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Author: Haddad, Charles R.

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**A new species of *Poachelas* from Maputaland, South Africa
(Araneae: Corinnidae), with considerable range extension for
*Poachelas striatus***

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

A new species of the tracheline sac spider genus *Poachelas* Haddad & Lyle, 2008 (Araneae: Corinnidae), presently known only from southern Africa, is described. The genus has been represented by three species, all of which are suspected to be closely associated with grasses. The new species described here, *P. refugus* sp. n., is known only from females collected at the type locality, Tembe Elephant Park in Maputaland, South Africa. New collecting records of the type species of the genus, *P. striatus* Haddad & Lyle, 2008, described from three localities in the central Free State Province of South Africa and with a distribution range of about 100 km, are presented. The species is widespread throughout the province, and is also recorded from the Eastern Cape, Northern Cape and Mpumalanga provinces for the first time, expanding its range to approximately 900 km.

KEY WORDS: Araneae, Trachelinae, spider, South Africa, Karoo, savannah, grassland, grass tussocks, distribution.

INTRODUCTION

The spider genus *Poachelas* Haddad & Lyle, 2008 (Araneae: Corinnidae) is one of seven tracheline genera recently described from the Afrotropical Region (Haddad 2006; Haddad & Lyle 2008; Lyle & Haddad 2009, 2010). It can be easily recognised from other trachelines by the elongate habitus and anterior legs, and pale colouration with a dark median abdominal stripe, adaptations to its apparent preferred microhabitat at the base of grass tussocks. Both sexes have strong paired ventral spines on the anterior tibiae and metatarsi, in addition to spines or erect setae on the anterior patellae. Known males of two species have ventral cusps on the tibiae, metatarsi and tarsi of leg I, and also on the metatarsi of leg II, which are absent in females (Haddad & Lyle 2008).

Poachelas are rarely collected by conventional methods (e.g. sweep-netting and pitfall trapping) and specimens can most easily be collected by searching at the bases of grass tussocks. During field work as part of a long-term biodiversity survey of the arachnid fauna of the Tembe Elephant Park in north-eastern KwaZulu-Natal Province, South Africa (Maputaland), immature specimens of an unusually spined clubionoid spider were collected in 2002, 2004, 2006 and 2007 by sweep-netting grasses and active searching in grass tussocks. Only following the description of *Poachelas* were additional immature specimens collected that could be definitively attributed to this genus. During 2009 the first adults were collected (two females), and these spiders could then be recognised as new species of *Poachelas*, here described as *P. refugus* sp. n.

Fieldwork forming part of the South African National Survey of Arachnida (SANSA) has resulted in the collection of additional specimens of *Poachelas striatus* Haddad & Lyle, 2008 from quite widespread localities in South Africa. These new records are also presented here, greatly expanding the range of this species from about 100 km to 900 km.

MATERIAL AND METHODS

The specimens were studied under a stereomicroscope in 70% ethanol for all measurements, photographs and drawings. The epigyne of the paratype female was dissected using entomological pins, cleared in a Labcon 5019U ultrasonic bath for 30 seconds, and drawn. Body measurements were taken of the larger holotype and smaller paratype females, and leg and eye measurements were taken for the holotype. All measurements were taken using an ocular micrometer on a Nikon SMZ stereomicroscope and are given in millimetres. Leg spination follows the format of Bosselaers and Jocqué (2000).

The following abbreviations are used in the description: AER – anterior eye row, AL – abdomen length, ALE – anterior lateral eye, AME – anterior median eye, AW – abdomen width, CL – carapace length, CW – carapace width, FL – fovea length, PER – posterior eye row, *pl* – prolateral, PLE – posterior lateral eye, *plv* – prolateral ventral, PME – posterior median eye, *rlv* – retrolateral ventral, SL – sternum length, SW – sternum width, TL – total length.

Digital photos of the holotype female were taken using a Nikon Coolpix 8400 mounted on a Nikon SMZ stereomicroscope. The extended focal range images were assembled using CombineZM image stacking software (<http://www.hadleyweb.pwp.blueyonder.co.uk>) to increase the depth of field.

The examined material has been deposited in the following collections (curators given in parenthesis): MRAC – Royal Museum for Central Africa, Tervuren, Belgium (Rudy Jocqué); NCA – National Collection of Arachnida, Pretoria, South Africa (Ansie Dippenaar-Schoeman); NMBA – National Museum, Bloemfontein, South Africa (Leon Lotz); TMSA – Ditsong National Museum of Natural History, Pretoria, South Africa (Robin Lyle).

TAXONOMY

Genus *Poachelas* Haddad & Lyle, 2008

Poachelas: Haddad & Lyle 2008: 65.

Type species: *Poachelas striatus* Haddad & Lyle, 2008.

***Poachelas refugus* sp. n.**

Figs 1–7

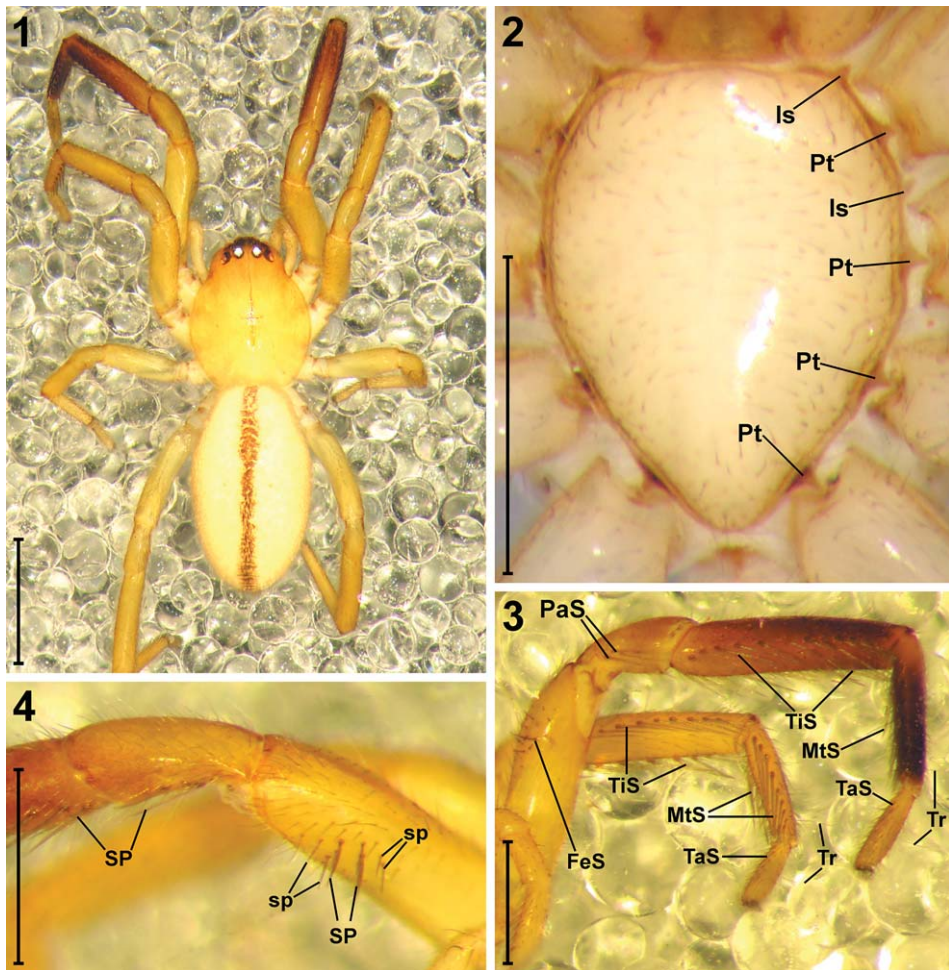
Etymology: The species name is Latin for fugitive, and refers to adults that evaded capture for several years during field trips at the type locality.

Diagnosis: This species is similar in size to *P. montanus* Haddad & Lyle, 2008 from South Africa but can be separated from *P. montanus* by the distinct abdominal stripe (Fig. 1) and presence of strong spines on the anterior legs (Figs 3, 4), which are erect setae in *P. montanus*. Females of *P. refugus* sp. n. can be further recognised from others in the genus by the anteriorly directed looping copulatory ducts and small anterior ST II (Figs 6, 7). This species belongs to the *Poachelas striatus* species group, defined by the presence of strong ventral leg spines in both sexes (Haddad & Lyle 2008).

Description:

Female.

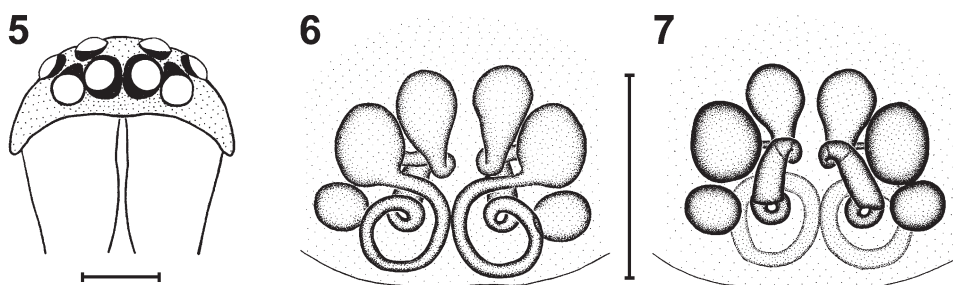
Measurements: CL 1.08–1.24, CW 0.87–0.99, AL 1.40–1.70, AW 0.83–1.00, TL 2.48–2.80, FL 0.12–0.15, SL 0.68–0.73, SW 0.55–0.59, AME–AME 0.04, AME–ALE 0.01,



Figs 1–4. Digital microscope photographs of *Poachelas refugus* sp. n., holotype female: (1) dorsal habitus; (2) sternum, ventral, slightly lateral view, showing intercoxal sclerites (Is) and precoxal triangles (Pt); (3) anterior legs, prolateral view, indicating femoral (FeS), patellar (PaS), tibial (TiS), metatarsal (MtS), tarsal (TaS) spines and trichobothria (Tr); (4) femur (distal), patella and tibia (proximal) of leg I enlarged, prolateral view, showing spines (SP) and spinules (sp). Scale bars = 1.0 mm in Fig. 1, 0.5 mm in Figs 2–4.

ALE–ALE 0.20, PME–PME 0.07, PME–PLE 0.05, PLE–PLE 0.32. Length of leg segments: I $1.00+0.49+0.83+0.65+0.37=3.34$; II $0.84+0.44+0.65+0.56+0.32=2.81$; III $0.59+0.37+0.41+0.49+0.29=2.15$; IV $0.95+0.41+0.84+0.86+0.37=3.43$.

Carapace, including eye region, bright yellow, with pale grey stripe from PER to fovea, with short transverse extension near posterior end of marking (Fig. 1); carapace flattened, slightly elevated from PER to fovea, with highest point at fovea, sloping gently to posterior; surface smooth, with scattered short fine setae; fovea indistinct, lying in shallow median depression, at $\frac{2}{3}$ carapace length. Eyes surrounded by black rings; AER procurved, lateral eyes very slightly larger than medians (Fig. 5); clypeus height equal



Figs 5–7. *Poachelas refugus* sp. n. paratype female: (5) eye region, anterior view; (6) epigyne, ventral view; (7) vulva, dorsal view. Scale bars = 0.2 mm.

to $\frac{2}{3}$ AME diameter; AME separated by $\frac{1}{2}$ their diameter; AME separated from ALE by approximately $\frac{1}{8}$ AME diameter; PER recurved (Fig. 1), median eyes slightly larger than laterals; PME separated by approximately $\frac{7}{8}$ their diameter; PME separated from PLE by $\frac{2}{3}$ PLE diameter. Chelicerae pale yellow-orange; anterior surface smooth, with scattered short fine setae; promargin and retromargin each with two small subequal teeth, each pair situated close together. Sternum creamy-yellow, yellow-brown along border; surface smooth, covered in fine setae (Fig. 2); precoxal triangles present; intercoxal sclerites only present between endite and coxa I, and between coxa I and II (Fig. 2). Abdomen creamy, with distinct dark grey dorsal median stripe running the length of abdomen (Fig. 1); abdomen elongate, $1\frac{1}{2}$ times longer than wide, broadest at $\frac{3}{8}$ times its length; dorsal scutum absent; surface covered in short fine setae; two pairs of oval sigilla present, first pair indistinct, at $\frac{1}{4}$ abdomen length, second pair distinct, near $\frac{1}{2}$ abdomen length (Fig. 1); venter without sclerites. Legs I to IV yellow, anterior pairs slightly darker than posteriors; patellae, tibiae and metatarsi of leg I dark orange-brown, of leg II slightly tinged with grey mottling (Fig. 3); all segments of anterior legs with several spines or spinules (Figs 3, 4), posterior pairs without spines or spinules; leg cusps on anterior legs absent; metatarsi and tarsi with weak scopulae, remaining leg segments covered in short fine setae; all tibiae, metatarsi and tarsi with several dorsal trichobothria; metatarsi III and IV with terminal preening comb. Leg spination: femora: I *pl* 4 spines, *pl* 6 spinules; patellae: I *plv* 4, II *plv* 2; tibiae: I *plv* 12 *rlv* 12, II *plv* 9 *rlv* 9; metatarsi: I *plv* 8 *rlv* 8, II *plv* 8 *rlv* 8; tarsi: I *plv* 9 *rlv* 5 spinules, II *plv* 5–8 *rlv* 4 spinules. Epigyne with copulatory openings situated posteriorly in short semi-circular ridges (Figs 6, 7); copulatory ducts directed anteriorly, looping before entering small oval anterior ST II, with transverse duct connecting ST II to lateral bilobed ST I.

Male. Unknown.

Holotype: ♀ SOUTH AFRICA: *KwaZulu-Natal*: Tembe Elephant Park, Pioneer grassland, 27°01.470'S: 32°24.346'E, base of grass tussocks, 5.xii.2009, C. Haddad (TMSA 23738).

Paratype: ♀ together with 4 immatures: same data as holotype (TMSA 23739).

Distribution: Known only from the type locality (Fig. 8).

Habitat and biology: Adults of this species are rare and initially only immatures were collected from the base of grass tussocks, and occasionally by sweeping, in pioneer grassland and sparse woodland habitats at the type locality. Adults were collected from grass tussocks in early summer (December). Despite exhaustive sampling in the nearby

Ndumo Game Reserve, approximately 10 km west of Tembe, no specimens of this new species have been collected there (Haddad *et al.* 2006), suggesting an association with the pioneer grassland and sparse woodland habitats that form a mosaic with sand forest endemic to Maputaland (Matthews *et al.* 1999, 2001). These habitats and soils are absent from Ndumo and could possibly explain the absence of *P. refugus* from this reserve. It may very well occur in Maputaland to the north and south of Tembe, where suitable habitat is available.

Poachelas striatus Haddad & Lyle, 2008

Poachelas striatus: Haddad & Lyle 2008: 67, figs 72, 73, 76–95.

See Haddad & Lyle (2008) for description of both sexes.

Material examined: SOUTH AFRICA: *Eastern Cape*: 1♂ 3 km N of Paterson, 33°24.878'S:25°57.531'E, base of grass tussocks, roadside, 23.iv.2010, C. Haddad (TMSA 23759). *Free State*: 1♂ Boshoff district, Farm Boesmansrus, 28°32.543'S:25°09.929'E, base of grass tussocks, 11.iii.2010, C. Haddad (TMSA 23767); 3♂ 1 imm. Brandfort district, Amanzi Private Game Res., 28°36.080'S:26°25.950'E, base of grass tussocks, 3.iv.2010, C. Haddad (MRAC 230336); 1♂ 15 imm. Clocolan district, Mpetsane Conservation Estate, 28°48.561'S:27°39.255'E, base of grass tussocks, 17.iii.2010, C. Haddad (NCA 2010/395); 1♂ 12 imm. Kimberley district, Benfontein Nat. Res., 28°50.452'S:24°49.473'E, base of grass tussocks, 13.iii.2010, C. Haddad (TMSA 23769); 1♀ Ladybrand district, De Luc farm, 29°17.524'S:27°24.267'E, base of grass tussocks, 5.xii.2008, C. Haddad (NCA 2008/4283); 4♂ 9♀ Platberg Nat. Res., grassland plain, 28°17.303'S:29°10.419'E, base of grass tussocks, 27.v.2010, C. Haddad (TMSA 23802); 1♀ same locality, Bottom of Donkey Pass, 28°16.836'S:29°11.992'E, base of grass tussocks, 27.v.2010, C. Haddad (TMSA 23803); 4♀ Tussen-die-Riviere Nat. Res., 30°28'S:26°07'E, active searching, grassland, 14.x.2008, L. Lotz & C. Haddad (NMBA 12663); 1♂ 2♀ 1 imm. 2 km W of Deallesville, 28°39.946'S:25°43.992'E, base of grass tussocks, 11.iii.2010, C. Haddad (TMSA 23768). *Mpumulanga*: 1♂ Delmas, pitfall traps, unsprayed maize, 25.v.2005, P. Marais (NCA 2008/2777). *Northern Cape*: 2♂ 1♀ 2 imm. 2 km S of Colesburg, 30°44.917'S:25°05.139'E, base of grass tussocks, roadside, 23.iv.2010, C. Haddad (TMSA 23766).

Distribution: This species was described from three localities in the central Free State Province within a range of approximately 100 km (Haddad & Lyle 2008), all falling within the Grassland Biome of South Africa (Fig. 8). Here the first records are provided of the species' occurrence in the Savannah (Benfontein), Thicket (Paterson) and Nama Karoo Biomes (Colesburg and Tussen-die-Riviere Nature Reserve). Given this newly found ecological flexibility and a strong association of the species with grasses, it is likely that *P. striatus* has a much broader distribution in South Africa and may occur wherever suitable grasses and grass densities are found. Only once additional focused sampling for this species has been done, can the environmental parameters restricting its distribution be determined. The new records reported here extend the range to the eastern, southern and western parts of the Free State, eastern Northern Cape, southern Eastern Cape and Mpumulanga provinces, thereby expanding the range of the species to approximately 900 km (Fig. 8).

The records from Platberg Nature Reserve are also significant, providing the first case of sympatry in the genus. At this locality *P. striatus* and *P. montanus* appear to be altitudinally separated. *P. striatus* occurs in the grassland plains at the base of Platberg (altitude *ca* 1750 m), consistent with its habitat at other localities. This represents the highest altitude at which *P. striatus* has been collected thus far. In contrast, *P. montanus* occurs on the top of Platberg in montane grassland at an altitude of about 2300 m.

Habitat and biology: The species is typically found at the base of grass tussocks of various genera (*Themeda*, *Eragrostis*, *Cymbopogon*, *Panicum* etc.) in open grassland

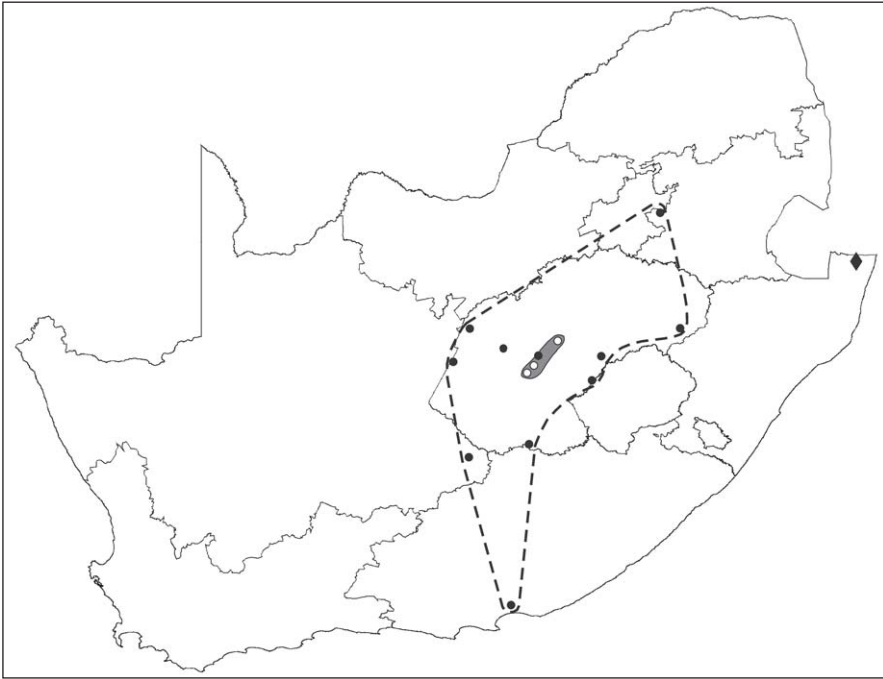


Fig. 8. Distribution of *Poachelas refugus* sp. n. (diamond) and published (open circles) and new (solid circles) records of *P. striatus* Haddad & Lyle, 2008 in South Africa. Shaded area indicates previously known distribution of *P. striatus* and broken line its new distribution.

plains with a compact soil substrate (sandy, loamy or clay). Here the first record is presented from an agroecosystem (maize at Delmas). Further details on the biology are provided in Haddad and Lyle (2008).

CONCLUSION

The description of *P. refugus* increases the known diversity of the genus to four species. This genus is relatively stable regarding somatic morphology, particularly the elongate body shape and strong leg spines ventrally on the anterior legs. However, the genitalic structure of the three known females is quite variable, and provides another example of stable somatic morphological templates accompanied by a complex range of genitalic structures. With further focused sampling at the base of grass tussocks in Africa it is likely that several more *Poachelas* species will be discovered. Only once a broader diversity of species is known can the extent of genitalic variation in the genus be truly appreciated.

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