A new *Halozetes* species (Acari: Oribatida: Ameronothridae) from the marine littoral of southern Africa

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A new species in the genus *Halozetes* Berlese, 1916 (*Halozetes capensis* n.sp.) is described from the marine littoral of southern Africa, representing a considerable extension of the geographical distribution, as well as the northernmost limit, of the genus *Halozetes*.

Key words: Oribatida, Ameronothroidea, marine mites, *Halozetes*, taxonomy.

INTRODUCTION

The oribatid mite genus *Halozetes* Berlese, 1916, is widely distributed and dominant on the peri-Antarctic Islands, the Antarctic Peninsula, and southern New Zealand. It is the sole oribatid component of the marine littoral mite fauna in the Antarctic regions. On the peri-Antarctic islands, *Halozetes* occurs on intertidal, rocky shores as well as in supralittoral and terrestrial habitats. Here we report the first record of the genus *Halozetes* from southern Africa. It represents a considerable extension of the geographical distribution, as well as the northernmost limit, of the genus. *Halozetes* was collected from the mid- and upper eulittoral zone along the southern African coast at the Cape Peninsula (Kommetjie) and the south coast (Nature's Valley) (Fig. 1). The specimens represent a new species which is described below.

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DESCRIPTION

***Halozetes capensis* n.sp.,** Figs 2–10

Diagnosis

Aggenital neotrichy absent, interlamellar setae long, notogastral seta h_2 longer than rest of notogastral setae; three pairs of porose sclerites present on gastronotum of immatures.

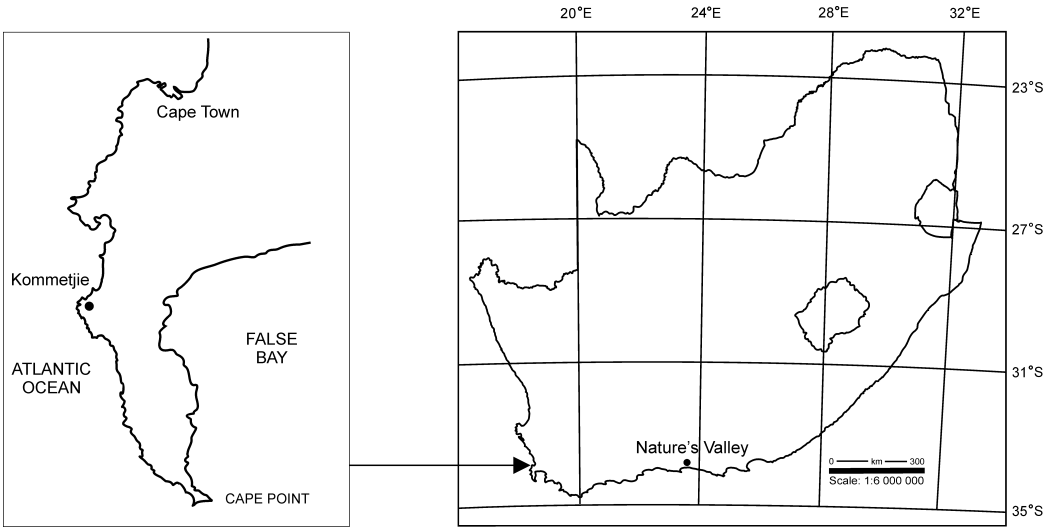
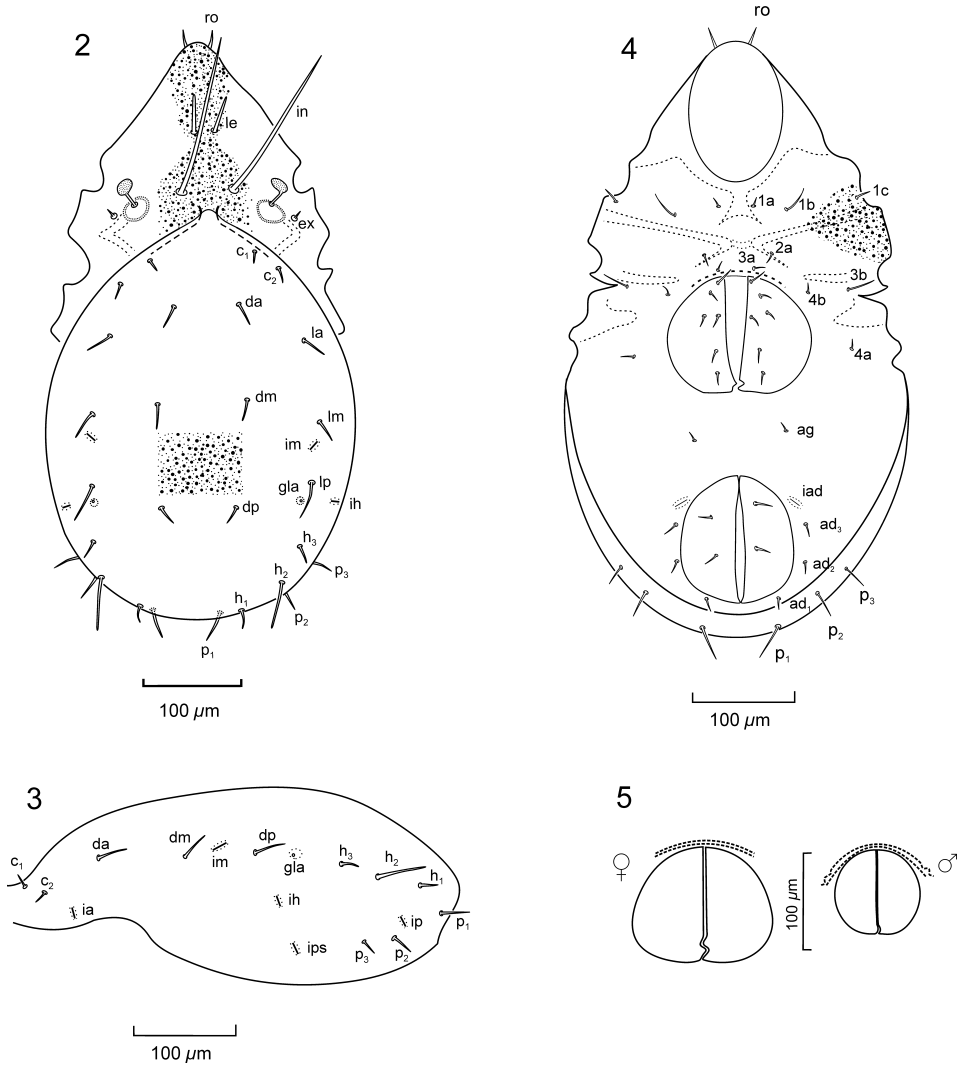


Fig. 1. South Africa, indicating the collecting sites of *Halozetes capensis*.



Figs 2–5. *Halozetes capensis*; **2**, dorsal view; **3**, lateral view of notogaster; **4**, ventral view; **5**, genital plates of male and female.

Description

Adult. Dimensions: females: length 417 μm (range 406–438), width 222 μm (range 206–250); males: length 382 μm (range 344–400), width 206 μm (range 169–219).

Dorsal aspect (Figs 2 & 3). *Prodorsum*: rostral seta (*ro*) short, smooth, pointed; lamellar seta (*le*) of medium length, directed upwards, dark brown, roughened, rounded apically; interlamellar seta (*in*) very long, directed upwards, dark brown, roughened, more or less three times as long as their mutual distance; bothridium (*bo*) round, opening only wide enough to accommodate the sensillar stalk; sensillus clavate with thin, short stalk; cerotegument with coarse granules, underlain by minute spots, restricted to medial part of prodorsum, extending laterally along rostrum; exobothridial seta (*ex*) very short. Setal lengths: *ro* = 24 μm (21–29); *le* = 42 μm (36–52); *in* = 163 μm (143–172).

Notogaster: anterior margin of notogaster projecting anteriorly, rounded, medially indistinct, covered by cerotegument; 14 pairs of notogastral setae present; c_3 absent; setae smooth, stout; c_1 very short, h_2 much longer than rest of setae; lyrifissures short; opisthosomal gland (*gla*) small, round; cerotegument similar to that on prodorsum. Setal lengths: c_1 = 14 μm (12–21); c_2 = 18 μm

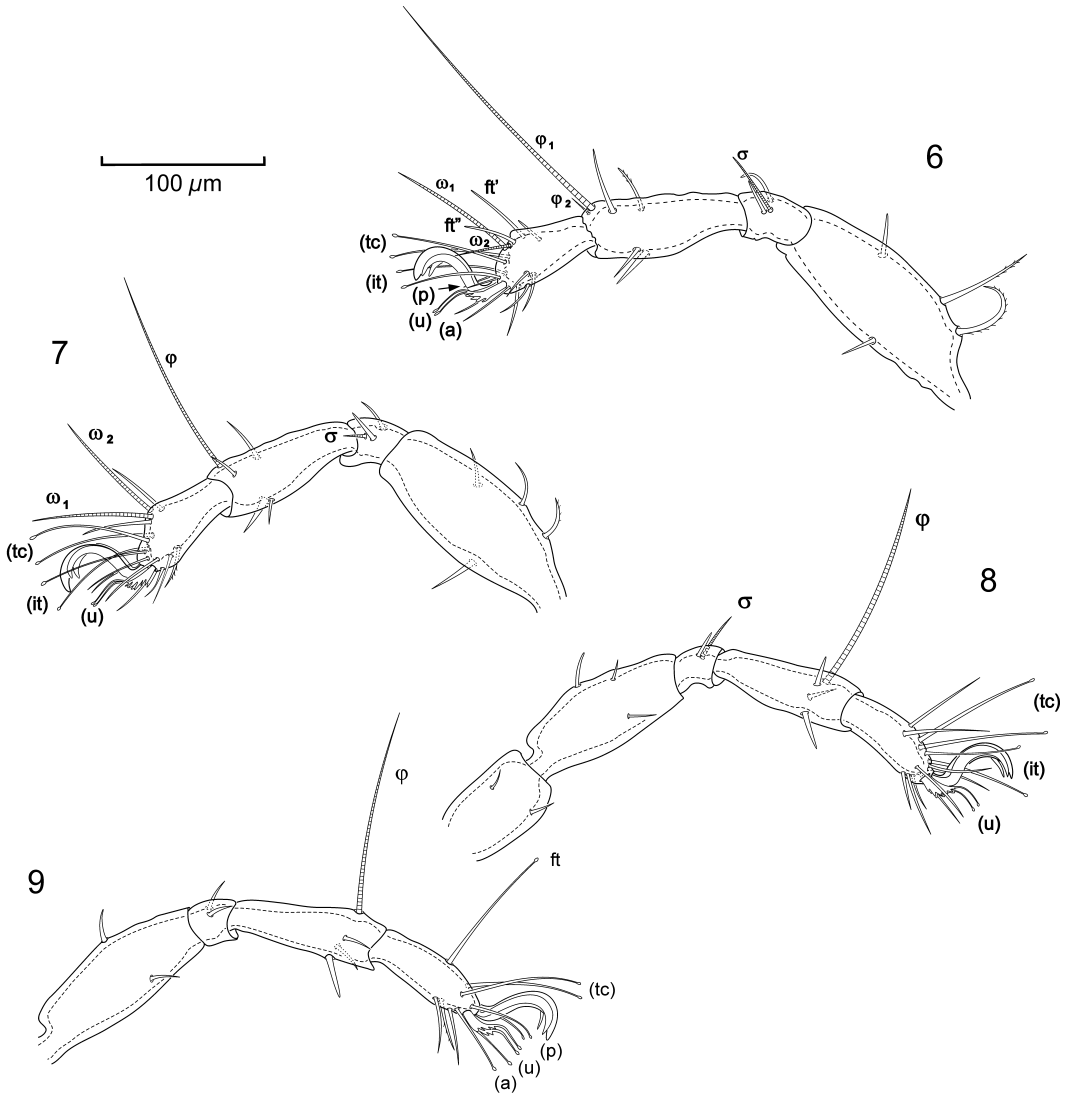


Fig. 6–9. *Halozetes capensis*; **6**, leg I; **7**, leg II; **8**, leg III; **9**, leg IV.

(14–21); *da* = 16 μm (12–21); *dm* = 20 μm (14–26); *dp* = 15 μm (12–24); *la* = 18 μm (17–19); *lm* = 26 μm (21–31); *lp* = 36 μm (31–45); h_1 = 23 μm (17–26); h_2 = 51 μm (48–57); h_3 = 20 μm (17–26); p_1 = 32 μm (26–38); p_2 = 30 μm (24–36); p_3 = 30 μm (29–31).

Ventral aspect (Figs 4 & 5). *Epimeral region*: Epimeral setae smooth, setae of *a*-series short, *b*-series longest; epimeral setal formula = 3-1-2-2; triangular patch of cerotegument (similar to that of dorsal side) present between legs I and II.

Anogenital region: all anogenital setae short, smooth, comprising six pairs of genital, one pair of aggenital, three pairs of adanal and two pairs of anal setae; interior margins of genital plates converge posteriad where they form an 'interlocking triangle' (*sensu* Wallwork 1963); genital plates sexually dimorphic (Fig. 5), those of females large, with distinct interlocking triangle and flattened posterior margin, while those of males are smaller, near circular and with weak interlocking triangle; pre-genital margin of ventral shield in both sexes with a narrow cuticular ridge, in females short (not reaching the external margins of the genital plates), narrow, edges parallel; in males longer (extending beyond the external margins of genital plates), more distinct, anterior edge uneven.

Legs (Figs 6–9). Tarsi tridactyl, medial claw stronger than laterals; all unguinal setae (*u*) with thick,

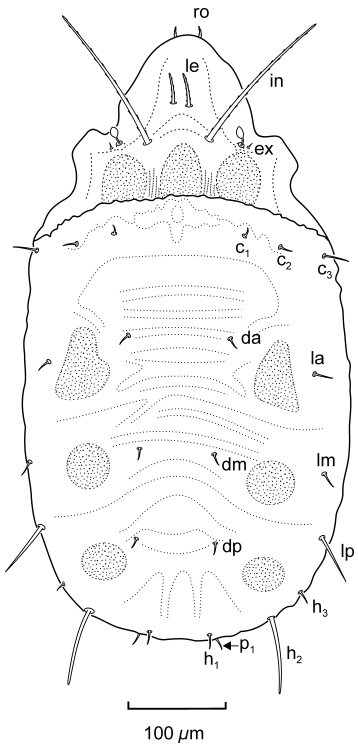


Fig. 10. *Halozetes capensis*; tritonymph, dorsal view.

serrated proximal sections, thin distal sections and minute clavate tips; all tectal (*tc*) and iteral (*it*) setae with clavate tips, as well as fastigial (*ft*), proral (*p*), and antelateral (*a*) setae of leg IV; paraxial solenidion of Tibia I (φ_2) minute; famulus absent.

Tritonymph (Fig. 10). *Prodorsum*: rostral seta (*ro*) short, roughened; lamellar seta (*le*) of medium length, roughened; interlamellar seta (*in*) very long, roughened; sensillar head and bothridium very small (much smaller than in adult); exobothridial seta (*ex*) minute; three brownish porose sclerites present posteriorly of interlamellar setae.

Gastronotic region: integument strongly pleated, medial pleats are more or less linear, while lateral ones are more irregular; three pairs of brownish porose sclerites present, situated laterally between setae of *d*-series and *l*-series; anterior sclerites unevenly shaped, large; medial and posterior sclerites smaller, roundish; all gastronotal setae smooth, seta h_2 significantly longer than rest of setae; seta *lp* of medium length; rest of gastronotal setae very short.

Distribution in southern Africa (Fig. 1). Collected by D.J. Marshall at Kommetjie, Cape Peninsula (34°13′S, 18°32′E) and Nature's Valley (33°59′S, 23°33′E), November 2000, from finely-branched algae in the mid- and upper eulittoral zone.

Type material. Holotype ♀ (NMB 4150.1), Kommetjie); 10 paratypes (NMB 4150.2), 5♂, 5♀, all from Kommetjie; deposited in Acarology Collection, National Museum, Bloemfontein. All preserved in 70% alcohol.

Remarks

Comparisons among *Halozetes* species were based on collections from Marion and Heard Islands for *H. marinus marinus, H. marinus devilliersi, H. intermedius, H. belgicae* (D.J.M.), and the general literature for other species. The present species resembles the species in the *H. marinus* group (*H. marinus marinus, H. m. devilliersi, H. m. minor*) by virtue of very long interlamellar setae, absence of aggenital neotrichy in males, and the lamellar setae in close mutual proximity (their length usually exceeds their mutual distance by two-fold). Four features distinguish *H. capensis* from all other *H. marinus*-group congeners. Adult *H. capensis* are (1) much smaller (417 μm *vs* 810 μm in *H. m. marinus* and *H. m. devilliersi*); (2) have relatively large sensilli with clavate, as opposed to lanceolate, heads (*cf. H. m. marinus* (Wallwork 1963)); and (3) have dimorphic notogastral setae in both adults and juveniles, with h_2 significantly longer than h_1 and h_3, as opposed to being of approximately equal length (*cf. H. m. marinus, H. m. devilliersi* and *H. m. minor* (Wallwork 1963, 1966; Engelbrecht 1974)). *H. capensis* is unique in the *H. marinus* group in that adults have retained a juvenile character (long h_2 setae). (4) The most striking interspecific differences are seen in the immature stages. The tritonymph of *H. capensis* differs from the other *H. marinus*-group tritonymphs in the shape and size of the dorsal porose sclerites. Only three pairs of sclerites are present dorsolaterally on the gastronotum, while the anteromedial and posteromedial sclerites of *H. marinus marinus* and *H. m. devilliersi* are absent.

This study reports the first collection of *Halozetes* from southern Africa and the northernmost occurrence of the genus. All other representatives of this genus occur on the Antarctic Peninsula, peri-Antarctic Islands or the South Island of New Zealand (Wallwork 1973; Luxton 1990; Starý & Block 1998). Furthermore, the incursion of southern ocean taxa into the southern African marine fauna is unusual; there are currently no mite faunistic associations reported for the southern African and Antarctic regions (see Starý & Block 1998). The marine invertebrate fauna of southern

Africa comprises mainly western and southern coastal generic endemics with a subtropical element in the eastern regions (Procheş & Marshall 2002), where two widely distributed tropical marine oribatid genera, *Schusteria* and *Fortuynia* (Marshall & Pugh 2000; Marshall & Pugh 2002), occur.

The South African record of *H. capensis* extends the already broad geographical (Gondwanan) distribution of the genus *Halozetes,* supporting the antiquity of both the genus *Halozetes* and ameronothroid mites in general (see Procheş & Marshall 2001). The hypothesis that the genus originated in the Antarctic region (Wallwork 1973), coupled with observations for the prevailing ocean current systems (such as the northerly directed Benguela current off the west coast of southern African), is corroborated by the new record of *H. capensis,* though this requires verification by morphometric and molecular phylogenetic techniques.

ACKNOWLEDGEMENTS

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REFERENCES

ENGELBRECHT, C.M. 1974. The genus *Halozetes* (Oribatei: Acari) on Marion Island. *Navorsinge van die Nasionale Museum* (Bloemfontein) **3**:1–25.

LUXTON, M. 1990. The marine littoral mites of the New Zealand region. *Journal of the Royal Society of New Zealand* **20**: 367–418.

MARSHALL, D.J. & PUGH, P.J.A. 2000. Two new species of *Schusteria* (Acari: Oribatida: Ameronothroidea) from the marine shores of southern Africa. *African Zoology* **35**: 201–205.

MARSHALL, D.J. & PUGH, P.J.A. 2002. *Fortuynia* (Acari: Oribatida: Ameronothroidea) from the marine littoral of southern Africa. *Journal of Natural History* **36**: 173–183.

PROCHEŞ Ş, & MARSHALL, D.J. 2001. Global distribution patterns of marine intertidal mites (non-halacarid): implications for their origins in marine habitats. *Journal of Biogeography* **28**: 47–58.

PROCHEŞ, Ş. & MARSHALL, D.J. 2002. Diversity and biogeography of southern African intertidal Acari. *Journal of Biogeography* **29**: 1–15.

STARÝ, J. & BLOCK, W. 1998. Distribution and biogeography of oribatid mites (Acari: Oribatida) in Antarctica, the sub-Antarctic islands and nearby land areas. *Journal of Natural History* **32**: 861–894.

WALLWORK, J.A. 1963. The Oribatei (Acari) of Macquarie Island. *Pacific Insects* **5**, 721–769.

WALLWORK, J.A. 1966. More oribatid mites (Acari: Cryptostigata) from Campbell I. *Pacific Insects* **8**, 849–877.

WALLWORK, J.A. 1973. Zoogeography of some terrestrial micro-arthropoda in Antarctica. *Biological Reviews* **48**, 233–259.