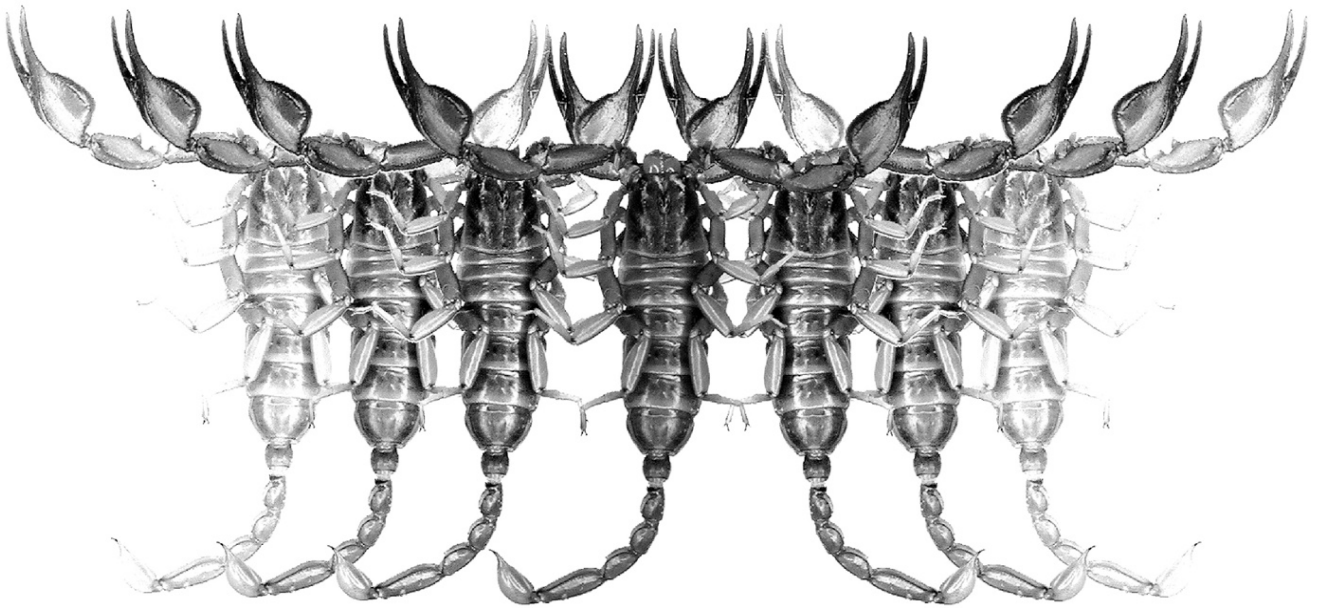


Euscorpius

Occasional Publications in Scorpiology



Lychas jakli sp. n. (Scorpiones: Buthidae)
from Indonesia

František Kovařík

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Lychas jakli sp. n. (Scorpiones: Buthidae) from Indonesia

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Summary

A new species *Lychas jakli* sp. n. (Scorpiones: Buthidae) is described from Indonesia, fully illustrated with color photos showing its morphology and habitus. A new synonymy is proposed: *Lychas kotao* Lourenço, 2020 = *Lychas mucronatus* (Fabricius, 1798), **syn. n.**

Introduction

Genus *Lychas* C. L. Koch, 1845 was revised by Kovařík in Kovařík & Ojanguren Affilastro (2013) and divided by Kovařík in 2019 to four genera: *Lychas* with 32 species, *Afrolychas* Kovařík, 2019 with 2 species, *Janalychas* Kovařík, 2019 with 7 species, and *Spelaeolychas* Kovařík, 2019 with 1 species. Position of genera *Lychas* and *Janalychas* close to genera *Isometrus* Ehrenberg, 1828 and *Reddyanus* Vachon, 1972 in buthid phylogeny was confirmed by a molecular analysis by Štundlová et al. (2022).

Here, a new species of genus *Lychas* is described based on recently collected material from Aru Islands (Indonesia).

In addition, one synonymy in the same genus is introduced: *Lychas kotao* Lourenço, 2020 with *Lychas mucronatus* (Fabricius, 1798).

Methods, Material & Abbreviations

Nomenclature and measurements follow Stahnke (1971), Sologlad & Sissom (2001), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974).

Specimen Depositories: FKCP (František Kovařík, private collection, Prague, Czech Republic; will in future be merged with the collections of the National Museum of Natural History, Prague, Czech Republic).

Morphometrics: D, depth; L, length; W, width.

Movable finger dentition: ID, inner denticles; OD, outer denticles.

Systematics

Family Buthidae C. L. Koch, 1837

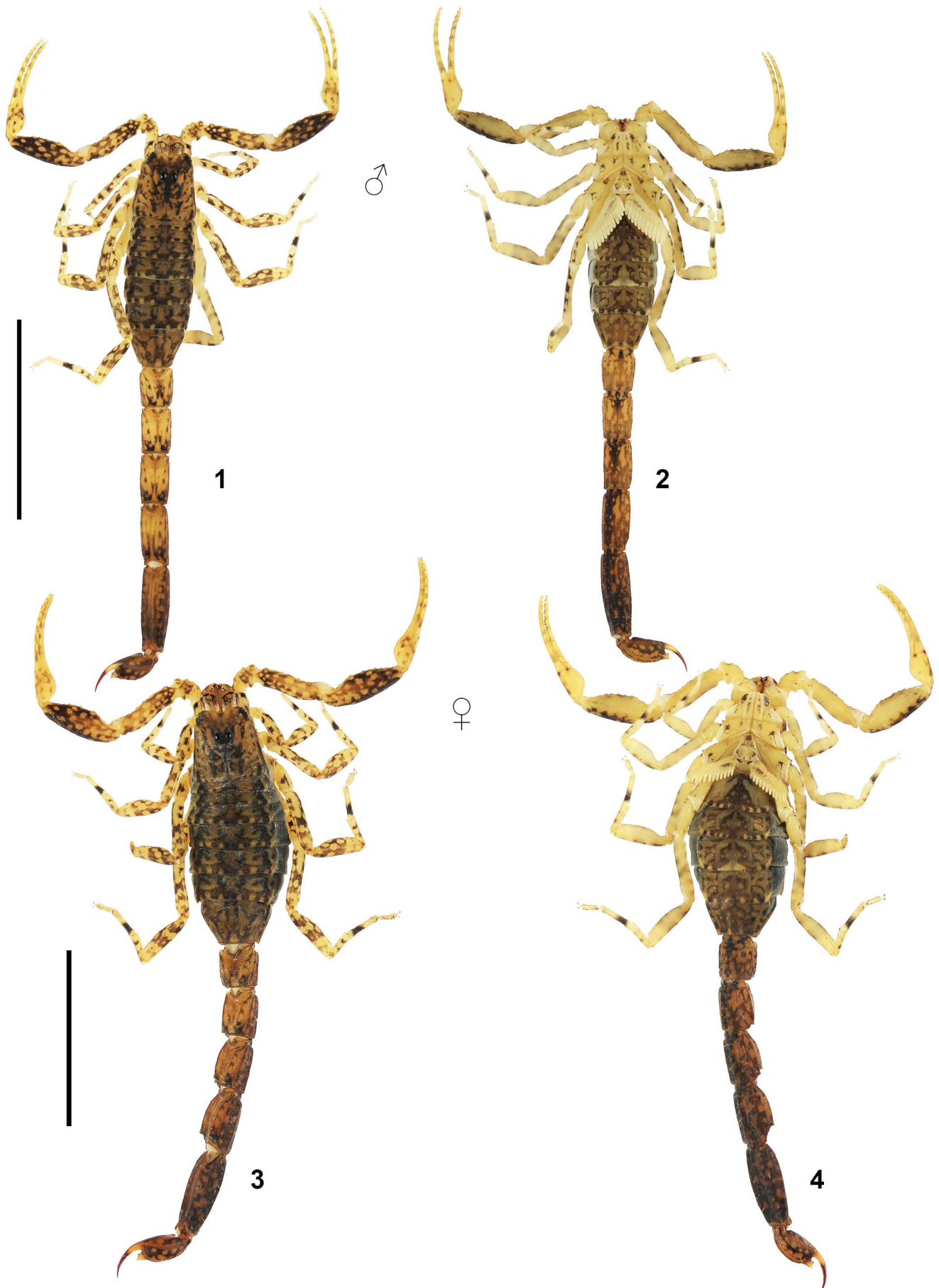
Genus *Lychas* C. L. Koch, 1845

(Figures 1–42, Table 1)

Lychas (in part) C. L. Koch, 1845: 3; Tikader & Bastawade, 1983: 40–107, figs. 99–184, 216–239, 256–285; Fet & Lowe, 2000: 158–169 (complete references list until 2000); Kovařík & Ojanguren Affilastro, 2013: 194–210, figs. 1410–1414, 1419–1423, 1434–1436, 1439–1449, 1471–1498, 1509–1555, 1562–1592; Kovařík, 2019: 3–6, figs. 1–9, 13, 18–36, 46–65, 75–94 (complete list of synonyms).

TYPE SPECIES. *Lychas scutillus* C. L. Koch, 1845.

DIAGNOSIS. Total length 20 mm (*L. rugosus*) – 105 mm (*L. brehieri*). Carapace granular, lacking distinct carinae, flat, subrectangular with concave anterior margin. Median eyes on ocular tubercle in anterior half of carapace; usually with 4, or sometimes 5 pairs of lateral eyes (3 major ocelli, 1–2 minor ocelli). Sternum type 1, triangular in shape. Tergites I–VI granular, with single median carina, tergite VII with 5 carinae. Metasoma elongate, segment I with 10 carinae, II–IV with 8–10 carinae, lateral median carina can be lacking. Telson ellipsoidal in shape, with distinct subaculear tooth. Pectinal tooth counts 8–26. Pectines with conspicuous or inconspicuous fulcra, rarely without fulcra. Chelicerae with typical buthid dentition, fixed finger armed with single denticle on ventral surface.



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

Dimensions (mm)		<i>Lychas jakli</i> sp. n.	
		♂ holotype	♀ paratype
Carapace	L / W	3.33 / 3.20	4.06 / 4.13
Mesosoma	L	7.34	9.36
Tergite VII	L / W	1.94 / 2.73	2.29 / 3.81
Metasoma + telson	L	17.23	20.22
Segment I	L / W / D	1.96 / 1.67 / 1.49	2.26 / 2.23 / 1.83
Segment II	L / W / D	2.24 / 1.49 / 1.43	2.61 / 1.99 / 1.80
Segment III	L / W / D	2.38 / 1.44 / 1.37	2.75 / 1.94 / 1.82
Segment IV	L / W / D	2.82 / 1.32 / 1.28	3.41 / 1.81 / 1.75
Segment V	L / W / D	4.09 / 1.32 / 1.29	4.83 / 1.78 / 1.70
Telson	L / W / D	3.74 / 1.18 / 1.11	4.36 / 1.45 / 1.43
Pedipalp	L	12.35	15.09
Femur	L / W	3.24 / 0.83	4.01 / 1.13
Patella	L / W	3.81 / 1.09	4.70 / 1.58
Chela	L	5.30	6.38
Manus	W / D	0.96 / 0.76	1.19 / 1.14
Movable finger	L	4.04	4.42
Total	L	27.90	33.64

Table 1. Comparative measurements of *Lychas jakli* sp. n. male holotype and female paratype. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

Pedipalps orthobothriotaxic, type Aβ, femur trichobothrium d_2 obviously internal, patella d_3 external to dorsomedian carina. Dentate margins of chela movable finger armed with 3 terminal (two subterminal and one distal) denticles, apical row composed of 3–7 denticles, and imbricated overlapping six rows of denticles, rows 1–5 terminated proximally flanked by two enlarged outer accessory denticles, and single inner accessory denticle displaced distally. Sixth row with one to four isolated outer accessory denticles midway along its length, no inner accessory denticles. Reduced to moderate tibial spurs present on leg III and leg IV, tibia and tarsus without bristle combs, ventral surfaces of tarsomeres II densely equipped with two rows of setae, unguis stout.

SUBORDINATE TAXA. For a list of taxa described until 2019, of which 32 are cited as valid, see Kovařík (2019: 3–4).

Lourenço (2020) described *Lychas kotao* from Thailand (Ko Tao Island) and differentiated it from *Lychas mucronatus* (Fabricius, 1798) from Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, and Vietnam according to three characters: (i) a paler general coloration pattern, and in special a quite distribution of the variegated spots on the chelicerae (this vague definition is not supported by any studies and it is in contradiction with my study of hundreds of specimens, which shows this character varying intraspecifically); (ii) pectines smaller and shorter in size with a slightly number of teeth (another definition lacking substance; in reality, the holotype female of *Lychas kotao* has 19–20 pectinal teeth and *Lychas mucronatus* has 16–25 teeth in both sexes (Kovařík & Ojanguren Affilastro, 2013: 205)); (iii) some distinct morphometric values (no specifics are given; in

reality, the table published by Lourenço (2020: 60) shows no values out of the range of intraspecific variability for *Lychas mucronatus*). The inevitable conclusion is that *Lychas kotao* Lourenço, 2020 is a junior synonym of *Lychas mucronatus* (Fabricius, 1798), **syn. n.**

Lychas jakli sp. n.

(Figures 1–42, Table 1)

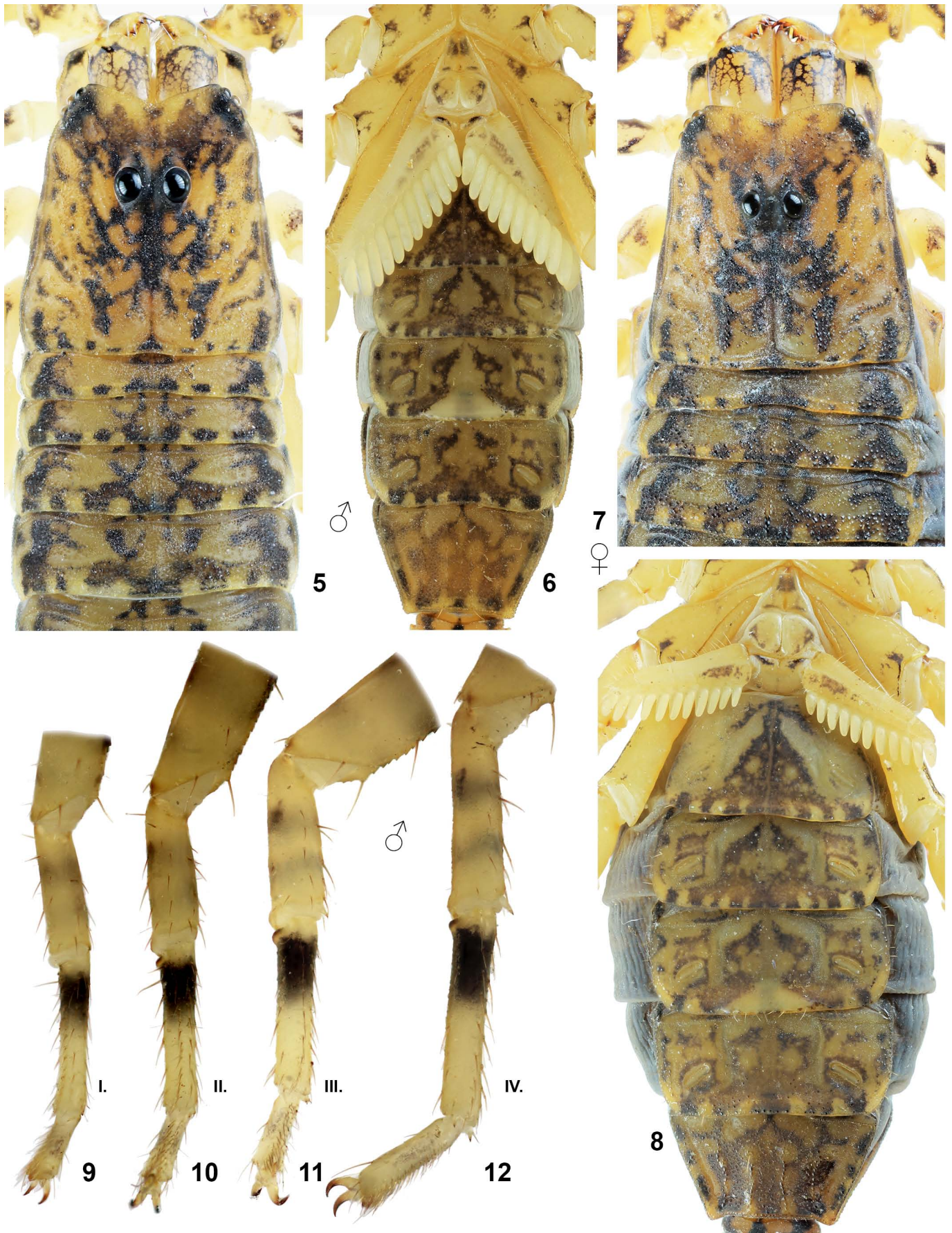
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TYPE LOCALITY AND TYPE DEPOSITORY. Indonesia, Maluku Province, Aru Islands, Wokam Island, 10–15 km NEE Waigua, 5°51'S 134°36'E; FKCP.

TYPE MATERIAL EXAMINED. Indonesia, Maluku Province, Aru Islands, Wokam Island, 10–15 km NEE Waigua, 5°51'S 134°36'E, February 2022, 1♂1♀ (holotype and paratype), leg. local collectors (Jakl and Häckel expedition), FKCP.

ETYMOLOGY. The specific epithet is a patronym honoring Stanislav Jakl (Czech Republic), an entomologist who helped to obtain the material.

DIAGNOSIS (♂♀). Total length 28–34 mm. In contrast to female, male has slightly narrower metasomal and pedipalps segments. Fingers of pedipalps not twisted proximally. Sixth row of granules on movable fingers of pedipalps with one external and no internal granules. Metasoma I–III with 10 carinae, of which two lateral on metasoma II–III are vestigial or absent in male, metasoma IV with 8 carinae. Dorsolateral



Figures 5–12. *Lychas jakli* sp. n. **Figures 5–6, 9–12.** Holotype male, carapace and tergites I–IV (5), sternopectinal region and sternites (6), and left legs I–IV, retrolateral aspect. **Figures 7–8.** Paratype female, carapace and tergites I–III (7), sternopectinal region and sternites (8).



Figures 13–34: *Lychas jakli* sp. n., segments of pedipalps. **Figures 13–23.** Holotype male, right pedipalp. Chela, dorsal (13), external (14), and ventral (15) views. Patella, dorsal (16), external (17), and ventral (18) views. Pedipalp femur and trochanter, internal (19), dorsal (20), and ventral (21) views. Pedipalp chela, fixed (22) and movable (23) fingers dentate margins. The trichobothrial pattern is indicated in Figures 14–17, 19–20 (white circles). **Figures 24–34.** Paratype female, right pedipalp. Chela, dorsal (24), external (25), and ventral (26) views. Patella, dorsal (27), external (28), and ventral (29) views. Femur and trochanter, internal (30), dorsal (31), and ventral (32) views. Pedipalp chela, fixed (33) and movable (34) fingers dentate margins.



Figures 35–42: *Lychas jakli* sp. n. **Figures 35, 37–39.** Holotype male, telson lateral (35), metasoma and telson, lateral (37), dorsal (38) and ventral (39). **Figures 36, 40–42.** Paratype female, telson lateral (36), metasoma and telson, lateral (40), dorsal (41) and ventral (42). Scale bars: 10 mm (37–39), 10 mm (40–42).

carinae of second and third metasomal segments terminate in a tooth which is particularly conspicuous, but it is not enlarged. Subaculear tooth large, wide and pointed, with granules. Nearly entire body spotted, fingers and manus of pedipalps of uniform color. Patella of pedipalps dorsally darker than femur. Fifth sternite bears conspicuous expanded glossy zones in posterior part. Pectinal teeth number 11–12 in male and 11 in female. Pectines with fulcra inconspicuous to absent.

DESCRIPTION. Total length of adults 28–34 mm. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 1. For habitus, see Figures 1–4. *Sexual dimorphism:* male has slightly narrower metasomal and pedipalps segments than female; fingers of pedipalps not twisted proximally in both sexes.

Coloration (Figs. 1–4). Base color orange with dark spots; chelicera reticulated; fingers of chelicerae with black spots; carapace, tergites and sternites dominantly orange, with a pattern of black spots; pedipalps dorsally and laterally yellow with several dark spots, identical on manus and fingers of chela; ventral side of pedipalps yellow, without spots; patella of pedipalps dorsally darker than femur; legs have the same color and pattern as femur and patella of pedipalps; metasomal segments yellowish to reddish with brown spots mainly in posterior parts, metasoma V more dark; telson is orange with spots.

Carapace and mesosoma (Figs. 5–8). Carapace granulated, without carinae; mesosoma with one median carina and is granulated; sternite VII with four carinae and is granulated; sternite V with conspicuous expanded glossy zones in posterior part; pectines extending to around half of sternite IV in male and around end of sternite III in female; pectinal fulcra are inconspicuous to absent; pectinal teeth number 11–12 in male and 11 in female.

Metasoma and telson (Figs. 35–42). Entire metasoma and telson glabrous; metasoma I–III with 10 carinae, from which two lateral on metasoma II–III are vestigial or absent in male, metasoma IV with 8 carinae, metasoma V with 5 carinae; dorsolateral carinae of second and third metasomal segments terminate in a tooth which is particularly conspicuous but it is not enlarged; telson is elongate, with subaculear tooth wide, pointed, dorsally with one pair of granules and with one granule at the tip.

Pedipalps (Figs. 13–34). Femur with five granulated carinae; patella has seven smooth carinae, and chela has smooth carinae which may be discernible throughout the length of the fixed finger; femur and patella finely irregularly are granulated; entire pedipalps are glabrous, with several short setae only; sixth row of denticles on the movable and fixed fingers of pedipalps has one external and no internal granules.

Legs (Figs. 9–12). Tibial spur is reduced on leg III and moderate on leg IV; femur with four partly granulated carinae; patella with five rather smooth carinae; tibia smooth; patella and tibia with only a few setae; tarsomeres of all legs internal bearing two rather irregular rows of setae.

Measurements. See Table 1.

AFFINITIES. The described features distinguish *L. jakli* sp. n. from all other species of the genus. Morphologically the closest species are *L. variatus* (Thorell, 1876), from Australia, Melanesia, and New Guinea, and *L. armasi* Kovařík, 2013 from Papua New Guinea. These two species can be distinguished from *L. jakli* sp. n. by having a strongly enlarged terminal tooth on dorsolateral carinae on metasoma II–III especially in males.

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