

## New species of phytoseiid mites from Mozambique and Malawi

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### Abstract

Two new mite species of the family Phytoseiidae (Acari: Mesostigmata) are described from southern Africa: *Typhlodromalus parcidentatus* n. sp. from Mozambique and *Typhlodromus (Anthoseius) malawiensis* n. sp. from Malawi.

**Key words:** Acari, Phytoseiidae, *Typhlodromalus parcidentatus*, *Typhlodromus malawiensis*, taxonomy

### Introduction

This paper refers to phytoseiid mites collected in Mozambique and Malawi when conducting surveys in cassava habitats prior to the introduction of exotic phytoseiid predatory mites for the biological control of the cassava green mite *Mononychellus tanajoa* (Bondar). Other described species collected on the same occasions will be listed in papers dealing with the ecological observations of that study. The newly described phytoseiid mites were collected in Mozambique and Malawi on plants commonly found in and around cassava fields to which the introduced predatory mites could conceivably move after their introduction.

All measurements are given in micrometers. Setal nomenclature for dorsal and ventral surfaces is that of Rowell et al. (1978) and Chant and Yoshida-Shaul (1991) respectively. Abbreviations used for depositories of type specimens are: IITAIM-Benin (International Institute of Tropical Agriculture Insect Museum, Cotonou, Benin); ESALQ/USP (Universidade de São Paulo, Escola Superior de Agricultura Luiz de Queiroz, Departamento de Entomologia, Fitopatologia e Zoologia Agrícola); ARC-PPRI (Agricultural Research

**1. *Typhlodromalus parcidentatus* n. sp.**

**DIAGNOSIS** - Females of this new species are similar to those of *Amblyseius rhusi* (Van der Merwe, 1965), but differ from them by the absence of distinct metasternal shields, much longer setae Z5, stouter and knobbed macrosetae on legs III and IV, and in that males of this new species do not have distinct notches lateral to preanal pores.

**FEMALE** – (Figs. 1A-1E) (5 specimens measured).

**Dorsum** – Dorsal shield with diagonal striae, 328 (313-343) long and 248 (240-250) wide at widest level of the proscutum. Setae j1 29 (26-30), j3 9 (8-9), j4 8 (6-9), j5 8, j6 8 (6-8), J2 10, J5 5, z2 9 (8-10), z4 9 (8-10), z5 8, Z1 8 (8-9), Z4 10 (10-11), Z5 57 (55-60), s4 14 (13-15), S2 13(10-15), S4 12 (10-13), S5 11 (10-13), r3 11 (10-11), R1 10 (9-10). Seta Z5 serrated; other setae smooth.

**Peritreme** – Extending to the level of insertion of j1.

**Venter** – All shields smooth and well sclerotized, except for posterior margin of sternal shield. Sternal shield with 3 pairs of setae and 2 pairs of lyrifissures. Setae st4 on integument. Distances between setae st1-st3 57 (54-58), st2-st2 72 (70-73), st5-st5 72 (70-75). With a pair of metapodal shields. Ventrianal shield vase-shaped, 103 (95-108) long, 54 (53-55) wide at level of ZV2 and 74 (70-78) wide at level of anus, with 3 pairs of preanal setae and a pair of pores posterior and slightly mesad to JV2.

**Chelicera** – Movable digit 26 (26-27) long, with 1 tooth; fixed digit 28 (28-29) long, with 5 teeth distally located on the inner edge of the digit and a *pilus dentilis*.

**Spermatheca** – Calyx 32 (30-33) long, funnel-shaped and bulged proximally; atrium distinct.

**Legs** – With knobbed macrosetae on legs III and IV: Sge III 31 (28-33), Sti III 23 (21-25), Sge IV 47 (43-48), Sti IV 31 (28-33) and St IV 57 (53-60). No macrosetae on other legs. Chaetotaxy of genu II 2-(2,2)/0-1 and genu III 1-2/1-2/0-1.

**MALE** – (Figs. 1F & 1G) (5 specimens measured).

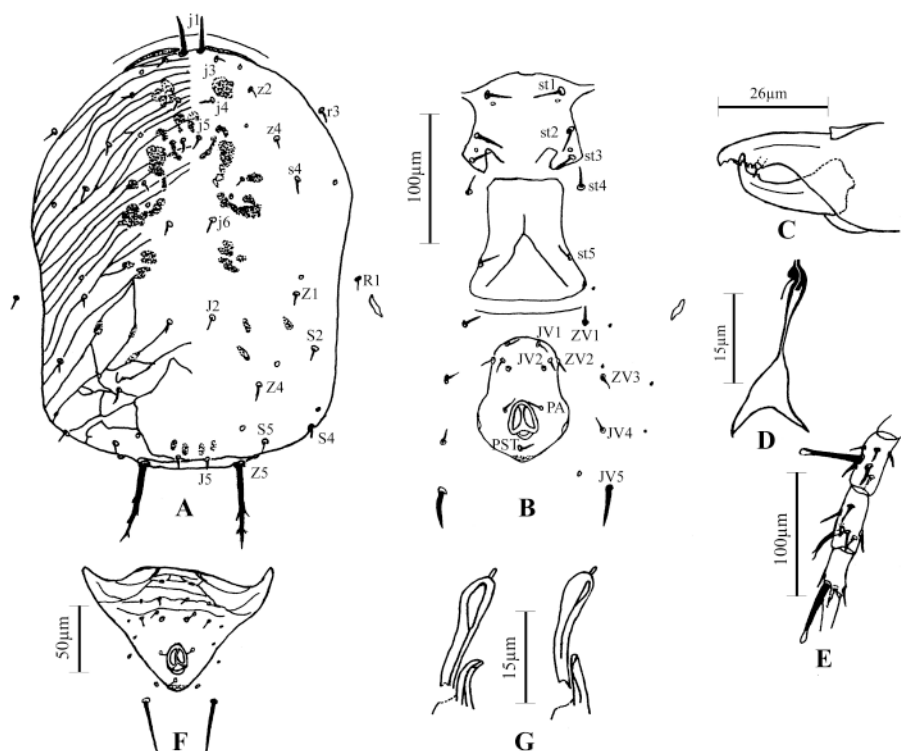
**Dorsum** – Dorsal shield with diagonal striae, 253 (253-255) long, 178 (176-181) wide at the widest level of proscutum. Setae j1 21 (20-22), j3 6 (6-7), j4 7 (6-8), j5 8 (7-8), j6 8 (7-9), J2 9 (9-10), J5 5 (4-5), z2 7, z4 9 (9-10), z5 8 (7-8), Z1 9 (9-10), Z4 10 (10-11), Z5 45 (42-46), s4 13 (13-14), S2 12 (11-12), S4 10 (10-11), S5 10, r3 10 (9-11), R1 9 (8-10). Seta Z5 serrated, other setae smooth.

**Peritreme** – Extending forward to level of insertion of z2.

**Venter** – Ventrianal shield sub-triangular, 93 (93-94) long, 143 (141-145) wide at anterior corners, with transverse striae anteriorly, 3 pairs of preanal setae, 4 pairs of small pores, one anterior to JV1 and 3 anterolateral, and a pair of large pores slightly posteromesad to JV2.

Spermatodactyl – Shaft 22 (20-23) long.

Legs – With knobbed macrosetae on legs III and IV: Sge III 21 (21-22), Sti III 20 (19-20), Sge IV 33 (31-35), Sti IV 28 (28-29) and St IV 41 (41-42). No macrosetae on other legs. Chaetotaxy of genu II 2-(2,2)/0-1 and genu III 1-2/1-2/0-1.



**FIGURE 1.** *Typhlodromalus parcidentatus* Zannou, Moraes & Hanna n. sp. (female): A. Dorsal shield; B. Ventral surface; C. Chelicera; D. Spermatheca; E. Leg IV. (male): F. Ventrianal shield; G. Spermatodactyl.

**LOCALITY AND TYPE MATERIAL** – Holotype female, allotype male, 1 paratype female and 1 paratype male from *Mangifera indica*, Muecate, Mozambique, 19-IV-2000, leg. I. Zannou (ESALQ/USP); 1 paratype female and 1 paratype male, same data as holotype (IITAIM-Benin) and 1 paratype female from *Anacardium occidentale*, 2 km N. Muecate, Mozambique 19-IV-2000, leg. I. Zannou (IITAIM-Benin); 1 paratype female from *Pennisetum glaucum*, Muecate, Mozambique, 19-IV-2000, leg. I. Zannou (USNMNH).

**REMARKS** – The fixed digit of the chelicera of this new species is not typical for the genus *Typhlodromalus* because it has relatively few teeth, all distally located, and the inner edge is medially concave. This type of fixed digit is more typical of species in the close

genus *Euseius*. This new species differs however from *Euseius* by having long peritreme and JV1 inserted on the anterior margin of the ventrianal shield.

ETYMOLOGY – The name *parcidentatus* refers to the few teeth on the fixed chelicera of this species.

## 2. *Typhlodromus (Anthoseius) malawiensis* n. sp.

DIAGNOSIS - This species is similar to *Typhlodromus (Anthoseius) praeacutus* (Van der Merwe, 1968), but differs from the latter by having, knobbed JV5 and knobbed macroseta on leg IV, and by the absence of a ventral seta on genus II.

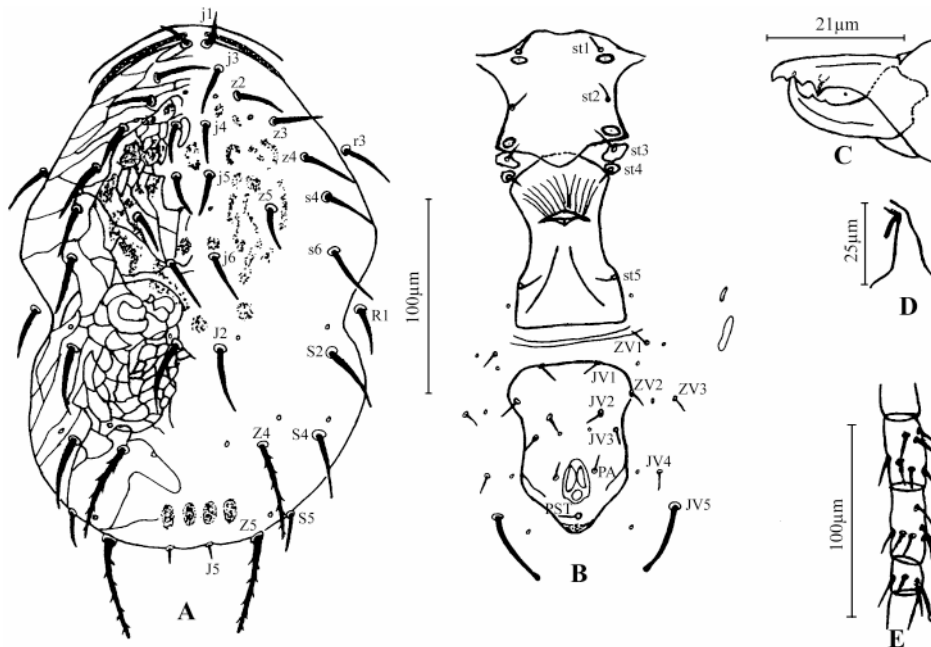


FIGURE 2. *Typhlodromus (Anthoseius) malawiensis* Zannou, Moraes & Hanna n. sp. (female): A. Dorsal shield; B. Ventral surface; C. Chelicera; D. Spermatheca; E. Leg IV.

FEMALE – (Fig. 2) (10 specimens measured)

Dorsum – Dorsal shield imbricate, 277 (260-285) long and 154 (145-165) wide at widest level of the proscutum. Setae j1 19 (18-20), j3 24 (21-28), j4 21 (19-24), j5 23 (20-26), j6 28 (25-31), J2 32 (30-35), J5 10 (9-10), z2 21 (16-24), z3 25 (20-29), z4 28 (23-31), z5 24 (21-25), Z4 42 (38-45), Z5 51 (48-55), s4 30 (26-33), s6 33 (29-38), S2 33 (30-40), S4 33 (30-35), S5 19 (16-23), r3 26 (23-30), R1 24 (19-28). Setae Z4 and Z5 serrate; other setae smooth. Seta Z5 blunt.

Peritreme – Extending forward to the level of insertion of j1.

Venter – All shields distinct and smooth. Sternal shield with a median, rounded projection on posterior margin, 2 pairs of setae and two pairs of lyrifissures. Setae st3 on pair of small shields; setae st4 on metasternal shields. Distance between setae st1-st3 56 (50-58), st2-st2 51 (48-53), st5-st5 53 (48-58). Ventrianal shield concave laterally, 88 (80-93) long, 66 (63-70) wide at level of ZV2 and 59 (54-65) wide at level of anus, with 4 pairs of preanal setae and a pair of pores posteromesad to JV2.

Chelicera – Movable digit 21 long, with 2 teeth; fixed digit 20 long, with 3 teeth and a *pilus dentilis*.

Spermatheca – Calyx 21 long, funnel shaped; atrium poorly defined.

Legs – With a single, knobbed macroseta, 19 (16-23) long, on tarsus of leg IV. Chaetotaxy of genu II 2-(2,2)/0-1; genu III 1-(2,2)/1-1.

MALE – Unknown.

LOCALITY AND TYPE MATERIAL – Holotype female from *Musa* sp., 1.3 km N Salima military camp, Malawi, 8-VII-1999, leg. I. Zannou (ESALQ/USP); 1 paratype female from *Manihot esculenta*, 10 km SSE Chiweta, Malawi, 6-V-2000, leg. I. Zannou (ESALQ/USP); 2 paratype females from *Manihot esculenta*, 10 km SSE Chiweta, Malawi, 6-V-2000, leg. I. Zannou (IITAIM-Benin); 3 paratype females from *Ficus exasperata*, 7.3 km SSE Chiweta, Malawi, 5-V-2000; leg. I. Zannou (IITAIM-Benin); 1 paratype female from *Psidium guajava*, 10 km N Salima military camp, Malawi, 8-V-2000, leg. I. Zannou (ARC-PPRI); 1 paratype female from *Piliostigma thonningii*, 2.3 km N Salima military camp, Malawi, 8-VII-1999, leg. I. Zannou (USNMNH); 1 paratype female from *Trichodesma zeylanicum*, 2.3 km N Salima military camp, Malawi, 8-VII-1999, leg. I. Zannou (USNMNH).

ETYMOLOGY: The name *malawiensis* refers to the country where the type specimens were collected.

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