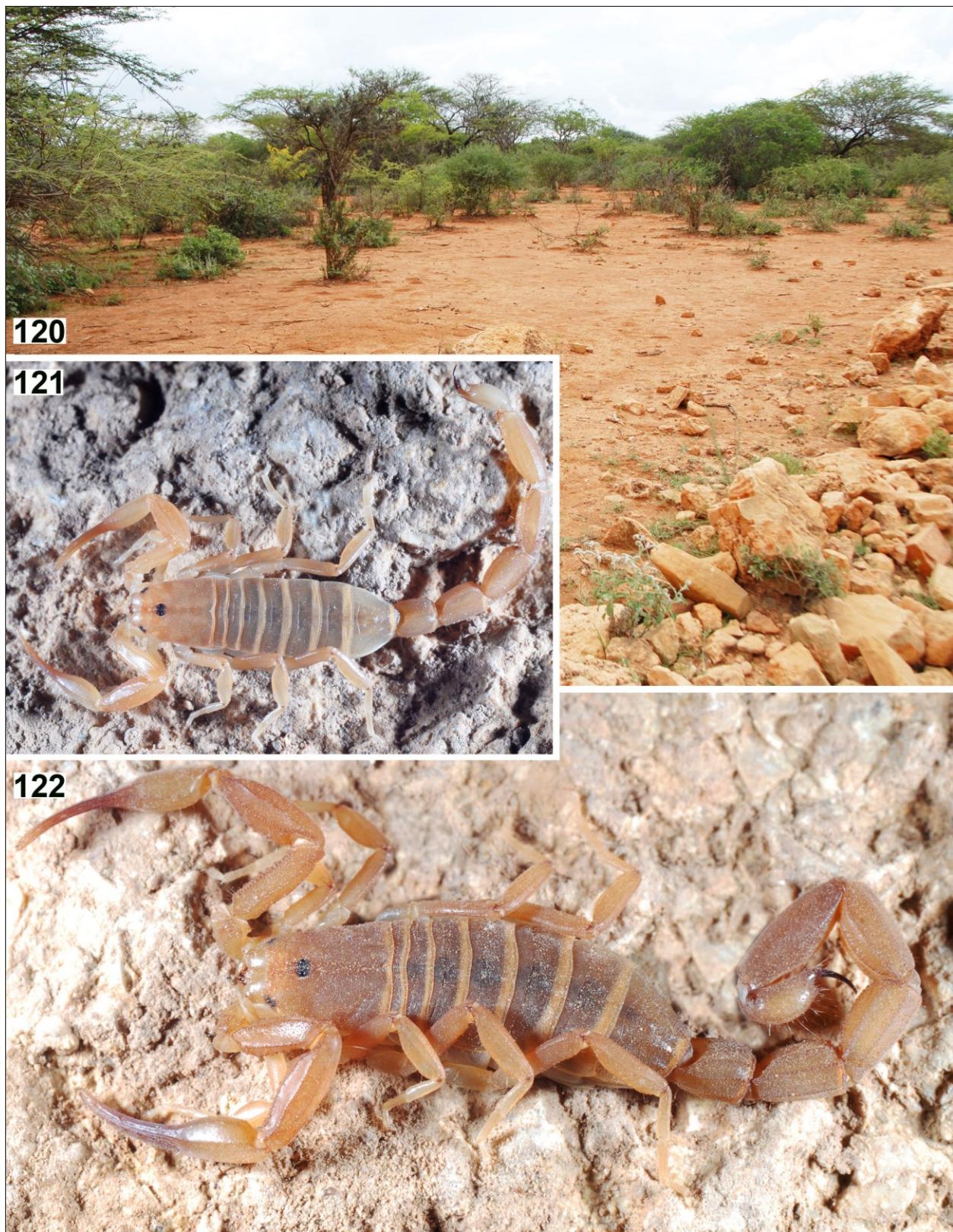


Figures 114–119: *Babycurus subpunctatus* Borelli, 1925 from locality 14EI. **Figures 114–116.** Male, metasoma and telson, lateral (114), ventral (115), and dorsal (116) views. **Figures 117–119.** Female, metasoma and telson, lateral (117), ventral (118), and dorsal (119) views.

CYTOGENETIC DATA (Fig. 102). We analyzed two paratype males using standard cytogenetic methods (e.g. Kovařík et al., 2009; Štáhlavský et al., 2014). The diploid complement of analyzed material is composed of 22 holocentric chromosomes (Fig. 102A). The first two chromosomes show considerable difference in size within both analyzed males (Fig. 102D). The first chromosome forms 10.75% ($SD=0.63$) of the diploid set in one male (the number of measured mitotic metaphases is 13) and 10.84% ($SD=0.17$) in the second male (the number of measured mitotic metaphases is 9). The second chromosome forms 7.84% ($SD=0.41$) in one male and 8.46% ($SD=0.90$) in the other. The rest of chromosomes decrease gradually in size from 6.28% to 2.48% or from 5.99% to 2.33%, respectively (Fig. 102B, D). The conspicuous difference of the size of the first two chromosomes may be explained by reciprocal translocations between different chromosome pairs. This type of chromosomal rearrangement forms multivalents during meiosis and may cause chromosomal different-

iation of size (e.g. Kovařík et al., 2013). We observed only limited number of postpachytene. However in all cases we found multivalents formed by ten chromosomes (in one cell of the first male and in four cells in the second male) (Fig. 102C). Moreover, in one cell we found decavalent and tetravalent together. It is evident that two chromosomes from this decavalent are the largest elements of the set and correspond to the first and second chromosomes of the karyotype (Fig. 102C, chromosomes marked 1 and 2)

AFFINITIES. The described features distinguish *B. sofomarensis* sp. n. from all other species of the genus. *B. sofomarensis* sp. n. seems to be closest to *B. subpunctatus* from which can be unequivocally separated by: **1)** total length 32–35 mm (males) and 46 mm (female) in *B. sofomarensis* sp. n. and 22.5 mm (male) – 32.25 mm (females) in *B. subpunctatus*; **2)** coloration darker in *B. sofomarensis* sp. n (Figs. 64–65 versus 62–63); **3)** pectines with 18–20 teeth in *B. sofomarensis* sp.



Figures 120–122: *Babycurus subpunctatus* Borelli, 1925, locality 14EI (120), Ethiopia, Somali State, Liben region, between Filtu and Dolo Odo, $04^{\circ}50'07.5''\text{N}$ $40^{\circ}55'13.5''\text{E}$, 912 m a.s.l., male (121) and female (122) at the locality.

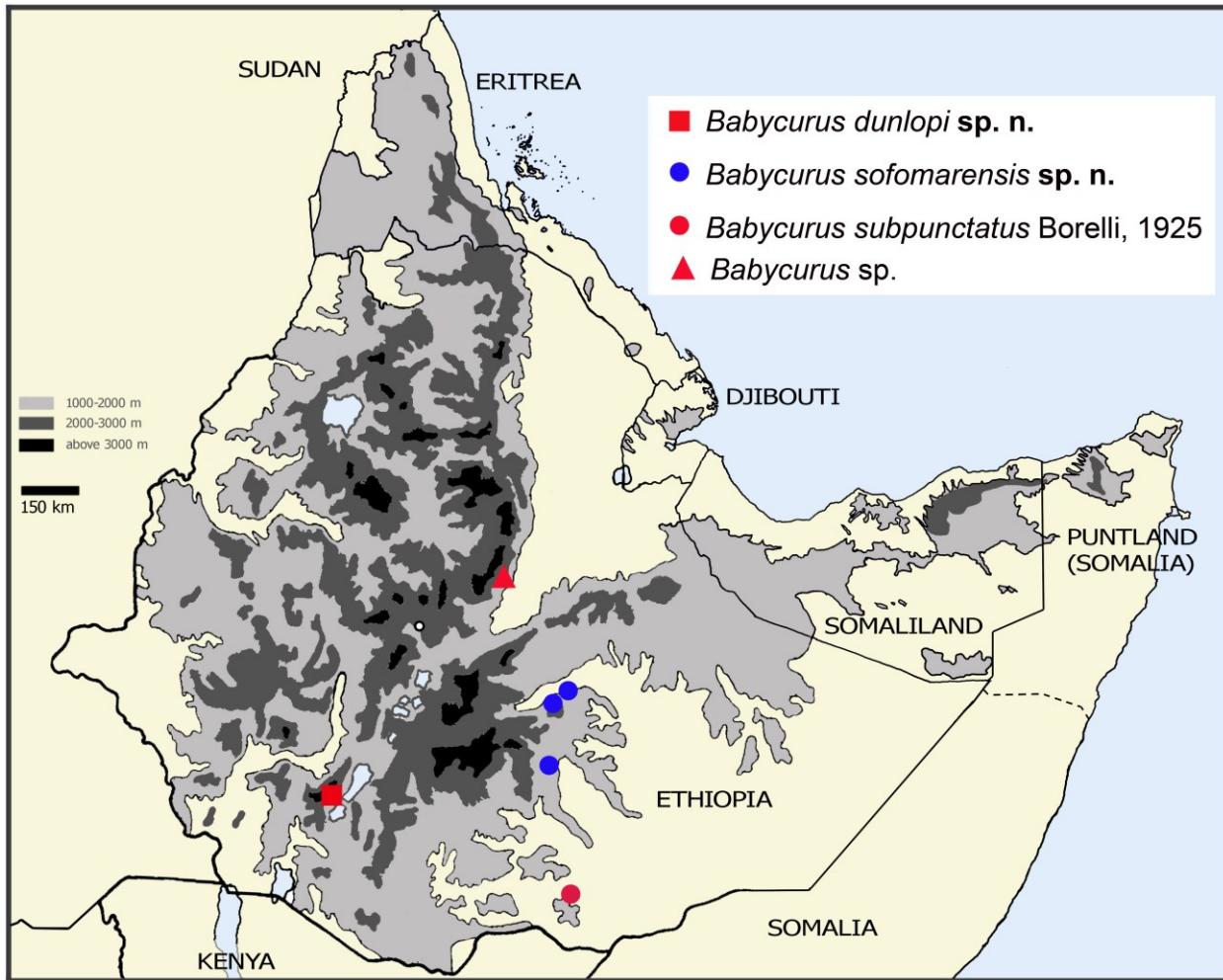


Figure 123: Map showing the known distribution of *Babycurus* in Ethiopia.

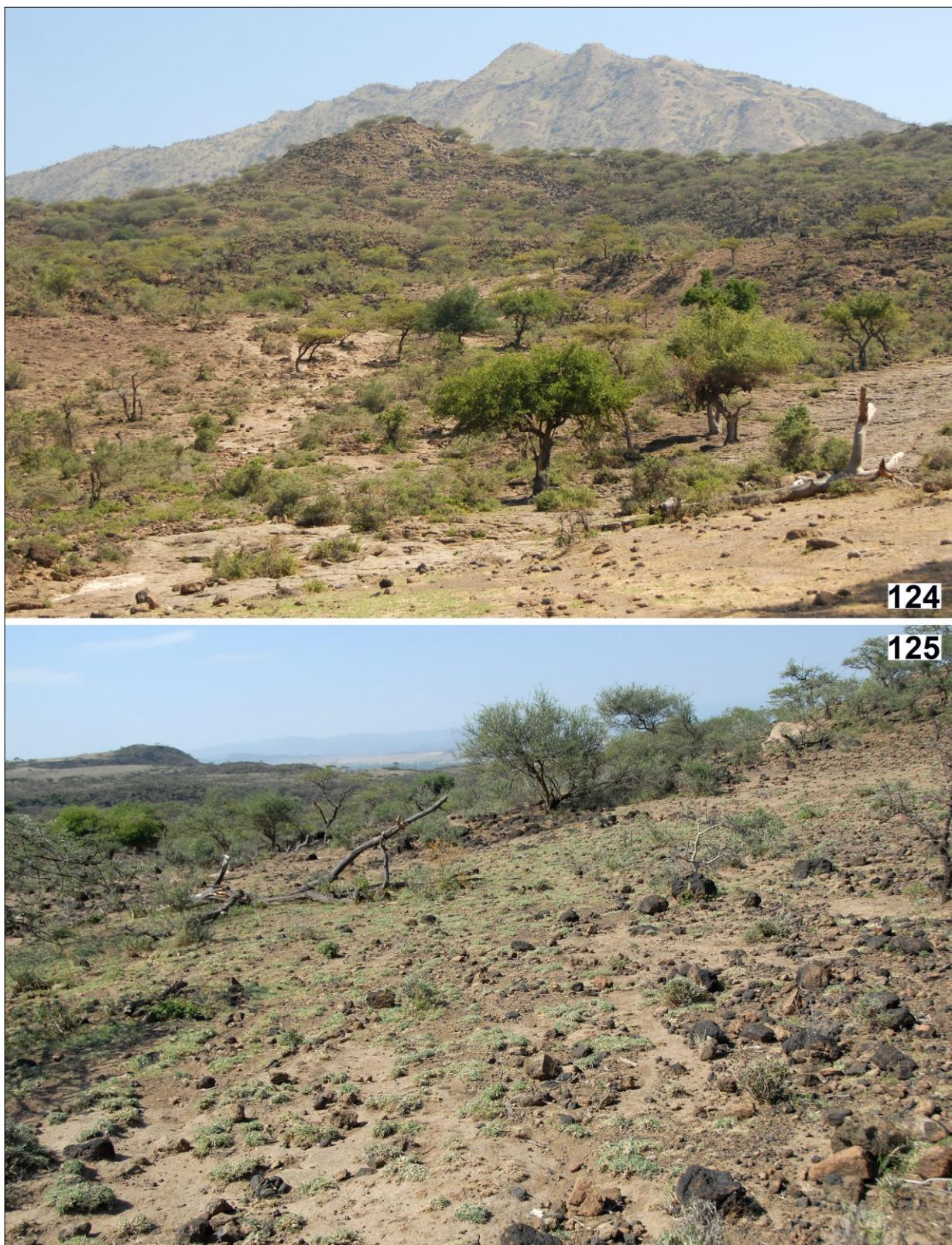
n. and 16–17 teeth in *B. subpunctatus*; 4) chela broader in *B. sofomarensis* sp. n (ratio chela length to manus width 3.5–3.8 in both sexes) than in *B. subpunctatus* (ratio chela length to manus width 5.1 in male and 4.3–4.6 in females); 5) male of *B. sofomarensis* sp. n. with fingers of pedipalps flexed proximally (Figs. 88 and 90–91) and almost straight in both sexes of *B. subpunctatus* (Figs. 81, 84, and 86).

COMMENTS ON LOCALITIES AND LIFE STRATEGY. We visited the type locality for the first time on 24 June 2013. We spent a night there and collected several types of *Pandinus trailini* Kovařík, 2013 (see Kovařík, 2013: 10, figs. 34–35). At the locality in the valley formed by the Gestro River on 24–25 June 2013 we recorded nighttime temperatures of 19.4 °C shortly after sunset, dropping to 15.6 °C (minimum temperature) before sunrise and up to 69% humidity. We collected at night with UV light four male paratypes. We visited the type locality again on 23 November 2014 and at night the first author

(FK) recorded nighttime temperatures of 23.3 °C shortly after sunset, dropping to 19 °C (minimum temperature) before sunrise and up to 64% humidity. The first author (FK) collected at night with UV light two other male paratypes and the female holotype. In addition to *B. sofomarensis* sp. n., he recorded at this locality *P. trailini*, *Hottentotta trilineatus* (Peters, 1861), and *Iomachus* sp.

Next night we spent at the locality 14EO (Fig. 96). Here, the first author (FK) recorded on 24–25 November 2014, shortly after sunset, a nighttime temperature of 22.7 °C, which gradually dropped to 16 °C (minimum temperature) before sunrise. Humidity during the night varied between 70% and 65%. Several specimens of *Hottentotta trilineatus* and a paratype of *B. sofomarensis* sp. n. were found around 22:00 h (temperature 19 °C).

The last paratype juvenile (Fig. 98) was collected during the day under a big stone at the locality 14EP (Fig. 97) in the valley formed by the Wabe Shebelle River. Apart from *B. sofomarensis* sp. n. we recorded



Figures 124–125: Locality of *Babycurus* sp., Ethiopia, Oromia State, East Shewa, Fantale zone, Fantale Mt. near Metahara, 09°00'56"N 39°51'21"E, 1050 m a.s.l.

Pandinus platycheles Werner, 1916 and *Hottentotta trilineatus* at this locality.

***Babycurus subpunctatus* Borelli, 1925**

(Figures 56–57, 62–63, 66, 78–86, 103–123, Table 2)

Babycurus subpunctatus Borelli, 1925: 318; Kovařík, 1998: 104; Fet & Lowe, 2000: 79; Kovařík, 2000: 256; Kovařík, 2003: 134.

TYPE LOCALITY AND TYPE DEPOSITORY. Somalia, Cuban Cubu; MCSN.

MATERIAL EXAMINED. Ethiopia, Somali State, Liben region, between Filtu and Dolo Odo, 04°50'07.5"N 40°55'13.5"E, 912 m a.s.l. (Fig. 120, locality No. 14EI), 1♂1♀ (Figs. 110–122), 20.XI.2014, leg. F. Kovařík, FKCP. Somalia, Cuban Cubu, IX.1923, 1♀ (holotype, Figs. 80–82, 103–109), leg. S. Patrizi, MCSN.

DIAGNOSIS. Total length 22.5 mm (male) –32.25 mm (females). Coloration yellowish brown to orange. Chelicerae yellow without reticulation. Pedipalp movable fingers with 6 principal rows of denticles and apical row of four denticles. Last row has one external and no internal granule. Pectines with 16–17 teeth in both sexes. First metasomal segment has 10 carinae, second through fourth segments have eight carinae. Telson setose, smooth, with subaculear tooth short and pointed. Vesicle elongate, ellipsoidal. Aculeus curved, slightly shorter than vesicle. Sexual dimorphism minor, adult males with chela slightly narrower in males (ratio chela length manus width 5.1 in male and 4.3–4.6 in females); there is no difference in length and width of metasomal segments (ratio metasomal segment V length to width 2.44–2.9 in both sexes); posterior margin of sternite V without smooth median patch in both sexes; fingers of pedipalps almost straight in both sexes.

COMMENTS ON LOCALITY. The both specimens were collected under stones along a road on the locality 14EI (Fig. 120) during a day (temperature 34.6 °C and 38% humidity). Apart from *B. subpunctatus*, the first author (FK) recorded *Hottentotta trilineatus*, *Parabuthus cf. liosoma* (Ehrenberg, 1828), *Uroplectes* sp., and two very common species of *Pandinus* sp. at this locality.

***Babycurus* sp.**

(Figures 123–125)

Babycurus zambonellii: Kovařík, 2003: 137; Kovařík & Whitman, 2005: 106.

COMMENTS. Only known specimen is a single juvenile after the second or third ecdysis located in MZUF collected by B. Lanza et al. 15.IV.1971 in Ethiopia, Awash

N. P., Crater Mt. Fantale (Kovařík & Whitman, 2005: 106, Figs. 124–125). This juvenile was cited as *Babycurus zambonellii* Borelli, 1902 (type locality Eritrea, Chenafena) but with a notice "(det. ?)" (see Kovařík, 2003: 137) because it is not possible to identify the sole juvenile correctly at the species level. We visited directly the crater on 29.XI.2014 and we found there *Buthus awashensis* Kovařík, 2011, *Compsobuthus abyssinicus* (Birula, 1903), and *Parabuthus liosoma* (Ehrenberg, 1828) (Figs. 124–125, locality 14EV, Ethiopia, Oromia State, East Shewa, Fantale zone, Fantale Mt. near Metahara, 09°00'56"N 39°51'21"E, 1050 m a.s.l.). Neither on this volcanic crater nor in the vicinity did we find *Babycurus* specimens although the area was investigated thoroughly between 2011 and 2014 and is near the type localities of three recently described scorpion species *Buthus awashensis* Kovařík, 2011, *Neobuthus awashensis* Kovařík et Lowe, 2012 (both with type locality Metahara env., 08°54'N 39°54'E), and *Pandinus (Pandinurus) awashensis* Kovařík, 2012 (Awash N. P., 08°52'35.15"N 40°05'39.8"E).

Acknowledgments

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