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THE GENUS *BUTHUS* LEACH, 1815 (SCORPIONES: BUTHIDAE) IN THE IBERIAN PENINSULA. PART 4: A NEW SPECIES FROM SOUTHERN SPAIN

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Abstract: The present paper is the fourth contribution of our taxonomic revision of the genus *Buthus* Leach, 1815 in the Iberian Peninsula. Herein, we describe a new species from the Cabo de Gata region of southeastern Andalucía (southern Spain). This species is morphologically remarkable and resembles only *Buthus manchego* Teruel & Turiel, 2020, known only from the upper Guadiana river basin in the Submeseta Sur, in the area where Ciudad Real adjoins Albacete (central Spain). The West European diversity of *Buthus* now reaches 17 species, all of them being local endemics.
Key words: Scorpiones, Buthidae, *Buthus*, taxonomy, new species, southern Spain.

El género *Buthus* Leach, 1815 (Scorpiones: Buthidae) en la Península Ibérica. Parte 4: una especie nueva de España meridional
Resumen: El presente artículo es la cuarta aportación a nuestra revisión taxonómica del género *Buthus* Leach, 1815 en la Península Ibérica. Aquí describimos una especie nueva de la región del Cabo de Gata, en el sudeste de Andalucía (España meridional). Esta especie es morfológicamente notable y se asemeja sólo a *Buthus manchego* Teruel & Turiel, 2020, sólo conocido de la cuenca superior del río Guadiana en la Submeseta Sur, en la región limítrofe entre Ciudad Real y Albacete (España central). La diversidad de *Buthus* en el oeste europeo alcanza ahora 17 especies, todas endémicas locales.
Palabras clave: Scorpiones, Buthidae, *Buthus*, taxonomía, especie nueva, sur de España.

Taxonomía/Taxonomy: *Buthus iaspis* **sp. n.**

Introduction

The present paper represents the fourth part of our continued taxonomic revision of the genus *Buthus* Leach, 1815 in the Iberian Peninsula. This long-term, thorough study has dramatically increased the knowledge on these scorpions: only four species were recognized as valid before our Part 1 was published (Teruel & Turiel, 2020), but within the year and a half period elapsed since, it has experienced a four-fold increase to 16.

Nine of these additional species were either described or resurrected by us (Teruel & Turiel, 2020, 2021a–b). Nevertheless, this also served as a boost for other authors who described the other three taxa (Lourenço, 2021; Ythier, 2021a–b). Moreover, a collateral result of our collecting effort was the unexpected discovery of an African buthid scorpion that was accidentally introduced and apparently became established in northwestern Spain (Teruel & Turiel, 2021c).

In the present contribution, we describe another new species, which occurs in the Cabo de Gata region of southeastern Andalucía, in southern Spain.

Methods & Material

See complete information in Teruel & Turiel (2020: 4–5), Teruel & Turiel (2021a: 3–4) and Teruel & Turiel (2021b: 3–4), with the following addition: the habitus and morphological details were photographed using a Canon EOS 600D digital camera, equipped with a Canon EF-S 60 mm macro lens.

Systematics

***Buthus iaspis* sp. n.**
Figures 1–4. Tables I–III

Buthus occitanus: Lourenço & Vachon, 2004: 93 [misidentification: specimens from Cabo de Gata]. Lourenço & Rossi, 2013: 13; fig. 10 [misidentification: map area covering Cabo de Gata-Níjar area].
Buthus montanus: Barrientos *et al.*, 2017: 132 [misidentification: specimens from Cabo de Gata-Níjar].

TYPE DATA. **SPAIN**: ANDALUCÍA: Almería Province: Almería Municipality: Parque Natural de Cabo de Gata-Níjar: Refugio de Aves Esteparias de Las Amoladeras, near road AL-3115 (36°49'41"N / 2°15'50"W / 20–40 m a.s.l.); 13/June/2021; C. Turiel; 1♂ holotype (RTO), 7♂♂, 3♀♀, 4♂♂ juveniles paratopotypes (RTO).

ETYMOLOGY. The selected epithet is an indeclinable noun in apposition: the Latin name for agate, the semiprecious stone that abounds in Cabo de Gata and gives the place its name. As opposite to what is commonly believed, the name of this cape does not derive from female cat ("Gata" in Spanish), but instead it is a corrupted spelling of "Ágata" (the Spanish name for agate).

DIAGNOSIS. Adult size large for the genus (66–79 mm in males, 75–77 mm in females), male slightly larger than same size-class females. Coloration with base vivid yellow; carapace and tergites with a dark trivittate pattern all along; carapace, tergites and ventral surface of metasoma with all carinae infuscate; pedipalps and legs with carinae faintly infuscate. Sexual secondary dimorphism moderate in habitus

(males slightly larger and slenderer), conspicuous in pedipalps (manus oval and slightly wider than patella in males, swollen and much wider than patella in females) and very conspicuous in metasoma (much longer and heavier in male). Pedipalp chela with many dark macrosetae scattered on ventral surface; manus with all carinae vestigial, smooth; fingers long (movable finger/manus length ratio: 1.62–1.76 in males, 1.56–1.57 in females), fixed and movable fingers with 12–13 principal rows of denticles, basal lobe/notch combination obsolete. Pectines with 28–34 teeth (mode 31 and 33) in males, 26–27 (mode 27) in females. Metasoma of males slightly longer and remarkably heavier than standard for the genus (see ratios in tab. II); dorsal lateral and lateral supramedian carinae moderately crenulate to subcrenulate on segments II–IV, ventral submedians on II–III feebly raised distally (stronger in female); intercarinal tegument coriaceous, with many fine to medium-sized granules (mostly minute) scattered dorsally and laterally on V only; setation sparse, with 2–3 pairs of dark macrosetae on almost all carinae (6–8 pairs on lateral supramedians and ventral laterals of V). Telson vesicle very large and globose in adults of both sexes.

DESCRIPTION (adult male holotype; tabs. I–III; paratopotype depicted in figs. 1, 3, 5, 7, 9, 11a–b, 12). **Coloration**. Base vivid yellow, slightly paler on chelicerae, pedipalp chelae, legs, venter and telson. Chelicerae pale yellow, immaculate. Pedipalp femur yellow, with carinae faintly infuscate; patella yellow, with carinae very faintly infuscate, mostly basally; chela manus yellow, only with faint traces of dark gray marbling on external surface, fingers pale yellow, immaculate. Carapace with all carinae and only few of coarse granulation deeply infuscate, and a large, diffuse dark brown blotch around median ocular tubercle; eyes and ocular tubercles black. Tergites with all carinae and coarse granulation deeply infuscate and with symmetric dark brown spots on lateral areas, defining altogether a clearly trivittate pattern (i.e., a narrow, median solid line plus two broad, variegated lateral stripes, all three well separated). Sternopectinal region and sternites pale yellow, immaculate. Pectines pale yellowish, with basal portion and basal plate progressively darker due to heavier sclerotization. Legs pale yellow, carinae faintly infuscate and with faint traces of dark gray marbling on distalmost portion of femur and basalmost portion of patella. Metasoma concolor (i.e., no segments conspicuously darker), vivid yellow and immaculate, with all carinae of ventral surface plus all others of segment V infuscate as thin dark lines. Telson pale yellow, immaculate, distal half of aculeus blackish.

Chelicerae. With dentition typical for the genus, teeth standard-sized and blunt (aged specimen). Tegument with a satin sheen, dorsodistal portion of manus with many coarse, conical to tuberculate, glossy granules in and around the dorsodistal depression. Setation very dense ventrally, but essentially lacking dorsally except for a patch of macrosetae at fixed finger base plus a large dark macroseta and a several translucent setae of various sizes around dorsodistal depression of manus.

Pedipalps. Size standard for the genus (3.60 times longer than carapace). Femur essentially straight (very slightly bent inwards distally) and with some short and dark setae, largely concentrated along ventrodistal edge; all carinae strong and serratocrenulate to granulose, formed by coarse, isolated, glossy granules; intercarinal tegument coriaceous and minutely punctate on glossier areas. Patella straight and with only a few dark setae scattered all over; all carinae moderate and granulose to coarsely subcostate, the former formed by coarse, isolated, glossy granules; intercarinal tegument coriaceous and minutely punctate on glossier areas, internal surface with few small, weak denticles. Chela with manus oval (length/width ratio = 1.56, length/depth ratio = 1.35, median part widest), slightly wider than patella (ratio 1.10) and with several dark, short setae scattered all over ventral surface, all carinae vestigial, smooth, intercarinal tegument smooth, glossy and with minute punctations scattered (barely distinguishable); fingers long (movable 1.76 times longer than underhand), not especially thick and weakly curved, fixed finger with 13/13 principal rows of denticles plus 13/12 inner and 12/12 outer accessory denticles (slightly coarser than principal denticles), movable finger with 12/13 principal rows of denticles plus 12/12 inner and 13/13 outer accessory denticles (slightly coarser than principal denticles), and the standard apical subrow with 3/3 denticles (large terminal denticle not included), basal lobe/notch combination obsolete.

Carapace. Slightly wider than long (length/width ratio = 0.95). Anterior margin essentially straight, with six pairs of short, dark setae. Carinae with lyre-shaped configuration perfectly defined: anterior medians and superciliaries strong, fused into a spoon-shaped figure and formed by very coarse, isolated, glossy granules; central laterals and posterior medians strong, fused into an S-shaped figure and formed by coarse to very coarse, isolated, glossy granules; lateral oculars and central medians strong, not fused (widely separated) and formed by coarse to very coarse, isolated, glossy granules; posterior laterals strong and formed by coarse, isolated, glossy granules. Furrows: posterior laterals deep and wide, other furrows obscured by remarkably depressed areas between adjacent carinae. Tegument coriaceous and irregularly covered by dense, variously sized, glossy granules along lateral and frontal areas. Median eyes large, separated by more than twice the ocular diameter; lateral eyes much smaller and mostly concealed below a granulose carina.

Sternum. Type 1, very small, triangular and bulky, with three thick, dark macrosetae, plus few minor, translucent setae. Tegument minutely and densely granulose, with coarser granules scattered.

Genital operculum. With 6–7 pairs of thick, dark macrosetae and some inconspicuous minor setae. Valves roundly subtriangular, shallowly concave and widely separated along posterior half; tegument smooth and glossy, but densely covered by dense, medium-sized, glossy granules along margins except medially. Genital papillae large, digitiform and not protruding.

Pectines. Long (reaching midpoint of leg IV trochanter) and narrowly subtriangular, setation very dense and dark. Tooth count 34/33, teeth not swollen, angulose. Fulcra large and swollen, paraboloid to round. Basal middle lamella narrowly subrectangular. Pre-pectinal plate heavily sclerotized, very short, wide and folded transversely, crescent-shaped; tegument coriaceous. Basal plate heavily sclerotized, wider than long, with two pairs of dark macrosetae; anterior margin shallowly straight, posterior margin markedly convex; tegument coriaceous to minutely and very densely granulose, with three conspicuous, deep depressions: one anteromedian (transverse, narrow and progressively much deeper medially to become a pit) and two laterals (large and oval).

Table I. Measurements of three adult types of *Buthus iaspis* **sp. n.** Abbreviations: length (L), width (W), posterior width (Wp), depth (D).

Dimensions (mm)		♂ holotype	♂ paratopotype	♀ paratopotype
Carapace	L / Wp	8.10 / 8.50	6.58 / 7.25	8.50 / 9.28
Mesosoma	L	18.75	16.50	21.60
Metasoma	L	42.78	35.75	36.90
Segment I	L / W / D	6.88 / 6.20 / 5.30	5.90 / 5.10 / 4.40	5.80 / 5.55/ 4.90
Segment II	L / W / D	8.10 / 5.85 / 5.20	6.70 / 4.85 / 4.36	6.80 / 5.20/ 4.90
Segment III	L / W / D	8.20 / 5.20 / 5.10	6.85 / 4.80 / 4.30	7.00 / 5.16 / 4.80
Segment IV	L / W / D	9.20 / 5.20 / 4.56	7.80 / 4.40 / 3.90	8.00 / 4.80 / 4.40
Segment V	L / W / D	10.40 / 4.51 / 3.90	8.50 / 3.85 / 3.22	9.30 / 4.50 / 3.90
Telson	L	8.90	7.30	9.50
Vesicle	L / W / D	4.90 / 4.10 / 3.80	4.10 / 3.20 / 3.00	5.00 / 4.42 / 4.00
Aculeus	L	4.00	3.20	4.50
Pedipalp	L	29.00	24.55	30.88
Femur	L / W	7.20 / 2.16	6.00 / 1.80	7.30 / 2.30
Patella	L / W	8.00 / 2.90	6.90 / 2.60	8.20 / 3.40
Chela	L	13.80	11.65	15.38
Manus	L / W / D	5.00 / 3.20 / 3.70	4.45 / 2.65 / 2.80	5.98 / 4.30 / 4.60
Movable finger	L	8.80	7.20	9.40
Total	**L**	**78.53**	**66.13**	**76.50**

Table II. Selected morphometric ratios of the adult types of *Buthus iaspis* **sp. n.** and its sibling species *B. manchego*. Abbreviations: length (L), width (W), depth (D). To compare it to the other 15 Iberian species, see Teruel & Turiel (2020: 38; tab. XIII), Teruel & Turiel (2021a: 13; tab. III), Teruel & Turiel (2021b: 5; tab. II), Lourenço (2021: 2), Ythier (2021a: 2, 4) and Ythier (2021b: 2–7; tabs. II–III).

Ratios	*B. iaspis sp. n.*	*B. manchego*
♂ pedipalp L / carapace L	3.58–3.73	3.59
♀ pedipalp L / carapace L	3.63	3.44–3.48
♂ pedipalp chela L/W	4.31–4.40	4.04
♀ pedipalp chela L/W	3.58	3.27–3.49
♂ pedipalp manus L/W	1.56–1.70	1.54
♀ pedipalp manus L/W	1.39	1.31–1.40
♂ pedipalp chela L / movable finger L	1.57–1.62	1.62
♀ pedipalp chela L / movable finger L	1.64	1.66–1.67
♂ pedipalp manus W / patella W	1.02–1.10	1.17
♀ pedipalp manus W / patella W	1.26	1.72–1.76
♂ metasoma L / carapace L	5.28–5.43	5.49
♀ metasoma L / carapace L	4.34	4.27–4.28
♂ metasomal segment I L/W	1.11–1.16	1.15
♀ metasomal segment I L/W	1.04	1.03–1.08
♂ metasomal segment I L/D	1.30–1.34	1.34
♀ metasomal segment I L/D	1.18	1.18–1.22
♂ metasomal segment IV L/W	1.77–1.78	1.88
♀ metasomal segment IV L/W	1.67	1.65–1.66
♂ metasomal segment IV L/D	2.00–2.02	1.96
♀ metasomal segment IV L/D	1.82	1.91–1.92
♂ metasomal segment V L/W	2.21–2.31	2.56
♀ metasomal segment V L/W	2.07	2.04–2.10
♂ metasomal segment V L/D	2.64–2.67	2.87
♀ metasomal segment V L/D	2.38	2.62–2.76
♂ telson L/W	2.17–2.28	2.09
♀ telson L/W	2.15	2.06–2.16
♂ telson L/D	2.34–2.43	2.33
♀ telson L/D	2.37	2.36–2.50

Table III. Pectinal tooth count variation in *Buthus iaspis* **sp. n.** and its sibling species *B. manchego*. Abbreviations: number of pectines (N), average (Ave.), standard deviation (SD). To compare it to the other 15 Iberian species, see Teruel & Turiel (2020: 39; tab. XIV), Teruel & Turiel (2021a: 13; tab. IV), Teruel & Turiel (2021b: 5; tab. III), Lourenço (2021: 2), Ythier (2021a: 2, 4) and Ythier (2021b: 4).

Species	Sex	*N*	Pectinal tooth count									Ave.	SD
			26	27	28	29	30	31	32	33	34		
B. iaspis **sp. n.**	♂♂	24	–	–	1	2	1	8	3	8	1	31.58	± 1.50
	♀♀	6	2	4	–	–	–	–	–	–	–	26.67	± 0.47
B. manchego	♂♂	4	–	–	–	–	–	–	1	2	1	33.00	± 0.71
	♀♀	6	–	–	2	2	1	1	–	–	–	29.17	± 1.07

Legs. Long and slender, with all carinae weak to moderate and finely subcrenulate to serrate except on femur, where moderate to strong and serrate to dentate. Intercarinal tegument coriaceous and minutely punctate on glossier areas, external surface of femur with few fine granules scattered. Bristlecombs well developed on I–III; distal part of patella and entire tibia with shape and setation standard for the genus (i.e., segments not enlarged and setation dense, long and thin). Tibial and pedal spurs very large and thin. Claws long and strongly curved.

Mesosoma. Size and shape standard for the genus. Tergites coriaceous to minutely and very densely granulose, and irregularly covered by moderately dense, fine to medium-sized, glossy, tuberculate granules more concentrated along lateral areas, lateral margins finely denticulate, posterior margin minutely denticulate; carinae: median longitudinal straight, progressively longer and stronger backwards and formed by medium-sized, isolated, glossy to rough granules, submedians anteriorly divergent, very shallowly arcuate on I–VI, shallowly S-shaped on VII, progressively longer and stronger backwards and formed by medium-sized, isolated, glossy granules, laterals absent on I–VI, strong, arcuate and formed by medium-sized, isolated, glossy granules on VII. Sternites with several long, dark macrosetae scattered all over (denser on III); lateral margins of all sternites finely serrato-crenulate, posterior margin minutely denticulate; carinae present only on posterior half of almost all segments: submedians obsolete on III–V (smooth, subcostate and subparallel), weak to moderate on VI (subcrenulate and anteriorly divergent), complete and moderately strong on VII (crenulate and parallel), laterals obsolete on III, moderately strong and present on posterior half of IV–VI (smooth, coarsely costate to subcrenulate and sinuose), strong and almost complete on VII (crenulate and very slightly divergent anteriorly); tegument on III finely and densely granulose, on IV–VII with a satin sheen to glossy, minutely punctate and densely covered by minute granules on lateral areas; spiracles very long and slit-like; sternite V with median smooth patch inconspicuous, very wide, short, flat and translucent.

Metasoma. Slightly longer (5.28 times longer than carapace), but much heavier than standard for the genus, progressively narrower and lower distally, with segment V both narrowest and lowest. Segment I with ten complete carinae, II–IV with eight, V with five: dorsal laterals moderate and crenulate on I–II, weak and subcrenulate to sparsely subgranulose on III–IV, absent on V; lateral supramedians moderate and crenulate on I–V; lateral inframedians moderate and crenulate, complete on I, present on about distal half of II–III, absent on IV–V; ventral laterals moderate and subcrenulate to subcostate on I, moderate and crenulate on II–IV, strong and irregularly serrate to lobate on V (with 2–3 moderately sharp and larger lobes); ventral submedians moderate and subcostate on I, moderate to strong, progressively stronger backwards and crenulate on II–III (feebly raised distally), moderate to strong and serratocrenulate on IV, absent on V (but subtly indicated by a pair of incomplete and irregular rows of conical granules on basal half); ventral median absent on I–IV, strong and coarsely dentate on V (irregularly bifurcate distally). Intercarinal tegument coriaceous, with many fine to medium-sized granules (mostly minute) dorsally and laterally on V only; dorsal furrow complete, wide and very shallow on all segments; setation sparse, with 2–3 pairs of dark macrosetae on most carinae (6–7 pairs on lateral supramedians and ventral laterals of V).

Telson. Vesicle large, globose (length/width ratio = 1.19, width/depth ratio = 1.08), with seven pairs of macrosetae (mostly dark) and several inconspicuous minor setae scattered all over; tegument glossy and minutely punctate, with obsolete traces of glossy granules scattered ventrally and laterally; ventral median carina obsolete, as are two accessory pairs of carinae (ventral laterals and lateral supramedians?), subaculear tubercle absent. Aculeus relatively long, but shorter than vesicle (ratio = 0.82), sharp and shallowly curved.

FEMALE (adult paratopotypes; tabs. I–III; figs. 2, 4, 6, 8, 10, 11e–f). Sexual dimorphism very conspicuous, differing from described male by: **1)** size slightly smaller (75.0–76.5 mm) within the same size-class; **2)** pedipalps more robust, with manus much heavier, globose (length/width ratio = 1.39, length/depth ratio = 1.30) and much wider than patella (ratio = 1.26); **3)** mesosoma wider, with lateral sides more convex; **4)** pre-pectinal plate reduced to a tiny oval sclerite, invaginated into the membrane to look like a transverse pit; **5)** genital papillae absent; **6)** pectines smaller and narrower, with lower tooth counts (26–27); **7)** metasoma relatively shorter and slenderer, with carinae stronger (especially the ventral submedians on segments II–III and ventral laterals on V, which are more strongly, coarsely and irregularly lobate).

VARIATION. In the pooled sample, adult size (tab. I) varied from 66.1–78.5 mm in males and 75.0–76.5 mm in females. There are clearly two size-classes among males, but apparently only one in females.

Coloration is quite constant among available specimens. There are only subtle differences in the shade of the base color and the extent of the dark patterns, but at least for the former, it is largely attributable to aging (i.e., older specimens are slightly darker and vice versa).

The basal lobe/notch combination has the same degree of development (obsolete) in all adults and mid- to late-instar juveniles of both sexes, but it is absent in the earlier instars.

Pectinal tooth counts (tab. III) varied from 28–34 in males and 26–27 in females, with modes of 31 and 33 in former sex and 27 in the latter. Single-tooth asymmetry was a frequent occurrence, being present in five males and two females (47% of the specimens). Moreover, two juvenile males had 29/31 and 28/31, a two-tooth and a three-tooth asymmetry, respectively.

COMPARISON. By the very large size of adults coupled to the unique habitus of the adult male that combines a slender pedipalp chela with a very large and heavy metasoma, this species is very easy to distinguish (even to unaided eye) from all other Western European congeners, except *Buthus manchego* Teruel & Turiel, 2020.

The latter can be reliably distinguished from *B. iaspis* **sp. n.** as follows: **1)** adult size slightly but consistently larger (81 mm in male, 79–80 mm in females); **2)** coloration with base conspicuously darker (orange-brown) and with fuscous pattern more developed (both darker and denser); **3)** pedipalp patella with dorsal median and dorsal external carinae coarser and weaker (subgranulose to smooth), especially in females; **4)** pedipalp chela with manus somewhat heavier (especially in males); **5)** pedipalp fingers with basal lobe/notch combination stronger (especially in males); **6)** pectinal tooth counts slightly but consistently lower (32–34 in males, 28–31 in females); **7)** entire body and appendages with setation somewhat sparser (especially on pedipalps, sternites and metasoma); **8)** sternites III–VI with carinae stronger (especially the submedians); **9)** metasomal segments with intercarinal granulation somewhat more developed (especially in males, which also have coarse granules scattered on dorsal surface).

Most of the differences mentioned above can be observed even to unaided eye, i.e., by comparing fig. 1–12 herein to fig. 23–24 in Teruel & Turiel (2020: 52).

Apart from this, the geographical distribution of these two sibling species is completely allopatric: *B. iaspis* **sp. n.** occurs in the southern Mediterranean coast at the Sierra de

Cabo de Gata (southeastern Almería), while *B. manchego* is restricted to the upper Guadiana river basin in the south-central core of the Submeseta Sur (Ciudad Real/Albacete bordering region). Both areas are not only biogeographically quite distinct, but also separated from each other by a distance of ca. 230 km that includes the massive isolation barrier of the Subbetic, Betic and Penibetic Mountain Systems in between (fig. 14).

DISTRIBUTION (fig. 14). According to our personal data and high-resolution photographs of collaborators, *B. iaspis* **sp. n.** is known only from the Mediterranean watershed of the Sierra de Cabo de Gata and its coastal alluvial plain, in southeastern Andalucía. Additional samples from around this region are currently under study to define the precise geographical range of this scorpion (R. Teruel & C. Turiel, in preparation).

ECOLOGICAL NOTES (figs. 12–13). This is a lapidicolous scorpion, which digs short burrows and scrapes in compacted clay/sandy soil under limestone and volcanic rocks. The vegetation is open chaparral, scrub and coastal steppe.

All specimens of *B. iaspis* **sp. n.** were collected during brief daytime searches, under rocks on flat to gently sloped areas (figs. 12–13). The species occurs in high population density, so it was not a rare event to find more than one specimen under the same rock (fig. 12a). Nevertheless, a case of cannibalism was observed at the type-locality: an adult male paratopotype was found while consuming a mid-instar juvenile about half its size (fig. 12c).

Amongst the food leftovers observed inside the scorpions scrapes, it was notorious to find small empty shells of land snails, either completely broken or with a conspicuous irregular hollow on the columella and external bend (fig. 12a,c). In absence of a direct observation, we cannot confirm that the land snails were predated upon by the scorpions, but the evidences match perfectly other cases already recorded on scorpions and other arachnids in the literature (Lamoral, 1971; Armas & Milera, 1989; Alayón García & Armas, 2010).

According to Capel Molina (1995), the Cabo de Gata area has a hot and dry climate that makes it one of the most arid places in Europe, and the most arid in the whole Iberian Peninsula. The historic pluviometric yearly mean is only about 156 mm, with an absolute minimum–maximum range of 37–674 mm. The temperature is stable along the year, with a mean of 26°C and 12°C in summer and winter, respectively, with very scarce and sporadic frosts and essentially no days with temperatures below 0°C. These conditions are key for this area to house high levels of endemism in both flora and fauna, one of the top in Europe as well.

REMARKS. This species was evidently misidentified as *B. occitanus* by Lourenço & Vachon (2004: 93) and Lourenço & Rossi (2013: 13, fig. 10) and as *B. montanus* by Barrientos et al. (2017: 132), based on specimens from Cabo de Gata. Similarly, additional literature records of *B. occitanus* from nearby Almería outskirts and Roquetas del Mar (Lourenço & Vachon, 2004: 92–93, fig. 43; Sousa *et al.*, 2010: 206–211, fig. 1; Rossi, 2012: 278; Lourenço & Rossi, 2013: 13, fig. 10), are all obviously wrong and could be referable instead to *B. iaspis* **sp. n.**

Acknowledgments

See complete information in Teruel & Turiel (2020: 32), Teruel & Turiel (2021a: 11) and Teruel & Turiel (2021b: 10). In addition to that, we thank Slaven Divković (Dormagen, Germany) for the technical assistance during the photographic work.

References

See a complete list in Teruel & Turiel (2020: 32–33), complemented by Teruel & Turiel (2021a: 12; 2021b: 11) and Teruel & Turiel (2021b: 11). Only those sources not listed therein and cited here follow:

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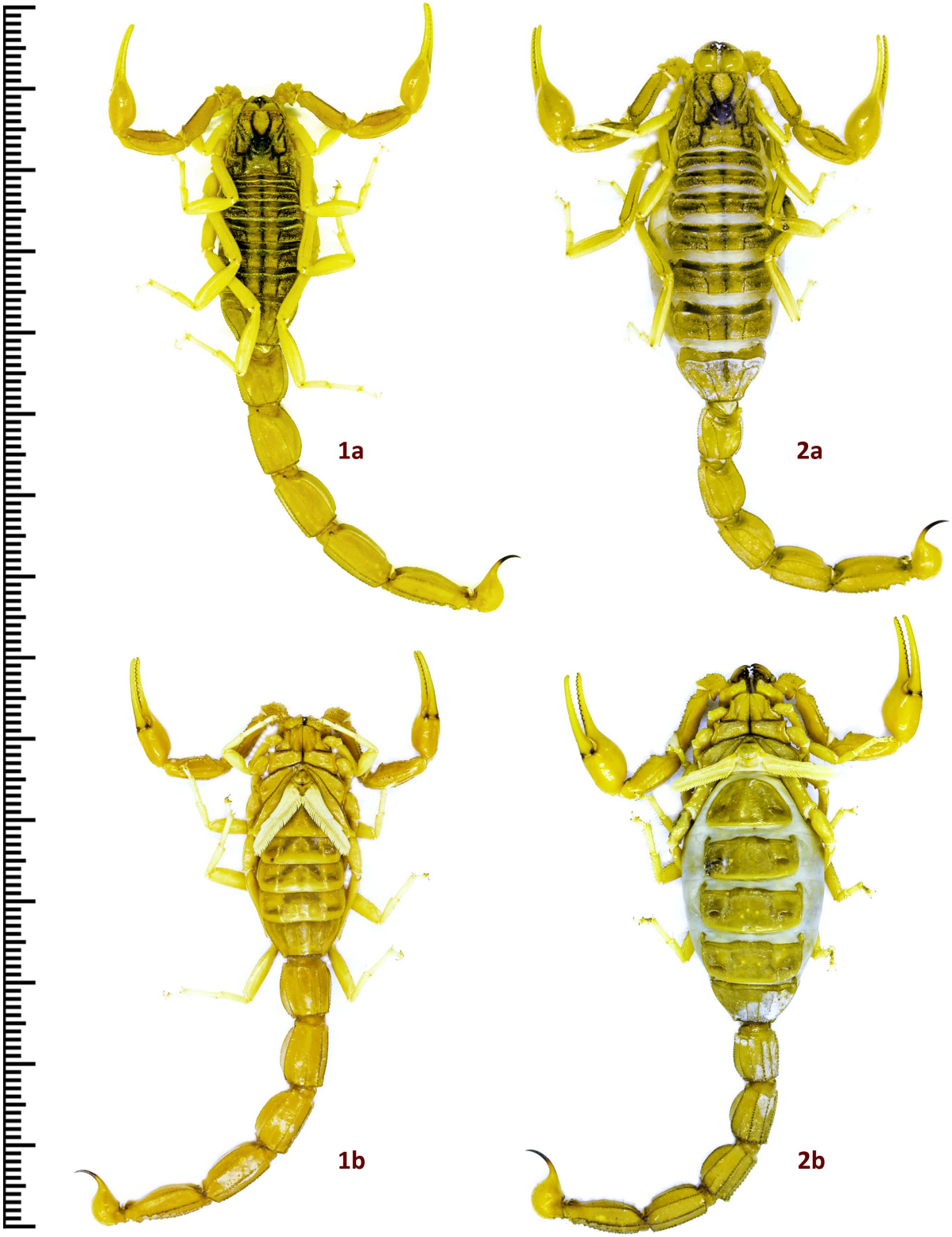
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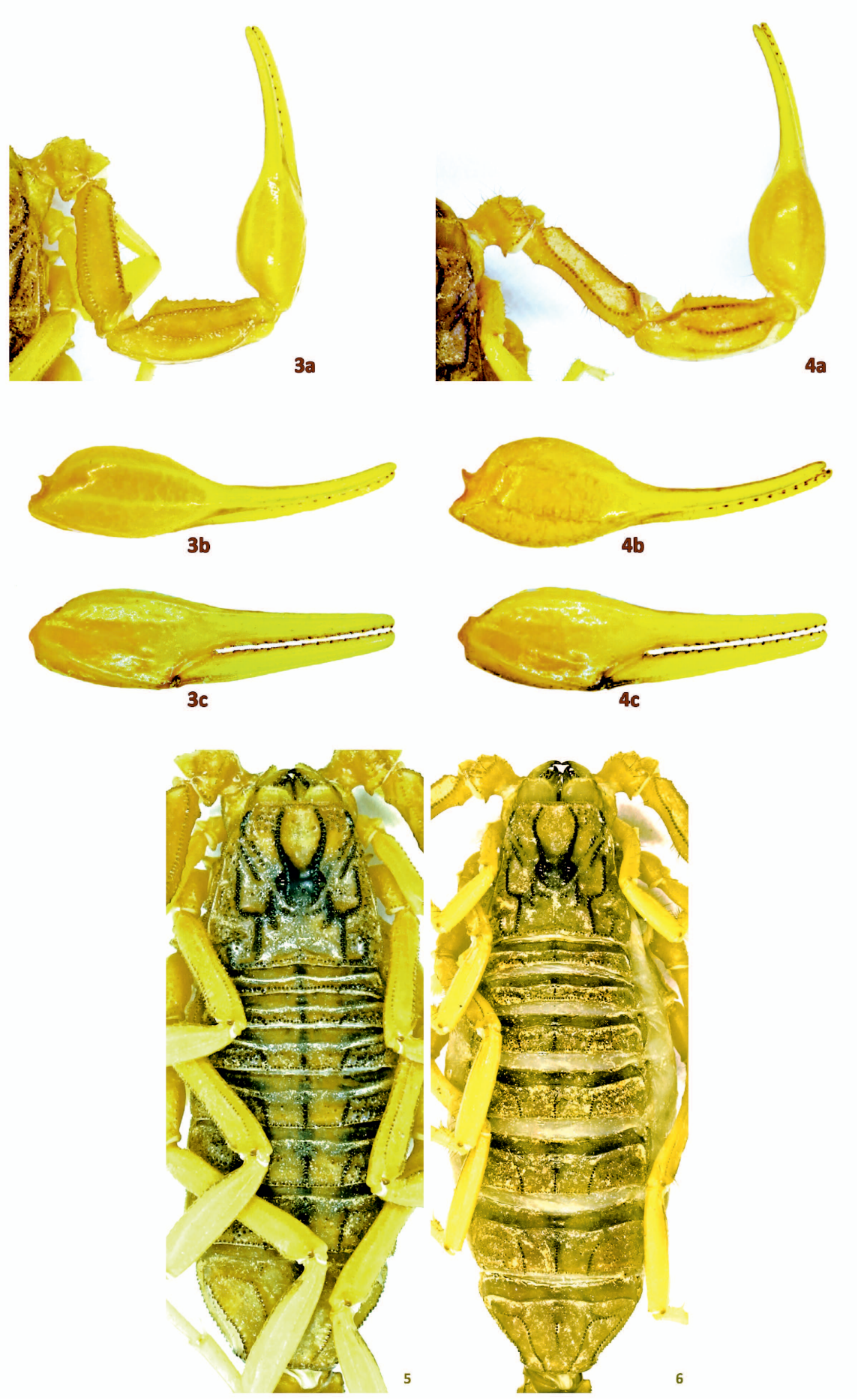
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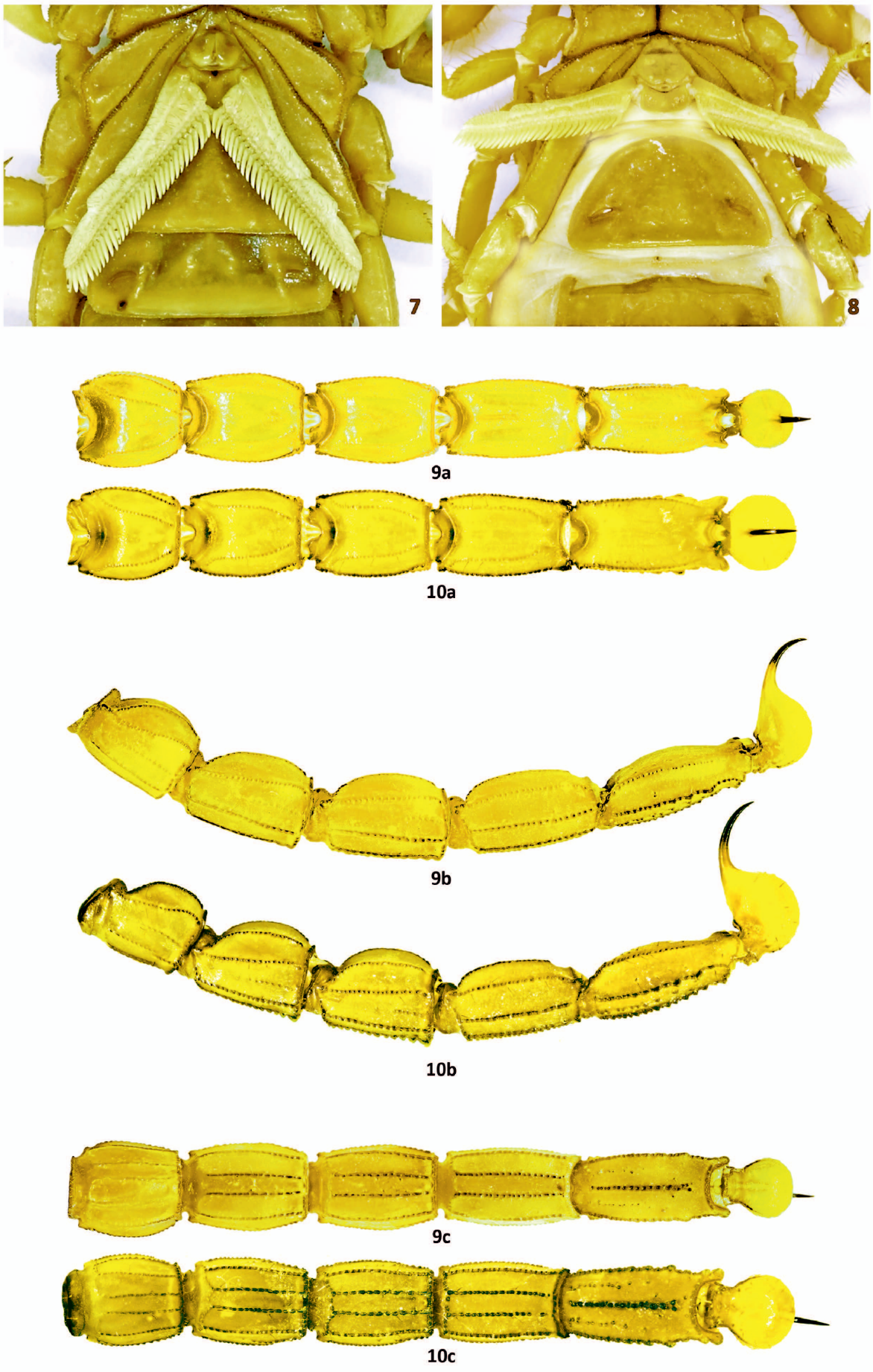
* Reference available at www.sea-entomologia.org



Figs. 1–2. *Buthus iaspis* **sp. n.**, adult male (**1**) and adult female (**2**) paratopotypes, habitus: **a)** dorsal; **b)** ventral. Scale bar in millimeters.



Figs. 3–6. *Buthus iaspis* **sp. n.**, adult male (**3**, **5**) and adult female (**4**, **6**) paratopotypes: pedipalp, dorsal (**a**) pedipalp chela, dorsal (**b**) pedipalp chela, external (**c**) and sternopectinal region (**5**–**6**). Setation largely omitted.



Figs. 7–10. *Buthus iaspis* **sp. n.**, adult male (**7**, **9**) and adult female (**8**, **10**) paratopotypes: sternopectinal region (**7**–**8**) and metasoma (**9**–**10**), dorsal (**a**), lateral (**b**) and ventral (**c**). Setation largely omitted.

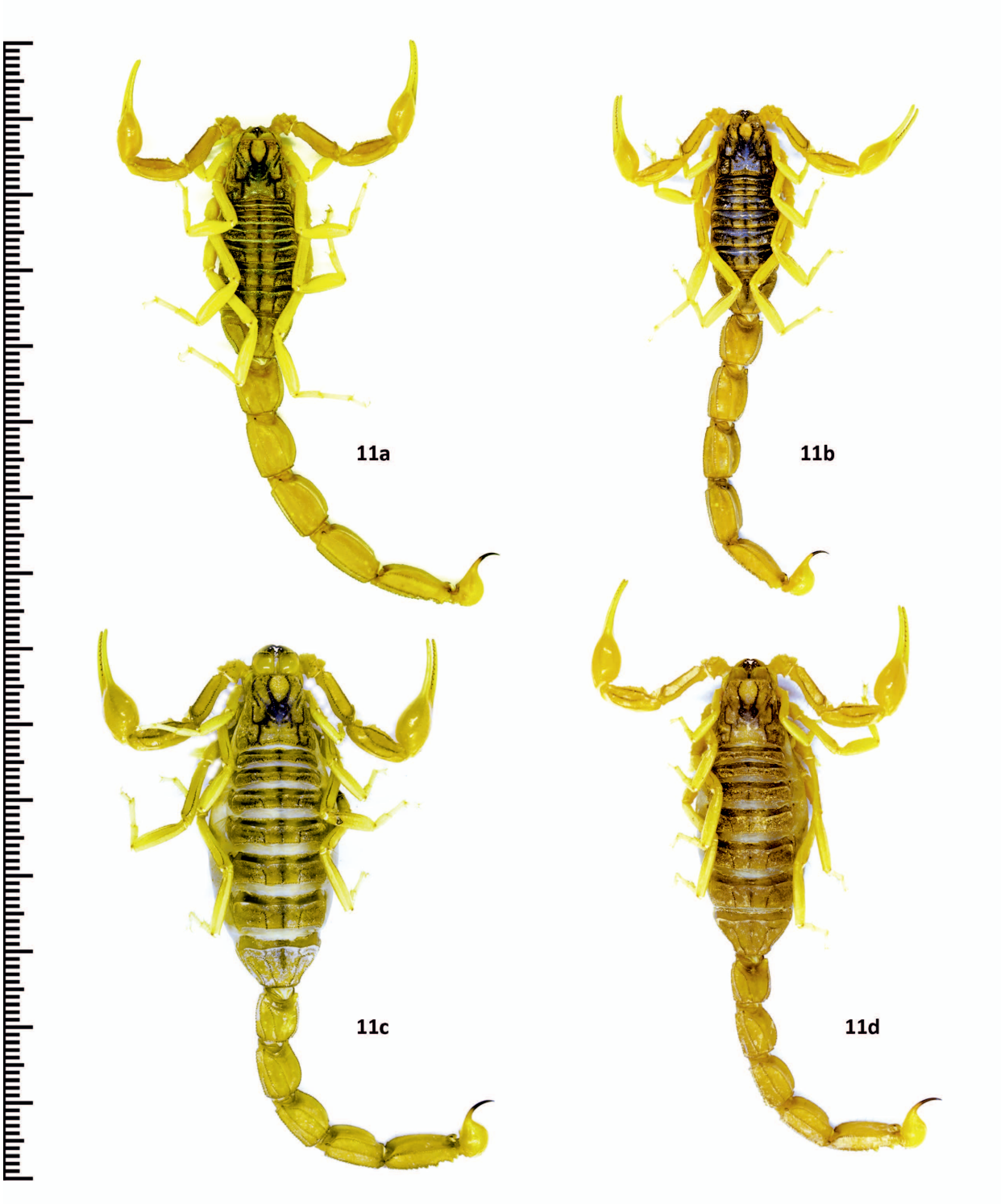


Fig. 11. *Buthus iaspis* **sp. n.**, dorsal habitus of two adult males (**a–b**) and two adult females (**c–d**), showing slight variations in size and coloration among paratopotypes. Scale bar in millimeters.

► **Fig. 12.** *Buthus iaspis* **sp. n.**, live individuals photographed when found at the type-locality: **a)** two adult male paratopotypes, in close proximity under the same rock (see the last exuvium of the upper specimen nearby); **b)** adult male holotype, inside its scrape under rock; **c)** adult male paratopotype, cannibalizing a juvenile female under rock. The four black arrows in "**a**" and "**c**" indicate broken shells of land snails, presumably predated upon by the scorpions; see also the common accompanying fauna of beetles and isopods.

► **Fig. 13.** *Buthus iaspis* **sp. n.**, two views of the habitat and microhabitat at the exact type-locality: **a)** facing southeast, in the background see the mountains of Sierra de Cabo de Gata; **b)** facing north, in the background see the mountains of Sierra Alhamilla. In both views, see the arid, flat, coastal alluvial plain with abundance of loose rocks and scrub vegetation, including the exotic *Agave* plants **(a)**, with tall flowered stems, native to America.


12a
12b
12c


13a
13b



Fig. 14. The Iberian Peninsula, showing the geographical distribution of the 17 species of *Buthus* recognized to occur there. For each species with multiple topographic records, the type locality is marked in red; in the case of *B. elongatus*, it corresponds to a large area and thus, we marked a central point for visual orientation.