

A new species of *Speleorchestes* (Nanorchestidae: Prostigmata) from a savanna biotope in South Africa

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A key to the South African species of *Speleorchestes* is given. A new species, *S. nylsvleyensis*, is described and figured.

'n Sleutel tot die Suid-Afrikaanse spesies van *Speleorchestes* word voorgestel. 'n Nuwe spesie, *S. nylsvleyensis*, word beskryf en geteken.

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Introduction

This study is based on material collected from soil and leaf litter sampled in a *Burkea*-savanna ecosystem at Nylsvley in the northern Transvaal and was done as a sub-project of the South African Savanna Ecosystem Project (S.A.S.E.P.). The latter is a project of the National Programme for Environmental Sciences of the C.S.I.R. The climate of the area is semi-arid with a mean annual temperature of 18,6°C and a mean annual rainfall of 630 mm. The soils are generally coarse with a vegetation mainly of *Burkea africana*, *Ochna pulcra* and *Terminalia sericea* and the most dominant grass species are *Eragrostis pallens* and *Digitaria eriantha*.

Mites of the family Nanorchestidae are known to have a world-wide distribution. The present study of the Acari from Nylsvley has shown that this family is one of the numerically dominant groups within the Prostigmata. This corresponds with data published by Olivier & Ryke 1965; Loots & Ryke 1966; Loots & Ryke 1967; Van den Berg & Ryke 1968; Theron & Ryke 1969 and Theron 1975.

At Nylsvley this family is represented by four species of *Speleorchestes*, viz. *S. meyeræ* Theron & Ryke, *S. natulus* Theron & Ryke, *S. potchefstroomensis* Theron & Ryke, *S. nylsvleyensis* sp. nov. and two species of *Nanorchestes*, viz. *N. africanus* Theron & Ryke and *N. globosus* Theron & Ryke. Other known South African species of *Speleorchestes* are *S. globulus* Theron & Ryke, originally described from sandy soils collected at Vaalharts in the Cape Province and *S. termitophilus* Tragardh, collected from a termite nest in Zululand, Natal.

The type material is deposited in the Acarological Collection of the Department of Zoology, Potchefstroom University for C.H.E. Potchefstroom.

Speleorchestes — Key to South African species

1. Sensilla *bo* lanceolate-ciliate; sensilla *le* filamentous and scarcely ciliate 2
- Sensilla *bo* and *le* filamentous and scarcely ciliate
..... 3

2. Sensilla *bo* prominently lanceolate and ciliate over entire length; body setae plumose, fan-shaped
..... *potchefstroomensis* Theron & Ryke, 1969.
- Sensilla *bo* slightly lanceolate and ciliate $\frac{3}{4}$ of its length; body setae branched, fan-shaped and robustly plumose *nylsvleyensis* spec. nov.
3. Hysterosomal setae fan- or wedge-shaped and densely plumose 4
- Hysterosomal setae globose and densely plumose *globulus* Theron, 1975.
4. Hysterosoma with three indistinct integumental folds, not dividing it into segments
..... *meyeræ* Theron & Ryke, 1969.
- Hysterosoma divided into three segments 5
5. Prodorsum with the normal six pairs of setae; hysterosomal setae robust; lateral margins of chelicerae concave; palpal tarsus with two solenidia and seven finely ciliate setae *natulus* Theron & Ryke, 1969.
- Setae *xa* absent; hysterosomal setae normal; lateral margins of chelicerae straight or slightly convex; palpal tarsus with two solenidia and six setae *termitophilus* Tragardh, 1909.

Type species: *Speleorchestes formicorum* Tragardh, 1909

Speleorchestes nylsvleyensis sp. nov., Figures 1–10

There is an obvious resemblance between this species and *S. potchefstroomensis* Theron & Ryke, but the former can be recognized by its smaller size (maximum 300 μm as opposed to 346 μm), the body setae being characteristically branched fan-shape and sensilla *bo* being slightly lanceolate and ciliate the first $\frac{3}{4}$ of the length only.

Female (Figures 1–9)

Dimensions: length of body (incl. gnathosoma) 273–300 μm ; length of body (excl. gnathosoma) 233–260 μm :

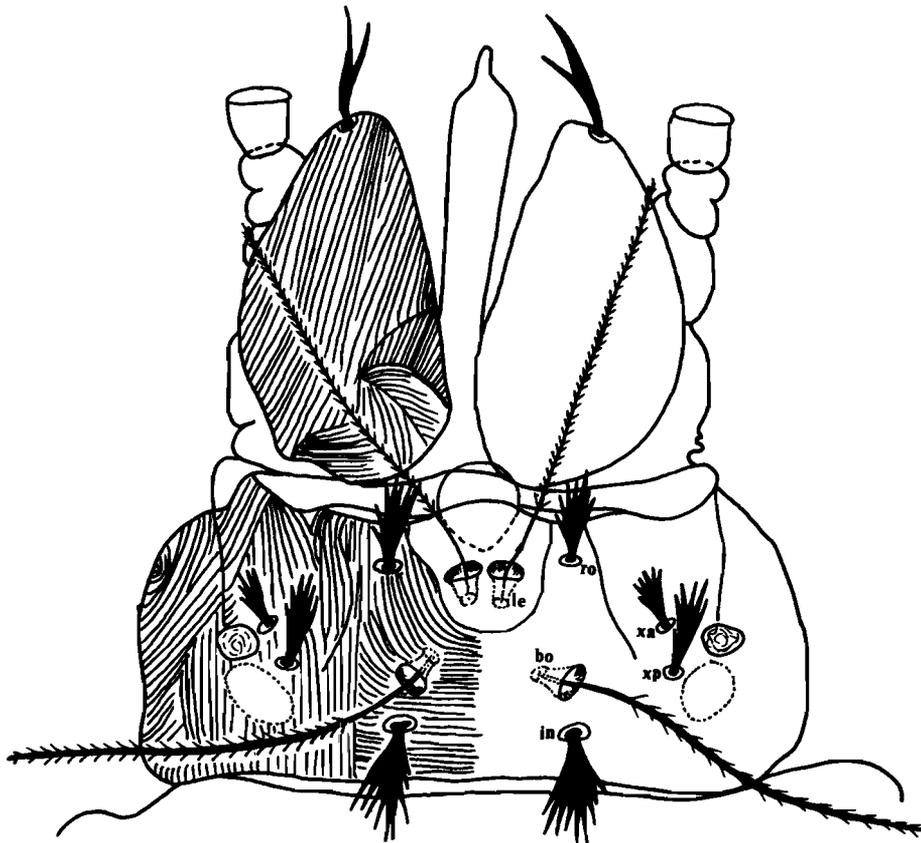


Figure 1 *Speleorchestes nylsvleyensis* sp. nov. Prodorsum, female.

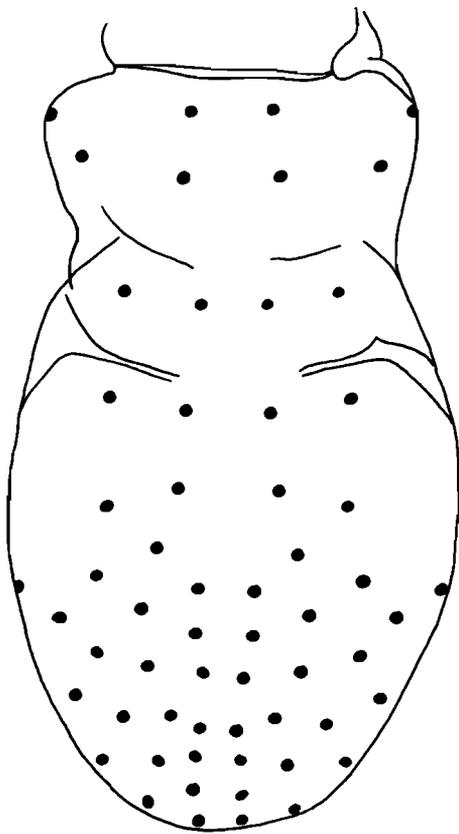


Figure 2 *Speleorchestes nylsvleyensis* sp. nov. Hysterosoma, female.

breadth of body 87–100 μm .

Dorsum (Figures 1–3). Prodorsum (Figure 1) wider than long, with the normal four pairs of setae and two pairs of sensilla; sensilla *le* long, filamentous and delicately ciliate; sensilla *bo* long, slightly lanceolate; setae *ro*, *xa*, *xp*, and *in* relatively small and unequal in size, *in* largest and *xa* smallest, *ro* and *xp* equal and about $\frac{2}{3}$ the length of *in*: one pair of small, prominent eyes laterally between *xa* and *xp*: with a pair of larger, oviform, postocular bodies posteriad to the eyes; sensory region ill-defined, appearing like an elevated integumental area between the basis of the sensilla and the anterior margin of the prodorsum; naso relatively large, without setae; no podocephalic tubes could be detected.

Hysterosoma (Figure 2) sacciform, elongate, distinctly separated from the prodorsum by a disjugal suture; anterior margin wider than prodorsum, thus forming shoulders; with 30 pairs of peculiarly branched fan-shaped, plumose setae (Figure 3); anterolateral region with two indistinct epidermal folds.

Venter (Figures 4–5). Genital opening (Figure 4) with two poorly defined genital covers bearing five pairs of genital setae, four pairs are arranged in a straight line and one (the second pair) situated more laterally; with three pairs of genital papillae; with a pair of prominent internal genital trachea; anal opening (Figure 5) with three pairs of setae; with 54–58 ventral setae, similar but

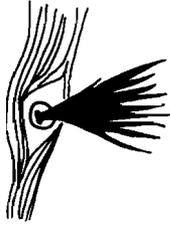


Figure 3 *Speleorchestes nylsvleyensis* sp. nov. Dorsal seta, female.

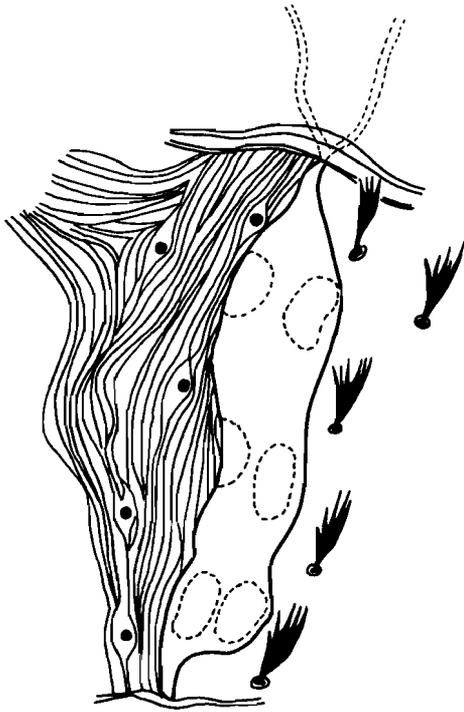


Figure 4 *Speleorchestes nylsvleyensis* sp. nov. Genital structure, female.

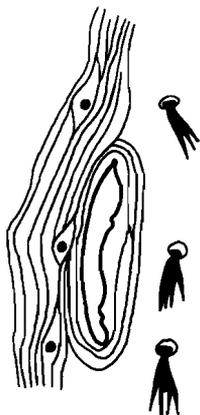


Figure 5 *Speleorchestes nylsvleyensis* sp. nov. Anal opening, female.

smaller than hysterosomal setae; two of these setae, situated between coxae IV, are unpaired.

Gnathosoma (Figures 6–7). Palpi (Figure 6) short, with



Figure 6 *Speleorchestes nylsvleyensis* sp. nov. Palp, female.

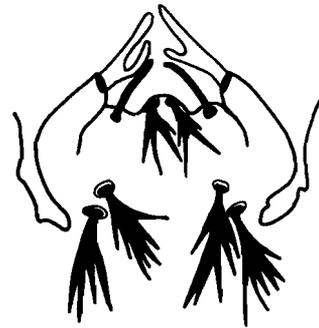


Figure 7 *Speleorchestes nylsvleyensis* sp. nov. Hypognathum, female.

four movable segments; femur prominently enlarged; tarsus with seven normal setae and two terminal rod-like solenidia on blunt tubercles; chelicerae large with small chelae; labrum-epipharynx rod-like and elongate (Figure 1); hypognathum (Figure 7) with three pairs of large branched fan-shaped setae and a pair of strong, rod-like setae; ectomalae large and furcate.

Legs (Figures 8–9). All legs with six segments; femora I–IV divided; leg IV (Figure 8) with divided trochanter; all legs lack true claws: tarsi I–IV with a large, hooked empodial claw; setae of coxae III bifurcate, both branches being branched fan-shape and plumose; tarsi I and II (Figure 9) with a small famulus on a distinctly differentiated area; with solenidia (S) and famuli (F) in parentheses, the setal formulae for the leg segments are as follows: tarsi 12(2S+1F)-10(1F)-8-9; tibiae 6-5-3-4; genua 5-4-3-3; femora 5-3-3-3; trochanters 0-0-0-0; coxae 2-1-2-2.

Male (Figure 10)

Dimensions: length of body (incl. gnathosoma) 236–259 μm ; length of body (excl. gnathosoma) 202–233 μm ; breadth of body 83–94 μm .

Genital opening smaller than in female; copulatory organ present but ill-defined; internally with four pairs of eugenital setae, the first pair on small tubercles; leg setae as for female.

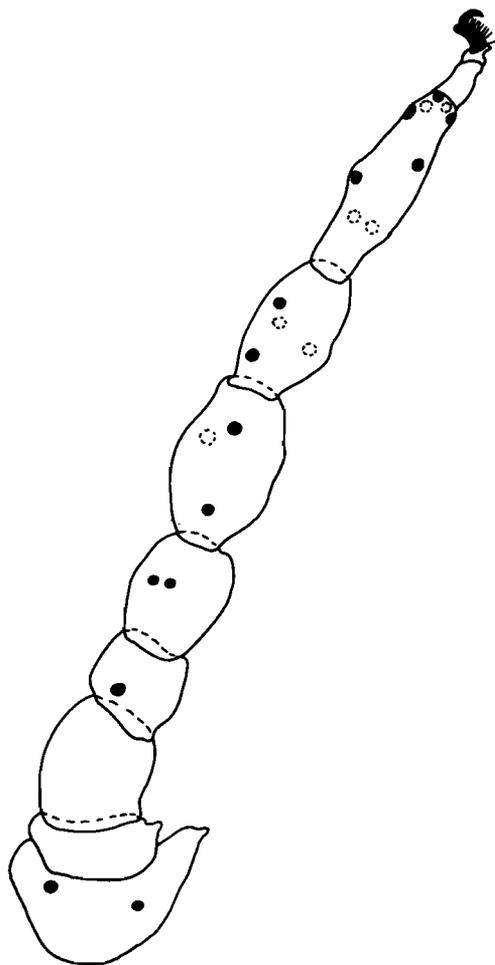


Figure 8 *Speleorchestes nylsvleyensis* sp. nov. Leg IV, female.



Figure 9 *Speleorchestes nylsvleyensis* sp. nov. Tarsus I, female.

Tritonymph

Dimensions: length of body (incl. gnathosoma) 233–250 μm ; length of body (excl. gnathosoma) 200–223 μm ; breadth of body 84–94 μm .

Genital opening with four pairs of genital setae, without internal setae or structures; dorsum with 26–28 pairs of setae; venter with 25–27 pairs of setae, both unpaired setae between coxae IV being present; setal

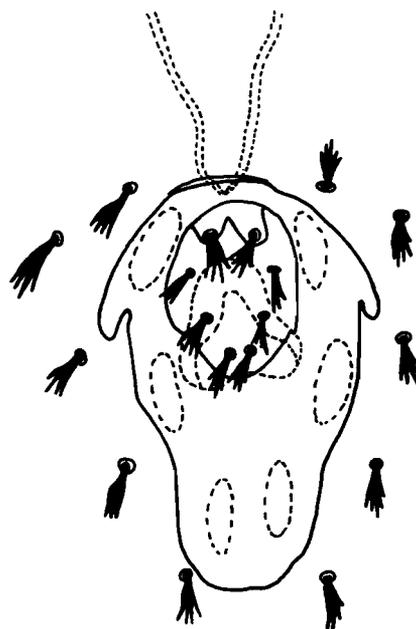


Figure 10 *Speleorchestes nylsvleyensis* sp. nov. Genital structure, male.

formulae of legs as for adults.

Deutonymph

Dimensions: length of body (incl. gnathosoma) 200–203 μm ; length of body (excl. gnathosoma) 163–170 μm ; breadth of body 73–76 μm .

Hysterosoma with 20–22 pairs of setae; venter with 16–18 pairs of setae; only one unpaired seta between coxae IV; genital opening with two pairs of papillae and three pairs of genital setae; tarsus I with 11 setae only, other leg setae as for adults.

Protonymph

Dimensions: length of body (incl. gnathosoma) 163–199 μm ; length of body (excl. gnathosoma) 130–166 μm ; breadth of body 70–73 μm .

Hysterosoma with 17 pairs of setae; with 12 pairs of ventral setae, lacking both unpaired setae; genital opening small, with one pair of papillae and one pair of setae; setal formula for legs as follows: tarsi 11(2S+1F)-10(1F)-8-6; tibiae 6-5-3-3; genua 5-4-3-1; femora 4-2-3-0; trochanters 0-0-0-0; coxae 2-1-1-1.

Material studied

Female holotype, 11 female paratypes, nine male paratypes, six tritonymph paratypes, five deutonymph paratypes, seven protonymph paratypes, Nylsvley, northern Transvaal, X. 1974 to XII. 1975, P.A.S. Olivier & E.A. Ueckermann.

Acknowledgements

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