A Revision of the Southern African Two-Eyed Spider Genus Diploglena (Araneae: Caponiidae)

Author: Haddad, Charles R.

Source: African Invertebrates, 56(2) : 343-363

Published By: KwaZulu-Natal Museum

URL: https://doi.org/10.5733/afin.056.0208

African Invertebrates Vol. 56 (2): 343–363 Pietermaritzburg 12 August 2015

A revision of the southern African two-eyed spider genus *Diploglena* (Araneae: Caponiidae)

Charles R. Haddad

Department of Zoology & Entomology, University of the Free State, P.O. Box 339, Bloemfontein, 9300 South Africa; haddadcr@ufs.ac.za

ABSTRACT

The Afrotropical two-eyed orange lungless spider genus *Diploglena* Purcell, 1904 is revised. Both sexes of the South African type species, *D. capensis* Purcell, 1904, are redescribed, as well as the females of the Namibian subspecies *D. capensis major* Lawrence, 1928. The males of this species are described for the first time, and it is elevated to species level as *D. major* stat. n.; it is also recorded from Botswana and South Africa for the first time. Four new species are described: *D. arida* sp. n., *D. dippenaarae* sp. n. and *D. proxila* sp. n. from South Africa, and *D. karooica* sp. n. from South Africa and Namibia. All of the species are distributed in arid and semi-arid vegetation types, including desert, Nama and Succulent Karoo, fynbos and dry savannahs.

KEY WORDS: Afrotropical Region, arid, desert, eyes, fynbos, Karoo, new species, savannah.

INTRODUCTION

The spider family Caponiidae is a small group of haplogyne spiders, currently represented by 15 genera and 90 species (World Spider Catalog 2015). The family is richest in South and Central America, while the Old World fauna is represented by only four genera, all placed in Caponiinae *sensu lato* (i.e. non-nopines): the type genus *Caponia* Simon, 1887 (11 species) and the genus *Diploglena* Purcell, 1904, represented by a single species and subspecies, from the Afrotropical Region; the recently described monotypic *Laoponia* Platnick & Jäger, 2008, endemic to Laos and Vietnam; and *Iraponia* Kranz-Baltensperger, Platnick & Dupérré, 2009, endemic to Iran.

Caponiids are quite unusual among spiders by the considerable reduction in the number of eyes in several genera. In the subfamily Nopinae, particularly, all of the genera have the number of eyes reduced to either four or two (e.g. Jiménez *et al.* 2011; Dupérré 2014; Ruiz & Brescovit 2015). Amongst the Caponiinae *sensu lato*, genera such as *Caponia* and *Calponia* Platnick, 1993 have eight eyes, with three pairs arranged around a central pair (Platnick 1993; Dippenaar-Schoeman & Jocqué 1997). In cases of eye reduction, some species of *Caponina* Simon, 1891 and the genus *Iraponia* have six eyes, *Notnops* Platnick, 1994 has four eyes, and the genera *Diploglena*, *Laoponia*, *Taintnops* Platnick, 1994 and *Tisentnops* Platnick, 1994 only have two eyes (Platnick 1994*a*, *b*; Platnick & Jäger 2008; Kranz-Baltensperger *et al.* 2009). *Diploglena* is unusual among the Caponiinae *sensu lato* by the distally widened endites, also present only in *Tisentnops* (Platnick 1994*b*: fig. 26; Platnick & Jäger 2008: fig. 27), with the two genera separated by the presence of squared denticles on the anterior margin of the endites in *Tisentnops* (Platnick 1994*b*).

In the present contribution the genus *Diploglena* is revised, the type species (*D. capensis* Purcell, 1904) is redescribed, the subspecies *D. capensis major* Lawrence, 1928 is elevated to species level as *D. major* stat. n., and four new species are described

http://africaninvertebrates.org
urn:lsid:zoobank.org:pub:387C410F-AF1D-4CD1-9C82-042E418D5039

from southern Africa (*D. arida* sp. n., *D. dippenaarae* sp. n., *D. karooica* sp. n. and *D. proxila* sp. n.). Although *D. capensis* was recently redescribed by Platnick and Jäger (2008), most of the specimens they examined were misidentified as *D. capensis* and correspond to some of the new species described here.

MATERIAL AND METHODS

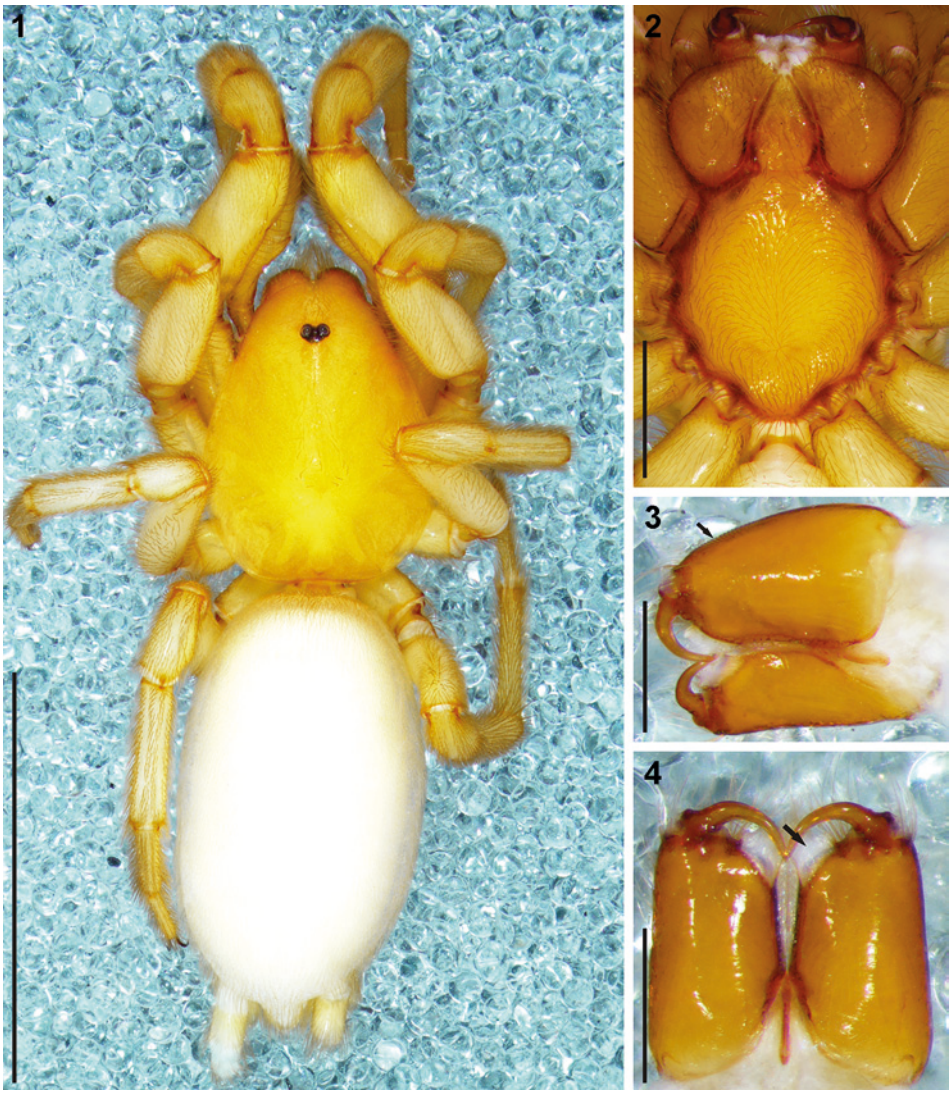
The specimens included in this study were measured and described using a Nikon SMZ800 stereomicroscope with a measuring eyepiece. Digital photographs were taken of various structures using a Nikon DS-L3 camera system attached to the Nikon SMZ800. A series of photographs were stacked using Combine ZM imaging software (Hadley 2008) to increase depth of field. Digital photographs of the male palps were traced using Corel X4, before final line drawings were made. Female epigynes were dissected from the abdomens of at least one female specimen per species using 0-size insect pins. Following Ruiz and Brescovit (2015), they were then cleared in eye lens cleaning solution (Abbott Total Care®) for 48 hours, after which they were rinsed three times with clean 70% ethanol and cleaned for 1 minute in a Labcon 5019U ultrasonic bath before study and photography, as above.

Due to the scarcity of material of these spiders, only one male and one female of *D. major* stat. n. were studied using scanning electron microscopy (S.E.M.). Material was left overnight in absolute ethanol, critical point dried with a Tousimis critical point dryer (Rockville, Maryland, USA.) and carbon dioxide drying gas, glued to aluminium stubs, and sputter coated with gold using a BIO-RAD (Microscience Division) Coating System (London, UK) three times (at 30 μm each). The material was examined in a Shimadzu SSX-550 scanning electron microscope and digital photographs were taken.

The following abbreviations are included in the descriptions: AL – abdomen length; AW – abdomen width; CL – carapace length; CLER – carapace length : eye ratio; CW – carapace width; ESTR – epigynal sclerite distance : trachea distance ratio; SL – sternum length; SW – sternum width; TL – total length. The CLER is a ratio proposed here as the proportional distance between the carapace length and the distance from the anterior margin of the carapace to the anterior margin of the pair of eyes (i.e. clypeus). The ESTR is a ratio proposed here that compares the distance between the lateral margins of the posterior tracheal openings with the distance between the lateral margins of the transverse sclerotised strips in the epigastric area (Fig. 14).

Material used in this study is deposited in the following collections (curators are given in parentheses):

CAS – California Academy of Sciences, San Francisco, U.S.A. (C. Griswold, A. Carmichael);
NCA – National Collection of Arachnida, ARC-Plant Protection Research Institute, Pretoria, South Africa (A. Dippenaar-Schoeman, P. Marais);
NMBA – National Museum, Bloemfontein, South Africa (L. Lotz);
NMSA – KwaZulu-Natal Museum, Pietermaritzburg, South Africa (C. Stoffels);
MRAC – Royal Museum for Central Africa, Tervuren, Belgium (R. Jocqué);
SAMC – Iziko South African Museum, Cape Town, South Africa (D. Larsen);
SMN – State Museum of Namibia, Windhoek, Namibia (T. Bird, H. Inana).



Figs 1–4. Digital microscope photographs of *Diploglena arida* sp. n. female (1, 2) and male (3, 4) paratypes: (1) dorsal habitus; (2) sternum and mouthparts; (3) chelicerae, posterolateral view, arrow indicating stridulatory file on anterolateral surface of paturon; (4) chelicerae, posterior view, arrow indicating translucent distal lobe. Scale bars: (1) = 5.0 mm; (2) = 1.0 mm; (3, 4) = 0.5 mm.

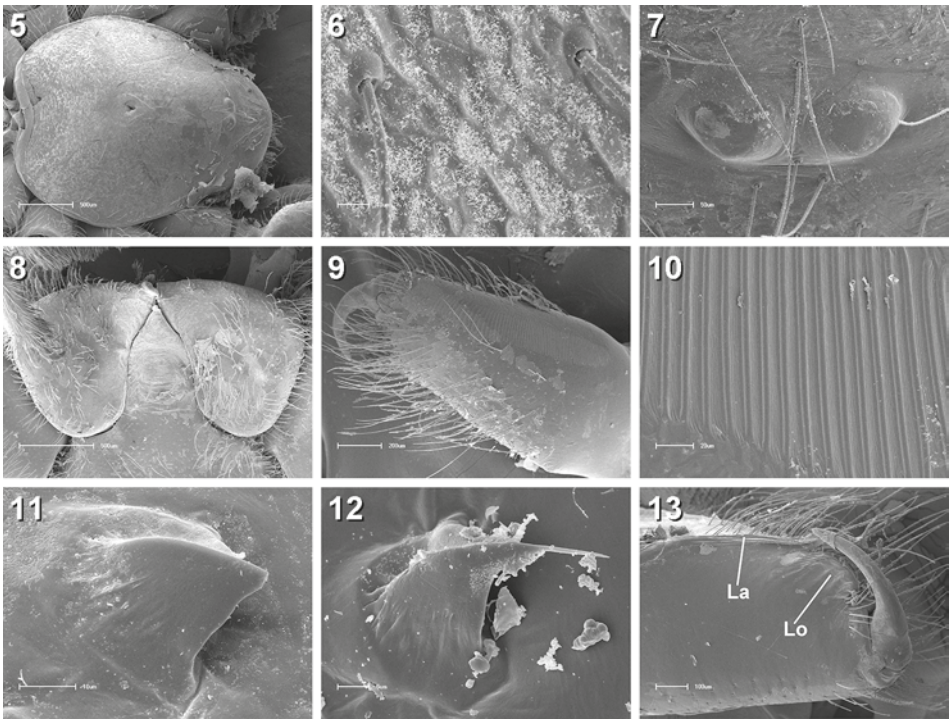
TAXONOMY

Family Caponiidae Simon, 1890

Genus *Diploglena* Purcell, 1904

Diploglena Purcell, 1904: 169; Dippenaar-Schoeman & Jocqué 1997: 118, fig. 61b; Jocqué & Dippenaar-Schoeman 2006: 88, fig. 21d; Platnick & Jäger 2008: 7.

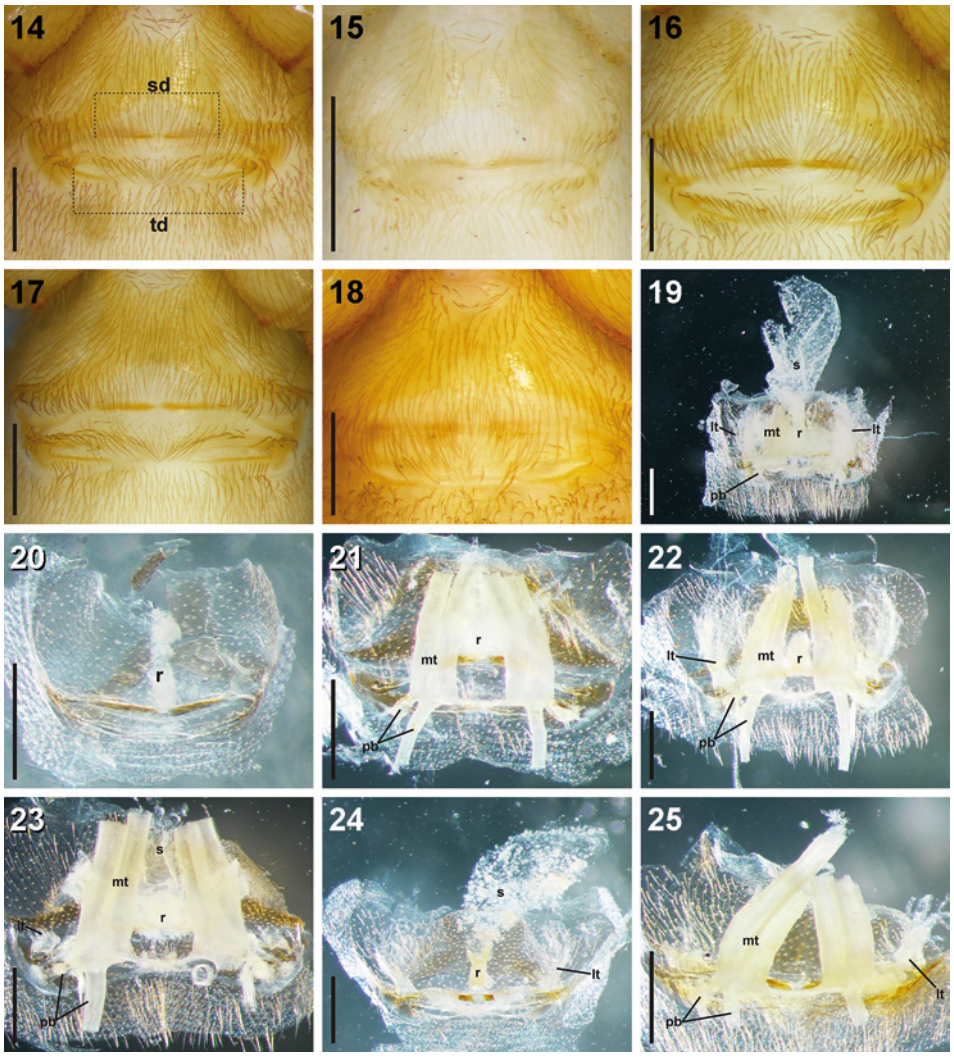
Type species: *Diploglena capensis* Purcell, 1904, by monotypy.



Figs 5–13. Scanning electron microscope photographs of *Diploglena major* Lawrence, 1928 female (5–7, 12) and male (8–11, 13): (5) carapace, dorsolateral view; (6) detail of carapace integument; (7) paired eyes; (8) endites, labium and anterior end of sternum; (9) right chelicera, antero-retrolateral view; (10) detail of cheliceral stridulatory file; (11, 12) stridulatory pick on palpal femora; (13) left chelicera, posterior view. Abbreviations: La – laminate keel on mesal margin of chelicera; Lo – lobe on distal margin of chelicera.

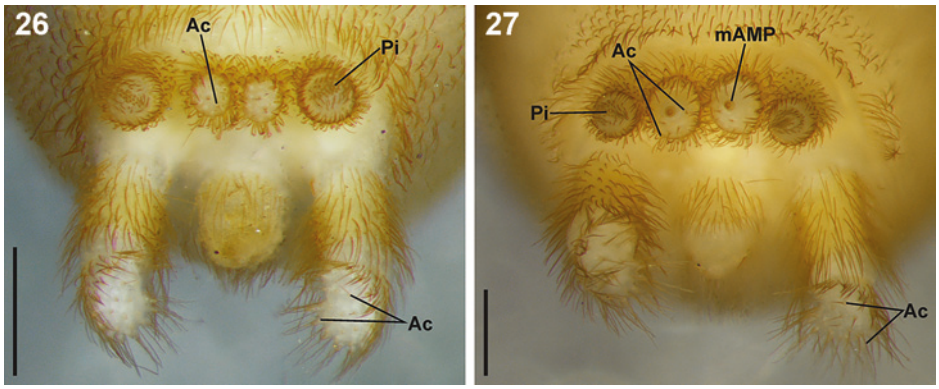
Diagnosis: *Diploglena* can be distinguished from the only other Afrotropical genus, *Caponia*, by the reduction of the eyes from eight to a single pair (Figs 1, 7), which are presumably the anterior median pair (Jocqué & Dippenaar-Schoeman 2006). Further, *Diploglena* can be separated from *Caponia* by the male palp with a short embolus and associated membranous conductor, which form a separate structure to the tegular apophysis (Figs 46–62, 64–66), while in *Caponia* these structures are found together distally on a stalk-like extension of the tegulum (Purcell 1904: figs 28–35). *Diploglena* shares with the South American genus *Tisentnops* the distally widened endites (Figs 2, 8) and the presence of a single pair of eyes, but can be separated from it by the lack of a series of squared denticles on the anterior margin of the endites (Platnick 1994*b*: fig. 26).

Description: Carapace oval, clearly narrowed, rounded anteriorly, somewhat flattened, slightly concave posteriorly (Figs 1, 5); surface with network of fine shallow subrectangular pits (Fig. 6), with scattered short fine setae, particularly around periphery and medially; longer thickened setae in oval cluster medially on thoracic region, also on clypeus (Fig. 1); eyes reduced to single pair (anterior medians), surrounded by black pigment, about five times their diameter from anterior margin of carapace (Fig. 1); eyes



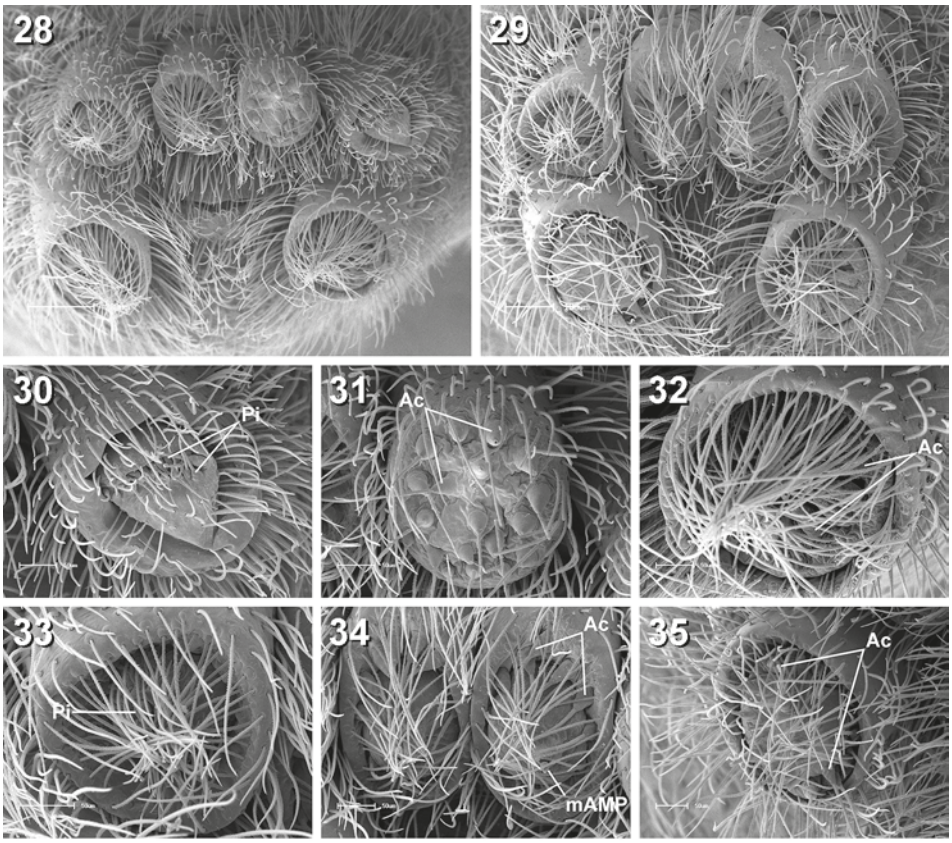
Figs 14–25. Digital microscope photographs of female *Diploglena* genitalia in ventral (14–18) and dorsal view (19–25): (14, 19) *D. arida* sp. n.; (15, 20) *D. capensis* Purcell, 1904; (16, 21) *D. dippenaarae* sp. n.; (17, 22, 23) *D. karooica* sp. n.; (18, 24, 25) *D. major* Lawrence, 1928. Abbreviations: lt – lateral sieve trachea; mt – anterior branches of paired median tubular tracheae; pb – posterior branches of paired median tubular tracheae; r – seminal receptacle; s – membranous sac extending from seminal receptacle; sd – distance between lateral ends of transverse sclerotised strips; td – distance between lateral ends of posterior tracheal spiracles. Scale bars = 0.5 mm.

separated by approximately one-quarter their diameter (Fig. 7). Sternum and labium separated by very fine suture, almost appearing fused (Figs 2, 8); labium elongate pentagonal, distal end unsclerotised; endites narrow proximally, widened distally, without distinct serrula, anteromedian corners unsclerotised (Figs 2, 8); sternum oval, covered in short fine curved setae; precoxal triangles present, intercoxal sclerites present between all coxal pairs, also between endites and coxae I (Fig. 2); pleural



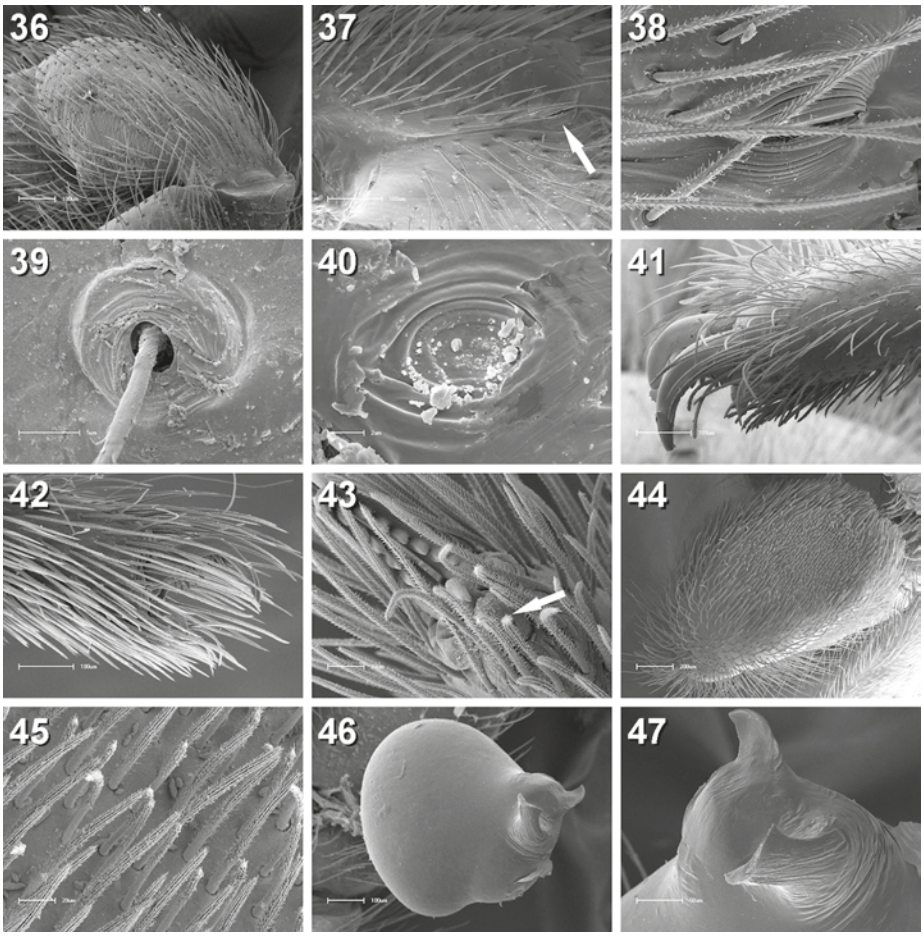
Figs 26–27. Digital microscope photographs of spinnerets of *Diploglena arida* sp. n. male (26) and female (27) paratypes. Abbreviations: Ac – aciniform gland spigots; mAMP – presumed minor ampullate gland spigot; Pi – piriform gland spigots. Scale bars = 0.5 mm.

membranes with isolated, weakly sclerotised epimeric sclerites dorsally above coxal pairs. Chelicerae with stridulatory file on antero-retrolateral surface of paturon (Figs 3, 9, 10), with corresponding stridulatory pick on prolateral surface of palpal femur, at approximately one-fifth its length; stridulatory pick of males forming nearly equilateral triangle (Fig. 11), in females with additional distal thorn-like projection (Fig. 12); chelicerae with fangs long, slender, strongly curved; paturon with translucent lamina, extending narrowly along mesal margin, continuing as broad membranous lobe along distal margin of paturon (Figs 4, 13); teeth absent; anteromedian margins of paturon with long bristles converging medially (Fig. 1). Abdomen oval, without markings, sigilla or scuta, covered in short fine setae; female genitalia in ventral view with moderate sclerotisation between petiole and epigastric groove, continuing laterally and posteriorly around tracheal spiracles; pair of narrow transverse sclerotised strips on epigastric groove, possibly associated with copulatory openings (Figs 14–18); venter with two pairs of tracheal spiracles, first pair lateral, second pair posterior to epigastric groove; internally, first pair form lateral sieve tracheae, directed anteriorly (Figs 19, 22–25); second spiracle pair forms two pairs of thick tubular median tracheae projecting anteriorly, each with shorter narrower trachea projecting posteriorly (Figs 19, 21–25) [during genitalic preparation some tracheae, seminal receptacles and membranous sacs broke off]; internal female genitalia comprising single oval or stalk-like median receptacle, expanding into anterior membranous sac (Figs 19–24), usually folded back posteriorly between median tracheae; six spinnerets in typical caponiid arrangement, with ALS, PMS subequal, small, in transverse row, PLS much larger, placed behind ALS, with anal tubercle slightly behind them (Figs 26–29); spigot structure, arrangement unusual for caponiids [most spigots studied by S.E.M. obscured by distal setae around periphery of spigot field, Figs 28–35]: ALS of both sexes with dense oblique ovoid median field of 15–20 small piriform gland spigots (Figs 26, 27, 30, 33); PMS of males with 12–20 scattered aciniform gland spigots (Figs 26, 31); PMS of females with single blunt presumptive minor ampullate gland spigot medially, also approximately 15 aciniform gland spigots, most arranged around periphery (Figs 27, 34); PLS of both sexes with approximately 30 aciniform gland spigots, 15 around periphery, 15 scattered



Figs 28–35. Scanning electron microscope photographs of *Diploglena major* Lawrence, 1928 male (28, 30–32) and female (29, 33–35): (28, 29) spinnerets, posterior view; (30, 33) anterior lateral spinnerets; (31, 34) posterior median spinnerets; (32, 35) posterior lateral spinnerets. Abbreviations: Ac – aciniform gland spigot(s); mAMP – presumed minor ampullate gland spigot; Pi – piriform gland spigot(s).

on distal surface (Figs 32, 35). Legs dorsally covered in short curved fine setae, arranged in distinct longitudinal rows dorsally on femora, patellae and tibiae, with naked lines between them (Figs 1, 36); leg spines absent; legs I more robust than II–IV, particularly the femora, patellae and tibiae, more so in males, legs II slightly thicker than III and IV (Fig. 1); retrolateral patellar indentations slit-like (Fig. 37), broader proximally than distally, running nearly entire length of patellae, with lyriform organ at distal end (Fig. 38); tibiae, metatarsi and tarsi with several trichobothria (Fig. 39); metatarsi and tarsi entire, lacking pseudosegmentation or ventral laminate keel on anterior metatarsi and/or tarsi; metatarsi and tarsi I and II of males with several thicker ventral setae with enlarged bases, resembling cuspules, sometimes on a slight mound, absent in females; tarsal organ oval, with five conspicuous radiating ridges (Fig. 40); three claws present, paired tarsal claws with single row of six to eight teeth on inner margin, unpaired claw smaller, lacking teeth (Figs 41–43); paired claws on anterior tarsi shorter, thicker, with shorter teeth (Fig. 41) than those on posterior tarsi (Figs 42, 43); onychium suboval, without distal projection (Fig. 43). Female palpal tarsus swollen and densely hirsute,



Figs 36–47. Scanning electron microscope photographs of *Diploglena major* Lawrence, 1928 female (36) and male (37–47): (36) patella II, prolateral proximal view; (37) patella III, patellar indentation, retrolateral ventral view, arrow indicating lyriform organ at distal end; (38) patella II, lyriform organ at distal end of patellar indentation; (39) tarsus II, trichobothrial base, dorsal view; (40) tarsus I, tarsal organ, dorsal view; (41) tarsus I, tarsal claws, prolateral view; (42) tarsus III, tarsal claws, retrolateral view; (43) same, ventral view, arrow indicating onychium; (44) palpal cymbium, dorsal view; (45) detail of proximal dorsal cymbial setae; (46) left palp, prolateral ventral view; (47) detail of embolus and tegular apophysis, ventral view.

particularly distal two-thirds dorsally; palpal claw absent; male palp with oval cymbium, with dense cymbial scopula in distal half, setae quite sparse proximally (Figs 44, 45); tegulum subcircular in ventral view, somewhat conical in lateral view, with tegular apophysis and embolus distally (Figs 46, 47), embolus with associated fine membranous conductor (Figs 46–62, 64–66).

Distribution: Arid and semi-arid parts of southern Africa (Botswana, Namibia and South Africa).

Habitat and biology: Ground-dwelling spiders usually collected by pitfall trapping, occasionally also from leaf litter and under rocks. All of the species are associated with

arid and semi-arid vegetation biomes, including desert, Nama Karoo, Succulent Karoo, savannah and fynbos. No species have been recorded from the Grassland, Thicket or Forest biomes yet.

Species included: *Diploglena arida* sp. n., *D. capensis* Purcell, 1904, *D. dippenaarae* sp. n., *D. karooica* sp. n., *D. major* Lawrence, 1928 stat. n. and *D. proxila* sp. n..

Diploglena arida sp. n.

Figs 1–4, 14, 19, 26, 27, 48–50

Diploglena capensis Purcell, 1904: Platnick & Jäger 2008: 10, figs 26–30 (in part, misidentified).

Etymology: The species is named for the arid habitats that it occupies in the Northern Cape Province of South Africa.

Diagnosis: Males of *D. arida* sp. n. are most similar to *D. capensis*, but can be separated by the shape of the tegular apophysis (subtriangular as opposed to slightly curved distally), the clearly larger membranous conductor, and the relative orientation of the embolus and tegular apophysis: tips in the same transverse plane in *D. arida* sp. n., while the tegular apophysis is clearly more distal and further from the embolus tip in *D. capensis* (compare Figs 48–50 with Figs 51–53). Females are similar to *D. dippenaarae* sp. n., but can be separated by the narrow unsclerotised patch on the anterior epigynal plate, which is only as broad as the transverse sclerotised strips (as broad as the lateral margins of the posterior tracheal openings in the other species).

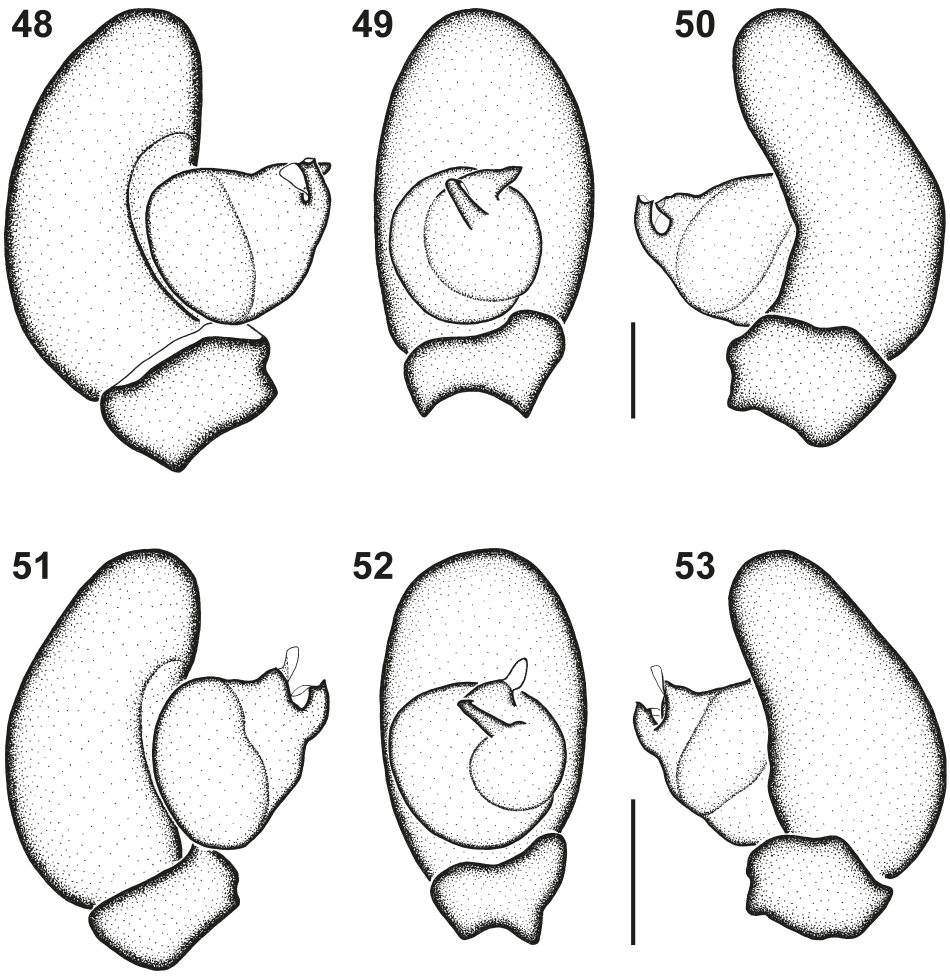
Description:

Male (holotype, NCA 98/291).

Measurements: CL 2.80, CW 2.15, SL 1.68, SW 1.43, AL 4.00, AW 2.25, TL 6.75 (6.10–6.75, n=2), CLER 1:0.21 (1:0.17–1:0.21).
Length of leg segments, sequence from femur to tarsus, and total: I 1.80 + 1.03 + 1.53 + 1.03 + 0.55 = 5.94; II 1.55 + 0.95 + 1.30 + 1.05 + 0.55 = 5.40; III 1.38 + 0.80 + 0.93 + 1.05 + 0.68 = 4.84; IV 1.75 + 1.03 + 1.50 + 1.34 + 0.85 = 6.47.
Carapace and chelicerae bright orange; sternum and mouthparts orange, darker around margins; leg I yellow-orange and legs II–IV creamy-yellow, metatarsi and tarsi slightly darker; abdomen cream dorsally and ventrally. Palpal femora and patellae yellow-orange, tibiae and cymbium orange; palpal tegulum with embolus more than twice as long as broad, directed prolaterally distally at approximately 11 o'clock; membranous conductor triangular, directed dorsally; embolus and tegular apophysis orientated transversely relative to one another; tegular apophysis subtriangular, directed retrolaterally ventrally at approximately 2 o'clock, distal end thin, weakly sclerotised, partly translucent; tips of tegular apophysis and embolus in same transverse plane (Figs 48–50).

Female (paratype, NCA 2008/2044).

Measurements: CL 2.75, CW 2.20, SL 1.70, SW 1.65, AL 4.55, AW 2.76, TL 7.20 (7.20–7.30, n=2), CLER 1:0.17 (1:0.17–1:0.18).
Length of leg segments, sequence from femur to tarsus, and total: I 1.78 + 1.03 + 1.40 + 0.95 + 0.58 = 5.74; II 1.58 + 0.95 + 1.23 + 1.00 + 0.58 = 5.34; III 1.38 + 0.95 + 1.30 + 1.05 + 0.60 = 5.28; IV 1.40 + 1.00 + 1.43 + 1.36 + 0.90 = 6.09.
Carapace yellow-orange; chelicerae orange-brown; sternum and mouthparts orange, darker around margins; leg I and II yellow, metatarsi and tarsi yellow-orange, legs II–IV



Figs 48–53. Left male palps of *Diploglena arida* sp. n. (48–50) and *D. capensis* Purcell, 1904 (51–53): (48, 51) prolateral view; (49, 52) ventral view; (50, 53) retrolateral view. Scale bars = 0.25 mm.

with creamy-yellow femora, remaining segments yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae yellow, tibiae and tarsi yellow-orange. External genitalia with weakly sclerotised anterior plate, with broad arch-shaped unsclerotised patch in front of paired slightly recurved sclerotised strips (Fig. 14); ESTR 1:0.54–1:0.64.

Holotype ♂: SOUTH AFRICA: *Northern Cape*: 20 km N of Concordia, 29°32'S 17°56'E, leg. A. Harrington, 2.vi.1997 (from scorpion burrow) (NCA 98/291).

Paratypes: SOUTH AFRICA: *Northern Cape*: Augrabies National Park, 28°40'S 20°25'E, leg. E. le Roux, 1.ii.2007, 1♀ (NCA 2008/2044); Kweekfontein, 29°29'S 18°06'E, leg. A. Harrington, 2.vi.1997 (burrows of *Opisthacanthus crassimanus*), 1♂ (NCA 98/290); 13 km E of Port Nolloth, 29°15'S 16°52'E, leg. B. Stuckenberg & J. Londt, 3.ix.1983 (west coast strandveld), 1♀ (NMSA 25802).

Distribution: Known only from the arid northern parts of the Northern Cape Province, South Africa (Fig. 63).

Diploglena capensis Purcell, 1904

Figs 15, 20, 51–53

Diploglena capensis Purcell, 1904: 170, pl. 11, figs 36–38 (♂ lectotype and 1♂ 1♀ paralectotypes, here designated: SOUTH AFRICA: *Western Cape*: St Helena Bay [32°46'S 18°01'E], Stompneus, leg. J. Goold, v–vi.1902, SAMC 11687, SAM/Aran 1579 – examined); Platnick & Jäger 2008: 10 (misidentified).

Diagnosis: Males of *D. capensis* are most closely related to *D. arida* sp. n., but can be separated by the shape of the tegular apophysis (slightly curved distally rather than subtriangular), the presence of only a small membranous conductor (larger and triangular in *D. arida* sp. n.), and the relative orientation of the embolus and tegular apophysis (compare Figs 51–53 with Figs 48–50). Females can be recognised by the ESTR of 1:0.78, which is considerably larger than that in the other species (<1:0.71).

Redescription:

Male (MRAC 124959).

Measurements: CL 1.78, CW 1.39, SL 1.10, SW 0.95, AL 2.50, AW 1.38, TL 4.18 (4.18–6.30, n=3), CLER 1:0.17 (1:0.17–1:0.17).

Length of leg segments, sequence from femur to tarsus, and total: I 1.25 + 0.68 + 0.96 + 0.65 + 0.42 = 3.96; II 1.05 + 0.62 + 0.78 + 0.65 + 0.45 = 3.55; III 0.86 + 0.50 + 0.60 + 0.66 + 0.45 = 3.07; IV 1.18 + 0.70 + 0.92 + 0.90 + 0.60 = 4.30.

Carapace and chelicerae yellow-brown; sternum and mouthparts yellow, darker around margins; leg I yellow, metatarsi and tarsi slightly darker, legs II–IV creamy-yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae yellow, tibiae and cymbium yellow-orange; palpal tegulum with straight embolus, more than twice as long as broad, directed prolaterally distally at approximately 10 o'clock; membranous conductor small, indistinct, tongue-like, directed dorsally; embolus and tegular apophysis orientated at slightly obtuse angle relative to one another; tegular apophysis with strongly sclerotised base, tip slightly curved and translucent, directed retrolaterally distally at approximately 1 o'clock; tip of tegular apophysis clearly more distal than embolus tip (Figs 51–53).

Female (MRAC 124959).

Measurements: CL 1.95, CW 1.50, SL 1.22, SW 1.07, AL 2.85, AW 1.70, TL 4.55 (4.55–6.50, n=2), CLER 1:0.17 (1:0.15–1:0.17).

Length of leg segments, sequence from femur to tarsus, and total: I 1.27 + 0.75 + 1.00 + 0.69 + 0.45 = 4.16; II 1.13 + 0.62 + 0.84 + 0.70 + 0.48 = 3.77; III 0.95 + 0.58 + 0.62 + 0.72 + 0.50 = 3.37; IV 1.25 + 0.78 + 1.00 + 0.95 + 0.62 = 4.60.

Carapace yellow; chelicerae yellow-orange; sternum and mouthparts creamy-yellow, darker around margins; leg I creamy-yellow, legs II–IV cream; abdomen cream dorsally and ventrally. Palpal femora and patellae creamy-yellow, tibiae and tarsi yellow. External genitalia with weakly sclerotised anterior plate, with broad subtriangular unsclerotised patch in front of paired slightly recurved sclerotised strips (Fig. 15); ESTR 1:0.78.

Other material examined: SOUTH AFRICA: *Western Cape*: Cederberg, Clanwilliam district, 32°21'S 19°10'E, leg. J. Smith, vii.1957 (in humus under bushes or big stones), 1♂ 1♀ (MRAC 124959); St Helena Bay [32°46'S 18°01'E], leg. J. Goold, 1901, 1sa♀ (SAMC 12904, SAM/Aran 1580).

Remarks: The syntypes are in poor condition and are entirely bleached, making it difficult to reliably redescribe the species from the types. The male specimen with both palps

intact is designated here as the lectotype, and the second male (missing the right palp) and female are designated as paralectotypes. The original description of *D. capensis* mentions three males, four females and two juveniles from St Helena Bay, but only two males and a single female were found in SAMC on request of the types. Another subadult female from St Helena Bay (SAMC 12904) was not labeled as a type. The female specimen mentioned from Malmesbury is a subadult female, while the female specimen listed from Cape Peninsula could not be traced.

Distribution: Known only from two localities in the Western Cape Province, South Africa (Fig. 63).

Diploglena dippenaarae sp. n.

Figs 16, 21, 54–56

Etymology: The species is named for Ansie Dippenaar-Schoeman, in recognition of her outstanding efforts in promoting research on African arachnids.

Diagnosis: Males of *D. dippenaarae* sp. n. are most similar to those of *D. karooica* sp. n., sharing the presence of a rounded basal lobe of the tegular apophysis. However, this structure is more pronounced in *D. dippenaarae* sp. n. and bears a larger triangular distal lobe than in *D. karooica* sp. n. Further, the embolus of *D. dippenaarae* sp. n. is straight while that of *D. karooica* sp. n. is slightly curved (compare Figs 54–56 with Figs 57–59). The shape of the epigyne in the females resembles that in *D. arida* sp. n., but the unsclerotised patch on the anterior plate of the epigyne is as broad as the lateral margins of the posterior spiracles, while it is only as broad as the transverse sclerotised strips in *D. arida* sp. n. (compare Fig. 16 with Fig. 17).

Description:

Male (holotype, NCA 2008/418).

Measurements: CL 2.45, CW 1.94, SL 1.52, SW 1.30, AL 3.40, AW 1.88, TL 5.70 (4.70–6.20, n=3), CLER 1:0.17 (1:0.17–1:0.17).

Length of leg segments, sequence from femur to tarsus, and total: I 1.78 + 0.98 + 1.39 + 0.94 + 0.55 = 5.64; II 1.43 + 0.90 + 1.15 + 0.93 + 0.59 = 5.00; III 1.31 + 0.75 + 0.85 + 1.03 + 0.65 = 4.59; IV 1.73 + 0.98 + 1.38 + 1.33 + 0.90 = 6.32.

Carapace and chelicerae bright orange, pits on carapace yellow-orange, giving mottled appearance; sternum and mouthparts yellow-orange, darker around margins; leg I bright yellow-orange, metatarsi and tarsi slightly darker, legs II–IV yellow, tarsi creamy-yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae bright yellow-orange, tibiae and cymbium orange; palpal tegulum with slightly curved embolus, twice as long as broad, directed distally at approximately 12 o'clock; membranous conductor triangular, directed dorsally; embolus and distal lobe of tegular apophysis at slightly obtuse angle relative to one another; tegular apophysis comprising rounded basal lobe distally on tegulum, with triangular distal lobe directed retrolaterally ventrally at approximately 3 o'clock; tip of embolus slightly more distal than tip of tegular apophysis (Figs 54–56).

Female (paratype, NCA 2008/385).

Measurements: CL 2.45, CW 1.90, SL 1.48, SW 1.34, AL 4.10, AW 2.40, TL 5.95 (5.95–6.30, n=2), CLER 1:0.19 (1:0.18–1:0.19).

Length of leg segments, sequence from femur to tarsus, and total: I 1.65 + 0.92 + 1.18 + 0.85 + 0.50 = 5.10; II 1.38 + 0.88 + 1.02 + 0.90 + 0.52 = 4.70; III 1.30 + 0.80 + 0.80 + 0.99 + 0.67 = 4.56; IV 1.66 + 0.98 + 1.36 + 1.35 + 0.75 = 6.10.

Coloration as in male. Palpal femora and patellae yellow-orange, tibiae and tarsi orange. External genitalia with weakly sclerotised anterior plate, with broad arch-shaped unsclerotised patch in front of paired slightly recurved sclerotised strips (Fig. 16); ESTR 1:0.54–1:0.71.

Holotype ♂: SOUTH AFRICA: *Western Cape*: Jacobsbaai, 32°57.770'S 17°53.494'E, leg. C. Haddad & R. Lyle, 2.x.2007 (night collection) (NCA 2008/418).

Paratypes: SOUTH AFRICA: *Western Cape*: Jacobsbaai, 32°57.770'S 17°53.494'E, leg. C. Haddad & R. Lyle, 2.x.2007 (leaf litter, coastal fynbos), 1♂ 1♀ (NCA 2008/385); Same data (leaf litter, shrubs), 1♂ (NCA 2008/439); Saldanha Bay [33°00'S 17°56'E], leg. B. Malkin, 18.xi.1949, 1♀ (CAS, CASENT 9057492).

Distribution: Known only from two localities in the vicinity of Saldanha Bay in the Western Cape Province, South Africa (Fig. 63).

Diploglena karooica sp. n.

Figs 17, 22, 23, 57–59

Diploglena capensis Purcell, 1904: Platnick & Jäger 2008: 10 (in part, misidentified).

Etymology: Named for the Nama Karoo habitats from which this species originates.

Diagnosis: Males of *D. karooica* sp. n. resemble those of *D. dippenaarae* sp. n., but can be separated by the less pronounced rounded basal lobe and the smaller triangular distal lobe of the tegular apophysis. The embolus of *D. karooica* sp. n. is slightly curved while that of *D. dippenaarae* sp. n. is straight (compare Figs 57–59 with Figs 54–56). Females can be distinguished by the transverse sclerotised strips being straight (Fig. 17), while slightly recurved in other *Diploglena*.

Description:

Male (holotype, NCA 91/40).

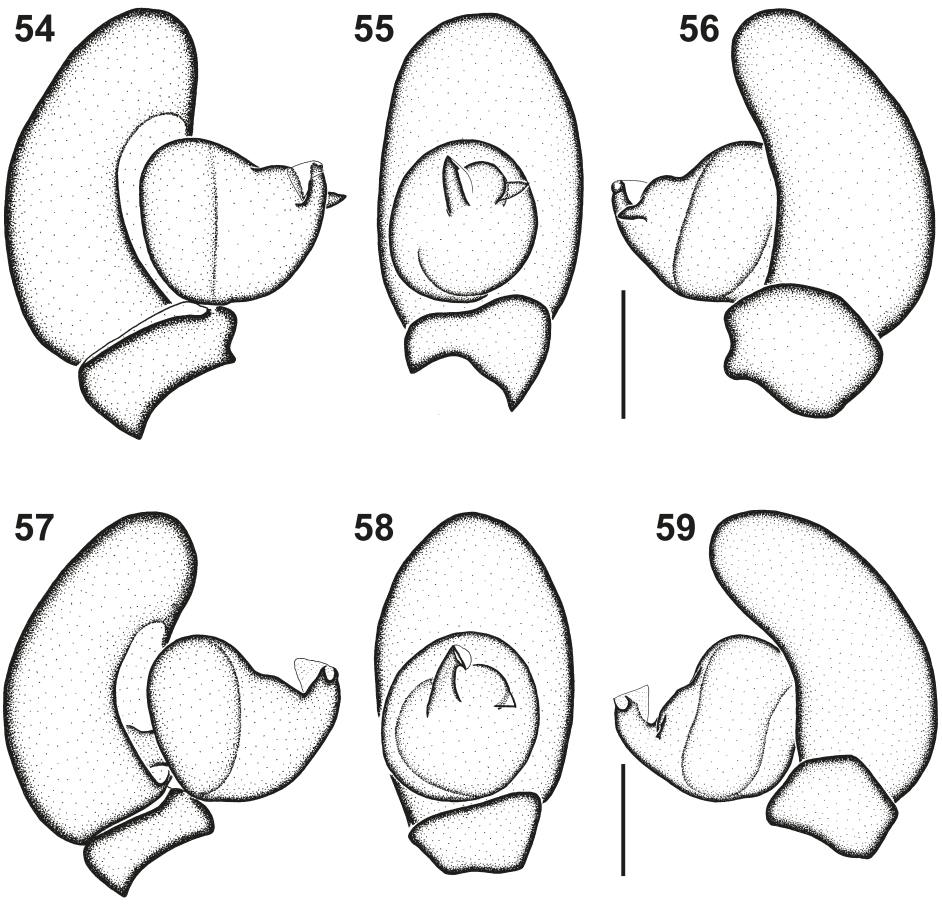
Measurements: CL 2.15, CW 1.73, SL 1.38, SW 1.20, AL 3.05, AW 1.85, TL 5.20 (5.00–7.68, n=4), CLER 1:0.16 (1:0.16–1:0.19).

Length of leg segments, sequence from femur to tarsus, and total: I 1.55 + 0.80 + 1.20 + 0.78 + 0.48 = 4.81; II 1.32 + 0.70 + 1.00 + 0.78 + 0.54 = 4.34; III 1.10 + 0.65 + 0.72 + 0.84 + 0.58 = 3.89; IV 1.43 + 0.80 + 1.07 + 1.04 + 0.71 = 5.05.

Carapace bright yellow-orange; chelicerae orange-brown; sternum and mouthparts yellow-orange, darker around margins; leg I yellow-orange, metatarsi and tarsi slightly darker, legs II–IV creamy-yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae yellow-orange, tibiae and cymbium orange; palpal tegulum with curved embolus, at least twice as long as broad, directed distally at approximately 1 o'clock; membranous conductor triangular, directed dorsally; embolus and distal lobe of tegular apophysis perpendicular relative to one another; tegular apophysis comprising rounded basal lobe distally on tegulum, with triangular distal lobe directed retrolaterally at approximately 4 o'clock; tip of embolus clearly more distal than tip of tegular apophysis (Figs 57–59).

Female (paratype, NCA 91/1550).

Measurements: CL 2.55, CW 2.00, SL 1.63, SW 1.48, AL 4.30, AW 2.10, TL 6.80 (4.45–8.50, n=5), CLER 1:0.22 (1:0.15–1:0.22).



Figs 54–59. Left male palps of *Diploglena dippenaarae* sp. n. (54–56) and *D. karooica* sp. n. (57–59): (54, 57) prolateral view; (55, 58) ventral view; (56, 59) retrolateral view. Scale bars = 0.25 mm.

Length of leg segments, sequence from femur to tarsus, and total: I 1.63 + 0.95 + 1.24 + 0.85 + 0.52 = 5.19; II 1.42 + 0.85 + 1.08 + 0.88 + 0.55 = 4.78; III 1.22 + 0.76 + 0.85 + 0.95 + 0.73 = 4.51; IV 1.55 + 0.96 + 1.27 + 1.22 + 0.86 = 5.86.

Carapace bright yellow-orange; chelicerae orange; sternum and mouthparts yellow-orange, darker around margins; leg I yellow-orange, metatarsi and tarsi slightly darker, legs II–IV yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae yellow-orange, tibiae and tarsi orange. External genitalia with weakly sclerotised anterior plate, with broad subtriangular unsclerotised patch in front of paired straight transverse sclerotised strips (Fig. 17); ESTR 1:0.61–1:0.62.

Holotype ♂: SOUTH AFRICA: *Western Cape*: Prince Albert, Tierberg, 33°13'S 22°02'E, leg. R. Dean, 25.vii.1989 (old lands) (NCA 91/40).

Paratypes: NAMIBIA: *Karas*: Hobas 374, 27°37'S 17°42'E, leg. E. Griffin, 16–28.x.1984 (pitfall traps in river and flood zone), 1♂ (SMN 39863); Keetmanshoop district, Farm Khabus 146, 26°18'S 18°13'E, leg. N. & G. Olivier, 14.iv–30.v.1988 (pitfall traps, on sandy plain next to dry riverbed), 1♀ (SMN 42200); Same

data but 23.vii–1.xii.1988, 1♂ 1sa♀ (SMN 42124). SOUTH AFRICA: *Northern Cape*: Henkries, 28°54'S 18°07'E, leg. A. Harrington, 2.vi.1997 (scorpion burrows), 1♂ 2♀ (NCA 98/292). *Western Cape*: Prince Albert, Tierberg, 33°13'S 22°02'E, leg. R. Dean, 17.viii.1988 (old lands), 1♀, together with 1♂ *Caponia* sp. (NCA 91/1550).

Other material examined: SOUTH AFRICA: *Western Cape*: Prince Albert, Heuweltjie, 33°13'S 22°02'E, leg. R. Dean, 19.i.1990 (old lands), 1 imm. (NCA 91/1569). NAMIBIA: Daberas, Diamond area 1, 28°17'S 16°45'E, leg. E. Griffin, 24–26.ix.1995 (pitfall traps), 1♀ (SMN 43693).

Remarks: The female from Daberas in southern Namibia (? in Fig. 63) has a badly wrinkled abdomen and the genitalia could not be compared with other material of *D. karooica* sp. n. and *D. arida* sp. n., which occur in the same general area of southern Africa. Since only *D. karooica* sp. n. has been collected from southern Namibia, this specimen is assumed to belong to this species. Collection of fresh material, especially males, from this part of Namibia will shed light on its true identity. Because of this uncertainty this specimen is not designated as a paratype.

In addition, Poller (2005) collected "*Diploglena capensis*" at two sites in southern Namibia (two triangles in Fig. 63) as part of a study of dune-dwelling arthropods: Middelpos (28°14'12.7"S 17°51'11.3"E) and Oase (27°13'57.2"S 17°54'28.4"E). The whereabouts of this material, identified by the author of this paper, are unknown, but it is likely that these specimens correspond to *D. karooica* sp. n. based on the revised biogeographical data presented here, and not *D. capensis*.

The disjunct distribution of *D. karooica* sp. n., with populations in the southwestern parts of South Africa, northern-western parts of the Northern Cape and southern Namibia suggests that the species should be widespread throughout this range, but has just been poorly sampled. Male palpal structure is consistent between all of these populations, so there is no doubt as to the distribution data presented here.

Distribution: Broadly distributed from southern Namibia to southwestern South Africa (Fig. 63).

Diploglena major Lawrence, 1928, **stat. n.**

Figs 5–13, 18, 24, 25, 28–47, 60–62

Diploglena capensis major Lawrence, 1928: 225 (Holotype ♀: NAMIBIA: *Kunene*: Kaross [19°30'S 14°20'E], leg. South African Museum Expedition, i.1925, SAMC B6736, SAM/Aran 1577 – examined).

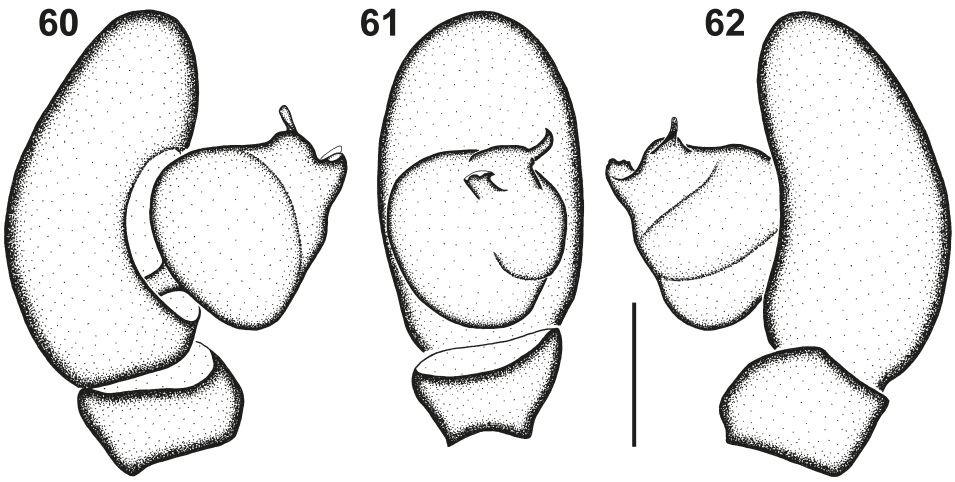
Diagnosis: Males of *D. major* can be easily separated from congeners by the relatively short embolus, which is as long as broad (approximately twice as long as broad in other *Diploglena*), and the orientation of the distal end of the tegular apophysis, which is directed slightly towards the distal end of the cymbium (Figs 60–62). Females are distinct by the anterior margin of the epigastric furrow overlapping and entirely obscuring the transverse sclerotised strips (Fig. 18), which can only be examined by pulling this lip anteriorly, while in the other species these strips are clearly visible.

Description:

Male (NCA 2010/5682).

Measurements: CL 2.20, CW 1.75, SL 1.38, SW 1.24, AL 2.77, AW 1.90, TL 4.95 (4.50–7.15, n=9), CLER 1:0.21 (1:0.18–1:0.24).

Length of leg segments, sequence from femur to tarsus, and total: I 1.55 + 0.75 + 1.13 + 0.74 + 0.42 = 4.59; II 1.25 + 0.70 + 0.95 + 0.73 + 0.45 = 4.08; III 1.07 + 0.58 + 0.74 + 0.80 + 0.55 = 3.74; IV 1.39 + 0.78 + 1.10 + 1.00 + 0.69 = 4.96.



Figs 60–62. Left male palp of *Diploglena major* Lawrence, 1928 in prolateral (60), ventral (61) and retrolateral views (62). Scale bars = 0.25 mm.

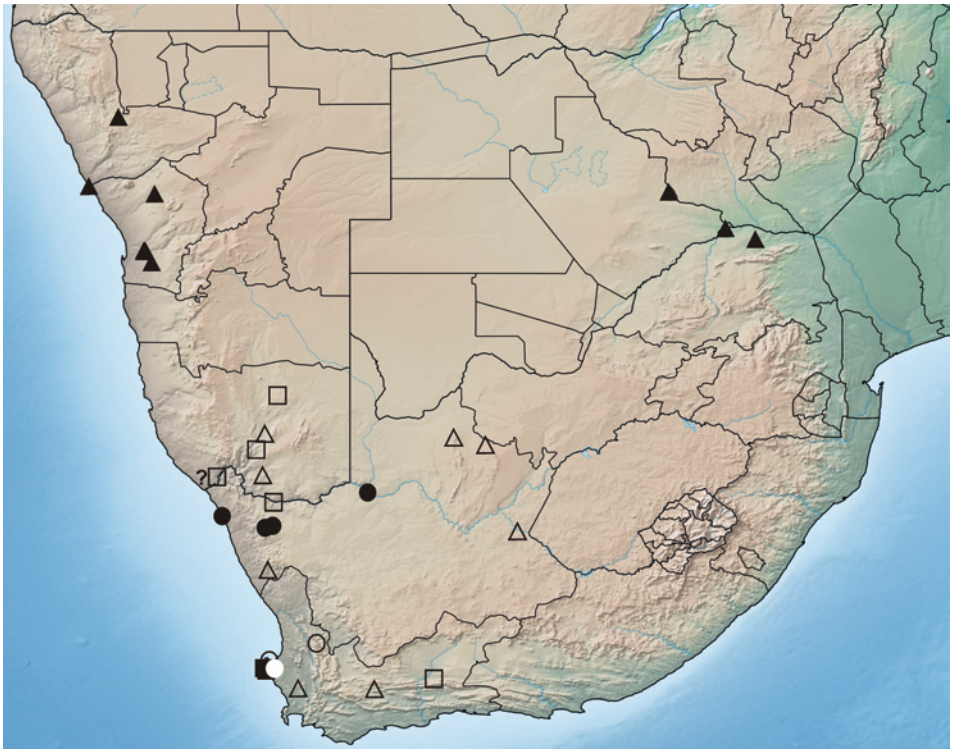


Fig. 63. Distribution of *Diploglena arida* sp. n. (black circles), *D. capensis* Purcell, 1904 (open circles), *D. dippenaarae* sp. n. (black squares), *D. karooica* sp. n. (open squares), *D. major* Lawrence, 1928 (black triangles), *D. proxila* sp. n. (white circle) and undetermined *Diploglena* immatures (open triangles) in southern Africa.

Carapace bright yellow-orange, pits yellow; chelicerae orange-brown; sternum yellow, mouthparts orange, both darker around margins; leg I bright yellow, metatarsi and tarsi yellow-brown, legs II–IV creamy-yellow; abdomen cream dorsally and ventrally. Palpal femora and patellae bright yellow, tibiae and cymbium orange-brown; palpal tegulum with short embolus, as long as broad, directed prolaterally distally at approximately 11 o'clock; membranous conductor small, only covering tip of embolus; embolus and distal lobe of tegular apophysis perpendicular relative to one another; tegular apophysis comprising suboval basal lobe distally on tegulum, with claw-like distal lobe directed retrolaterally distally at approximately 2 o'clock; tip of tegular apophysis clearly more distal than tip of embolus (Figs 60–62).

Female (NCA 2010/3204).

Measurements: CL 2.90, CW 2.35, SL 1.83, SW 1.65, AL 4.20, AW 3.03, TL 6.55 (6.00–9.30, n=5), CLER 1:0.19 (1:0.19–1:0.21).

Length of leg segments, sequence from femur to tarsus, and total: I 1.80 + 1.30 + 1.33 + 1.38 + 0.52 = 6.33; II 1.55 + 1.00 + 1.10 + 0.90 + 0.53 = 5.08; III 1.40 + 0.85 + 0.88 + 1.05 + 0.75 = 4.93; IV 1.73 + 1.08 + 1.35 + 1.25 + 0.82 = 6.23.

Carapace bright orange, pits yellow-orange; chelicerae orange-brown; sternum and mouthparts bright orange, darker around margins; legs I–IV bright yellow-orange, metatarsi and tarsi I and II slightly darker; abdomen cream dorsally and ventrally. Palpal femora and patellae bright yellow-orange, tibiae and tarsi orange. External genitalia with weakly sclerotised anterior plate, with broad arch-shaped unsclerotised patch in front of slightly recurved paired transverse sclerotised strips (Fig. 18); ESTR 1:0.52–1:0.56.

Other material examined: BOTSWANA: *North-East*: Selkirk Mine, near Francistown, 21°19.494'S 27°45.030'E, leg. D.H Jacobs, 1.iii.2008 (pitfall traps), 1♂ (NCA 2010/5682); Same data but 6.iv–22.viii.2008, 1♀ (NCA 2010/3204), 1♂ 2 imm. (NCA 2009/3205), 1♂ 1♀ prepared for S.E.M.; Same locality, 21°10.2'S 27°31.2'E, leg. D. Jacobs, 6.v–22.vii.2008 (pitfall traps, EIA site 2), 4♂ (NCA 2010/3230). NAMIBIA: *Erongo*: Central Namib Desert, 16 km ESE of Swakopmund, 22°46.380'S 14°57.720'E, 394 m, leg. D. Jacobs & C. Deschodt, 7.vi.2013 (pitfall traps, Ongolo EIA site 06), 1sa♀ (NCA 2014/2138); Central Namib Desert, 47 km ESE of Swakopmund, 22°46.380'S 14°58.860'E, 427 m, leg. D. Jacobs & C. Deschodt, 7.vi.2013 (pitfall traps, Ongolo EIA site 07), 1sa♀ (NCA 2014/2094); Central Namib Desert, 49 km ESE of Swakopmund, 22°46.800'S 14°59.760'E, 441 m, leg. D. Jacobs & C. Deschodt, 7.vi.2013 (pitfall traps, Ongolo EIA site 09), 2sa♀ (NCA 2014/2095); Central Namib Desert, 66 km E of Walvis Bay, 23°02.580'S 15°08.460'E, leg. D. Jacobs & C. Deschodt, 6–12.vi.2013 (pitfall traps, TUMAS site 09), 1♂ (NCA 2013/5533); 10 miles W of Okombahe [21°22'S 15°13'E], 920 m, leg. E.S. Ross & R.E. Leech, 10.v.1958, 1♀ (CAS, CASENT 9057491); Ugab R. mouth, 21°11'S 13°37'E, leg. H. Kleynhans, 24.v.1988, 1♂ (SMN 40904). SOUTH AFRICA: *Limpopo*: Limpopo Valley, Farm Stoke, 22°29'S 29°52'E, leg. N. Theron, 6.v.2009 (pitfall traps, site B), 1♀ (NCA 2010/4878); Limpopo Valley National Park, 22°13'S 29°08'E, leg. A. Leroy, 29.iv.1997 (under rocks), 1 imm. (NCA 97/823).

Remarks: The abdomen of the female holotype is somewhat shriveled in its present state. Lawrence (1928) indicated its body length as 9.3 mm, making this the largest specimen of *Diploglena* known. The other females collected within the distribution range of *D. major* are mostly less than 7 mm in length, but considerable variation was also found amongst the males from the Selkirk Mine population in Botswana. The identical palpal structure of the single male from subcoastal Namibia (one of the southernmost localities in Fig. 63) with those from eastern Botswana indicates that this species is widespread across the arid and semi-arid northern parts of the subcontinent, and thus it is unlikely that the holotype of *D. major* (northernmost Namibian locality in Fig. 63) represents a different species to the others, despite its considerably larger size.

Distribution: Known from western Namibia, recorded from eastern Botswana and the northern parts of South Africa for the first time (Fig. 63).

Diploglena spp.

Remarks: Several depositories examined consisted only of immature or subadult specimens that could not be definitively attributed to any of the species described here. However, the localities provide an important indication of the distribution of the genus in southern Africa (Fig. 63). Further collecting in these areas should be encouraged to find adults and confirm their identification.

Material examined: SOUTH AFRICA: *Northern Cape*: 4 km W of Hopetown, 29°37'S 24°04'E, leg. B. Chambers, 5.xii.1996–15.ii.1997 (pitfall traps, mixed karooveld), 2 imm. (NCA 97/996); Garies [30°33'S 17°59'E], leg. B. Malkin, 14.xi.1949, 1 imm. (CAS, CASENT 9057493); Red Sands Country Lodge, 14 km SW of Kuruman, 27°30.500'S 23°17.150'E, leg. M. Burger, F. Endeman & T. Olivier, 26.ii–7.iii.2006 (pitfall and funnel traps), 1 imm. (NCA 2007/1736); Tswalu Kalahari Reserve, site 4, 27°19.239'S 22°30.758'E, leg. R. Lyle, P. Webb and Tswalu students, 12–16.iii.2013 (pitfall traps), 1 imm. (NCA 2013/4096). *Western Cape*: Anysberg Nature Reserve, Road between Vrede and Allemorgens, 33°28.029'S 20°34.535'E, leg. C. Haddad & R. Lyle, 24.ix.2007, litter under *Thamnochortis*, 1 imm. (NCA 2007/3743); Malmesbury [33°27'S 18°43'E], leg. W. Purcell, xi.1897, 1sa♀ (SAMC 2850, SAM/Aran 1578).

ADDENDUM

Following acceptance of this manuscript for publication, the author received a depository containing a male and female *Diploglena* as part of a mixed spider loan from the National Museum in Bloemfontein, South Africa (NMBA). Examination of these specimens showed them to represent another new species. For the sake of completion, and avoiding a separate publication to describe this species, the journal editor kindly allowed the inclusion of this species' description as an addendum to this paper.

Diploglena proxila sp. n.

Figs 64–68

Etymology: The species name is Latin for broad, referring to the broad base of the tegular apophysis of the male palp.

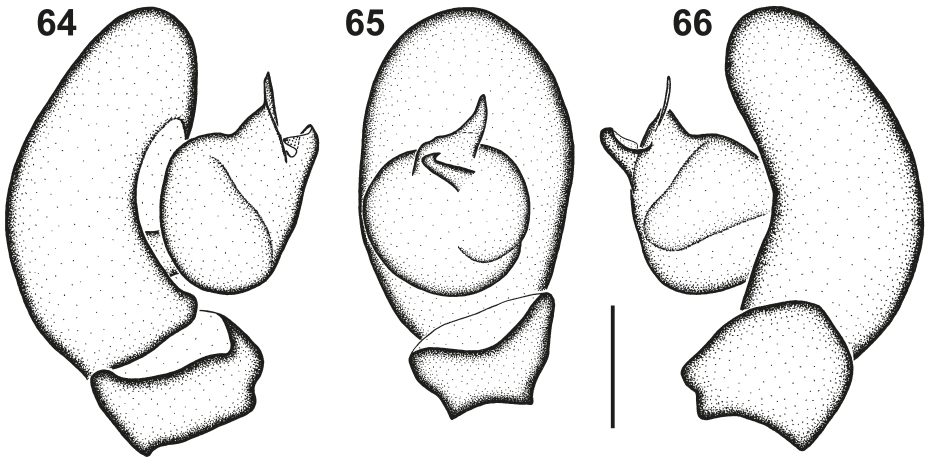
Diagnosis: Males of *D. proxila* sp. n. are most similar to those of *D. capensis* and *D. major*, with which it shares the distal lobe of the tegular apophysis projecting considerably beyond the distal margin of the tegulum. It can be separated from *D. capensis* by the much broader basal lobe of the tegular apophysis, and from *D. major* by the much larger distal lobe of the tegular apophysis and clearly longer embolus (compare Fig. 65 with Figs 52 and 61). The shape of the epigyne in the females resembles that in *D. major*, particularly the partially obscured sclerotised strips (compare Fig. 67 with Fig. 18), but *D. proxila* sp. n. has a slightly greater ESTR of 1:0.61, while 1:0.52–1:0.56 in *D. major*.

Description:

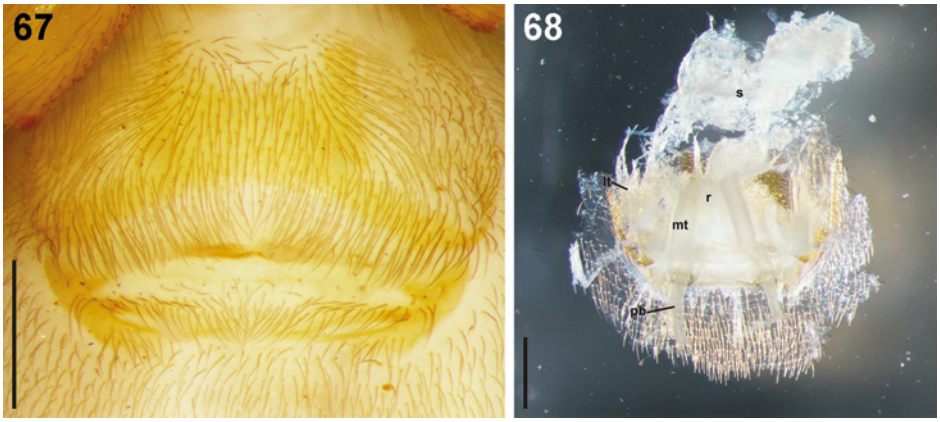
Male (holotype, NMBA 2128).

Measurements: CL 2.60, CW 2.11, SL 1.55, SW 1.42, AL 3.68, AW 2.00, TL 5.75, CLER 1:0.16.

Length of leg segments, sequence from femur to tarsus, and total: I 1.80 + 0.95 + 1.40 + 0.88 + 0.55 = 5.58; II 1.60 + 0.80 + 1.20 + 0.95 + 0.60 = 5.15; III 1.25 + 0.75 + 0.80 + 0.97 + 0.67 = 4.44; IV 1.66 + 0.98 + 1.28 + 1.30 + 0.85 = 6.07.



Figs 64–66. Left male palp of *Diploglena proxila* sp. n. in prolateral (64), ventral (65) and retrolateral views (66). Scale bars = 0.25 mm.



Figs 67–68. Digital microscope photographs of female *Diploglena proxila* sp. n. genitalia in ventral (67) and dorsal view (68). Abbreviations: lt – lateral sieve trachea; mt – anterior branches of paired median tubular tracheae; pb – posterior branches of paired median tubular tracheae; r – seminal receptacle; s – membranous sac extending from seminal receptacle. Scale bars = 0.5 mm.

Carapace and chelicerae bright orange, chelicerae slightly darker, pits on carapace yellow-orange, giving mottled appearance; sternum and mouthparts yellow-orange, darker around margins; leg I bright yellow-orange, legs II–IV slightly paler, with distal ends of metatarsi and entire tarsi creamy-yellow; abdomen cream dorsally and ventrally. Palpal femora, patellae and tibiae bright yellow-orange, cymbium slightly paler; palpal tegulum with slightly curved embolus, twice as long as broad, directed prolaterally at approximately 10 o'clock; membranous conductor triangular, directed dorsally; embolus and distal lobe of tegular apophysis at nearly right angle to one another; tegular apophysis comprising broad basal lobe distally on tegulum, with triangular distal lobe directed distally at approximately 1 o'clock; tip of tegular apophysis projecting considerably beyond distal tegular margin, clearly more distal than tip of embolus (Figs 64–66).

Female (paratype, NMBA 2128).

Measurements: CL 2.68, CW 2.13, SL 1.60, SW 1.45, AL 4.95, AW 2.75, TL 7.50, CLER 1:0.17.

Length of leg segments, sequence from femur to tarsus, and total: I 1.86 + 1.05 + 1.30 + 0.98 + 0.55 = 5.74; II 1.60 + 0.95 + 1.10 + 0.95 + 0.55 = 5.15; III 1.35 + 0.78 + 0.85 + 1.00 + 0.65 = 4.63; IV 1.77 + 1.05 + 1.90 + 1.38 + 0.80 = 6.90.

Coloration as in male. Palpal femora, patellae and tibiae yellow-orange, tarsi orange. External genitalia with weakly sclerotised anterior plate, lateral margins nearly parallel anteriorly, sclerotisation extending obliquely from the posterolateral edge, with broad narrow unsclerotised patch in front of paired slightly recurved sclerotised strips (Fig. 67); internal structure as for congeners (Fig. 68); ESTR 1:0.61.

Holotype ♂: SOUTH AFRICA: *Western Cape*: Vredenburg, Farm Besters Kraal 38, 32°50'S 17°55'E, leg. L.N. Lotz, 24.x.1987 (under plants and rocks) (NMBA 2128).

Paratype: Together with holotype, 1♀ (NMBA 2128).

Distribution: Known only from the type locality, located between the populations of *D. capensis* and *D. dippenaarae* sp. n. on the South African West Coast (Fig. 63).

ACKNOWLEDGEMENTS

The curators of the various collections are thanked for the loans of material that made this study possible. This research was funded by the National Research Foundation of South Africa through its Competitive Funding for Rated Researchers programme (grant no. 95569). Alexander Sanchez Ruiz (Brazil) kindly provided measurements and identifications of two NCA depositories that were on loan to him at the time of this study. Hanlie Grobler (Centre for Microscopy, University of the Free State, South Africa) prepared the material for scanning electron microscopy and assisted with the production of images. The two reviewers, Norman Platnick (USA) and Yvonne Kranz-Baltensperger (Switzerland), are thanked for their constructive suggestions that considerably improved this manuscript.

REFERENCES

Dippenaar-Schoeman, A.S. & Jocqué, R. 1997. *African spiders: an identification manual*. Plant Protection Research Institute Handbook No. 9. Pretoria: Agricultural Research Council.

Dupérré, N. 2014. Three new species of Caponiid spiders from Ecuador (Araneae, Caponiidae). *Zootaxa* **3838**: 462–474.

Hadley, A. 2008. *Combine ZM imaging software*. (http://www.hadleyweb.pwp.blueyonder.co.uk; accessed 24/06/2014).

Jiménez, M.L., Platnick, N.I. & Dupérré, N. 2011. The haplogyne spider genus *Nopsides* (Araneae, Caponiidae), with notes on *Amrishoonops*. *American Museum Novitates* **3708**: 1–18.

Jocqué, R. & Dippenaar-Schoeman, A.S. 2006. *Spider families of the world*. Tervuren: Royal Museum for Central Africa.

Kranz-Baltensperger, Y., Platnick, N.I. & Dupérré, N. 2009. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from Iran. *American Museum Novitates* **3656**: 1–12.

Lawrence, R.F. 1928. Contributions to a knowledge of the fauna of South-West Africa VII. Arachnida (Part 2). *Annals of the South African Museum* **25**: 217–312.

Platnick, N.I. 1993. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from California. *American Museum Novitates* **3063**: 1–8.

———1994*a*. A revision of the spider genus *Caponina* Araneae, Caponiidae). *American Museum Novitates* **3100**: 1–15.

———1994*b*. A review of the Chilean spiders of the family Caponiidae (Araneae, Haplogynae). *American Museum Novitates* **3113**: 1–10.

Platnick, N.I. & Jäger, P. 2008. On the first Asian spiders of the family Caponiidae (Araneae, Haplogynae), with notes on the African genus *Diploglena*. *American Museum Novitates* **3634**: 1–12.

Poller, R. 2005. *Using insects to evaluate the biogeographic status of isolated dune patches in southern Namibia.* Unpublished M.Sc thesis. Bloemfontein: University of the Free State.

Purcell, W.F. 1904. Descriptions of new genera and species of South African spiders. *Transactions of the South African Philosophical Society* **15**: 115–173.

Ruiz, A.S. & Brescovit, A.D. 2015. On the taxonomic placement of the Cuban spider *Nops ariguanabo* Alayón and the description of a new Mexican *Tarsonops* (Araneae, Caponiidae). *Zootaxa* **3914**: 131–143.

World Spider Catalog. 2015. *World Spider Catalog, Version 16*. Bern: Natural History Museum. (http://wsc.nmbe.ch; accessed 27/01/2015).