

New species and new records of *Mesoceration* Janssens, 1967 from South Africa (Coleoptera, Hydraenidae).

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Abstract

Mesoceration Janssens, 1967 is the most speciose genus of Prosthetopinae, most of the 44 described species being restricted to South Africa, and almost all occupying the benthic zone of streams and rivers. Here seven species are described as new: *Mesoceration caniplenum* sp. nov., *M. foggoi* sp. nov., *M. helmei* sp. nov., *M. hirsutum* sp. nov., *M. rugulosum* sp. nov., *M. sewefonteinense* sp. nov. and *M. sinclairi* sp. nov., bringing the number of known species to 51. All seven new species have been discovered during recent, targeted sampling of South African Hydraenidae. New collection records resulting from this fieldwork are also provided for 27 previously described species, together with ecological notes.

Key words: Coleoptera, Hydraenidae, South Africa, *Mesoceration*, new species, new records, ecology.

Introduction

With 44 species described to date (Perkins 2008; Bilton 2014a), *Mesoceration* Janssens, 1967 is the most diverse genus of Prosthetopinae, a largely southern Afrotemperate lineage of Hydraenidae (Perkins & Balfour-Browne 1994). Known *Mesoceration* species are restricted to South Africa and Lesotho, with a concentration of taxa in the fold mountains of the Western Cape (Perkins & Balfour-Browne 1994; Perkins 2008), a known hotspot of freshwater biodiversity (de Moor & Day 2013). The vast majority of collection records are from running waters; *Mesoceration* species being characteristic of riffle areas, where a number of species can co-occur on the underside of stones, together with Elmidae and Dryopidae.

Here I describe seven new species of this genus, as well as providing new collection records for 27 others, some of which represent significant extensions of their known geographical ranges. The opportunity is also taken to provide ecological notes on selected *Mesoceration* species and their habitats.

Materials and Methods

Specimens were studied using Leica MZ8 or M205C stereomicroscopes, with a Fluopac FP1 fluorescent illuminator. Habitus photographs were taken with a Canon EOS 500D camera fitted to a Leica Z6 Apo macroscope, fitted with a 2x objective lens. Specimens were illuminated using a Leica LED5000 HDI dome illuminator to avoid shadow.

Genitalia were mounted on glass slides in Kisser's glycerol gelatine (see Riedel 2005) and imaged using an Olympus CX31 microscope with the same camera. All image stacks

were produced by hand, and combined using Zerene Stacker software (www.zerenesystems.com). Unless otherwise stated, hind wings were not examined.

Exact label data are cited for specimens. // indicates new line in label text.

Abbreviations

CDTB	Collection D.T. Bilton, Plymouth, UK
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
NHM	Natural History Museum, London, UK
NMW	Naturhistorisches Museum Wien, Vienna, Austria
OUMNH	Oxford University Museum of Natural History, Oxford, UK
SAM	Iziko South African Museum, Cape Town, South Africa
SANC	South African National Collection of Insects, Pretoria, South Africa
TMSA	Ditsong Museum (former Transvaal Museum), Pretoria, South Africa
BL	Body length (front of labrum to elytral apices)
EL	Elytral length (outer angle of shoulder to apex)
EW	Elytral width at widest point

Taxonomy

Mesoceration caniplenum sp. nov.

(Figs 1, 2 & 5)

Type locality. South Africa, KwaZulu-Natal, uKhahlamba Drakensberg National Park, Injisuthi, stream in Afromontane forest remnant below Van Heyningen's Pass (Fig. 5A).

Type material. Holotype (male): "27/xii/2013 South Africa KZN// Ukhahlamba Drakensberg NP// 1st stream below Van Heyningen's//Pass @ Injisuthi D T Bilton leg." (genitalia extracted and mounted on same card) and red holotype label (SAM).

Paratypes (14): **South Africa:** 6 m# same data as holotype; 6 m#, 2f# "27/xii/2013 South Africa KZN// Ukhahlamba Drakensberg NP// 2nd stream below Van Heyningen's//Pass @ Injisuthi D T Bilton leg." (CDTB, MCZ, NMW, SAM, SANC, TMSA). All with red paratype labels.

Description. Size: Holotype: BL 1.6 mm; EL 0.9 mm; EW 0.6 mm. Paratypes: m#s BL 1.45–1.75 mm; EL 0.85–1.0 mm; EW 0.55–0.65 mm. f#s BL 1.6–1.65 mm; EL 0.85–0.9 mm; EW 0.6–0.65 mm.

Colour: Dorsum (Fig. 1A) with head dark pitchy brown to black; ocelli, antecellar sulci and area between sulci and compound eyes paler. Pronotum reddish brown on disc, broadly yellow towards lateral margins. Elytra yellow; suture, lateral margins and serial punctures darker. Legs pale yellow, maxillary palpi pale yellow with last segment infuscated over most of length. Venter with head, pronotum and elytral pseudopileurs yellow; meso and metaventrites, abdominal ventrites and elytral epipleurs reddish brown. Prosternum, meso- and metaventrites, and much of abdomen silvery due to hydrofuge vestiture.

Head: Labrum quadrate, markedly broader anteriorly than posteriorly. Rounded apicolaterally with broad apicomedian emargination occupying approx. 0.5 of length. Sides of apicomedian

emargination and apicolateral angles weakly raised. Surface shining, with fine, elongate microreticulation, obsolete on centre at base. Scattered fine punctures with short, fine, decumbent setae. Frontoclypeal suture strong, arcuate. Clypeus strongly shining, with scattered medium punctures bearing fine, decumbent setae, and traces of microreticulation lines laterally. Centre of frons and vertex shining; punctation and setation as clypeus, microreticulation absent. Anteoocellar sulci shallow, dull, punctate and microreticulate; same sculpture between sulci and lateral margins of compound eyes. Ocelli large, flat, shining. Compound eyes moderate, occupying approx. 0.35 lateral margin of head, 12 ommatidia in longest series.

Pronotum: Cordate, transverse, broadest at middle. Anterior margin arcuate over median 0.6, without hyaline border; posterior margin straight. Anterior angles broadly rounded, posterior angles rectangular. Lateral margins sinuated from widest point to base; narrowly margined and weakly crenulate. Disc relatively flat, shining, with band of transverse microreticulation over central 0.5 close to anterior margin, and partly obsolete isodiametric meshes in foveae, laterally and on parts of pronotal reliefs. Microreticulation absent from central reliefs.

Pronotum with sparse, fine, shallow punctures, bearing long, fine, decumbent setae on explanate lateral margins. With 10 distinct fovea as follows: Anterior median fovea elongate, shallow, broadest in posterior 0.5; posterior median fovea shallow, circular. Anterior admedian fovea shallow, circular, open laterally; posterior admedian fovea shallow, oval, orientated anterolaterally. Anterior and posterior adlateral foveae shallow, circular, open laterally. Fields of coarse, deep, setose punctures present close to anterior and posterior margins.

Elytra: Elongate oval, broadest at middle. Subparallel over anterior 0.5, then weakly attenuated to conjointly rounded, narrowly truncate apices. Dorsally flattened, with shallow posterior declivity. Lateral margins explanate and weakly serrate. Elytral series of coarse, shallow punctures, not striate impressed. Serial punctures granulate, with fine, clear setae, reaching next puncture in row; punctures finer posteriorly. Elytral intervals with small, flat, widely-spaced granules, with fine decumbent setae. Granules spaced approx. 1–2x spacing of serial punctures. Series 5 and 6 separated by narrow interval. Interval 8 flat, without carina.

Legs: Apical protarsomere with two stout ventral setae; basal three protarsomeres with suction setae.

Venter: Mentum shining, microreticulate, meshes isodiametric in centre and elongate at sides. Surface with scattered, short, erect setae. Anterior margin of mentum, and palpifer with long, erect setae. Submentum shining, with traces of transverse microreticulation. Genae shining, with transverse microreticulation anteriorly; wrinkled behind. Gula shining with transverse microreticulation posteriorly. Prosternum with weak, glabrous central ridge. Remainder rugulose, covered in dense hydrofuge vestiture. pronotal hypomeron broad, weakly shining, with fine isodiametric microreticulation. Mesoventrite and metaventrite with dense hydrofuge vestiture. Mesoventral plaques glabrous, forming inverted Y; stem 0.2 length of arms, latter forming flat, glabrous patches. Metaventrite with shallow elongate median fovea over posterior 0.5; fovea flanked by broad, glabrous patches which extend to posterior margin and connect in a narrow glabrous band apicomediaally, anterior to metacoxae. Elytral pseudepipleurs shining, traces of microreticulation; epipleurs shining, ridge-like. Abdominal ventrites 1–4 with dense hydrofuge vestiture. Abdominal ventrite 5 entirely glabrous over central 0.3; hydrofuge vestiture in anterior 0.5 laterally; glabrous part shining, with shallow transverse microreticulation. Junction between pilose and glabrous portions with irregular row

of long, golden, decumbent setae. Abdominal ventrite 6 glabrous, with shallow, transverse microreticulation; double, irregular row of golden, decumbent setae approx. 0.4 from apex.

Aedeagus: Elongate, slightly arcuate in ventral view, with parameres attaching close to base and extending almost to the apex of the main piece. Main piece produced on left side in ventral view, thus appearing notched due to gap between this projection and the distal lobe. Distal lobe short, curved to the left in ventral view (Fig. 2A).

Female: Somewhat broader than males, with broader, more strongly explanate elytral margins. Elytral apices with rounded posterolateral angles, and more broadly truncate; sutural angle more strongly emarginated. Glabrous area on metaventrite smaller, restricted to posterior margin. Abdominal ventrite 5 with glabrous area restricted to semicircular patch over posterior 0.4–0.4. Glabrous area with irregular row of golden, decumbent setae 0.5 from apex.

Variation: Paratypes vary somewhat in colouration, some being slightly darker, others slightly paler than the holotype.

Differential diagnosis. A member of the *barriotum* group *sensu* Perkins & Balfour-Browne (1994) and Perkins (2008), lacking a carina on the 8th elytral interval, and with elytral series 5 and 6 separate throughout. *M. caniplenum* sp. nov. is morphologically closest to *M. drakensbergense* Perkins, 2008 [note—automatic emendation of *Mesoceration drakensbergensis* Perkins] and *M. integrum* Perkins, 2008 [note—automatic emendation of *Mesoceration integer* Perkins], but differs from *M. drakensbergense* in its smaller size (BL 1.6–1.75 mm vs. ca. 1.89 mm), distinct colour pattern and aedeagus, which has a more pronouncedly toothed apicolateral projection on the main piece in the new species. *M. integrum* is approx. the same size as *M. caniplenum* sp. nov., and also has an aedeagus with a left-sided apicolateral projection on the main piece in ventral view, but like that of *M. drakensbergense* this is more rounded than that of the new species, as well as being shorter than in either. Externally, *M. integrum* is distinguished from the new species by its more rounded elytra, which are more highly arched dorsally, with a stronger posterior declivity. In addition, *M. caniplenum* sp. nov. has smoother elytral intervals, with finer granules, and finer, shallower punctures on the pronotal reliefs.

Distribution. Known to date only from two small streams at Injisuthi, in the uKhahlamba Drakensberg National Park. In the type locality (Fig. 5A) the species was found in water trickling over a vertical rock face at the opening of a small gorge formed in a rock outcrop in Afromontane forest. The second locality is at slightly lower altitude than the type locality, where the species was taken below stones in a small stream flowing through montane grassland.

Etymology. From the latin *canis* (= dog) and *plenum* (= satisfied; satiated). Injisuthi is an isiZulu name which can translate in English as “place of the well-fed dog”, referring to the formerly abundant game of this area.

***Mesoceration foggoi* sp. nov.**
(Figs 1, 2, 5 & 6)

Type locality. South Africa, Western Cape, Matsikammaberg, permanent stream 1 km SE of Sewefontein farm (Fig. 6A).

Type material. Holotype (male): “21/ix/2014 South Africa WC// Matsikammaberg stream// 1 km SE of Sewefontein farm// permanent D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Paratypes (36): 13 m#, 13 f# same data as holotype; 6 m# “21/ix/2014 South Africa WC// Matsikammaberg stream// 1 km NW of Sewefontein farm// D T Bilton leg.”; 1 m#, 1 f# “21/ix/2014 South Africa WC// Matsikammaberg seepage stream// over rock at head of Elandskloof// D T Bilton leg.”; 1 m# “20/ix/2014 South Africa WC// Gifberg – stream in Gifberg Pass// above Vanrhynsdorp// rocky stream D T Bilton leg.”; 1 m# “20/ix/2014 South Africa WC// Gifberg-vertical wet rock face// in Gifberg Pass nr. Vanrhynsdorp// A Foggo leg.” (CDTB, MCZ, NMW, OUMNH, SAM, SANC, TMSA). All with red paratype labels.

Description. Size: Holotype: BL 1.7 mm; EL 1.05 mm; EW 0.6 mm. Paratypes: m#s BL 1.65–1.75 mm; EL 1.0–1.05 mm; EW 0.6–0.65 mm. f#s BL 1.65–1.85 mm; EL 1.05–1.1 mm; EW 0.6–0.65 mm.

Colour: Dorsum (Fig. 1B) with head and pronotum dark piceous brown to black; ocelli slightly paler than rest of head. Elytra paler; orange-brown, suture pitchy, and explanate margins paler. Legs orange-brown, tarsi and femoro-tibial junctions infuscated; tarsal claws pale yellow. Maxillary palpi pitchy brown to black. Venter dark brown to black, with silvery hydrofuge vestiture; pronotal hypomeron and elytral pseudopleurs paler.

Head: Labrum slightly transverse, rounded apicolaterally with broad apicomedian emargination running approx. 0.4 of length. Sides of apicomedian emargination and anterior angles weakly raised. Surface shining, lacking microreticulation and with scattered fine punctures bearing long white decumbent setae. Frontoclypeal suture strong, arcuate. Clypeus, frons and vertex strongly shining. Clypeus with medium scattered punctures bearing decumbent setae; devoid of microreticulation over central 0.8, with weak longitudinal meshes at lateral margins. Central portion of frons sculptured as central clypeus; punctures slightly larger and sparser. Antecellar sulci well-marked, broad, open laterally. Sulci and area inside compound eyes rugulose microreticulated. Ocelli small, shining. Head behind ocelli with sharp declivity. Vertex and occiput rugulose, with transverse microreticulation. Compound eyes large, occupying approx. 0.5 lateral margin of head, 14 ommatidia in longest series.

Pronotum: Cordate, slightly transverse, broadest just before middle. Anterior margin arcuate over median 0.5, without hyaline border; posterior margin straight. Anterior angles obtusely rounded, posterior angles rectangular. Lateral margins sinuated from widest point to base; broadly marginated and crenulate. Surface shining, lacking microreticulation except for areas of transverse meshes in narrow strips in central 0.5 close to anterior and posterior margins. With 10 distinct fovea as follows: Anterior median fovea elongate; posterior median fovea transverse oval. Anterior admedian fovea circular; posterior admedian fovea oval, orientated anterolaterally. Anterior adlateral fovea circular, open laterally; posterior adlateral fovea oval, open laterally. Field of coarse punctures just behind anterior margin in central 0.5, punctures extending into anterior 0.5 of anterior median and anterior admedian foveae. Double row of coarse punctures along posterior margin in central 0.6; remainder of disc with scattered fine – medium punctures bearing long white decumbent setae.

Elytra: Elongate oval, broadest at middle. Subparallel over middle 0.3, then attenuated to truncately rounded apex. Apical angles rounded, slightly emarginated around suture. Sides explanate; minutely serrate. Punctures of elytral series evident to apex; punctures relatively coarse; larger in anterior 0.5. Discal series striate impressed, especially in anterior 0.3. Series

1 and 2 confluent just behind middle, in front of posterior declivity. Series 5 and 6 confluent over anterior 0.3. Serial punctures bearing fine, white, decumbent setae, which reach anterior margin of next puncture in row. Elytral intervals minutely granulate; granules each with fine puncture posteriorly, which bears long, white, decumbent seta which overlaps next seta in row by approx. 0.5 of length. Interval 8 carinate almost to apex.

Legs: Apical protarsomere with two stout ventral setae; basal three protarsomeres with suction setae.

Venter: Mentum weakly shining, rugulose microreticulate; meshes elongate along lateral margins and isodiametric in centre. Submentum shining, lacking microreticulation. Genae with transverse microreticulation anteriorly; hydrofuge vestiture posteriorly. Gula with transverse, open microreticulation. Prosternum with narrow, distinct, shining and glabrous central ridge. Rest of surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron broad, shining, lacking microreticulation. Mesoventrite and metaventrite with dense hydrofuge vestiture. Mesoventral plaques glabrous, forming inverted Y. Adlateral and admedian ridges also visible on mesoventrite. Metaventrite with broad, elongate median fovea over posterior 0.5. Metaventrite with small, shining glabrous patch apicomediaally, close to metacoxae. Elytral pseudoepipleurs broad, shining, lacking microreticulation; epipleurs shining, ridge-like, with hydrofuge vestiture over anterior 0.2. Abdominal ventrites 1–4 with dense hydrofuge vestiture. Abdominal ventrite 5 glabrous over posterior 0.8 in central 0.3, with scattered hydrofuge setae and dense, medium punctures bearing long, white, decumbent setae in posterior 0.5 of glabrous patch. Abdominal ventrite 6 shining, traces of transverse microreticulation and double row of irregular punctures along posterior margin, with long, decumbent setae in centre of row, and shorter, stouter, peg-like setae laterally.

Aedeagus: Elongate, with parameres attaching close to base and extending well beyond the apex of the main piece. Main piece relatively broad in ventral view, with strong, stout, curved apical tooth, and long, tube-like distal lobe, extending just beyond the paramere apices. Distal lobe bifurcated approx. 0.25 from apex – this structure being unique so far within the genus (Fig. 2B).

Female: Elytra broader and flatter than in males, more strongly explanate along lateral margins. Apex more strongly truncated and emarginated around suture. Abdominal ventrite 5 with glabrous area occupying central 0.3, with weak transverse microreticulation and moderate, medium punctures over apical 0.2, each bearing a yellow decumbent seta. Setae longer centrally; shorter, stouter and peg-like laterally. Anterior tarsi simple.

Variation: Paratypes vary somewhat in colouration, some specimens being paler than the holotype, with yellowish brown elytra and brownish pronotum. This is not, apparently, due to teneralty.

Differential diagnosis. A member of the *rivulare* group, which would key to *M. splendorum* Perkins & Balfour-Browne, 1994. Compared to *M. splendorum*, *M. foggoi* sp. nov. is larger (BL 1.65–1.85 mm vs. ca. 1.6 mm). Within the *rivulare* group, the new species can be further distinguished by the elytral series, which are well-marked throughout, with the discal series striate impressed. The most similar species in size and colouration is *M. hantam* Bilton, 2014, which has less impressed elytral series, composed of smaller punctures. The aedeagus of *M. foggoi* sp. nov. is closest to *M. rapidense* Perkins, 2008 [note—automatic emendation of *Mesoceration rapidensis* Perkins] in overall structure, although these species differ in the detail of the apical tooth, and the bifurcated distal lobe of *M. foggoi* sp. nov. is so far unique

within the genus. *M. rapidense* is also very different externally, with a much narrower forebody than *M. foggoi* sp. nov., with weak elytral series, which are not striate impressed.

Distribution. Known to date only from a number of localities on the Gifberg-Matsikammaberg massif in the northern part of the fynbos biome of the Core Cape Floristic region (Manning & Goldblatt 2012). Apparently a relatively common and widespread species in these mountains, found abundantly in all running-water sites investigated in 2014. Taken together with two other apparent Gifberg-Matsikammaberg endemics, *Mesoceration umbrosum* Perkins, 2008 and *Mesoceration sewefonteinense* sp. nov. Particularly abundant where thin trickles of water flowed over algae-encrusted sheets of sandstone bedrock in stream margins (e.g. Fig. 5B). Some of the specimens collected were tenerals.

Etymology. Named after my friend and colleague Dr Andy Foggo, who enthusiastically assisted with water beetle sampling on the Gifberg-Matsikammaberg, including the collection of the type series.

***Mesoceration helmei* sp. nov.**

(Figs 1 & 2)

Type locality. South Africa, Western Cape, Groote Winterhoek mountains, small stream below Sneeuatpiek, 1,300 m.

Type material. Holotype (male): “11/ii/2015 South Africa WC// Groote-Winterhoekberge stream below// Sneeuatpiek 1,300 m D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Paratypes (14) 4 m# 10 f# same data as holotype (CDTB, MCZ, NMW, OUMNH, SAM, SANC, TMSA). All with red paratype labels.

Description. Size: Holotype: BL 1.55 mm; EL 0.9 mm; EW 0.6 mm. Paratypes: m#s BL 1.55–1.7 mm; EL 0.9–1.0 mm; EW 0.6–0.65 mm. f#s BL 1.55–1.7 mm; EL 0.9–1.0 mm; EW 0.6–0.65 mm.

Colour: dorsum (Fig. 1C) dark piceous brown to black, lateral margins of elytra and ocelli paler. Legs and maxillary palpi yellow; last segment of maxillary palpi infuscated in apical 0.6. Venter dark piceous brown to black, with silvery hydrofuge vestiture on much of thorax and abdomen. Head somewhat paler, mentum, basistipes and palifer yellowish-red.

Head: Labrum slightly transverse, rounded apicolaterally, with apicomedian emargination running approx. 0.5 of length. Sides of apicomedian emargination and anterior angles weakly raised. Surface weakly shining, with shallow, isodiametric to elongate microreticulation and scattered, decumbent setae, especially towards posterior margin. Frontoclypeal suture well-marked, almost linear. Entire upper surface of head dull, with strong rugulose microreticulation; meshes larger on clypeus and lateral areas of frons, smaller on central frons and vertex. Anteo-cellular sulci shallow, open anteriorly. Ocelli small, shining. Compound eyes relatively small, occupying 0.4 lateral margin of head, 10 ommatidia in longest series.

Pronotum: Cordate, slightly transverse, broadest just in front of middle. Anterior margin arcuate over median 0.5, without hyaline border; posterior margin bisinuate around centre. Anterior angles obtusely rounded; posterior angles rectangular. Lateral margins sinuated from widest point to base; broadly marginated and moderately serrate. Surface dull, with rugulose

microreticulation and shallow scattered medium punctures which are almost obscured by the microsculpture. Meshes of microreticulation similar in size to central frons. Irregular row of large punctures close to anterior and posterior margins. With 10 distinct fovea as follows: Anterior median fovea elongate; posterior median fovea elongate oval; both deepest in centre. Anterior admedian fovea shallow, oval; posterior admedian fovea shallow, elongate oval, orientated anterolaterally. Anterior and posterior adlateral fovea deep, pit-like; anterior smaller and shallower than posterior.

Elytra: Elongate oval, broadest at middle. Subparallel over anterior 0.5, then attenuated to truncately rounded apices. Sides narrowly explanate, especially anteriorly, entire. Punctures of elytral series relatively coarse; larger in anterior 0.5, smaller and shallower posteriorly. Discal series very weakly striate impressed in anterior 0.6. Serial punctures with fine decumbent setae arising from granules on anterior puncture margin, not usually reaching next puncture in row. Series 1 and 2 confluent at posterior declivity, and becoming closely subparallel in basal 0.3. Series 5 and 6 confluent at middle. Intervals granulate, granules bearing short decumbent setae in anterior 0.25.

Legs: Apical protarsomere with two stout ventral setae; basal three protarsomeres with suction setae.

Wings: Reduced.

Venter: Mentum shining, depressed in middle, with strong elongate to isodiametric microreticulation. Long suberect golden setae along anterior margin and scattered punctures in posterior 0.5, with short, stout, recumbent setae. Submentum shining, with shallow transverse microreticulation, especially evident posteriorly. Genae shining, with transverse wrinkles centrally, and transverse microreticulation meshes laterally. Gula shining with fine transverse microreticulation. Prosternum with distinct central ridge; entire surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron broad, smooth and shining, lacking microreticulation; shallow, round fovea close to inner anterolateral angle. Mesoventrite and metaventrite with dense hydrofuge vestiture. Mesoventral plaques glabrous, forming an inverted Y; admedian and adlateral ridges also present but covered in vestiture. Metaventrite with elongate median fovea over posterior 0.5; weak median ridge present anterior to furrow and paired, shallow, rounded admedian foveae anteriorly, below mesocoxae. Elytral pseudepipleurs broad, shining with traces of transverse wrinkles, narrowing to apex over posterior 0.5; epipleurs narrow, ridge-like, shining except for small patch of hydrofuge vestiture at level of mesocoxae. Abdominal ventrites 1–4 with hydrofuge vestiture; denser laterally and sparser centrally. Abdominal ventrite 5 with large semicircular shining glabrous patch, occupying 0.1 of length of ventrite laterally, 0.5 centrally; devoid of microreticulation. Irregular transverse row of medium punctures bearing decumbent setae 0.3 from apex. Abdominal ventrite 6 glabrous, shining, with weak transverse microreticulation and transverse row of medium punctures bearing decumbent setae 0.25 from apex.

Aedeagus: Elongate, straight in ventral view, with parameres attaching close to base and extending well beyond the apex of the main piece. Main piece with narrow, bluntly pointed apical tooth on left side, partly overhanging base of distal lobe. Distal lobe elongate, arcuate, extending beyond the apices of the parameres (Fig. 2C).

Female: Slightly broader than male, especially on elytra, which have more broadly explanate lateral margins. Elytral apex produced, acuminate, with narrow, truncately rounded apices. Abdominal ventrite 5 with broad, shining, concave glabrous patch over central 0.75, running

from approx. 0.1 behind anterior margin. Impunctate and lacking microreticulation; posterior margin thickened and rounded, with long golden decumbent setae following curvature of hind margin.

Variation: Paratypes vary in size, but are otherwise relatively uniform in structure. Some covered in flocculated deposits.

Differential diagnosis. A member of the *endroedyi* group *sensu* Perkins & Balfour-Browne (1994). *M. helmei* sp. nov. would key to *M. concessum* Perkins & Balfour-Browne, 1994 in this work, on the basis of the weak granules of the elytral intervals and the first and second elytral series being confluent at the posterior declivity. The new species differs from both this species and *M. tabulare* Perkins, 2008 in the relatively broader habitus, especially on the elytra, which are less elongate, more strongly curved towards the apices, and have a lower carina on the 8th interval. *M. helmei* sp. nov. also has much less evident pronotal punctation, and shinier elytral intervals, as well as very different male genitalia.

Distribution. To date known only from the type locality, a small cold stream in a shaded gully below Sneeuatpiek in the Groote Winterhoek mountains north of Tulbagh; an area with frequent and relatively extensive winter snows. The beetles were found in a small spring pool below a cliff beside a permanent stream section, where they were abundant together with *Rapnus* sp. (Dryopidae). *Mesoceration apicalum* Perkins & Balfour-Browne, 1994 was abundant in the nearby stream itself.

Etymology. Named after the South African botanist, Nick Helme, who has provided me with numerous valuable suggestions on areas to sample in the Cape, and was present when the type series was collected.

***Mesoceration hirsutum* sp. nov.**
(Figs 1, 2 & 5)

Type locality. South Africa, Western Cape, Cederberg, Breëwaterkloof stream, ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 5C).

Type material. Holotype (male): “23/ix/2014 South Africa WC// Cederberg stream ca. 2 km// SE of Uitkyk Pass 1,050m// D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Description. Size: Holotype: BL 1.8 mm; EL 1.05 mm; EW 0.65 mm.

Colour: dorsum (Fig. 1D) black, with golden-yellow setae on pronotum and elytra; ocelli dark reddish brown. Legs dark reddish brown. Maxillary palpi pitchy. Venter dark pitchy brown to black; elytral pseudopileurs paler in posterior 0.5. Much of ventral surface of thorax and abdomen silvery due to hydrofuge vestiture.

Head: Labrum slightly transverse, strongly rounded apicolaterally, with apicomedian emargination over 0.5 of length. Sides of apicomedian emargination and anterior angles weakly raised. Surface shining, with weak, obsolete microreticulation and sparse punctures, each bearing a fine decumbent seta. Frontoclypeal suture obsolete, weak, arcuate. Clypeus shining, finely wrinkled, with sparse punctures bearing fine, decumbent setae. Frons and vertex shining, coarsely and confluent punctate; punctures bearing short, recumbent,

golden-yellow setae. Anteocellar sulci broad, shallow, open laterally; sulci and areas between sulci and compound eyes sculptured as central frons. Ocelli small, shining. Compound eyes relatively large, occupying approx. 0.5 lateral margin of head, 16 ommatidia in longest series.

Pronotum: Cordate, somewhat transverse, broadest at middle. Anterior margin arcuate over central 0.5, without hyaline border; posterior margin weakly rounded. Anterior angles obtusely rounded; posterior angles obtuse. Lateral margins sinuated from widest point to base; broadly marginated and strongly crenulated in anterior 0.5, weakly crenulated in posterior 0.5. Discal reliefs and posterior 0.5 of lateral explanate areas coarsely and confluent punctate; punctures bearing long, golden-yellow, recumbent setae. Explanate lateral margins shining, impunctate in anterior 0.5. Microreticulation restricted to narrow band of transverse meshes close to anterior margin. With 10 distinct fovea as follows: Anterior median fovea elongate, shallow and punctate over anterior 0.5, deeper and impunctate, smooth behind; posterior median fovea circular, deep and impunctate, shining. Anterior admedian fovea shallow, transverse oval, punctate; posterior admedian fovea shallow, elongate oval, orientated anterolaterally, punctate, punctures shallower than on reliefs, traces of microreticulation. Anterior and adlateral fovea elongate, oval, open laterally, shining and impunctate; posterior adlateral fovea small, deep, circular.

Elytra: Elongate oval, broadest behind middle. Sides rounded; gradually attenuated to shoulders and apex. Apicolateral angles obsolete, apices conjointly rounded to suture. Sides narrowly explanate, entire. Punctures of elytral series evident to apex; larger in anterior 0.5, smaller behind. Discal series striate impressed. Series 1 and 2 confluent behind posterior declivity. Series 5 and 6 confluent in anterior 0.3. Serial punctures with long, recumbent, golden-yellow setae, reaching next puncture in row. Intervals 2–3 transversely rounded; outer ones flat. Intervals coarsely granulate, granules bearing recumbent setae similar to those in elytral series. Interval 8 carinate to approx. 0.1 from apex.

Legs: Apical protarsomere with two stout ventral setae; basal three protarsomeres with suction setae.

Venter: Mentum shining, with rugulose isodiametric microreticulation; smooth and lacking microreticulation in centre close to posterior margin. Elongate, white, erect setae close to anterior margin of mentum and on palifer. Submentum smooth and shining, finely wrinkled behind, with scattered punctures bearing white, recumbent setae. Genae shining, with fine transverse wrinkles. Gula smooth and shining anteriorly, with fine, transverse microreticulation posteriorly. Prosternum with well-marked central ridge, somewhat thickened in posterior 0.5; with broad, shallow depression either side of centre, reaching to above outer angles of procoxae. Surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron smooth and shining, with deep, circular depression at level of anterior edge of procoxae. Mesoventrite and metaventrite with dense hydrofuge vestiture. Mesoventral plaques glabrous, forming inverted Y, stem 0.5 length of arms. Apex of arms connecting with ridges along posterior median projection of mesoventrite, to form trapezoidal ridge. Admedian and adlateral ridges present, but under hydrofuge vestiture. Metaventrite with broad, elongate, median fovea over posterior approx. 0.6 and small semicircular glabrous patch posteromedially. Anteromedial margin of metaventrite with M-shaped longitudinal ridge, pits present inside and outside arms of M, below mesocoxae. Elytral pseudopipleurs broad, shining, attenuated to apex over posterior 0.3; elytral epipleurs narrow, ridge-like. Abdominal ventrites 1–4 with dense hydrofuge vestiture. Abdominal ventrite 5 with broad, semicircular, shining, glabrous patch occupying posterior 0.5. Junction between pilose and glabrous areas marked by irregular row of fine, decumbent setae. Similar row halfway down glabrous patch.

Abdominal ventrite 6 glabrous, shining, traces of transverse microreticulation. Row of setae close to apex, sparser than those on ventrite 5.

Aedeagus: Relatively large, highly elongate, straight in ventral view, with parameres attaching close to base and extending beyond the apex of the main piece. Main piece with strong, stout apical tooth on left side, tooth overhanging base of distal lobe. Distal lobe elongate, extending well beyond paramere apices; apex expanded (Fig. 2D).

Female: Unknown.

Differential diagnosis. A rather isolated species morphologically. Would key to the *rivulare* group in Perkins & Balfour-Browne (1994) on account of the carinate 8th elytral interval, 5th and 6th elytral series confluent anteriorly, and the apparent lack of microreticulation on the pronotal reliefs. This apparent lack of microreticulation is, however, a result of the coarse confluent punctation of the reliefs, and this species does not actually appear to belong to the *rivulare* group, whose species are very different in both external and aedeagal anatomy (see Perkins & Balfour-Browne 1994; Perkins 2008). Instead, the new species seems to belong to the *endroedyi* group *sensu* Perkins & Balfour-Browne (1994), some of whose members it more closely resembles in having granulate elytral intervals and a coarsely punctate pronotum. Discal pronotal microreticulation, is also actually present in *M. hirsutum* sp. nov., but only visible in some of the fovea. The aedeagus of the new species most closely resembles *M. piceum* Perkins, 2008, a species with which the new taxon was sympatric in the Cederberg. *M. hirsutum* sp. nov. differs from *M. piceum* in the much more strongly punctate pronotum, the more strongly granulate elytral intervals, as well as the presence of golden-yellow decumbent setae on the pronotum and elytra, the larger size (1.8 mm vs. 1.53 mm), and details of the aedeagus, which is larger, has a stronger lateral tooth on the main piece, and a much straighter distal lobe in the new species.

Distribution. To date known only from the type locality (Fig. 5C), a high-altitude east facing stream flowing through Cederberg Sandstone Fynbos (*sensu* Mucinia & Rutherford 2006) in Breëwaterkloof, at the head of the Matjies River in the Cederberg range. The only known specimen was collected under a boulder in a riffle. Other beetles found in the same stream included *Mesoceration dissonum* Perkins & Balfour-Browne, 1994, *M. granulovestum* Perkins, 2008, *M. jucundum* Perkins & Balfour-Browne, 1994, *M. languidum* Perkins & Balfour-Browne, 1994, *M. periscopum* Perkins, 2008, *M. piceum*, *M. repandum* Perkins, 2008 and *M. rivulare* Perkins & Balfour-Browne, 1994—this apparently being the largest number of co-occurring species of the genus so far reported.

Etymology. Named in reference to the stiff golden-yellow hairs on the pronotum and elytra.

***Mesoceration rugulosum* sp. nov.**

(Figs 3, 4 & 5)

Type locality. South Africa, Western Cape, Franschhoek Pass, wet rock faces beside stream crossing R45 road, 500 m (Fig. 5D).

Type material. **Holotype** (male): “25/ix/2009 South Africa WC// Franschhoekpas, 500 m wet rock//faces beside R45 road// D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Paratypes (18) 7 m# 11 f# “25/ix/2010 South Africa WC// Franschhoekpas, 500 m small// stream beside R45 road// D T Bilton leg.” [same locality as Holotype] (CDTB, MCZ, SAM, SANC, TMSA). All with red paratype labels.

Description. Size: Holotype: BL 1.7 mm; EL 0.95 mm; EW 0.65 mm. Paratypes: m#s BL 1.75–1.8 mm; EL 0.95–1.0 mm; EW 0.65–0.67 mm. f#s BL 1.75–1.85 mm; EL 0.95–1.05 mm; EW 0.65–0.7 mm.

Colour: Dorsum (Fig. 3A) reddish brown to black. Head black with reddish brown antecellar furrows, Ocelli and vertex. Pronotum dark pitchy brown on disc, broadly reddish brown close to lateral margins, and narrowly so along anterior and posterior margins. Elytra dark reddish brown, pitchy along suture and on carina and along lateral margins. Legs and maxillary palpi reddish brown; maxillary palpi with apical segment infuscated. Venter reddish brown, metaventrites piceous, especially laterally; elytral epipleurs piceous.

Head: Labrum weakly transverse, rounded apicolaterally, with broad apicomedian emargination over approx. 0.5 of length. Sides of apicomedian emargination and anterior angles weakly raised. Surface shining, with obsolete, open microreticulation and scattered punctures. Stout, white, recumbent setae along anterior and lateral margins Frontoclypeal suture weak, arcuate. Clypeus, frons and vertex strongly microreticulate, rugulose, granulate on centre of frons. Antecellar furrows broad, open laterally, rugulose. Ocelli small, shining. Compound eyes large, occupying approx. 0.4 of lateral margin of head, 16 ommatidia in longest series.

Pronotum: Cordate, slightly transverse, broadest in middle. Anterior margin arcuate over central 0.5, without hyaline border; posterior margin straight. Anterior angles obtusely rounded; posterior angles rectangular. Lateral margins sinuated from widest point to base; broadly marginated and crenulated. Surface dull, rugulose, with strong microreticulation of isodiametric meshes, and scattered, flat, shining granules on reliefs, and flattened decumbent yellow setae in anterior and posterior 0.25 of disc. With 10 distinct fovea as follows: Anterior median fovea elongate, broadest in posterior 0.6; posterior median fovea shorter, but also elongate, almost meeting anterior median fovea. Anterior admedian fovea small, shallow, rounded, open laterally; posterior admedian fovea broad, shallow oval, orientated anterolaterally. Anterior and posterior adlateral fovea shallow, rounded, open laterally.

Elytra: Elongate oval, broadest behind middle, subparallel over median 0.6 then attenuated to broad, truncately rounded apices. Posterolateral angles rounded but evident; sutural angles obtuse. Broadly explanate at sides. Punctures of elytral series evident to apex, punctures larger in anterior 0.5, becoming smaller and less impressed behind. Discal series striate impressed. Series 1 and 2 confluent just behind posterior declivity; 5 and 6 confluent over anterior 0.3. Intervals shining, granulate; granules bearing short, decumbent setae. Interval 8 strongly carinate to approx. 0.2 from apex.

Legs: Apical protarsomere with two ventral setae; one longer and stouter than the other; basal three protarsomeres with suction setae.

Venter: Mentum shining, rugulosely microreticulate, with isodiametric meshes. Long, erect, yellow setae along anterior margin. Cardo, basistipes and palifer with white, erect setae. Submentum shining, with obsolete, transverse microreticulation. Genae shining anteriorly, with obsolete transverse microreticulation centrally, stronger and more isodiametric laterally; with rugulose microreticulation and hydrofuge vestiture posteriorly; vestiture extending along

hind margin of ocular ridge behind compound eyes. Gula shining, with transverse microreticulation, stronger posteriorly. Prosternum with well-marked, narrow, shining, glabrous central ridge. Remainder of surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron broad, shining, with rugulose isodiametric microreticulation and broad, open, oval fovea situated anteriorly to the front margin of procoxae. Mesoventrite and metaventrites with dense hydrofuge vestiture. Mesoventral plaques forming an inverted Y, stem 0.5 length of arms. Weak admedian and adlateral ridges also present, but covered in vestiture. Metaventrite with broadly elongate median fovea over posterior 0.6, and broad, transverse depressions anteriorly, below mesocoxae; small, glabrous semicircular patch present posteromedially. Elytral pseudopileurs broad, shining, very narrow over posterior 0.25; epipleurs shining, ridge-like to apex. Abdominal ventrites 1–5 with dense hydrofuge vestiture. Abdominal ventrite 6 shining, glabrous, with obsolete transverse microreticulation and irregular row of elongate, yellow decumbent setae close to posterior margin.

Aedeagus: Elongate, relatively broad in ventral view, with parameres attaching close to base and extending just beyond the apex of the main piece. Main piece with very broad truncate tooth at apex. Distal lobe elongate, curving strongly to the left in ventral view (Fig. 4C).

Female: Slightly broader than males, with more strongly explanate elytral margins and truncate apices. Submentum more strongly rugulose than in males. Abdominal ventrite 5 with shining, semicircular glabrous patch over posterior 0.5. Glabrous area divided in half: anterior 0.5 with thicker cuticle, and weakly transverse microreticulation, posterior 0.5 thinner, and devoid of microreticulation; junction between two areas marked by irregular crenulated puncture row, bearing long, yellow, decumbent setae. Abdominal ventrite 6 entirely glabrous, shining, with isodiametric microreticulation and a row of short, stout setae close to posterior margin. Legs simple.

Variation: Paratypes vary slightly in colouration, some appearing slightly darker than the holotype.

Differential diagnosis. A member of the *truncatum* group *sensu* Perkins & Balfour-Browne (1994). As with *M. brevigranum* Perkins & Balfour-Browne, 1994 and *M. granulovestum* Perkins, 2008, the pronotal reliefs of *M. rugulosum* sp. nov. are rugulosely sculptured and granulate. *M. granulovestum* is readily distinguished from the new species due to its much narrower pronotum, relative to the elytra. *M. brevigranum* is narrower overall, with deeper pronotal foveae and more evident granules on the reliefs. The new species is also clearly distinguished on its aedeagus, the broad tooth of the main piece being unique so far within the genus.

Distribution. To date known only from the type locality (Fig. 1D), a thin film of water flowing over a sloping sandstone rockface beside a stream at Franschoek Pass.

Etymology. Named in reference to the heavily sculptured head and pronotum.

***Mesoceration sewefonteinense* sp. nov.**
(Figs 3, 4 & 6)

Type locality. South Africa, Western Cape, Matsikammaberg, permanent stream 1 km SE of Sewefontein farm (Fig. 6A).

Type material. Holotype (male): “22/ix/2014 South Africa WC// Matsikammaberg stream// 1 km SE of Sewefontein farm// permanent D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Description. Size: Holotype: BL 1.4 mm; EL 0.8 mm; EW 0.5 mm.

Colour: Dorsum (Fig. 3B) reddish to pitchy brown, ocelli and pronotal margins paler. Legs and maxillary palpi pale yellow. Venter pale red to piceous brown; head and prothorax lighter, meso and metaventrites and elytral epipleurs darker.

Head: Labrum slightly transverse, rounded apicolaterally with broad, V-shaped apicomedian emargination over 0.5 of length. Sides of apicomedian emargination distinctly raised, anterior margins less so. Surface shining, with shallow, open, longitudinal microreticulation and scattered medium punctures bearing long, decumbent setae. Frontoclypeal suture weak but visible, arcuate. Clypeus somewhat shining, with coarse, transverse microreticulation and scattered punctures bearing decumbent setae. Centre of frons shining, with somewhat granulated isodiametric microreticulation and coarse punctures bearing decumbent setae. Vertex microreticulate, rugulose. Anteocellar furrows open laterally; furrows and areas between them and compound eyes rugulose. Ocelli flat, shining. Compound eyes relatively large, occupying approx. 0.6 lateral margin of head, 12 ommatidia in longest series.

Pronotum: Cordate, quadrate, widest in front of middle. Anterior margin arcuate over central 0.5, no hyaline border; posterior margin weakly bisinuate around centre. Anterior angles broadly rounded; posterior angles rectangular. Lateral margins sinuated from widest point to base; broadly marginated and weakly serrate. Entire upper surface somewhat shining, with isodiametric microreticulation, somewhat granulate on reliefs; scattered medium punctures bearing decumbent setae. With 10 distinct fovea as follows: Anterior median fovea elongate, deeper posteriorly, almost meeting oval posterior median fovea; the two separated by an area lower than the lateral reliefs. Anterior admedian fovea shallow, oval; posterior admedian very shallow, elongate oval, orientated anterolaterally. Anterior and posterior adlateral fovea circular, posterior deeper than anterior.

Elytra: Elongate oval, broadest at middle, subparallel over central 0.6 then attenuated to broadly rounded apex. Suture slightly produced. Lateral margins narrowly explanate and minutely serrate. Elytral series with punctures becoming smaller towards apex; not striate impressed. Punctures shallow, with decumbent setae reaching next puncture in row; series granulate in front of punctures. Series 1 and 2 confluent at posterior declivity; series 5 and 6 confluent in anterior 0.3. Series 8 carinate from shoulder almost to apex. Intervals strongly granulate, particularly in basal 0.3, but granules continuing beyond posterior declivity; granules bearing decumbent setae which reach next granule in row.

Legs: Apical protarsomere with two long, stout ventral setae; one longer and stouter than the other; basal three protarsomeres with suction setae.

Venter: Mentum somewhat shining, with strong microreticulation composed of slightly elongate meshes. Anterior and lateral margins sharply depressed relative to centre. Submentum shining, with weak, isodiametric microreticulation. Mentum and submentum with scattered, elongate, decumbent setae. Genae shining, transversely wrinkled, especially laterally. Gula shining, with fine transverse microreticulation posteriorly. Prosternum with low, glabrous, central ridge, widened over posterior 0.5. Rest of surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron broad, dull, with weak isodiametric

microreticulation. Mesoventrite and metaventrite dull, with dense hydrofuge vestiture. Mesoventral plaques forming an inverted Y, stem shorter than arms. Stem and posterior 0.5 of arms broad, flat; anterior 0.5 of arms narrower. Low admedian and adlateral ridges also present, but covered by vestiture. Metaventrite with broad, shallow median fovea over posterior 0.5 and small semicircular glabrous patch between metacoxae; anterior of metaventrite with low M-shaped ridge below mesocoxae. Elytral pseudepipleurs weakly shining, traces of microreticulation; epipleurs narrow, shining, ridge-like. Dense patch of longer, erect hairs visible at base of abdomen, between interior borders of metacoxae. Abdominal ventrites 1–4 with dense hydrofuge vestiture. Abdominal ventrite 5 with glabrous patch occupying approx. 0.2 of ventrite; semicircular around centre. Junction between pilose and glabrous areas marked by a row of punctures bearing long, decumbent setae. Abdominal ventrite 6 glabrous, weakly shining, with open, isodiametric microreticulation; irregular row of short, decumbent setae 0.2 from apex.

Aedeagus: Elongate, with parameres attaching close to base and extending just beyond the apex of the main piece. Distal lobe short, funnel-shaped in ventral view, with open membranous apex – unique within the genus to date (Fig. 4B).

Female: Unknown

Differential diagnosis. A member of the *endroedyi* group *sensu* Perkins & Balfour-Browne (1994). The species would key to *M. dissonum* Perkins and Balfour-Browne, 1994 in this work, since the granules of the median elytral intervals continue beyond the posterior declivity. *M. sewefonteinense* sp. nov. differs in its more elongate, parallel-sided habitus, paler dorsal and ventral colouration, duller, more strongly granulate elytra, head with stronger microreticulation on frons, and the very different, and so far unique, structure of the aedeagus.

Distribution. To date known only from the type locality (Fig. 6A), a permanent stream section running through Bokkveld Sandstone Fynbos (*sensu* Mucina & Rutherford 2006) close to Sewefontein farmhouse on the Matsikammaberg at the northern edge of the Core Cape Floristic Region (Manning & Goldblatt 2012). The Matsikammaberg is a striking inselberg, reaching just over 1,000 m in altitude, with 700 m high sandstone cliffs towering over the dry Knersvlakte plains of Namaqualand. The mountain forms a mesic island in an otherwise semi-arid landscape, annual rainfall reaching 550 mm in the east contrasting with as little as 50 mm per year on the plains below. The Matsikammaberg is consequently home to a diverse flora, 10% of which is regionally, and 4% locally endemic (Helme 2004).

Etymology. Named in reference to the type locality. Sewefontein translates as seven springs in English.

***Mesoceration sinclairi* sp. nov.**
(Figs 3, 4 & 6)

Type locality. South Africa, Western Cape, False Bay, small stream on R44 road below Boskloff Peak (Fig. 6B).

Type material. **Holotype** (male): “3/x/2014 South Africa WC//Kogelberg – stream with seepages along R44 road// D T Bilton leg.” (genitalia extracted and mounted on same card) and red holotype label (SAM).

Paratypes (26) 12 m# 14 f# same data as holotype (CDTB, MCZ, NMW, OUMNH, SAM, SANC, TMSA). All with red paratype labels.

Description. Size: Holotype: BL 1.4 mm; EL 0.85 mm; EW 0.55 mm. Paratypes: m#s BL 1.4–1.5 mm; EL 0.85–0.9 mm; EW 0.55–0.57 mm. f#s BL 1.45–1.55 mm; EL 0.9–1.0 mm; EW 0.55–0.65 mm.

Colour: dorsum (Fig. 3C) dark piceous brown to black, ocelli paler. Legs and maxillary palpi orange-yellow; last segment of maxillary palpi infuscated in apical 0.6. Venter dark piceous brown to black, with silvery hydrofuge vestiture on much of thorax and abdomen. Head paler, mentum, basistipes and palifer yellowish-red.

Head: Labrum slightly transverse, rounded apicolaterally, with apicomedian emargination running approx. 0.4 of length. Sides of apicomedian emargination and anterior angles weakly raised. Surface shining, with shallow, open microreticulation and scattered, long, decumbent setae, especially towards posterior margin. Frontoclypeal suture arcuate, shallow but distinct. Clypeus, frons and vertex shining. Clypeus with strong, open, isodiametric microreticulation, stronger laterally, and scattered decumbent setae. Central frons with traces of microreticulation and scattered, coarse, shallow punctures bearing long, decumbent setae. Anteocellar sulci deep, open laterally; sulci and areas between them and compound eyes rugulose, with coarse, impressed isodiametric microreticulation. Ocelli shining, prominent. Compound eyes relatively small, occupying ca. 0.3 lateral margin of head, 12 ommatidia in longest series.

Pronotum: Cordate, slightly transverse, broadest at middle. Anterior margin arcuate over median 0.4, without hyaline border; posterior margin slightly rounded. Anterior angles obtusely rounded; posterior angles broadly rectangular. Lateral margins sinuated from widest point to base; broadly margined and weakly crenulate. Surface shining, lacking microreticulation except for narrow strip of transverse microreticulation along central 0.5 of anterior margin, and shallow isodiametric microreticulation in foveae. With 10 distinct foveae as follows: Anterior median fovea elongate; posterior median fovea oval. Anterior admedian fovea shallow, oval, open laterally; posterior admedian fovea shallow, elongate oval, orientated anterolaterally. Anterior and posterior adlateral fovea deep, pit-like, anterior open laterally. Anterior and posterior 0.2 of disc with sparse, coarse, deep punctures over central 0.5, these extending into front 0.5 of anterior median and anterior admedian foveae. Most punctures bearing long, pale, decumbent setae. Pronotal reliefs with scattered fine-medium punctures bearing similar setae.

Elytra: Elongate, widest just behind shoulders then parallel-sided over approx. 0.3 of length, then attenuated to apex. Apex rounded, apical angles distinct, acutely rounded. Sides narrowly explanate, especially anteriorly, entire. Punctures of elytral series relatively coarse; larger in anterior 0.5, smaller posteriorly. Discal series striate impressed in anterior 0.6, series 5 and 6 striate impressed also posteriorly. Serial punctures with fine decumbent setae, not usually reaching next puncture in row. Series 1 and 2 confluent at posterior declivity, and becoming closely subparallel in basal 0.3. Series 5 and 6 confluent in anterior 0.3. Intervals 1–5 a row of fine punctures, each puncture bearing a long, fine, decumbent seta; reaching and partly overlapping next seta in row. Intervals 2–4 weakly raised in anterior 0.3; interval 8 carinate to approx. 0.2 from apex.

Legs: Apical protarsomere with two stout ventral setae; basal three protarsomeres with suction setae.

Venter: Mentum weakly shining, with elongate-isodiametric microreticulation and scattered stout yellow setae. Submentum weakly shining, with traces of microreticulation and fine, scattered punctures. Genae shining, with transverse wrinkles, becoming transverse meshes of the microreticulation laterally. Gula shining anteriorly with transverse ridges, dull posteriorly with fine transverse microreticulation. Prosternum with distinct central glabrous ridge, broader posteriorly between procoxae. Rest of surface rugulose, with dense hydrofuge vestiture. Pronotal hypomeron broad, smooth and shining, lacking microreticulation; shallow, round fovea close to inner anterolateral angle. Mesoventrite and metaventrite with dense hydrofuge vestiture. Mesoventral plaques glabrous, forming an inverted Y; admedian and adlateral ridges also present but covered in vestiture. Metaventrite with elongate median fovea over posterior 0.5 and small semicircular glabrous patch posteromedially; paired, rounded admedian foveae anteriorly, below mesocoxae. Lateral areas of metaventrite, below outer angles of mesocoxae strongly depressed, almost foveate. Elytral pseudopleurs broad, shining, narrowing to apex over posterior 0.5; epipleurs narrow, ridge-like. Abdominal ventrites 1–4 with hydrofuge vestiture; denser laterally and sparser centrally. Abdominal ventrite 5 with vestiture in basal 0.5, and semicircular smooth, glabrous, shining area in posterior 0.5; transverse row of punctures bearing decumbent setae 0.5 way down glabrous section of ventrite. Abdominal ventrite 6 glabrous, shining, with weak transverse microreticulation and double transverse row of medium punctures bearing decumbent setae 0.25 from apex.

Aedeagus: Elongate, straight in ventral view, with parameres attaching close to base and extending just beyond the apex of the main piece. Main piece with stout, rectangular apical tooth on left side, partly overhanging base of distal lobe. Distal lobe elongate, with expanded base and arcuate apex, directed leftwards in ventral view, extending beyond the apices of the parameres (Fig. 4C).

Female: Broader than male, especially on elytra, which have more broadly explanate lateral margins. Elytral apex more pointed, more strongly acuminate; roof-like around suture. Elytra with small depression on disc where series 1 and 2 become confluent. Microreticulation on head and Pronotum stringer than in males. Abdominal ventrite 5 with broad, shining, glabrous patch over central 0.5, running from approx. 0.1 behind anterior margin. Impunctate and lacking microreticulation; posterior margin thickened and rounded.

Variation: Paratypes vary in size, but are otherwise relatively uniform in structure.

Differential diagnosis. A member of the *endroedyi* group *sensu* Perkins & Balfour-Browne (1994). Distinguished by a combination of reduced pronotal microreticulation, of which only traces can be seen on the shining reliefs, the well-impressed elytral series composed of relatively large punctures, which are striate impressed on the disc, and the shining elytral intervals, which lack visible granules, and which are raised in places. The aedeagal morphology is most like that of *M. dissonum* Perkins & Balfour-Browne, 1994 and *M. littlekarroo* Perkins, 2008. *M. sinclairi* sp. nov. differs from both species in having a broader, more truncate apical tooth on the main piece, and a differently-shaped distal lobe, which is smaller and finer apically than in *M. dissonum* and shorter and curved more basally than in *M. littlekarroo* (see Fig. 4C & D). Both these species are also readily distinguished externally on account of their strongly microreticulate pronotal reliefs, and *M. littlekarroo* by its strongly microreticulate frons.

Distribution. To date known only from the type locality (Fig. 6B), a small tickling stream in a shaded gully beside the R44 road below the Kogelberg Range, on the eastern shores of False Bay. Here the species occurred with *Mesoceration brevigranum*.

Etymology. Named after my long-time friend Magnus Sinclair, who was instrumental in supporting my early interest in beetles.

New records of described *Mesoceration* species

The following new records of *Mesoceration* were made as a result of fieldwork by the author in South Africa, 2002–2015. In the case of streams and rivers, unless otherwise indicated, beetles were taken by disturbing stones in riffles.

Distinctum Group

***Mesoceration distinctum* Perkins & Balfour-Browne, 1994**

Relatively widespread in the Western Cape, from east of George to the mountains above Franschoek and Wellington. New records as follows: 19/ix/2009 Western Cape, Langeberg, in sandy margins of temporary ditch beside R324 12 km S of Barrydale—1 f#; 4/i/2014 Western Cape, Langeberg, Marloth Reserve, Duiwels Bos, stream in Afrotemperate forest—abundant.

***Mesoceration disjunctum* Perkins, 2008**

Known from the southeastern part of the Western Cape, and southwestern part of the Eastern Cape provinces. I can add the following records, from the same general area: 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—1 m#; 20/ix/2009 Western Cape, stream beside R339 in Prince Alfred's Pass ca. 10 km S of Avontuur—1 m#.

***Mesoceration repandum* Perkins, 2008**

Described from the Cederberg and adjacent mountains in the northern part of the Western Cape Province (Perkins 2008). I can add the following records, all from the Cederberg, where the species is abundant, in both permanent and temporary streams and rivers: 21/ix/2010 & 23/ix/2012 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—abundant; 23/ix/2011 Western Cape, Cederberg, seepages over exposed rock, 1,200 m, below Wolfberg Arch, beside Matjiesrivier-Wupperthal road—abundant; 23/ix/2011 & 23/ix/2012 Western Cape, Cederberg, stream in Gabriel's Pass ca. 1,500 m, below Wolfberg Arch—abundant; 24/ix/2011 Western Cape, Cederberg, stream above Algeria Waterfall—abundant; 25/ix/2011 Western Cape, Cederberg, margins of seepage over sand beside road on plateau ca. 3 km SE of Uitkyk Pass—abundant; 1/x/2013 Western Cape, Cederberg, pools in temporary stream behind Cederberg Oasis—abundant; 3/x/2013 Western Cape, Cederberg, spring-stream below Wolfberg Cracks above Dwarsriver—abundant; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 6A) —abundant.

***Mesoceration reticulatum* Perkins, 2008**

Widely distributed west-east in the Western and Eastern Cape provinces. I can add the following records, including the first from the Swartberg range: 23/ix/2008 Eastern Cape, Garden Route National Park, Storm River Mouth, Afrotemperate forest, second stream on E side of entrance—1 m#, 1 f#; 1/i/2014 Western Cape, Groote Swartberg, permanent stream below Kangoberg on Gamkaskloof road (Fig. 6C) —1 m#. The Swartberg specimen is more strongly sculptured than specimens I have seen from elsewhere in the range, as well as having a slightly more robust apical tooth on the main piece of the aedeagus.

Rivulare Group

***Mesoceration jucundum* Perkins & Balfour-Browne, 1994**

Another relatively widespread Cape species, to which I can add the following records. As well as occurring in streams, this species is frequent in macrolithic habitats (Vaillant 1956; see Bilton 2014b for some examples), some of which are likely to be temporary: September 2002 Western Cape, Bainskloof Pass above Wellington, seepages over rock beside R301 on north side of pass—1 m#, 1 f#; 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—abundant; 20/ix/2009 Western Cape, stream beside R339 in Prince Alfred's Pass ca. 10 km S of Avontuur—abundant; 24/ix/2009 Western Cape, Groote Swartberg, seepages over rock beside R328, ca. 2 km N of Gamkaskloof turn-off—3 m#; 20/ix/2010 Western Cape, seepages over rock in Middleberg Pass on R303 above Blinkwater—1 m#, 2 f#; 21/ix/2010 & Western Cape, Cederberg, wet rock seepages in Uitkyk Pass above Algeria—1 m#, 2 f#; ; 21/ix/2010 & 23/ix/2012 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—abundant; 24/ix/2012 Western Cape, Cederberg, Uitkyk Pass, small stream beside road on N side of pass—abundant; 24/ix/2012 Western Cape, Cederberg, wet rock seepages at top of Uitkyk Pass above Algeria—1 m#; 26/ix/2012 Western Cape, Bain's Kloof Pass, seepages on R301 below Limietkop—1 m#; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 6A) —few.

***Mesoceration periscopum* Perkins, 2008**

Described from the Cederberg (Perkins 2008). I can add the following records, both from the same mountains: 25/ix/2011 Western Cape, Cederberg, margins of seepage over sand beside road on plateau ca. 3 km SE of Uitkyk Pass – 2 m#, 4 f#; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 6A) – 1 m#, 1 f#.

***Mesoceration rivulare* Perkins & Balfour-Browne, 1994**

A widespread Cape species, with most records in the north-south trending mountains of the Western Cape Province (Perkins 2008). I can add the following records: 20/ix/2010 Western Cape, Middleberg, margins of ditch on sand beside R303 ca. 5 km N of Kunje—1 m#, 1 f#; 23/ix/2011 Western Cape, Cederberg, seepages over exposed rock, 1,200 m, below Wolfberg Arch, beside Matjiesrivier-Wupperthal road—1m#; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m—abundant; 9/ii/2015 Western Cape, Kogelberg, stream in Fairly Glen nr. Betty's Bay—abundant.

***Mesoceration splendorum* Perkins & Balfour-Browne, 1994**

A relatively widespread species known from Mpumalanga Province in northeastern South Africa, around the edge of the Great Escarpment and Cape Fold mountains, to the Cederberg

in the Western Cape (Perkins 2008; Bilton 2014a). I can add the following records: 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—1 m#; 20/ix/2009 Western Cape, stream beside R339 in Prince Alfred's Pass ca. 10 km S of Avontuur—abundant; 24/ix/2009 Western Cape, Groote Swartberg, stream on R328 2 km N of De Top, on N side of pass, 1,700m—1 m#; 24/ix/2009 Western Cape, Groote Swartberg, Dorpsrivier ca. 12 km S of Prince Albert—abundant; 23/ix/2011 Western Cape, Cederberg, seepages over exposed rock, 1,200 m, below Wolfberg Arch, beside Matjiesrivier-Wupperthal road—1 m#, 1 f#; 1/x/2013 Western Cape, Cederberg, pools in temporary stream behind Cederberg Oasis—abundant; 1/i/2014 Western Cape, Groote Swartberg, river at Gamkaskloof—abundant; 1/i/2014 Western Cape, Groote Swartberg, permanent stream below Kangoberg on Gamkaskloof road (Fig. 6C) —abundant; 2/i/2014 Western Cape, Groote Swartberg, first stream on N side of Swartberg Pass—abundant; 4/i/2014 Western Cape, Langeberg, Marloth Reserve, Duiwels Bos, stream in Afrotropical forest—abundant.

Barriotum Group

***Mesoceration barriotum* Perkins, 2008**

I can add the following new records: 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—1 m#; 20/ix/2009 Western Cape, stream beside R339 in Prince Alfred's Pass ca. 10 km S of Avontuur—abundant; 24/ix/2009 Western Cape, Groote Swartberg, seepages over rock beside R328, ca. 2 km N of Gamkaskloof turn-off—1 m#; 24/ix/2009 Western Cape, Groote Swartberg, Dorpsrivier ca. 12 km S of Prince Albert—1 m#, 1 f#; /i/2014 Western Cape, Groote Swartberg, river at Gamkaskloof—abundant; 1/i/2014 Western Cape, Groote Swartberg, permanent stream below Kangoberg on Gamkaskloof road (Fig. 6C) —abundant; 1/i/2014 Western Cape, Groote Swartberg, stream on S side of Swartberg pass, below Oliewenberg—abundant; 2/i/2014 Western Cape, Groote Swartberg, Meiringspoort, residual pools in river—few; 2/i/2014 Western Cape, Groote Swartberg, first stream on N side of Swartberg Pass—abundant.

***Mesoceration integrum* Perkins, 2008**

A species of southern and eastern South Africa and Lesotho. Newly recorded from: 23/ix/2008 & 21/ix/2009 Eastern Cape, Garden Route National Park, Storms River Mouth, stream in Afrotropical forest on Blue Duiker Trail—3 m#, 1 f#; 24/ix/2008 Western Cape, seepage spring with gravel in Afrotropical forest beside R102 nr. Bloukrantz Forest Station—3 m#.

***Mesoceration semicarinulum* Perkins, 2008**

A species of the Northern Cape Province, from the Richtersveld to the western margins of the Hantamsberg (Perkins 2008). I can add the following captures, all from the Kamiesberg: 19/ix/2010 Northern Cape, Kamiesberg, stream on Witwater-Langkloof road ca. 1 km S of junction—abundant; 19/ix/2010 Northern Cape, Kamiesberg, stream ca. 5 km W of Witwater, above Studer Pass—abundant; 17/ix/2014 Northern Cape, Kamiesberg, stream below Damsland, N of Rooiberg—abundant; 17/ix/2014 Northern Cape, Kamiesberg, seepages over rock below summit of Johannes se Berg—abundant; 17/ix/2014, Northern Cape, Kamiesberg, stream on Studer Pass road at Modderfontein—abundant; 18/ix/2014 Northern Cape, Kamiesberg, stream at bottom of Langkloof, 700m—abundant; 18/ix/2014 Northern Cape, Kamiesberg, stream in Langkloof, ca. 1,000m—abundant; 18/ix/2014 Northern Cape,

Kamiesberg, stream in Langkloof, ca. 1,100m—abundant; 19/ix/2014 Northern Cape, Kamiesberg, Kamiesberg Pass, temporary stream flowing from Sneekop—abundant; 19/ix/2014 Northern Cape, Kamiesberg, Groen River on N7 ca. 6 km S of Garies—abundant. Specimens vary somewhat in the extent of the carina on the eighth elytral interval.

Concavum Group

***Mesoceration natalense* Perkins, 2008**

Described from widely separated localities in KwaZulu-Natal (Perkins 2008). I can add the following record: 27/xii/2013 KwaZulu-Natal, uKhahlamba Drakensberg National Park, INhlambamasoka stream ca. 2 km E of Injisuthi—1 m#, 1 f#. Note the automatic emendation of *Mesoceration natalensis* Perkins.

Rubidum Group

***Mesoceration fuscipes* Perkins & Balfour-Browne, 1994**

Known from the north-south trending mountains of the Western Cape Province. I can add the following record: 21/ix/2010 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—abundant.

Endroedyi Group

***Mesoceration concessum* Perkins & Balfour-Browne, 1994**

Known solely from the types from Table Mountain (Perkins & Balfour-Browne 1994). The new record extends the range of this apparently narrow-range endemic onto the Cape Peninsula: 19/ix/2008 Western Cape, Table Mountain National Park, Silvermine, seepages over rock beside M64 above Noordhoek—1 m#, 1 f#.

***Mesoceration dissonum* Perkins & Balfour-Browne, 1994**

A relatively widespread Cape species, most records being from the Western Cape Province. I can add the following: 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—abundant; 20/ix/2009 Western Cape, stream beside R339 in Prince Alfred's Pass ca. 10 km S of Avontuur—abundant; 24/ix/2009 Western Cape, Groote Swartberg, Dorpsrivier ca. 12 km S of Prince Albert—abundant; 22/ix/2010 Western Cape, small shaded stream along R301 road below Obiekwaberg, below Bain's Kloof Pass above Wellington—abundant; 24/ix/2012 Western Cape, Cederberg, Uitkyk Pass, small stream beside road on N side of pass—1 f#; 3/x/2013 Western Cape, Cederberg, spring-stream below Wolfberg Cracks above Dwarsriver—abundant; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 5C) —abundant; 9/ii/2015 Western Cape, Kogelberg, stream in Fairly Glen nr. Betty's Bay—abundant.

***Mesoceration languidum* Perkins & Balfour-Browne, 1994**

Most records are from the Western Cape, where the species is widespread. I can add the following: 20/ix/2009 Western Cape, Dieprivier on R339 S of Smaldeel, ca. 10 km S of Prince Alfred's Pass—abundant; 22/ix/2011 & 23/ix/2012 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—abundant; 24/ix/2011 Western Cape, Cederberg, stream above Algeria Waterfall—abundant; 23/ix/2014 Western

Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 5C) — few; 1/i/2014 Western Cape, Grootte Swartberg, river at Gamkaskloof—abundant.

***Mesoceration littlekarroo* Perkins, 2008**

Described from the south side of the Grootte Swartberg, on the edge of the Little Karoo. New records are all from further west in the Grootte Swartberg range, from both northern and southern slopes: 24/ix/2009 Western Cape, Grootte Swartberg, stream on R328 2 km N of De Top, on N side of pass, 1,700m—abundant; 24/ix/2009 Western Cape, Grootte Swartberg, Dorpsrivier ca. 12 km S of Prince Albert—abundant; 1/i/2014 Western Cape, Grootte Swartberg, permanent stream below Kangoberg on Gamkaskloof road (Fig. 6 C) —abundant; 1/i/2014 Western Cape, Grootte Swartberg, stream on S side of Swartberg pass, below Oliewenberg—abundant; 2/i/2014 Western Cape, Grootte Swartberg, first stream on N side of Swartberg Pass—abundant. The aedeagi of all these Swartberg specimens (Fig. 4D) have a distal lobe that is more strongly curved in ventral view than that illustrated by Perkins (2008) —otherwise they do not differ from the description, and would appear to belong to this species.

***Mesoceration piceum* Perkins, 2008**

Described from the Cederberg, in the northern part of the Western Cape Province (Perkins 2008). The following new record is from a nearby locality, in the same mountain system: 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 5C) —1 m#, 1 f#.

***Mesoceration tabulare* Perkins, 2008**

Apparently endemic to Table Mountain (Perkins 2008). I can add the following records, from the same massif, but different drainages: 27/ix/2008 Western Cape Table Mountain National Park, Table Mountain, stream in Valley of the Red Gods—abundant; 24/ix/2010 Western Cape, Table Mountain National Park, Table Mountain, sandy stream in Echo Valley (Fig. 6D)—abundant.

Apicalum Group

***Mesoceration apicalum* Perkins & Balfour-Browne, 1994**

Another relatively widespread Cape species, showing some variation in aedeagal morphology (Perkins & Balfour-Browne 1994). Newly recorded from: 22/ix/2009 Western Cape, Garden Route National Park, Diepwalle Forest Station, Goumarivier in Afrotropical forest—abundant; 4/i/2014 Western Cape, Langeberg, Marloth Reserve, Duiwels Bos, stream in Afrotropical forest—abundant; 11/ii/2015 Western Cape, Grootte Winterhoek, stream below Sneeuatpiek 1,300 m—abundant.

Truncatum Group

***Mesoceration brevigranum* Perkins & Balfour-Browne, 1994**

Known from a handful of localities in the Western Cape, to which I can add: September 2002 Western Cape, Mitchell's Pass above Ceres, wet rock seepages—1 f#; 27/ix/2009 Western Cape, tributary of Witrivier below Bastian's Kloof on R301, shore washing in gravels—

abundant; 3/x/2014 Western Cape, False Bay, small stream on R44 road below Boskloff Peak (Fig. 6B) —abundant.

***Mesoceration granulovestum* Perkins, 2008**

Described from the Cederberg in the Western Cape Province (Perkins 2008). In addition to further samples from this area, I can extend the range into the adjacent Middleberg: 20/ix/2010 Western Cape, Middleberg, margins of ditch on sand beside R303 ca. 5 km N of Kunje—abundant; 23/ix/2011 Western Cape, Cederberg, seepages over exposed rock, 1,200 m, below Wolfberg Arch, beside Matjiesrivier-Wupperthal road—1 m#, 1 f#; 23/ix/2012 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—abundant; 24/ix/2012 Western Cape, Cederberg, Uitkyk Pass, small stream beside road on N side of pass—abundant; 23/ix/2014 Western Cape, Cederberg, Breëwaterkloof stream ca. 2 km SE of Uitkyk Pass, 1,050m (Fig. 5C) —few.

***Mesoceration rufescens* Perkins & Balfour-Browne, 1994**

A Cape species, mostly in the north-south trending mountains of the Western Cape Province (Perkins 2008). New record as follows: 21/ix/2010 Western Cape, Cederberg, Matjiesrivier Reserve, Matjies River ca. 3 km N of Cederberg Oasis—1 m#, 1 f#.

***Mesoceration truncatum* Perkins & Balfour-Browne, 1994**

Known from a number of localities in the north-south trending fold mountains of the Western Cape, and not reported since the original description (Perkins & Balfour-Browne 1994). I can add the following record from the same general area: 27/ix/2009 Western Cape, tributary of Witrivier below Bastian's Kloof on R301, shore washing in gravels—1 m#, 1 f#.

***Mesoceration umbrosum* Perkins, 2008**

Apparently restricted to the Gifberg area in the northern part of the Western Cape fold mountains. The following new records are from this same general area, but extend the range onto the adjacent escarpment and into the Northern Cape Province: 18/ix/2010 Northern Cape, sandy margins of temporary pool beside R27 road ca. 2 km E of Vanrhynspass—1 m#; 20/ix/2014 Western Cape, Gifberg, stream in Gifberg Pass above Vanrhynsdorp—abundant; 21/ix/2014 Western Cape, Matsikammaberg, stream 1 km NW of Sewefontein farm (Fig. 5B) —abundant; 21/ix/2014 Western Cape, Matsikammaberg, stream 1 km SE of Sewefontein farm (Fig. 6A) —abundant.

Pallidum Group

***Mesoceration pallidum* Perkins & Balfour-Browne, 1994**

Described from Assegaibos, in an upper tributary of the Great Berg system in the Western Cape, and apparently not collected since. I can add the following record, from the same general area close to Wellington: 22/ix/2010 Western Cape, small shaded stream along R301 road below Obiekwaberg, below Bain's Kloof Pass above Wellington—1 m#, 2 f#.

Abstrictum Group

***Mesoceration abstrictum* Perkins & Balfour-Browne, 1994**

Described from three localities in the north-south trending fold mountains of the Western Cape, and one locality (Nature's Valley) in the Eastern Cape; not reported since the description. I can add the following locality, which extends the range of this species West, onto Table Mountain: 24/ix/2010 Western Cape, Table Mountain National Park, Table Mountain, sandy stream in Echo Valley (Fig. 6D) —abundant. Note that the long distal lobe extends linearly from the apex of the main piece when dissected from fresh specimens, the curved appearance shown in the original description (Perkins & Balfour-Browne 1994 p. 122) developing when the aedeagus is placed in mountant.

Discussion

Now containing 51 species, *Mesoceration* is the most diverse genus of the largely southern African hydraenid subfamily Prosthetopinae. Amongst other prosthetopine genera only *Parasthetops* Perkins approaches the diversity of *Mesoceration*, with 21 described species (Perkins 2008), which, like *Mesoceration*, are almost entirely South African. Most *Mesoceration* are found under stones in riffles in streams and rivers, although some species also occur at stream margins, as well as in thin films of running water over exposed bedrock. *M. rugulosum* sp. nov. is so far known only from films of water flowing over wet rock and one of the known localities for *M. caniplenum* sp. nov. is a similar habitat. Whilst it was also present below stones in riffles, *M. foggoi* sp. nov. was most abundant in thin films of water flowing over bedrock beside streams on the Gifberg-Matsikammaberg (e.g. Fig. 5B). Recent records also reveal that other species can sometimes occur in such habitats. Of these, *M. jucundum* appears to be the most frequent facultative madicole; more than 50% of my recent records of this species being from wet rock seepages, usually on vertical faces inhabited by typical madicoles such as *Pterosthetops* Perkins, *Coelometopon* Janssens and *Oomtelecopon* Perkins, albeit in wetter areas of habitat with appreciable flow. Species which can be found in sandy streams or seepages include *M. abstrictum*, *M. granulovestum* and *M. periscopum*, all of which have been taken in algal mats in shallow water away from rocks. Both permanent and temporary habitats support members of the genus, although permanent/semi-permanent streams appear to have more diverse faunas (see below). *M. hantam* Bilton is known only from temporary habitats on the Hantamsberg (Bilton 2014a), and *M. barriotum*, *M. repandum* and *M. semicarinulum* have all, for example, been found in pools in drying streambeds.

It is not unusual to find a number of *Mesoceration* co-occurring in the same stretch of stream or river, often under a single stone. To date, sites with highest number of sympatric species appear to be more permanent, and include the Dieprivier below Prince Alfred's Pass in the Langkloof Mountains of the southeastern Western Cape, where six species (*M. barriotum*, *M. disjunctum*, *M. dissonum*, *M. jucundum*, *M. languidum* & *M. splendorum*) co-occurred in riffles with filamentous algae, and a stream in Breëwaterkloof above Uitkyk Pass in the Cederberg, where nine species (*M. dissonum*, *M. granulovestum*, *M. hirsutum* sp. nov., *M. jucundum*, *M. languidum*, *M. periscopum*, *M. piceum*, *M. repandum* & *M. rivulare*) were found below stones in riffles. Co-occurring species often differ dramatically in local abundance; *M. hirsutum* sp. nov. and *M. sewefonteinense* sp. nov., for example, are both known solely from the holotypes, collected with abundant material of other *Mesoceration* species. It seems likely that a number of other such rare species remain to be discovered in the Cape Fold Mountains, particularly in relatively inaccessible areas at high altitude.

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Figure legends

Fig. 1. Habitus of *Mesoceration* holotypes. A) *M. caniplenum* sp. nov.; B) *M. foggoi* sp. nov.; C) *M. helmei* sp. nov.; D) *M. hirsutum* sp. nov.

Fig. 2. Aedeagi of *Mesoceration* species. A) *M. caniplenum* sp. nov., holotype; B) *M. foggoi* sp. nov., holotype; C) *M. helmei* sp. nov., holotype; D) *M. hirsutum* sp. nov., paratype. Scale bar = 0.25 mm.

Fig. 3. Habitus of *Mesoceration* holotypes. A) *M. rugulosum* sp. nov.; B) *M. sewefonteinense* sp. nov.; C) *M. sinclairi* sp. nov.

Fig. 4. Aedeagi of *Mesoceration* species. A) *M. rugulosum* sp. nov., holotype; B) *M. sewefonteinense* sp. nov., holotype; C) *M. sinclairi* sp. nov., holotype; D) *M. littlekarroo*, Swartberg, permanent stream below Kangoberg on Gamkaskloof road. Scale bar = 0.25 mm

Fig. 5. Habitats of *Mesoceration* species in South Africa. A) KwaZulu-Natal, uKhahlamba Drakensberg National Park, Injusuthi, stream in Afromontane forest remnant below Van Heyningen's Pass—*M. caniplenum* sp. nov., beetles collected from the wet rockface on the right hand side of the stream; B) Western Cape, Matsikammaberg, stream 1 km NW of Sewefontein farm—*M. foggoi* sp. nov., *M. umbrosum*; C) Western Cape, Cederberg, Breëwaterkloof stream, ca. 2 km SE of Uitkyk Pass, 1,050m—*M. hirsutum* sp. nov., *M. dissonum*, *M. granulovestum*, *M. jucundum*, *M. languidum*, *M. periscopum*, *M. piceum*, *M. repandum*; D) Western Cape, Franschhoek Pass, wet rock faces beside stream crossing R45 road, 500m—*M. rugulosum* sp. nov. Photos D. T. Bilton.

Fig. 6. Habitats of *Mesoceration* species in South Africa. A) Western Cape, Matsikammaberg, permanent stream 1 km SE of Sewefontein farm—*M. foggoi* sp. nov., *M. sewefonteinense* sp. nov., *M. umbrosum*; B) Western Cape, False Bay, small stream on R44 road below Boskloff Peak—*M. sinclairi* sp. nov., *M. brevigranum*; C) Western Cape, Groote Swartberg, permanent stream below Kangoberg on Gamkaskloof road—*M. barriotum*, *M. littlekarroo*, *M. reticulatum*, *M. splendorum*; D) Western Cape, Table Mountain National Park, Table Mountain, stream in Echo Valley—*M. abstrictum*, *M. tabulare*. Photos D. T. Bilton.