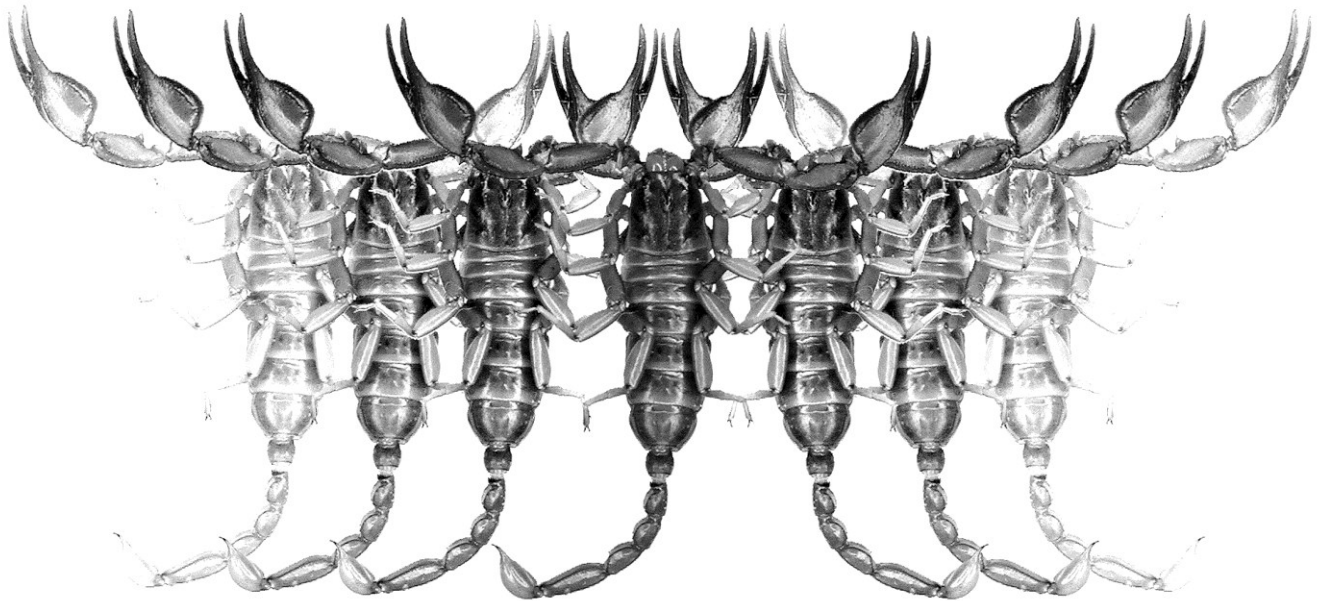


Euscorpius

Occasional Publications in Scorpiology



**A Review of *Androctonus finitimus* (Pocock, 1897), with
Description of Two New Species from Pakistan and India
(Scorpiones, Buthidae)**

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Euscorpius

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A review of *Androctonus finitimus* (Pocock, 1897), with description of two new species from Pakistan and India (Scorpiones, Buthidae)

František Kovařík¹ & Zubair Ahmed²

<http://zoobank.org/urn:lsid:zoobank.org:pub:C44239B6-7A2A-4F9D-9DDC-D0CA32192393>

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Summary

We describe *Androctonus robustus* **sp. n.** and *A. cholistanus* **sp. n.** from Pakistan and India and compare them with *A. finitimus* (Pocock, 1897), whose holotype we have studied. These three species are closely related and form a group that has hitherto been considered one species. They share coloration and are close to each other in geographic range. However, these three species can be reliably distinguished morphologically, primarily based on morphometry of male metasoma, which is widest in *A. robustus* **sp. n.** and narrowest in *A. cholistanus* **sp. n.**

Systematics

Androctonus finitimus (Pocock, 1897)
(Figs. 1–4, 9–12, 22–24, 31)

Prionurus finitimus Pocock, 1897: 103; Birula, 1900: 356; Weidner, 1959: 103.

Buthus australis finitima: Kraepelin, 1899: 16.

Buthus australis finitimus: Pocock, 1900: 16; Kraepelin, 1913: 123; Takashima, 1945: 75; Vachon, 1966: 209; Pérez Minnocci, 1974: 18; Tikader & Bastawade, 1983: 243.

Androctonus australis finitimus: Vachon, 1948: 457 (1952: 163); Khatoon, 1999: 208;

Androctonus amoreuxi finitimus: Vachon, 1959: 124; Habibi, 1971: 42; Kovařík, 1997: 40; Kovařík, 1998: 103.

Androctonus finitimus: Levy & Amitai, 1980: 22; Fet & Lowe, 2000: 73; ?Lourenço, 2005: 151; ?Lourenço & Qi, 2006: 96.

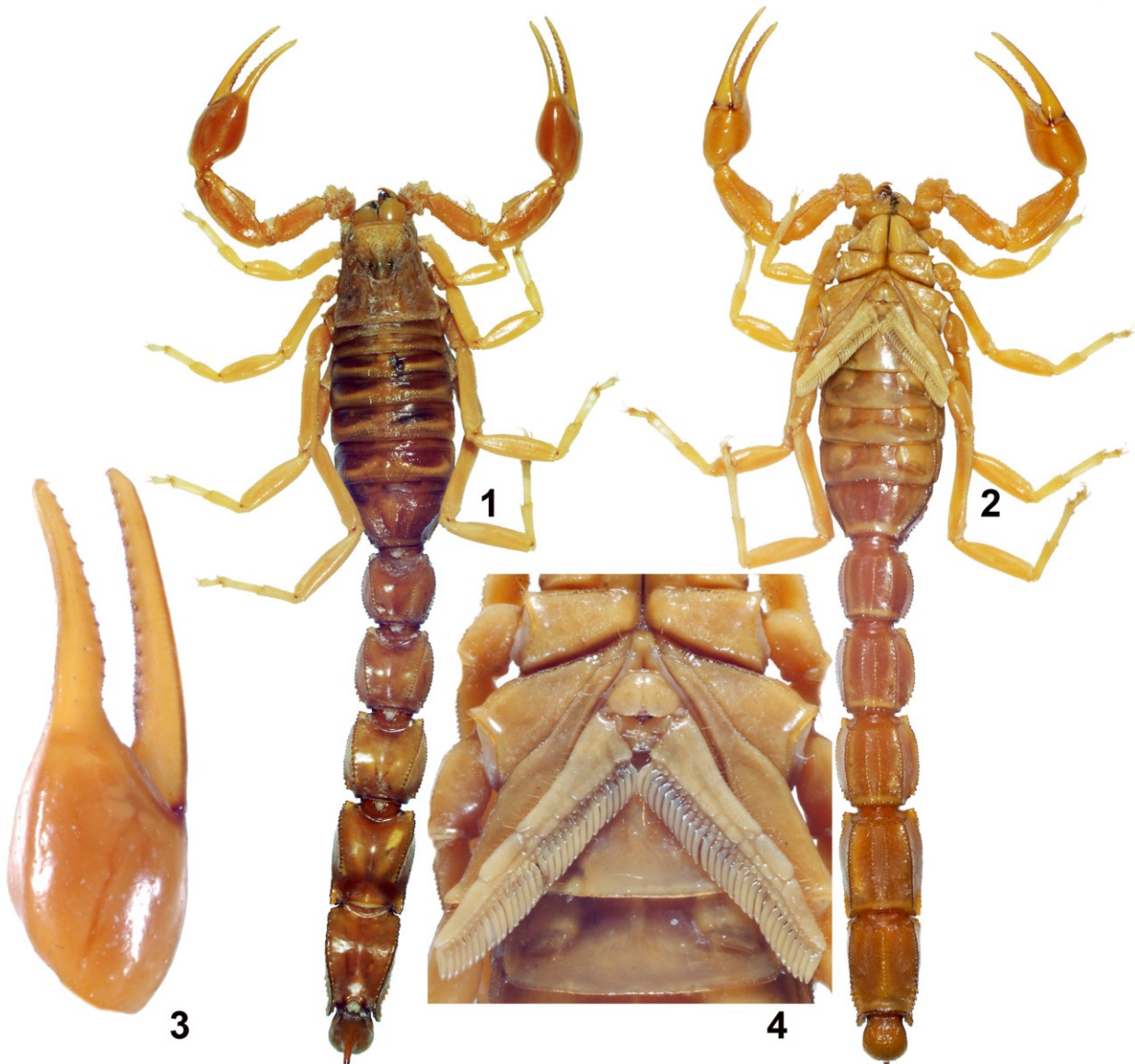
TYPE LOCALITY AND TYPE DEPOSITORY. Kotri, Sind, British India (now Pakistan); BMNH (Natural History Museum, London, UK).

TYPE MATERIAL EXAMINED. PAKISTAN, Sindh Province, Kotri District, Kotri, 1 ♂ (holotype, Figs. 1–4, 22–24), BMNH No. 1896.7.30.69, G. M. Ryan - c. R. C. Wroughton - p.

ADDITIONAL MATERIAL EXAMINED. PAKISTAN, Sind Province, Tharparkar District, Nagar Parkar, 8 May 2007, 1 juv., 15 September 2010, 2 ♂ (Figs. 9–10), leg.

Z. Ahmed (FKCP); Sindh Province, Tharparkar District, Islamkot, Thar, 22 October 2010, 1 ♀ (Figs. 11–12) 2 juvs., leg. Z. Ahmed (FKCP).

DIAGNOSIS. Total length 65–80 mm. Base color yellow to yellowish brown. Pedipalps including trochanter and legs always yellow. Chelicerae yellow, without reticulation. Fifth metasomal segment and vesicle pale greenish or brownish black, darker pigment may spread to sides and lower surface of fourth metasomal segment which is never entirely black. Carapace densely granulated, with anterior and posterior median carinae developed; anterior margin of carapace straight. Pectinal teeth number 28–32 in males, 22–24 in females. Sternites without carinae; sternite VII finely granulated, with four carinae. First metasomal segment of male wider than long, other segments longer than wide. Third metasomal segment of male longer than deep. First metasomal segment with 10 carinae, second to fourth segments with eight carinae, and fifth segment with five carinae. Missing lateral carinae on second and third metasomal segments replaced by three or four large granules on posterior margin. Dorsal carinae on first through fourth metasomal segments terminate in a larger tooth. Metasomal segment V with four setae on lateral surface. Anal arch with two or three lobes. Dorsal surface of metasoma smooth except a few granules that may be present on first and second segments. Tarsomeres of legs hirsute with bristlecombs dense on first to third legs but present also on fourth leg. Pedipalp chela without carinae. Movable fingers of pedipalps with 13–14 rows of granules and external and internal granules.

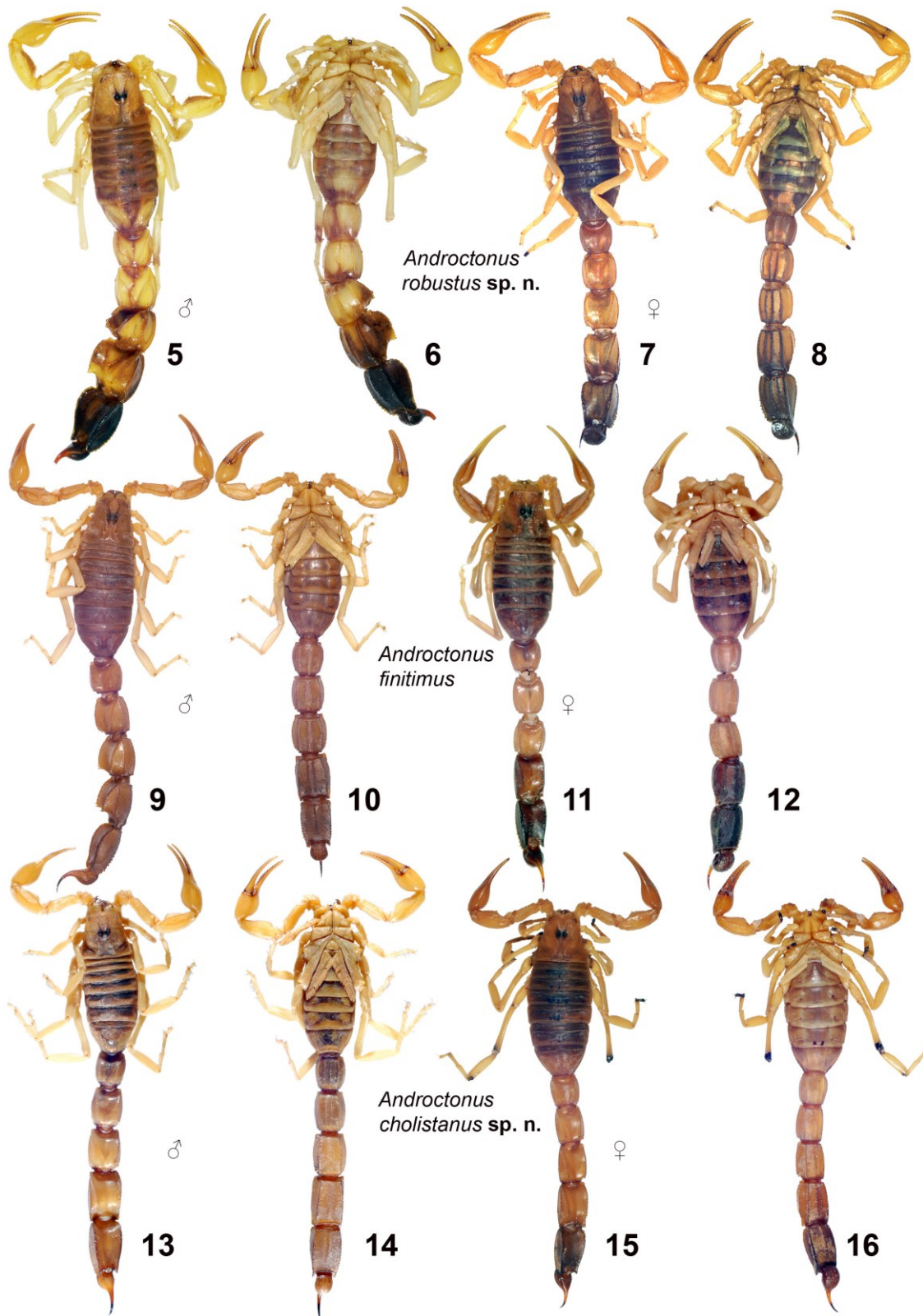


Figures 1–4: *Androctonus finitimus* (Pocock, 1897), ♂ holotype. 1–2. Dorsal and ventral views. 3. Chela. 4. Pectinal area.

Male with fingers proximally weakly twisted with little gap.

MEASUREMENTS IN MM. *Male holotype*. Total length 75; carapace length 8.1, width 8.3; metasoma and telson length 46; first metasomal segment length 5.8, width 6, depth 5.1; second metasomal segment length 6.8, width 6.3, depth 5; third metasomal segment length 7, width 6.7, depth 5.5; fourth metasomal segment length 8.5, width 6.7, depth 5.6; fifth metasomal segment length 8.9, width 6, depth 4.2; telson length ca 8; telson width 3.6; pedipalp femur length 6.2, width 2.1; pedipalp patella length 7.7, width 3.3; chela length 13.2; manus width 3.8; movable finger length 8.9.

COMMENTS. *Androctonus finitimus* has the fifth metasomal segment and vesicle pale greenish or brownish black; the darker pigment may spread on the sides and lower surface of the fourth segment (Pocock, 1900: 16). Lourenço (2005: 152) and Lourenço & Qi (2006: 96) probably mistook this species for *A. baluchicus*, which is darker and has namely the fourth and fifth metasomal segments entirely dark. Because of the two closely related species described below, it is likely that also some other papers on scorpions of this region concern these new species. The precise distribution of *A. finitimus* thus cannot be presently established.



Figures 5–16: 5–8: *Androctonus robustus* sp. n. 5–6. Dorsal and ventral views, ♂ (70 mm) holotype. 7–8. Dorsal and ventral views, ♀ (67 mm) paratype. 9–12: *A. finitimus* (Pocock, 1897). 9–10. Dorsal and ventral views, ♂ (79 mm), Pakistan, Sindh Province, Nagar Parkar, FKCP. 11–12. Dorsal and ventral views, ♀ (65 mm), Pakistan, Sindh Province, Islamkot, Thar, FKCP. 13–16: *A. cholistanus* sp. n. 13–14. Dorsal and ventral views, ♂ (63.5 mm) holotype, Pakistan, Punjab Province, Cholistan Desert, 28°30'N 70°00'E, FKCP. 15–16. Dorsal and ventral views, ♀ (66 mm), Pakistan, FKCP.

***Androctonus robustus* Kovařík et Ahmed, sp. n.**

(Figs. 5–8, 17–21, 25–27, 31)

<http://zoobank.org/urn:lsid:zoobank.org:act:6E6B2641-BB77-4B83-80C1-83EC11216A4F>

TYPE LOCALITY AND TYPE DEPOSITORY. PAKISTAN, Sindh Province, Jamshoro District, Tori Phatak Village near Lakhra Khanot, 25°42'46"N 68°08'01"E; the first author's collection (FKCP).

TYPE MATERIAL. PAKISTAN, Sindh Province, Jamshoro District, Tori Phatak Village near Lakhra Khanot, 25°42'46"N 68°08'01"E, 20 May 2009, 2♂ 3♀ 1♀ im. (holotype ♂ and paratypes), leg. Z. Ahmed (FKCP).

ETYMOLOGY. Named for markedly wide and robust metasoma, namely in males.

DIAGNOSIS. Total length 66–86 mm. Base color yellow to yellowish brown. Pedipalps including trochanter and legs always yellow. Chelicerae yellow, without reticulation. Fifth metasomal segment and vesicle greenish black, darker pigment may spread to sides and lower surface of fourth segment that is never entirely black. Carapace densely granulated, with anterior and posterior median carinae developed; anterior margin of carapace straight. Pectinal teeth number 24–30 in males, 22–25 in females. Sternites without carinae; sternite VII can be finely granulated and always bears four carinae. First and third metasomal segments of male wider than long, other segments longer than wide. Third metasomal segment of male deeper than long or as deep as long. First metasomal segment with 10 carinae, second to fourth segments with eight carinae, and fifth segment with five carinae. Missing lateral carinae on second and third metasomal segments replaced by three or four large granules on posterior margin. Dorsal carinae on first through fourth metasomal segments terminate in a larger tooth. Metasomal segment V with four setae on lateral surface. Anal arch with two or three lobes. Dorsal surface of metasoma smooth. Tarsomeres of legs densely hirsute with bristlecombs dense on first to third legs but present also on fourth leg. Pedipalp chela without carinae. Movable fingers of pedipalps with 13–15 rows of granules and external and internal granules. Male with fingers proximally weakly twisted with little gap.

DESCRIPTION. Adult males 66–70 mm long, adult females 70–86 mm long. For habitus see Figs. 5–6 (male) and Figs. 7–8 (female). For position and distribution of trichobothria of pedipalps see Figs. 18–21. Trichobothrium d_2 of the pedipalp femur is present on the dorsal surface. Sexual dimorphism is manifested in wider male metasoma and slightly wider male chela. The

male has fingers proximally weakly twisted with little gap.

COLORATION. The base color is yellow to yellowish brown. Pedipalps including the trochanter and legs are always yellow. The fifth metasomal segment and the vesicle are greenish black, darker pigment may spread to sides and the lower surface of the fourth segment, which is never entirely black; other metasomal segments are yellow to yellowish brown, ventral carinae may be black. The chelicerae are yellow, without reticulation. The mesosoma is yellowish brown, darker than legs.

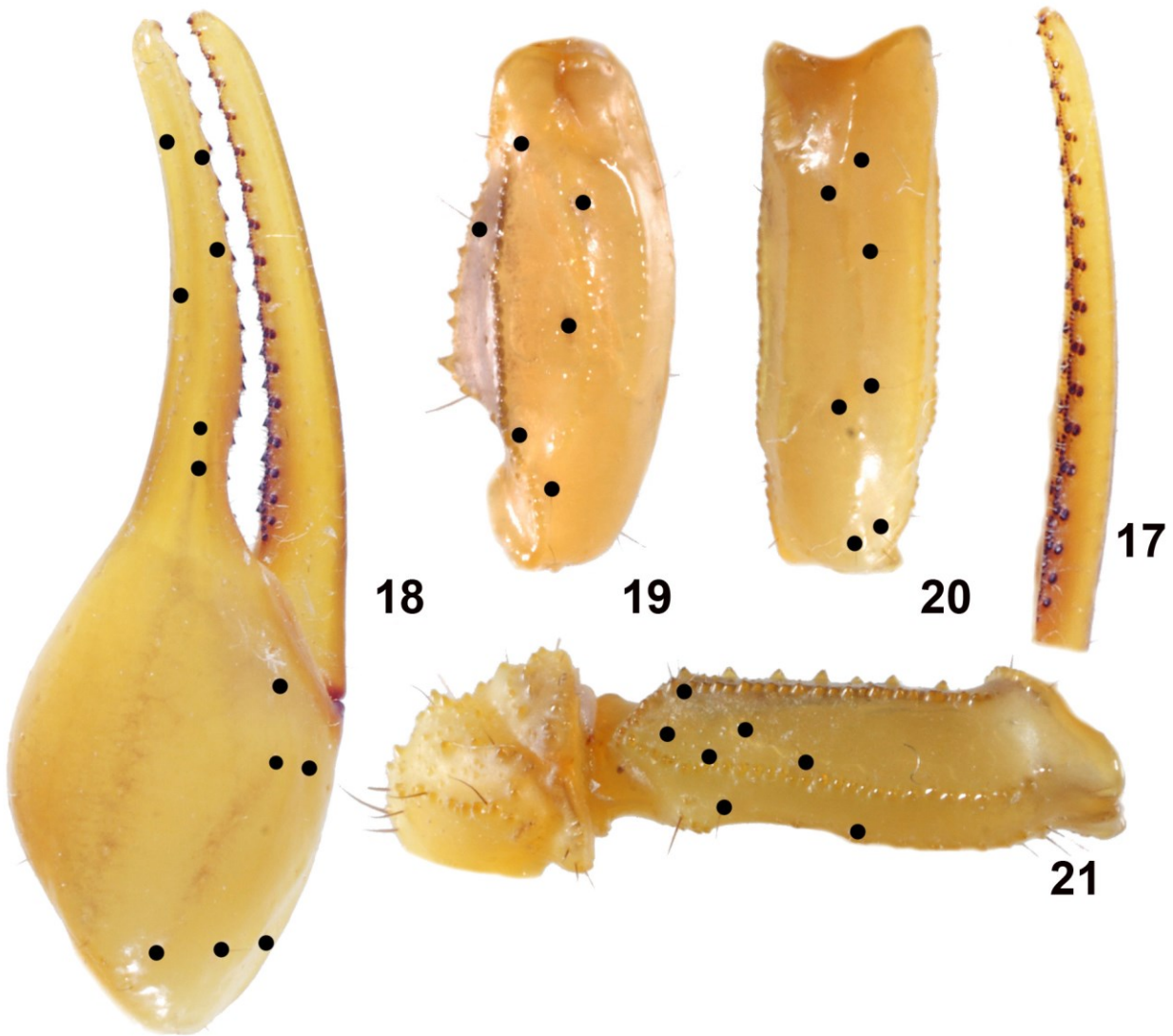
CARAPACE. The surface is densely granulated. Carinae are inconspicuous, only the anterior and posterior median carinae are well developed. The anterior carapace margin is straight, with six to eight long macrosetae.

MESOSOMA. With three carinae. The pectinal tooth count in males is 24–30: 24 (1), 27 (1), 30 (2) [n= 4], and in females, 22–25: 22 (1), 23 (3), 25 (2) [n= 6]. Marginal tips of pectines extend to the proximal quarter of sternite V in males and to the end of sternite III or proximal half of sternite IV in females. The pectines bear three marginal lamellae and eight or nine middle lamellae. Each lamella bears numerous dark setae, three to six on each fulcrum. Sternites III–VI lack carinae. Sternite VII may be finely granulated and always bears four carinae.

METASOMA AND TELSON. The first metasomal segment bears 10 carinae, the second to fourth segments bear eight carinae, and the fifth segment bears five carinae. Missing lateral carinae on the second and third segments are replaced by three to four large granules on the posterior margin. All carinae are composed of distinct granules. Dorsal carinae on the first through fourth segments terminate in a larger tooth. All segments are setose only sparsely. The telson is elongate in both sexes, but more so in males. The surface of the telson is bumpy, sparsely hirsute, and without a subaculear tubercle. The first and the third metasomal segments of the male are wider than long, other segments are longer than wide. The third metasomal segment of the male is deeper than long or as deep as long. Metasomal segment V bears four setae on the lateral surface. The anal arch has two or three lobes. The dorsal surface of the metasoma is smooth.

LEGS. The tarsomeres of legs are densely hirsute, with bristlecombs dense on legs I–III, but present also on the fourth legs. The femur and patella may bear four to six carinae, which however may be obsolete. The femur bears only solitary setae.

PEDIPALPS. 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. The chela is smooth, without carinae. All pedipalps including the trochanter are only very sparsely hirsute. The movable fingers of pedipalps bear 13–15 rows of granules and external and internal granules; the fixed fingers bear 11–



Figures 17–21: *Androctonus robustus* sp. n., ♂ (70 mm) holotype. 17. Movable finger of pedipalp. 18–21. Trichobothrial pattern. 18. Chela dorsal. 19. Patella dorsal. 20. Patella external. 21. Femur dorsal.

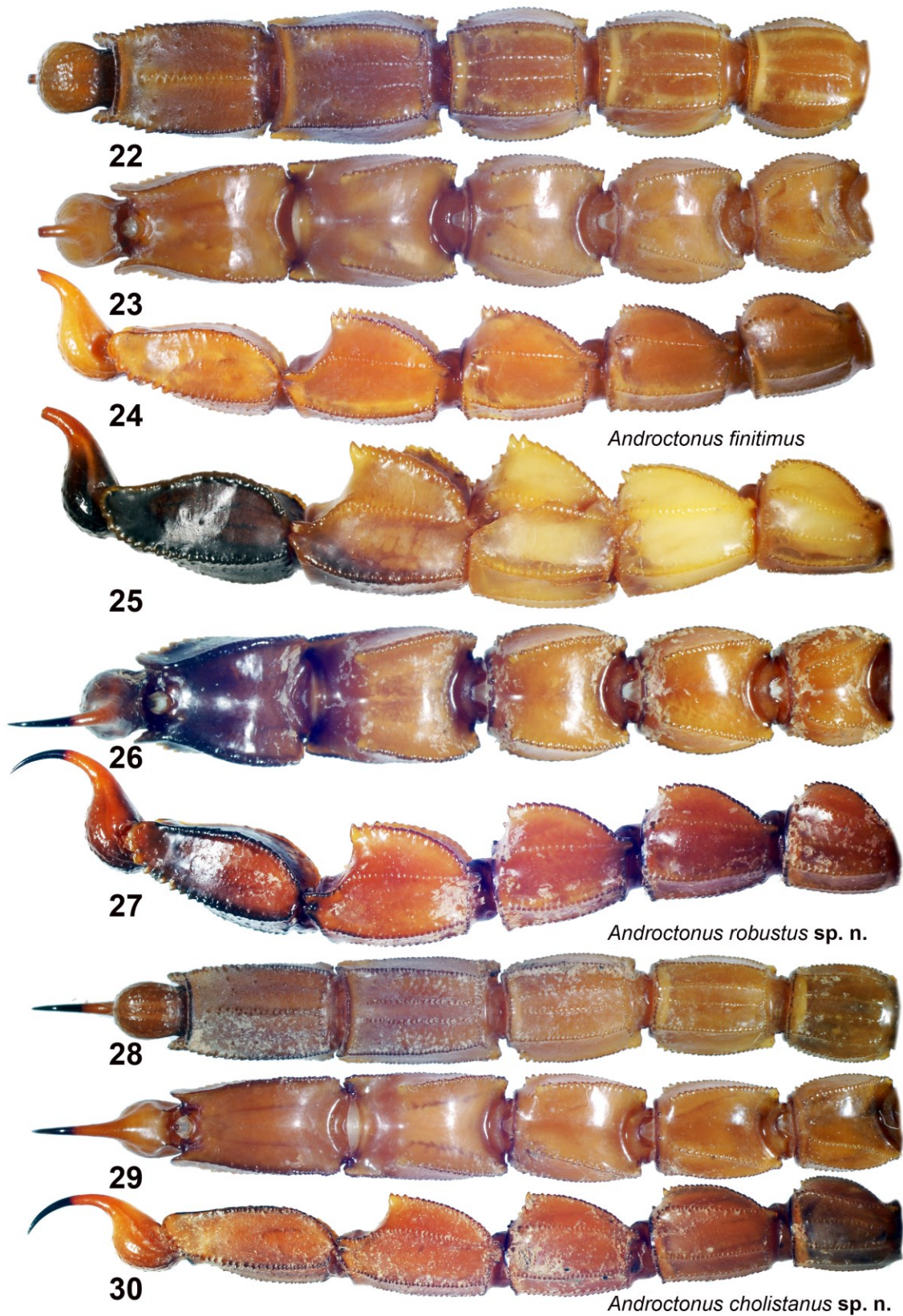
13 rows of granules, with external and internal accessory granules and three distal granules.

MEASUREMENTS IN MM. *Male holotype*. Total length 70; carapace length 8.5, width 9; metasoma and telson length 44; first metasomal segment length 5.7, width 6, depth 5.1; second metasomal segment length 6.7, width 6.6, depth 5.4; third metasomal segment length 6.8, width 7.5, depth 6.9; fourth metasomal segment length 8.2, width 7.6, depth 7; fifth metasomal segment length 8.9, width 7.2, depth 4.8; telson length ca 7.5; telson width 3.4; pedipalp femur length 7.1, width 2.3; pedipalp patella length 8.5, width 3.5; chela length 14.1; manus width 4.3; movable finger length 9.7.

Male paratype. Total length 66; carapace length 7.5, width 8.3; metasoma and telson length 41; first meta-

somal segment length 5, width 5.5, depth 4.8; second metasomal segment length 6.3, width 5.8, depth 4.9; third metasomal segment length 5.5, width 6.2, depth 5.8; fourth metasomal segment length 8, width 6.2, depth 5.8; fifth metasomal segment length 8.3, width 5.9, depth 4.3; telson length 7.7; telson width 3.2; pedipalp femur length 6, width 2.3; pedipalp patella length 7.4, width 3.3; chela length 11.8; manus width 4; movable finger length 7.6.

Female paratype. Total length 84; carapace length 9.6, width 10; metasoma and telson length 50.5; first metasomal segment length 6.4, width 6.4, depth 5.4; second metasomal segment length 7.7, width 6.3, depth 5.6; third metasomal segment length 7.9, width 6.7, depth 6.3; fourth metasomal segment length 9.4, width 6.7, depth 6.5; fifth metasomal segment length 9.7, width 6,



Figures 22–30: Metasoma and telson. 22–24. *Androctonus finitimus* (Pocock, 1897), ♂ (75 mm) holotype, ventral, dorsal, and lateral views. 25–26. *A. robustus* sp. n. 25–26. ♂ (70 mm) holotype, lateral and ventral views. 27. ♂ (66 mm) paratype, lateral view. 28–30. *A. cholistanus* sp. n., ♂ (63.5 mm) holotype, ventral, dorsal, and lateral views.

depth 4.8; telson length 9.4; telson width 3.9; pedipalp femur length 6.9, width 2.4; pedipalp patella length 8.7, width 3.5; chela length 13.9; manus width 4.2; movable finger length 9.9.

Androctonus cholistanus Kovařík et Ahmed, sp. n.
(Figs. 13–16, 28–31)

<http://zoobank.org/urn:lsid:zoobank.org:act:6E6B2641-BB77-4B83-80C1-83EC11216A4F>

TYPE LOCALITY AND TYPE DEPOSITORY. PAKISTAN, Punjab Province, Cholistan Desert, 28°30'N 70°00'E; the first author's collection (FKCP).

TYPE MATERIAL. PAKISTAN, Punjab Province, Cholistan Desert, 28°30'N 70°00'E, 18 June 2009, 1 ♂ (holotype), leg. Z. Ahmed, FKCP; 2012, 4 ♂ 2 ♀ (paratypes) (Figs. 15–16), without locality data (FKCP). INDIA, Rajasthan State, near Jaisalmer, July 1995, 1♂1♀im. (paratypes), leg. R. Sauer (FKCP).

ETYMOLOGY. Named after the type locality.

DIAGNOSIS. Total length 60–72 mm. Base color yellow to yellowish brown. Pedipalps including trochanter and legs always yellow. Chelicerae yellow, without reticulation. Fifth metasomal segment and vesicle greenish black, darker pigment may spread to sides and lower surface of fourth metasomal segment that is never entirely black. Carapace densely granulated, with anterior and posterior median carinae developed; anterior margin of carapace straight. Pectinal teeth number 26–32 in males and 21–23 in females. Sternites without carinae; sternite VII finely granulated and with four carinae. All metasomal segments of male longer than wide and deep. First metasomal segment with 10 carinae, second to fourth segments with eight carinae, and fifth segment with five carinae. Missing lateral carinae on second and third metasomal segments replaced by three or four large granules on posterior margin. Dorsal carinae on first through fourth metasomal segments terminate in a larger tooth. Metasomal segment V with four setae on lateral surface. Anal arch with three lobes. Dorsal surface of metasoma smooth. Tarsomeres of legs densely hirsute, with bristlecombs dense on first to third legs but present also on fourth legs. Pedipalp chela without carinae. Movable fingers of pedipalps with 13–14 rows of granules and with external and internal granules. Male with fingers proximally weakly twisted with little gap.

DESCRIPTION. Adult males are 60–72 mm long and adult females are 60–68 mm long. For habitus see Figs. 13–14 (male holotype) and Figs. 15–16 (female). For position and distribution of trichobothria of pedipalps see Figs.

18–21 (the same as in *A. robustus* sp. n.). Trichobothrium d_2 of pedipalp femur is present on the dorsal surface. Sexual dimorphism is weak; it is not evident in the shape of the metasoma. Males have only slightly wider chela of pedipalps than females. Both sexes have fingers proximally weakly twisted with little gap.

COLORATION. The base color is yellow to yellowish brown. Pedipalps including the trochanter and legs are always yellow. The fifth metasomal segment and the vesicle are greenish black; the darker pigment may spread to sides and lower surface of the fourth metasomal segment, which is never entirely black; other metasomal segments are yellow to yellowish brown, ventral carinae may be black. The chelicerae are yellow, without reticulation. The mesosoma is yellowish brown, darker than legs.

CARAPACE. The surface is densely granulated. Carinae are inconspicuous, only the anterior and posterior median carinae are well developed. The anterior margin of the carapace is straight and bears eight long macrosetae.

MESOSOMA. The mesosoma bears three carinae. The pectinal tooth count in males is 26–32: 26 (2), 27 (3), 28 (1), 29 (3), 31 (1), 32 (1) [n=11], and in females, 21–23: 21 (1), 22 (3), 23 (2) [n=6]. The marginal tips of the pectines extend to the proximal half of sternite V in males and to proximal half of sternite IV in females. The pectines have three marginal lamellae and six to eight middle lamellae. The lamellae bear numerous dark setae, three to six on each fulcrum. Sternites III–VI lack carinae. Sternite VII is finely granulated, with four carinae.

METASOMA AND TELSON. The first metasomal segment bears 10 carinae, the second to fourth segments bear carinae, and the fifth segment bears five carinae. Missing lateral carinae on the second and third metasomal segments are replaced by three to four large granules on posterior margin. All carinae are composed of distinct granules. Dorsal carinae on the first through fourth metasomal segments terminate in a larger tooth. All segments are only very sparsely setose. All metasomal segments of male are longer than wide and deep. Metasomal segment V bears four setae on the lateral surface. The anal arch has three lobes. The dorsal surface of the metasoma is smooth. The telson is elongate in both sexes. The surface of the telson is bumpy, sparsely hirsute, and without a subaculear tubercle.

LEGS. The tarsomeres of legs are densely hirsute, with bristlecombs dense on legs I–III, but present also on the fourth legs. The femur and patella may bear four to six carinae, which however may be obsolete. The femur bears only solitary setae.

PEDIPALPS. 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. The chela is smooth, without carinae. All pedipalps including the trochanter are only very sparsely hirsute. The movable

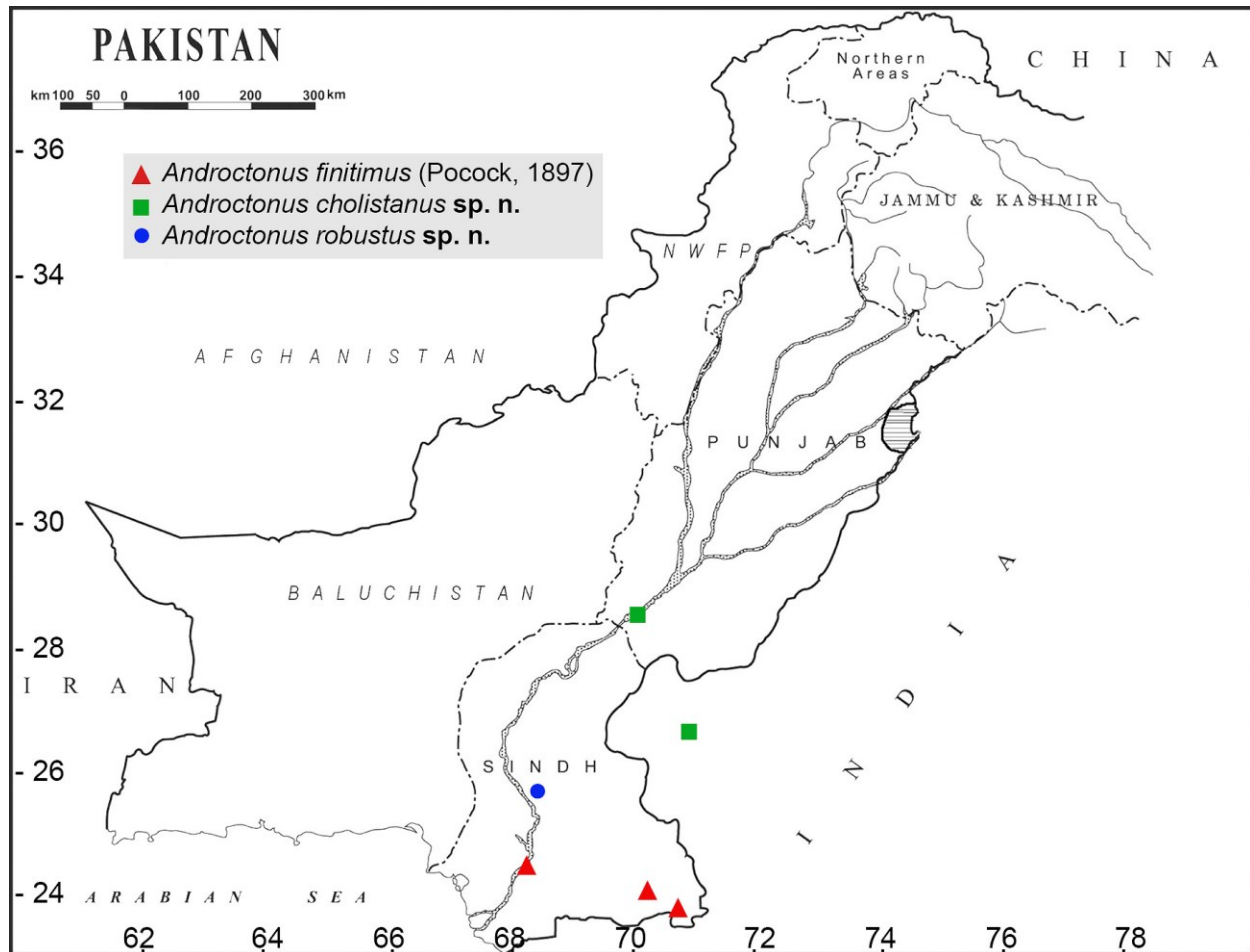


Figure 31: Distribution map of the examined specimens of *Androctonus finitimus* (Pocock, 1897), *A. robustus* sp. n., and *A. cholistanus* sp. n.

fingers of pedipalps bear 12–13 rows of granules and external and internal granules; the fixed fingers bear 11–12 rows of granules, with external and internal accessory granules and three distal granules.

MEASUREMENTS IN MM. *Male holotype*. Total length 63.5; carapace length 6.9, width 7.3; metasoma and telson length 39.7; first metasomal segment length 4.7, width 4.5, depth 4.2; second metasomal segment length 5.9, width 4.7, depth 4; third metasomal segment length 6.2, width 5.1, depth 4.3; fourth metasomal segment length 7.6, width 4.9, depth 4.5; fifth metasomal segment length 8, width 5, depth 3.4; telson length 7.1; telson width 3.4; pedipalp femur length 5.3, width 1.9; pedipalp patella length 7, width 2.9; chela length 11.7; manus width 3.4; movable finger length 7.4.

Female paratype (India, Rajasthan State, near Jaisalmer). Total length 66; carapace length 7.7, width 9.1; metasoma and telson length 39.5; first metasomal segment length 5.1, width 4.9, depth 4.4; second metasomal segment length 6.1, width 5.0, depth 4.5; third metasomal segment length 6.5, width 5.1, depth

4.8; fourth metasomal segment length 7.7, width 4.9, depth 4.8; fifth metasomal segment length 8.5, width 4.9, depth 3.7; telson length 7.7; telson width 3.2; pedipalp femur length 5.3, width 1.9; pedipalp patella length 7, width 2.9; chela length 11.7; manus width 2.9; movable finger length 7.8.

Key to Asian species of *Androctonus*

1. Color reddish brown to black. *A. crassicauda* (Olivier, 1807) and *A. maelfaiti* Lourenço, 2005
– Base color usually yellow. Pedipalps and legs always yellow. 2
2. Movable fingers of pedipalps with 9–10 rows of granules. *A. afghanus* Lourenço et Qi, 2006
– Movable fingers of pedipalps with 12–15 rows of granules. 3
3. Fifth metasomal segment and vesicle pale greenish or brownish black, darker pigment may spread to sides and

lower surface of fourth segment never entirely black... 4
– Fourth and fifth metasomal segments entirely black.
..... *A. baluchicus* (Pocock, 1900)

4) All metasomal segments of male longer than wide.
..... *A. cholistanus* sp. n.
– First metasomal segment of male wider than long. 5

5. Third metasomal segment of male longer than deep. ...
..... *A. finitimus* (Pocock, 1897)
– Third metasomal segment of male deeper than long or
as deep as long. *A. robustus* sp. n.

AFFINITIES AND COMMENTS. *A. finitimus* (Pocock, 1897), *A. robustus* sp. n., and *A. cholistanus* sp. n. form a closely knit group hitherto considered one species. They are similarly colored and their geographic ranges are in close proximity (Fig. 31). However, they can be reliably distinguished morphologically, namely by the differences in morphometry of the male metasoma (Figs. 22–30 and key).

When using morphometry, it is important to remember that males of most scorpions reach maturity after a number of ecdyses that may vary within a species, which directly influences the measured feature; some variation thus must be expected. In case of the three species concerned morphometry could be used because the measured males were of nearly identical size and presumably matured after the same number of ecdyses, probably five.

The studied specimens seem to indicate that *A. cholistanus* sp. n. (60–72 mm) is the smallest species; it also has the smallest number of rows of granules on the movable fingers of pedipalps (12–13), the narrowest metasoma, and the most elongate telson (Fig. 30 versus 27).

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