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A remarkably small species of *Uroplectes* Peters, 1861 (Scorpiones: Buthidae), endemic to the Succulent Karoo of South Africa

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ABSTRACT

The scorpion fauna of southern Africa is very diverse, especially in the arid western half of the subcontinent. New species continue to be discovered as the region is surveyed with ultraviolet light detection methods. The present contribution describes *Uroplectes ansiedippenaarae* sp. n., which is endemic to the Succulent Karoo Biome in the Northern Cape and Western Cape provinces of South Africa. The new species appears to be most closely related to *U. variegatus* (C.L. Koch, 1844), which is endemic to the Fynbos Biome in the Western Cape Province. *Uroplectes ansiedippenaarae* sp. n. is the smallest species of *Uroplectes* Peters, 1861, and among the smallest scorpion species in southern Africa, with adults ranging from 16–20 mm in total length. The addition of this new species raises the number of *Uroplectes* species and subspecies in South Africa to 19, and the number of endemics to 10.

KEY WORDS: Afrotropical Region, southern Africa, Chelicerata, Arachnida, scorpion, biodiversity, systematics, taxonomy, new species, morphology, distribution, biome.

INTRODUCTION

The scorpion fauna of southern Africa (south of 15° latitude) is very diverse, especially in the arid western half of the subcontinent (Prendini 2005). New species continue to be discovered as the region is surveyed with ultraviolet (UV) light detection methods (Prendini 2000*a*, *b*, 2001*a*, 2003, 2006; Prendini & Esposito 2010). The buthid genus *Uroplectes* Peters, 1861 presently comprises 29 species and subspecies, distributed from the Cape Peninsula to Ethiopia and Nigeria (Fet & Lowe 2000), but its greatest diversity and endemism occurs in South Africa (Prendini 2005). Although several regional studies provided keys, checklists and/or redescriptions for the species of South Africa (Lawrence 1955), Namibia (Lamoral 1979) and Zimbabwe (Newlands & Martindale 1986; FitzPatrick 1996, 2001), the genus as a whole has not been revised since Kraepelin (1899) and its limits with respect to other genera, e.g. *Uroplectoides* Lourenço, 1998, are unclear.

The present contribution describes a new species of *Uroplectes*, endemic to the Succulent Karoo Biome in the Northern Cape and Western Cape provinces of South Africa (Figs 1, 2A, B). *Uroplectes ansiedippenaarae* sp. n. (Fig. 2C–E) appears to be most closely related to *U. variegatus* (C.L. Koch, 1844) (Fig. 2F), which is endemic to the Fynbos Biome in the Western Cape Province. The addition of this new species raises the number of *Uroplectes* species and subspecies in South Africa to 19, and the number of endemic species to 10. This remarkable species is the smallest in the genus, and among the smallest scorpion species in southern Africa, with adults ranging from 16–20 mm in total length.

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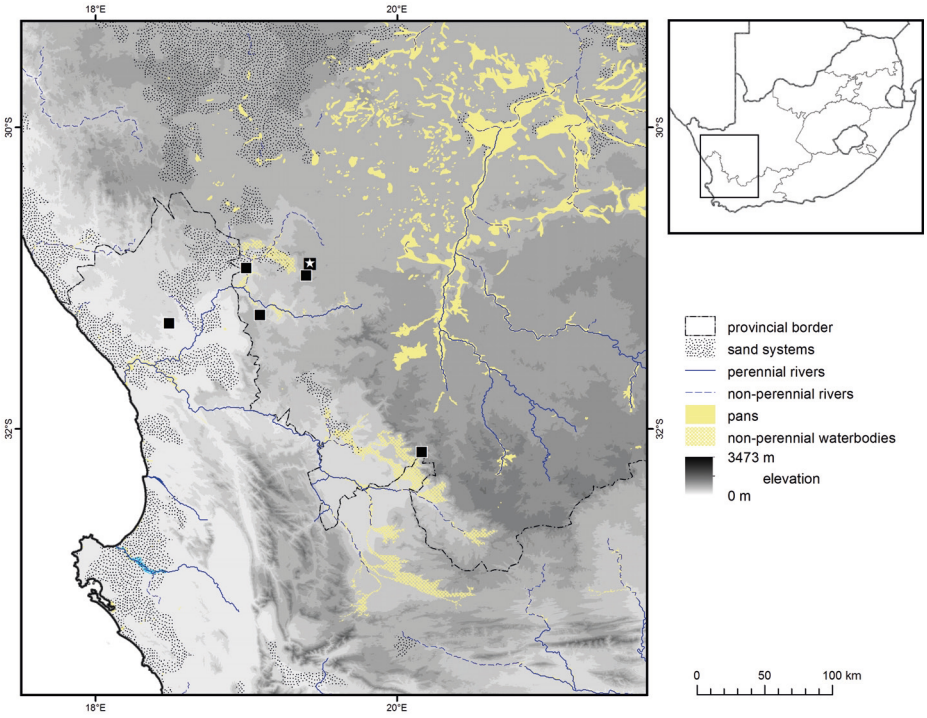

Fig. 1. The known distribution of *Uroplectes ansiedippenaarae* sp. n. in the Northern Cape and Western Cape provinces of South Africa. Black squares indicate known locality records; white star on black square indicates type locality.

MATERIAL AND METHODS

Scorpions collected personally were found at night using portable UV lamps, comprising a pair of mercury-vapor tubes attached to a chromium parabolic reflector and powered by a rechargeable 7 Amp/hr, 12 V battery, or UV-LED flashlights. A portable Garmin™ GPS V Plus device was used for recording the geographical coordinates of collection localities in the field.

Material examined is deposited in the American Museum of Natural History, New York (AMNH), the KwaZulu-Natal Museum, Pietermaritzburg, South Africa (NMSA), and the South African National Collection of Arachnida, Agricultural Research Council, Plant Protection Research Institute, Roodeplaat, South Africa (NCA). Tissue samples for DNA isolation are stored in the Ambrose Monell Collection for Molecular and Microbial Research (AMCC) at the AMNH.

Photographs were taken in visible light as well as under long wave UV light using a Microptics™ ML-1000 digital photomicrography system. Measurements (mm), given as average and range in the descriptions, were recorded using the ocular micrometer of a Nikon® SMZ-1500 stereomicroscope. Morphological terminology follows previous papers on Buthidae C.L. Koch, 1837 by the author (e.g. Prendini 2004*a*, *b*, *c*, 2005*b*; Vignoli & Prendini 2008; Prendini *et al.* 2009; Tahir *et al.* 2014), with the terms 'external'

and 'internal' replaced by 'retrolateral' and 'prolateral' when referring to position on appendages (chelicerae, pedipalps and legs). Terminology for lateral ocelli follows Loria and Prendini (2014). Counts of median denticle subrows on pedipalp chela movable finger include the short subterminal subrow comprising two denticles.

A distribution map was produced using ArcMap Version 10.1 (Environmental Systems Research Institute, Redlands, California), by superimposing point locality records on the GTOPO30 global digital elevation model (https://lta.cr.usgs.gov/GTOPO30), obtained from http://webmap.ornl.gov/wcsdown/wcsdown.jsp?dg_id=10003_1.

TAXONOMY

Family Buthidae C.L. Koch, 1837
Genus *Uroplectes* Peters, 1861

Uroplectes ansiedippenaarae sp. n.

Figs 1–6; Table 1

Etymology: The specific epithet is a patronym honoring Dr Ansie Dippenaar-Schoeman of the Agricultural Research Council, Plant Protection Research Institute, South Africa, for her many contributions to African arachnology.

Diagnosis: *Uroplectes ansiedippenaarae* sp. n. appears to be most closely related to *U. variegatus* (Fig. 2F) but differs from the latter in the following respects: *Uroplectes ansiedippenaarae* sp. n. is smaller, total length 16.2–19.4 mm ($n = 11$) in both sexes, than *U. variegatus*, total length 19.1–22.4 mm ($n = 6$) in ♂ and 21.8–25.9 mm ($n = 6$) in ♀ (Tables 1, 2). The habitus of *U. ansiedippenaarae* sp. n. is more robust, with an incrassate pedipalp chela manus and a globose telson (Fig. 2C–E), than that of *U. variegatus*, which is more gracile, with a slender chela manus and telson (Fig. 2F). The number of subrows in the median denticle rows of the pedipalp chela fixed and movable fingers is lower (7 and 8, respectively; Table 1) in *U. ansiedippenaarae* sp. n., than in *U. variegatus* (8 and 9, respectively; Table 2). The pectinal tooth count is also lower, with 12–14/12–14 ($n = 10$) (♂) and 11/13 (♀), and the basal pectinal tooth of the female much smaller (*ca.* twice the size of the other teeth) in *U. ansiedippenaarae* sp. n., than in *U. variegatus*, with 15–18/16–18 ($n = 6$) (♂) and 14–15/14–16 ($n = 6$) (♀) pectinal teeth and the basal pectinal tooth of the female *ca.* five times larger than the other teeth (Tables 1, 2). *Uroplectes ansiedippenaarae* sp. n. is generally less granular, with less developed metasomal carinae than *U. variegatus*. For example, the spiniform granules on the dorsosubmedian carinae of metasomal segments I–III and, especially, IV, are small, the ventrosubmedian carinae of segments I–IV and the ventrolateral carinae of segment V obsolete, and the primary subaculear tubercle rounded in *U. ansiedippenaarae* sp. n., whereas the spiniform granules on the dorsosubmedian carinae of metasomal segments I–IV are prominent, the ventrosubmedian carinae of segments I–IV and the ventrolateral carinae of segment V distinct and costate-granular, and the subaculear tubercle conical in *U. variegatus*. The two species differ further in the pattern of infuscation. The legs and pedipalps are immaculate, except for the pedipalp chela fingers, in *U. ansiedippenaarae* sp. n., whereas the leg femora and patellae and the pedipalp femur, patella, chela fingers and often the manus are spotted with infuscation in *U. variegatus*. Metasomal segments I–III, and often segment IV are immaculate in

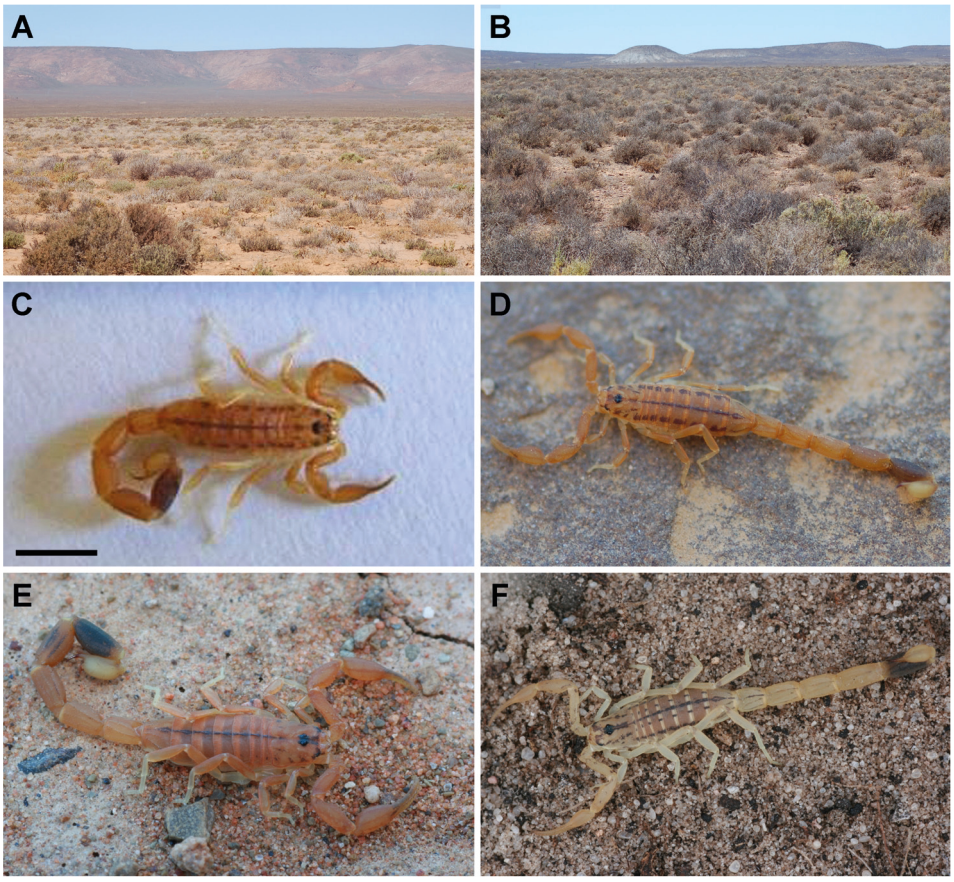

Fig. 2. (A, B) Succulent Karoo habitat and (C–E) live habitus of *Uroplectes ansiedippenaarae* sp. n. and (F) *Uroplectes variegatus* (C.L. Koch, 1844). (A) Northern Knersvlakte Vygieveld at Ezelkopvlakte, Northern Cape Province, South Africa. (B) Hantam Karoo at Loeriesfontein, Northern Cape Province, South Africa. (C) *U. ansiedippenaarae* sp. n., ♂, Glen Lyon, Northern Cape Province, South Africa. Scale bar, 3 mm. (D) *U. ansiedippenaarae* sp. n., ♂, Loeriesfontein. (E) *U. ansiedippenaarae* sp. n., ♂, Langkloof, Northern Cape Province, South Africa. (F) *U. variegatus*, Koeberg, Western Cape Province, South Africa. Photographs courtesy J. Huff (A, B, D), C. Willis (C) and I. Engelbrecht (E, F).

U. ansiedippenaarae sp. n., whereas the metasomal carinae and often the dorsomedian surface of metasomal segments I–IV are striped with infuscation in *U. variegatus*. The mesosomal tergites of *U. ansiedippenaarae* sp. n. bear at most three stripes of infuscation (a median stripe and usually a pair of lateral stripes; Fig. 2C–E), whereas the tergites of *U. variegatus* bear at least five stripes of infuscation (a median stripe, a pair of submedian stripes and one or two pairs of lateral stripes; Fig. 2F).

Description: The following account is based on the type material.

Total length: Adult: small, maximum length, measured from anterior margin of carapace to tip of aculeus, 18.2 mm (16.2–19.4 mm, $n = 6$) (♂), 17.3 mm (♀) (Table 1).

Colour: Base colour uniformly pale yellowish to reddish orange (Fig. 2C–E), with paler sternum, genital operculum, pectines, sternites, telson and ventral surface of legs.

Uniformly immaculate except for infuscation as follows: Pedipalp chela fingers infuscate; cheliceral manus, retrolateral surfaces usually infuscate; some or all carapace surfaces (notably interocular, circumocular, anterolateral, median lateral, posteromedian and posterolateral) with patches of infuscation; mesosomal tergites with a median stripe and usually a pair of lateral stripes of infuscation (Figs 2C–E, 4); metasomal segment IV and, to a much lesser extent, segment III with ventromedian stripe, pair of ventrolateral stripes and sometimes pairs of lateral and/or dorsolateral stripes of infuscation; segment V entirely infuscate, except posteriorly. Dark, infuscate metasoma V contrasts with paler carapace, pedipalps, legs and metasomal segments I–IV, and very pale telson.

Chelicerae: Movable finger, ventral surface with two subdistal teeth; distal external (dorsal) and distal internal (ventral) teeth subequal, opposable. Fixed finger, ventral surface without denticles. Fingers and manus, proventral surfaces with long, dense vestiture of macrosetae.

Carapace: Anterior width of posterior width, 46% (42–50%, $n = 10$) (♂), 36% (♀); posterior width of length, 100% (95–105%, $n = 10$) (♂), 100% (♀) (Table 1). Anterior carapace margin slightly procurved, with median projection (epistome) and without median notch (Fig. 3A, B). Five pairs of lateral ocelli (Type 5 pattern); each lateral ocular tubercle with three major ocelli, situated laterally, and two minor ocelli, situated posterior and posterodorsal to the posterolateral major ocellus. Median ocelli considerably larger than lateral ocelli, distance between ocelli less than width of ocellus. Median ocular tubercle situated anteromedially, distance from anterior carapace margin 33% (28–37%, $n = 10$) (♂), 33% (♀) of carapace length (Table 1). Superciliary carinae obsolete, finely granular, not protruding above median ocelli. Other carinae absent. Anteromedian sulcus shallow, narrow; posteromedian sulcus narrow, shallow anteriorly, becoming deeper posteriorly; posterolateral sulci shallow, wide, curved; posteromarginal sulcus obsolete. Carapace surfaces finely and sparsely granular.

Pedipalps: Femur width of length, 40% (33–43%, $n = 10$) (♂), 38% (♀) (Table 1). Prodorsal, promedian, proventral, retrodorsal and retromedian carinae obsolete, granular, complete (Fig. 5A). Promedian carina additionally with a few subspiniform granules. Other carinae absent. Dorsal and prodorsal intercarinal surfaces finely and sparsely granular. Other surfaces smooth or nearly so. Patella width of length, 42% (40–44%, $n = 10$) (♂), 41% (♀) (Table 1). Promedian and proventral carinae obsolete, comprising discontinuous rows of spiniform granules, and demarcated with prominent macrosetae, especially proximally (Fig. 5B–D). Other carinae absent. Prodorsal intercarinal surfaces finely and sparsely granular. Other surfaces smooth or nearly so. Chela manus slightly incrassate (♂, Fig. 5E–G) or slender (♀, Fig. 5H); width of height, 114% (113–150%, $n = 10$) (♂), 114% (♀); width of length along ventroexternal carina, 62% (56–64%, $n = 10$) (♂), 62% (♀); length along ventroexternal carina of length movable finger, 90% (81–100%, $n = 10$) (♂), 81% (♀) (Table 1). Manus sparsely setose; surfaces acarinate, smooth (Fig. 5E–H). Fixed and movable fingers sublinear, little to no gap between fingers proximally, when closed (Fig. 5F, H); surfaces smooth; median denticle rows respectively comprising seven and eight oblique denticle subrows (Table 1), each subrow terminating in a large median denticle proximally, and flanked proximally by a large retrolateral denticle, and distally by a larger prolateral denticle, prolateral denticles separated from median subrows by approximately one denticle width; fingers each with enlarged terminal denticle.

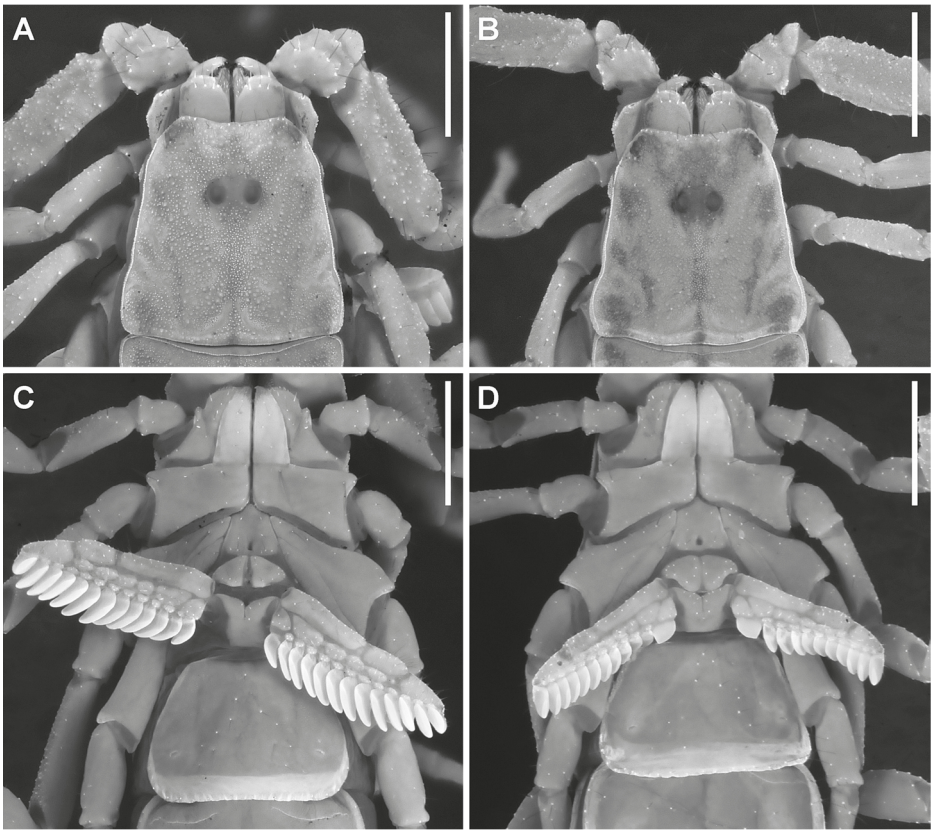

Fig. 3. Carapace, (A, B) dorsal aspect, (C, D) sternum, genital opercula and pectines, ventral aspect of *Uroplectes ansiedippenaarae* sp. n., Loeriesfontein, Northern Cape Province, South Africa. A, C – Holotype ♂ (AMNH); B, D – Paratype ♀ (AMNH). Scale bars = 1 mm.

Trichobothria: Orthobothriotaxic, Type A, α-configuration (Fig. 5) with the following segment totals: 11 femur: 5 dorsal (d_1–d_5), 4 internal (i_1–i_4), 2 external (e_1, e_2); 13 patella: 5 dorsal d_1–d_5, 1 internal (*i*), 7 external (*et*, *est*, *em*, esb_1, esb_2, eb_1, eb_2); 8 chela manus: 2 ventral (V_1, V_2), 6 external (Eb_1–Eb_3, *Esb*, *Est*, *Et*); 7 chela fixed finger: *dt*, *db*, *it*, *et*, *est*, *esb*, *eb*. The following trichobothria are noticeably smaller ('petite'): femur: d_2, d_3, d_4, i_4, e_2; patella: d_2, eb_2; chela manus: V_1, *Et*, Eb_3, *Esb*; chela fixed finger: *esb*.
Legs: Femora I–IV, each with two obsolete granular carinae and retrolateral surfaces finely and sparsely granular. Patellae I–IV, retrolateral surfaces finely and sparsely granular. Other segments acarinate and smooth. Tibiae I–IV, retrolateral and ventral surfaces with scattered macrosetae; III and IV with spurs. Basitarsi I–IV, each with pro- and retroventral rows of fine, acuminate macrosetae; macrosetal combs absent; pro- and retrolateral pedal spurs present. Telotarsi I–IV, each with pro- and retroventral rows of fine, acuminate macrosetae; laterodistal lobes truncated; median dorsal lobes extending to ungues; ungues short, distinctly curved, equal in length.
Sternum: Subtriangular (Fig. 3C, D). Median longitudinal furrow Y-shaped, shallow anteriorly, becoming deeper posteriorly.

Genital operculum: Genital opercula suboval, completely divided longitudinally; genital papillae present (♂, Fig. 3C), absent (♀, Fig. 3D).
Hemispermatophore: Flagelliform.
Pectines: Distal edge reaching past distal edge of coxa IV but not reaching to distal edge of trochanter IV (♂, Fig. 3C) or to distal edge of coxa IV (♀, Fig. 3D). Three marginal lamellae and 7 or 8 (♂) or 6 (♀) median lamellae; first proximal median lamella (scape) of each pecten unmodified, mesial margin angular, approximately 90°, teeth present along entire posterior margin. Fulcra present. Pectinal teeth curved, all similar in size (♂) or basal pectinal tooth oval, enlarged, approximately twice the size of other teeth (♀); tooth count, 13/13 (12–14/12–14, $n = 10$) (♂) and 11/13 (♀) (Table 1).
Mesosoma: Tergites I–VI unicarinate, each bearing costate to costate-granular median carinae in posterior half to two-thirds of segment and pair of submedian depressions. Tergite VII pentacarinate, with obsolete median carina, restricted to anterior half of segment, distinct costate-granular submedian carinae in posterior half, and distinct costate-granular lateral carinae in posterior two-thirds. Pre-tergites smooth. Post-tergites, intercarinal surfaces sparsely and finely granular, becoming more coarsely granular posteriorly. Sternites III–VII, acarinate, smooth, except for sternite VII, which is finely and sparsely granular posterolaterally; IV–VI, each with paired longitudinal depressions prolateral to spiracles, absent on VII. Sternite VII, length of width, 61% (50–72%, $n = 10$) (♂), 56% (♀) (Table 1).
Metasoma and telson: Metasomal segments I–V progressively increasing in length but similar in width (Figs 4, 6); segment V, width of segment I, width, 90% (82–100%, $n = 10$) (♂), 82% (♀) (Table 1). Metasoma slender, width of length, segment I, 77% (71–85%, $n = 10$) (♂), 85% (♀); II, 63% (56–67%, $n = 10$) (♂), 71% (♀); III, 56% (56–63%, $n = 10$) (♂), 67% (♀); IV, 47% (45–52%, $n = 10$) (♂), 56% (♀); V, 43% (35–48%, $n = 10$) (♂), 45% (♀). Telson vesicle, width of metasomal segment V, width, 89% (80–90%, $n = 10$) (♂), 100% (♀); globose, height of length, 60% (53–64%, $n = 10$) (♂), 60% (♀); dorsal surface sublinear, concave basally, ventral surface markedly curved. Aculeus relatively short and abruptly curved, length of vesicle length, 45% (40–58%, $n = 10$) (♂), 47% (♀). Length metasoma and telson, of total length, 49% (46–50%, $n = 10$) (♂), 46% (♀). Dorsosubmedian carinae, segments I–IV distinct, costate-granular, complete, each terminating posteriorly in prominent spiniform granule, less pronounced on IV than on I–III (Fig. 6A, B); segment V, absent. Dorsolateral carinae, segments I–IV, distinct, costate-granular, complete, terminating posteriorly in prominent spiniform granule on segments I–III; segment V, obsolete or absent. Median lateral carinae, segments I–III, distinct, costate-granular, complete on I, partial, restricted to posterior three-quarters, on II and III (Fig. 6C, D); segments IV and V, absent. Ventrolateral carinae, segments I–IV, distinct, costate-granular, complete; segment V, obsolete, granular, complete (Fig. 6E, F). Ventrosubmedian carinae, segments I–IV, obsolete, granular, complete; segment V, absent or obsolete, discontinuous granular row, restricted to anterior half. Ventromedian carina, segment V, obsolete, granular, complete, unmodified posteriorly. Dorsolateral, median lateral and, to a lesser extent, dorsomedian intercarinal surfaces, segments I–IV, finely and sparsely granular; segment V, smooth. Ventral intercarinal surfaces, segment I, smooth; segments II and III, finely and sparsely granular posteriorly; segments IV and V, more coarsely and densely granular, especially posteriorly. Metasomal segments uniformly sparsely setose. Telson vesicle acarinate,

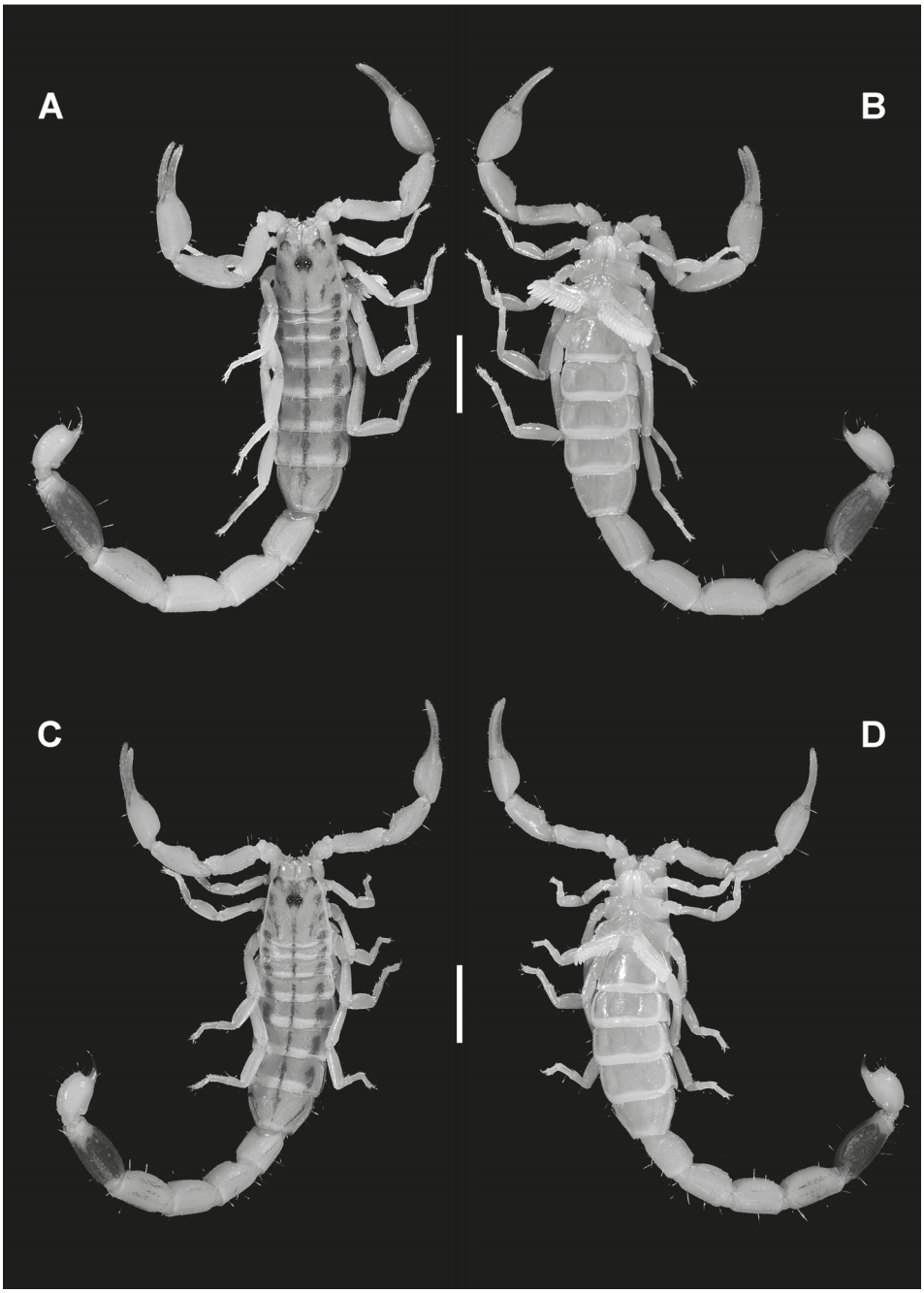

Fig. 4. Habitus, (A, C) dorsal aspect and (B, D) ventral aspect of *Uroplectes ansiedippenaarae* sp. n., Loeriesfontein, Northern Cape Province, South Africa. A, B – Holotype ♂ (AMNH); C, D – Paratype ♀ (AMNH). Scale bars = 5 mm.

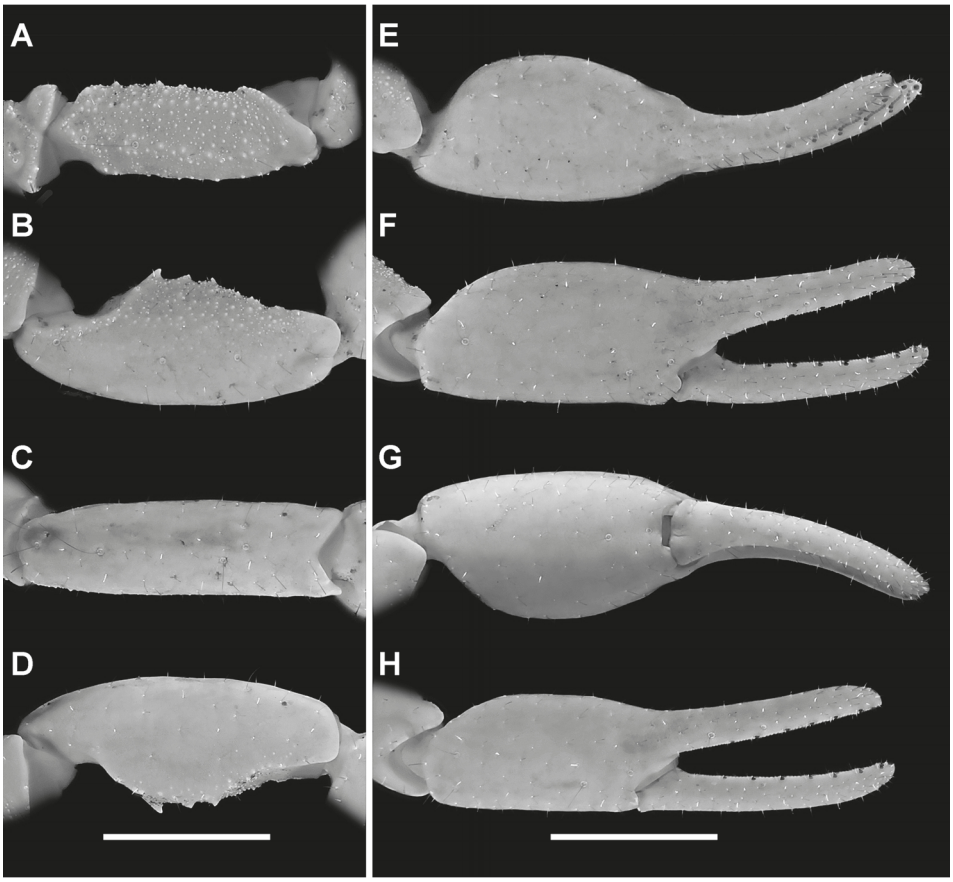

Fig. 5. Dextral pedipalp segments of *Uroplectes ansiedippenaarae* sp. n., (A–G) holotype ♂ (AMNH) and (H) paratype ♀ (AMNH), Loeriesfontein, Northern Cape Province, South Africa. (A) Femur, dorsal aspect. (B–D) Patella, (B) dorsal, (C) retrolateral and (D) ventral aspects. (E–H) Chela, (E) dorsal, (F, H) retrolateral and (G) ventral aspects. Scale bars = 1 mm.

with compound subaculear tubercle, comprising at least three subspiniform granules ventrally and prominent anterodorsal lateral lobes; dorsal, lateral and ventral surfaces smooth; ventral surfaces moderately setose, becoming more so distally at base around subaculear tubercle.

Variation: The specimens from Ezelkopvlakte and Grootgraafwater on the Knersvlakte are markedly paler than those from Kamdaniekop and Loeriesfontein on the Bokkeveld plateau, lacking infuscation on the chelicerae and metasomal segment III, and most infuscation on the carapace and tergites including all or most of the pair of lateral stripes. The specimens from Langkloof in the Tankwa Karoo are more reddish in base colouration (Fig. 2E) than the specimens from the Bokkeveld plateau and the Knersvlakte, and more infuscate than the specimens from the Knersvlakte (Fig. 2D), but less so than the specimens from the Bokkeveld plateau, lacking most infuscation on the carapace and tergites including all or most of the pair of lateral stripes.

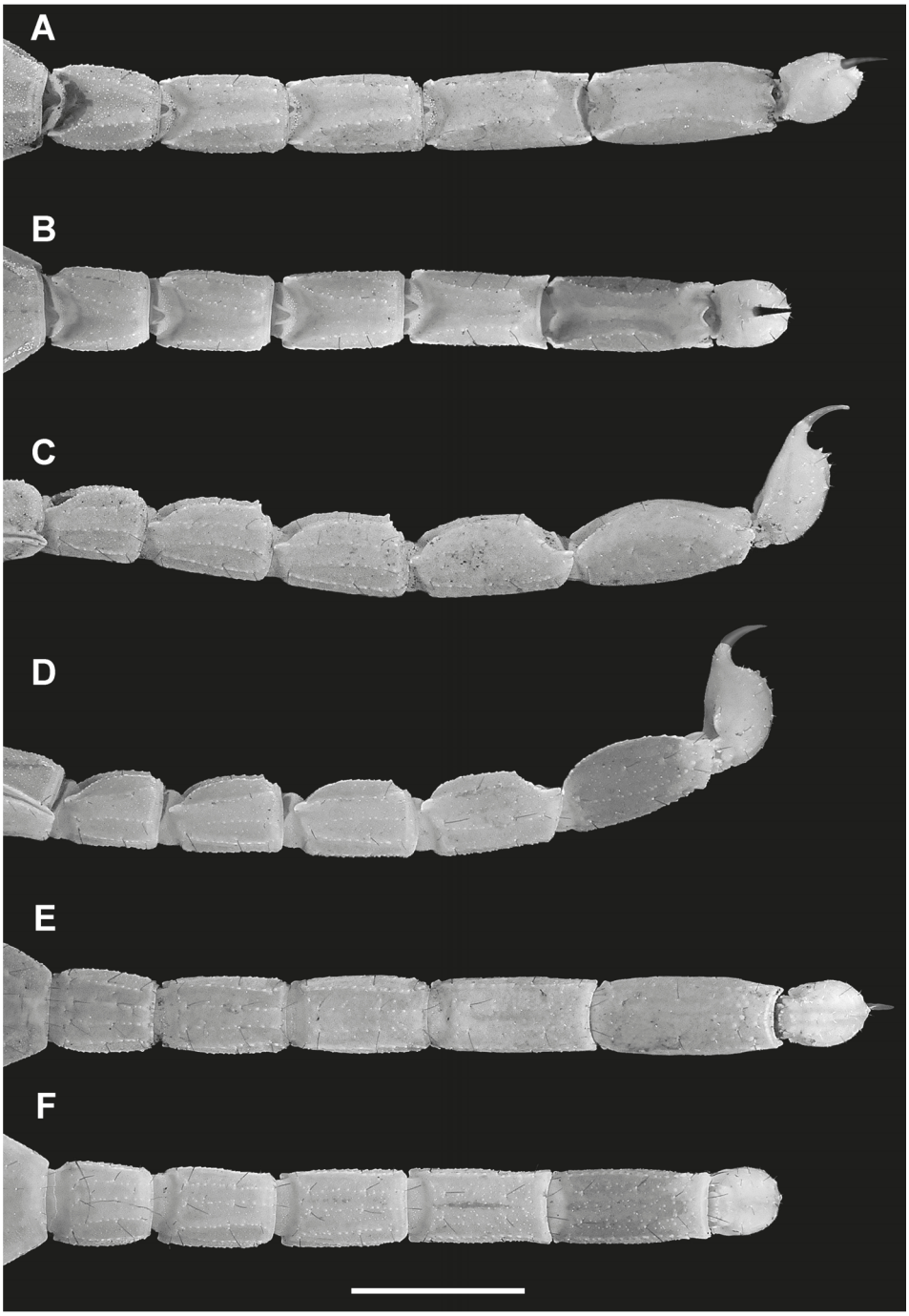

Fig. 6. Metasoma and telson, (A, B) dorsal, (C, D) lateral and (E, F) ventral aspects of *Uroplectes ansiedippenaarae* sp. n., Loeriesfontein, Northern Cape Province, South Africa. A, C, E – Paratype ♂ (AMNH); B, D, F – Paratype ♀ (AMNH). Scale bars = 1 mm.

Holotype ♂ (AMNH): SOUTH AFRICA: *Northern Cape Province*: Calvinia District: Farm Loeriesfontein 675, 4.6 km N Loeriesfontein on road AP 2972 to Granaatboskolk, opposite landing strip, 30°54.348'S 19°25.449'E, 860 m, 16.ii.2007, L. Prendini & J. Huff, Nama/Succulent karoo transition on shallow pan with hard clayey-loam soil, cracked clay surface, with succulent mats, UV detection on cold, windy, moonless night, sympatric with *Uroplectes carinatus* (Pocock, 1890) and *Opistophthalmus* sp.

Paratypes: SOUTH AFRICA: *Northern Cape Province*: Calvinia District: same data as holotype, 6♂ 1♀ (AMNH), 1 subad. ♀ (AMCC [LP 6882]); Farm Ezelkopvlakte 333, 13.9 km SW intersection with R355 (Kliprand–Loeriesfontein) on Loop 6 road along Sishen–Saldanha railway line, 30°55.974'S 19°00.070'E, 369 m, 26.ii.2009, L. Prendini & H. Bichard, Succulent Karoo along pans in Kromrivier bed, mesems and *Salsola* L. dominant vegetation on consolidated, compacted alluvium, soft near surface but becoming harder below, UV detection on cool, still, dark night, specimens collected sitting on the ground, sympatric with *Opistophthalmus* spp., *U. carinatus* and *U. gracilior* Hewitt, 1914, 3♂ (AMNH); Kamdaniekop valley, 7 km SW Loeriesfontein, 30°59'S 19°24'E, 27–28.ii.1979, B.H. Lamoral, sympatric with *U. carinatus*, 15♂ 1♀ (NMSA 22128 old 11338). Sutherland District: Tankwa Karoo National Park: Farm Lange Kloof 60, Langkloof, 13 km NE intersection with P2250 (Calvinia–Ceres), 32°09.242'S 20°09.824'E, 662 m, 11.ii.2010, L. Prendini & I. Engelbrecht, dry riverbed (Langkloof) and adjacent steep rocky slopes, Succulent karoo on clayey-loam soil, relatively open area, UV detection on warm, moonless night with slight breeze, wind at 1 am, specimens sitting or walking on open, stony ground, sympatric with *O. pallipes* C.L. Koch, 1842, *Parabuthus capensis* (Ehrenberg, 1831) and *Uroplectes* sp., 3♂ (AMNH), 32°09.271'S 20°09.827'E, 655 m, *ibid.*, 6♂ (AMNH), 1♂ (AMCC [LP 10382]). *Western Cape Prov.*: Vanrhynsdorp District: Farm Grootgraafwater, 31°18.06'S 18°29.34'E, 30.ix.2013, M. Weideman, active search, open ground, 2♂ (NCA 2014/257).

Distribution: Endemic to South Africa, and presently known from eight localities in the Calvinia and Sutherland districts of the Northern Cape Province, and the Vanrhynsdorp District of the Western Cape Province (Fig. 1). The type material originates from two localities situated very close to one another in Langkloof, on the western slope of the Roggeveldberge, in the Tankwa Karoo National Park, two localities in the Knersvlakte (Ezelkopvlakte and Grootgraafwater) and two on the Bokkeveld plateau (Kamdaniekop and Loeriesfontein). Glen Lyon (31°14.700'S 19°05.543'E), a third locality on the Bokkeveld plateau, is based only on a photographic record (Fig. 2C).

Ecology: The known locality records of *U. ansiedippenaarae* sp. n., which range in altitude from 370–860 m, occur in four vegetation zones of the Succulent Karoo Biome (Mucina *et al.* 2006): Central Knersvlakte Vygieveld, Northern Knersvlakte Vygieveld (Fig. 2A), Hantam Karoo (Fig. 2B), and Tanqua Escarpment Shrubland. All specimens were collected by UV light detection at night, except the specimen from Glen Lyon (Fig. 2C), which was captured in a pitfall trap. The specimens from Langkloof, a deep gorge on the western slope of the Roggeveldberge, were sitting or walking on open, stony ground on clayey-loam soil, near a dry riverbed and on the adjacent rocky slopes, on a warm, moonless night with a slight breeze. The specimens from Ezelkopvlakte were sitting on the ground on pans of consolidated, compacted alluvium in the dry bed of the Kromrivier, dominated by Mesembryanthemaceae Fenzl and *Salsola* bushes (Fig. 2A), on a cool, still, moonless night. The specimens from Loeriesfontein were sitting on a shallow pan of hard clayey-loam soil with a cracked surface, small stones, and Mesembryanthemaceae mats (Fig. 2B), on a cold, windy, moonless night. The habitat and habitus of *U. ansiedippenaarae* sp. n. are consistent with the lapidicolous ecomorphotype (Prendini 2001*b*). Eight other scorpion species were collected in sympatry at one or more of the localities: four buthids, *Parabuthus capensis*, *U. carinatus*, *U. gracilior*, and another species of *Uroplectes*, and five scorpionids, *Opistophthalmus granifrons* Pocock, 1896, *O. pallipes* and three other species of *Opistophthalmus* C.L. Koch, 1837.

TABLE 1

Meristic data for type specimens of *Uroplectes ansiedippenaarae* sp. n. in collection of American Museum of Natural History, New York. Measurements (mm) follow Prendini (2004*a*, *b*, *c*, 2005*b*). [1]Sum of carapace, tergites I–VII, metasomal segments I–V, and telson; [2]distance from anterior carapace margin; [3]sum of tergites I–VII; [4]sum of metasomal segments I–V and telson; [5]distance from base of condyle to tip of fixed finger. Abbreviations: Ht. –Holotype; Pt. – Paratype.

Specimen	type sex	Ht. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♂	Pt. ♀
Total length[1]		18.9	18.2	19.4	18.6	18.1	18.7	16.8	16.2	16.9	17.9	17.3
Carapace	median ocelli[2]	0.7	0.6	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6
	length	1.9	1.8	1.9	1.8	1.8	1.9	1.8	1.7	1.7	1.8	1.8
	anterior width	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9
	posterior width	2.0	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.7	1.9	1.8
Sternite VII	length	1.1	1.0	1.1	1.3	1.1	1.1	0.9	0.9	0.9	0.9	1.0
	width	1.8	1.6	1.8	1.8	1.6	1.8	1.8	1.6	1.6	1.7	1.8
Mesosoma	total length[3]	5.6	5.4	6.0	5.8	5.9	5.8	4.6	4.6	4.9	5.2	5.3
Metasoma I	length	1.4	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.3	1.3	1.3
	width	1.1	1.0	1.1	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1
	height	1.0	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0
Metasoma II	length	1.6	1.5	1.7	1.6	1.4	1.6	1.5	1.4	1.5	1.6	1.4
	width	1.0	0.9	1.1	1.0	0.9	1.0	1.0	0.9	0.9	0.9	1.0
	height	1.0	0.9	1.0	0.9	0.9	1.0	0.9	0.9	0.9	0.9	1.0
Metasoma III	length	1.8	1.6	1.8	1.7	1.6	1.7	1.6	1.6	1.6	1.8	1.5
	width	1.0	0.9	1.1	1.0	0.9	1.0	1.0	0.9	0.9	1.0	1.0
	height	1.0	0.9	1.1	0.9	0.9	1.0	0.9	0.9	0.9	0.8	1.0
Metasoma IV	length	2.1	2.0	2.1	2.0	2.0	2.0	1.9	1.8	1.9	2.0	1.8
	width	1.0	0.9	1.1	1.0	0.9	1.0	0.9	0.9	0.9	0.9	1.0
	height	1.0	0.9	1.1	0.9	0.9	1.0	0.9	0.9	0.9	1.0	1.0
Metasoma V	length	2.3	2.6	2.3	2.2	2.1	2.2	2.1	2.0	2.2	2.2	2.0
	width	1.0	0.9	1.1	1.0	0.9	0.9	0.9	0.9	0.9	1.0	0.9
	height	1.1	1.0	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Metasoma	total length[4]	9.2	9.0	9.3	8.9	8.4	8.8	8.4	8.0	8.5	8.9	8.0
Telson	total length	2.2	2.0	2.2	2.1	2.0	2.2	2.0	1.9	1.8	2.0	2.2
	vesicle length	1.5	1.3	1.4	1.5	1.4	1.5	1.4	1.2	1.3	1.4	1.5
	vesicle width	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9
	vesicle height	0.9	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9
	aculeus length	0.7	0.7	0.8	0.6	0.6	0.7	0.6	0.7	0.5	0.6	0.7
Femur	length	1.5	1.5	1.7	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.3
	width	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.5
	height	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5
Patella	length	2.0	2.0	2.0	1.8	1.8	1.9	1.7	1.6	1.7	1.9	1.7
	width	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.7
	height	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Chela	length[5]	3.1	3.0	3.1	2.9	2.9	3.0	2.8	2.7	2.8	2.9	2.7
	width	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.8
	height	0.8	0.8	0.8	0.6	0.7	0.6	0.7	0.7	0.7	0.7	0.7
	length retroventral carina	1.5	1.4	1.6	1.5	1.4	1.5	1.3	1.3	1.3	1.3	1.3
	length movable finger	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.6
	fixed finger denticle subrows	7/7	7/6	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7
	mov. finger denticle subrows	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8
Pectines	total length	1.5	1.5	1.7	1.5	1.3	1.4	1.5	1.5	1.3	1.5	1.4
	length dentate margin	1.6	1.5	1.7	1.5	1.2	1.5	1.5	1.5	1.4	1.5	1.5
	tooth count (left/right)	13/13	13/13	14/12	14/12	13/14	13/13	12/12	13/13	13/12	12/13	11/12

TABLE 2

Meristic data for specimens of *Uroplectes variegatus* (C.L. Koch, 1844) from Elandsbaai and Koeberg, Western Cape Prov., South Africa, in collection of American Museum of Natural History, New York. Measurements (mm) follow Prendini (2004*a*, *b*, *c*, 2005b). [1]Sum of carapace, tergites I–VII, metasomal segments I–V, and telson; [2]distance from anterior carapace margin; [3]sum of tergites I–VII; [4]sum of metasomal segments I–V and telson; [5]distance from base of condyle to tip of fixed finger.

Specimen	sex	♂	♂	♂	♂	♂	♂	♀	♀	♀	♀	♀	♀
Total length[1]		20.9	22.4	21	20.3	19.1	19.6	25.8	25.9	24.5	22.6	23.5	21.8
Carapace	median ocelli[2]	0.9	0.9	0.9	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.4	1.1
	length	2.2	2.3	2.3	2.3	2.2	2.3	2.9	2.7	2.7	2.8	2.9	2.7
	anterior width	1.0	1.1	1.1	1.1	1.1	1.1	1.3	1.4	1.4	1.4	1.5	1.5
	posterior width	2.2	2.3	2.1	2.3	2.2	2.3	2.8	2.9	2.9	3,0	3.1	2.8
Sternite VII	length	1.2	1.2	1.3	1.2	1.1	1.4	1.4	1.5	1.3	1.5	1.2	1.6
	width	1.9	2.0	1.9	2.1	2.0	2.1	2.8	2.8	3.0	2.3	3.0	2.8
Mesosoma	total length[3]	5.5	5.7	5.0	5.7	5.1	5.1	7.8	7.1	7.6	7.0	6.9	6.8
Metasoma I	length	1.5	1.6	1.6	1.5	1.6	1.8	1.7	1.9	1.6	1.7	2.0	1.7
	width	1.2	1.3	1.3	1.3	1.3	1.3	1.6	1.7	1.5	1.7	1.8	1.6
	height	1.1	1.1	1.2	1.2	1.2	1.2	1.4	1.5	1.3	1.4	1.6	1.4
Metasoma II	length	1.9	2.0	2.0	1.9	1.8	2.0	2.0	2.3	2.0	2.0	2.1	1.9
	width	1.1	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.4	1.5	1.6	1.4
	height	1.1	1.1	1.2	1.2	1.2	1.2	1.4	1.4	1.3	1.4	1.6	1.4
Metasoma III	length	2.0	2.1	2.1	2.0	2.0	2.1	2.3	2.4	2.1	2.1	2.2	2.1
	width	1.1	1.2	1.1	1.2	1.2	1.2	1.5	1.5	1.4	1.5	1.6	1.4
	height	1.1	1.1	1.2	1.2	1.2	1.2	1.4	1.4	1.3	1.4	1.6	1.4
Metasoma IV	length	2.5	2.7	2.6	2.6	2.4	2.5	2.8	2.7	2.6	2.5	2.8	2.5
	width	1.1	1.2	1.1	1.1	1.2	1.2	1.4	1.4	1.3	1.4	1.5	1.4
	height	1.0	1.1	1.1	1.2	1.2	1.2	1.4	1.4	1.3	1.4	1.5	1.3
Metasoma V	length	2.8	3.0	2.9	3.0	3.0	2.9	3.2	3.7	3.0	3.2	3.3	3.1
	width	1.1	1.1	1.1	1.1	1.2	1.1	1.4	1.3	1.3	1.4	1.5	1.3
	height	1.0	1.1	1.0	1.1	1.1	1.1	1.3	1.3	1.2	1.3	1.5	1.2
Metasoma	total length[4]	10.7	11.4	11.2	9.1	9.0	9.5	12.0	13.0	11.3	9.7	10.6	9.5
Telson	total length	2.5	3.0	2.5	3.2	2.8	2.7	3.1	3.1	2.9	3.1	3.1	2.8
	vesicle length	1.5	1.8	1.5	1.7	1.6	1.6	1.8	1.9	1.7	1.8	1.8	1.7
	vesicle width	0.9	0.8	0.8	0.8	0.9	0.8	1.0	1.0	1.0	1.1	1.1	1.1
	vesicle height	0.8	0.8	0.8	0.8	0.9	0.8	0.9	1.0	1.0	1.0	1.1	1.0
	aculeus length	1.0	1.2	1.0	1.5	1.2	1.1	1.3	1.2	1.2	1.3	1.3	1.1
Femur	length	2.9	2.1	2.1	1.9	2.1	1.8	2.3	2.3	2.0	2.2	2.3	2.1
	width	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.7
	height	0.5	0.6	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.6
Patella	length	2.3	2.3	2.2	2.3	2.4	2.3	2.5	2.8	2.4	2.6	2.7	2.6
	width	0.7	0.8	0.8	0.8	0.8	0.8	1.0	1.0	0.9	1.5	1.6	0.9
	height	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.9	0.8
Chela	length[5]	3.3	3.5	3.3	3.1	3.5	3.4	3.8	4.1	3.8	3.8	4.1	3.8
	width	0.7	0.8	0.7	0.7	0.7	0.7	0.9	1.4	0.9	0.8	0.9	0.8
	height	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.9	0.8
	length retroventral carina	1.2	1.3	1.2	1.1	1.1	1.1	1.3	1.4	1.3	1.3	1.3	1.2
	length movable finger	1.6	2.8	2.3	2.3	2.3	2.3	2.7	2.8	2.7	2.5	2.9	2.6
	fixed finger subrows	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8
	mov. finger subrows	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9
Pectines	total length	2.0	2.3	2.1	2.1	2.3	2.2	2.1	2.1	2.1	2.0	2.4	2.1
	length dentate margin	2.0	2.3	2.1	2.1	2.3	2.2	2.1	2.1	2.1	2.0	2.4	2.1
	tooth count (left/right)	16/16	17/17	17/18	17/18	17/17	18/17	15/16	15/15	14/15	15/14	15/15	16/16

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