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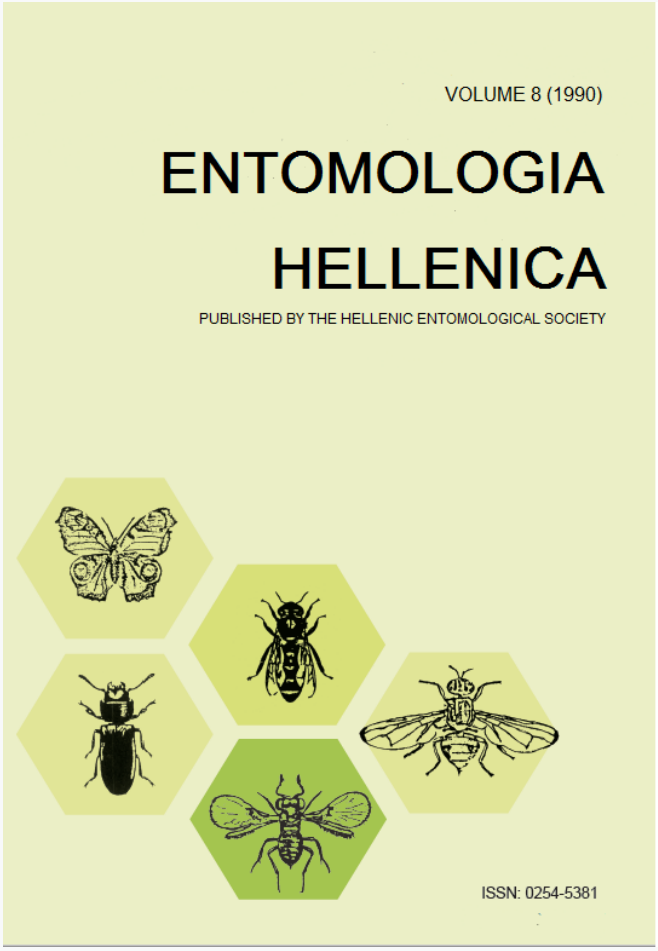

Two new species of the genus Typhlodromus Scheuten (Acari: Phytoseiidae) from Greece

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Two New Species of the Genus *Typhlodromus* Scheuten (Acari: Phytoseiidae) from Greece[1]

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ABSTRACT

Adult females and males of two new Phytoseiid species, *Typhlodromus pentelicus* and *Typhlodromus phylaktioticus*, are described and illustrated. The former species was found on the bark of various trees while the latter was collected from *Clematis* sp. and *Fragaria* sp. in Greece.

Introduction

During a survey carried out by the authors on Phytoseiid mites in Greece, several species were found to be new to science. Two of those, *Typhlodromus pentelicus* and *T. phylaktioticus*, are described and illustrated herebelow.

Materials and Methods

The setal nomenclature is based on the system of Lindquist and Evans (1965) as used for the Family Phytoseiidae by Rowell et al. (1978). Other terminologies used were those of Athias-Henriot (1975, 1977) for organotaxy, De Leon (1961) for the spermatodactyl, Evans and Till (1979) for the ventral pores and Wainstein (1973) for spermatheca. All measurements are given in microns; the number of specimens used were 4 females and 2 males for *T. pentelicus* and 5 females and 2 males for *T. phylaktioticus*.

Description

Typhlodromus pentelicus spec. nov.

FEMALE

D o r s u m (Fig. 1). Dorsal shield 384 (381-386) long (j1-J5) with a waist; width at level of S2 210 (207-211) with 17 pairs of setae (j1, j3, j4, j5, j6, J2, J5, z2, z3, z4, z5, Z4, Z5, s4, s6, S2, S4). Dorsal shield sclerotized, reticulated mainly on the

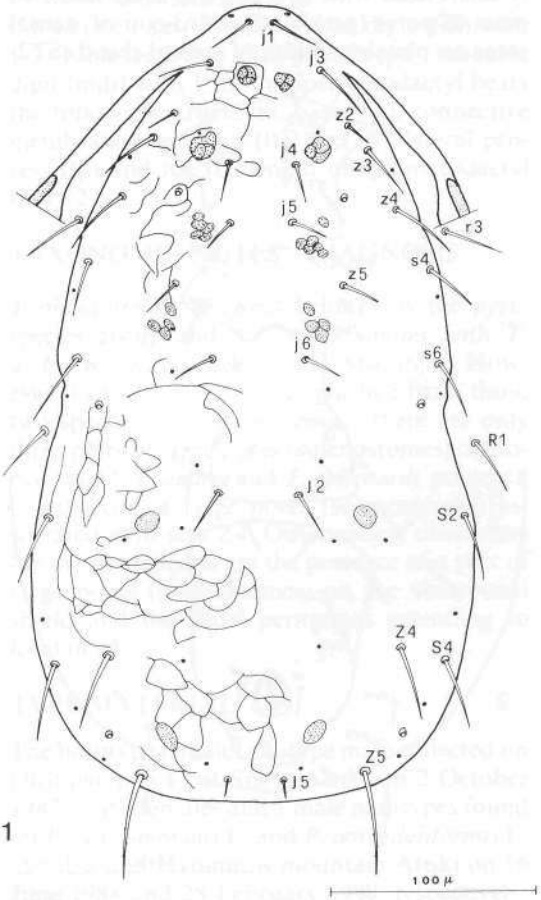

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FIG. 1. *Typhlodromus pentelicus* spec. nov. female, dorsal shield.

[1] Received for publication March 23, 1990.

opisthosoma, wide posteriorly and bearing three pairs of large pores (solenostomes): one between j4 and z4, another posteriad to s6 and a third between Z4 and Z5. Fourteen small pores (sensillae) visible on dorsal shield. Muscle marks (sigilles) visible mostly on podosoma. All dorsal setae, except Z5 which is slightly serrated, smooth and tapering to fine points. Sublateral setae r3 and R1 on interscutal membrane, smooth. Measurements of setae as follows: j1 26, j3 32 (29-35), j4 18(17-20), j5 18 (17-20), j6 20, J2 24 (23-26), J5 12, z2 18 (17-20), z3 27 (26-29), z4 27 (26-29), z5 20 (17-20), Z4 36 (35-37), Z5 50 (49-52), s4 30 (29-32), s6 32 (32-35), S2 32 (32-35), S4 35 (35-37), r3 28 (26-29) and R1 30 (29-32). Peritremes short 85 (81-92) long (from stigma to apex), extended to level of setae z4.

V e n t e r (Fig. 2). Sternal shield smooth slightly sclerotized with two pairs of setae and two pairs of pores (pst1, pst2); third pair of sternal setae on platelets; width of sternal shield (ST2-

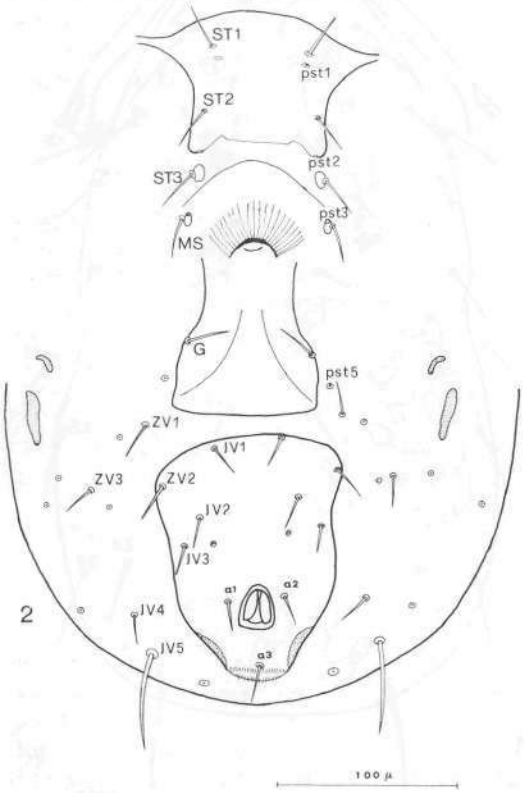


FIG. 2. *Typhlodromus pentelicus* spec. nov. female, venter.

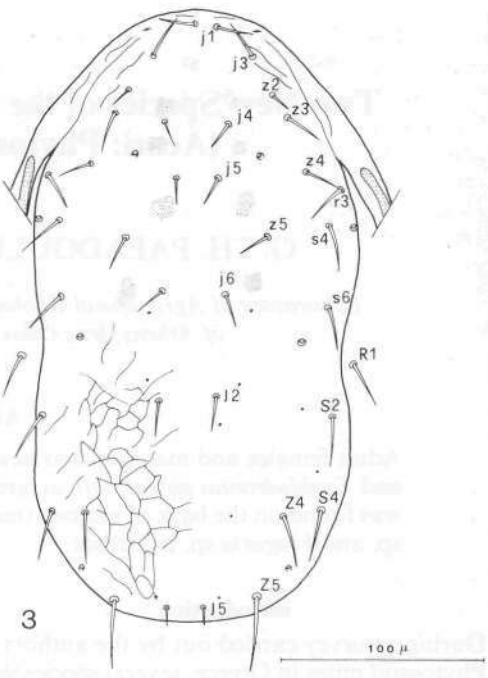


FIG. 3. *Typhlodromus pentelicus* spec. nov. male, dorsal shield.

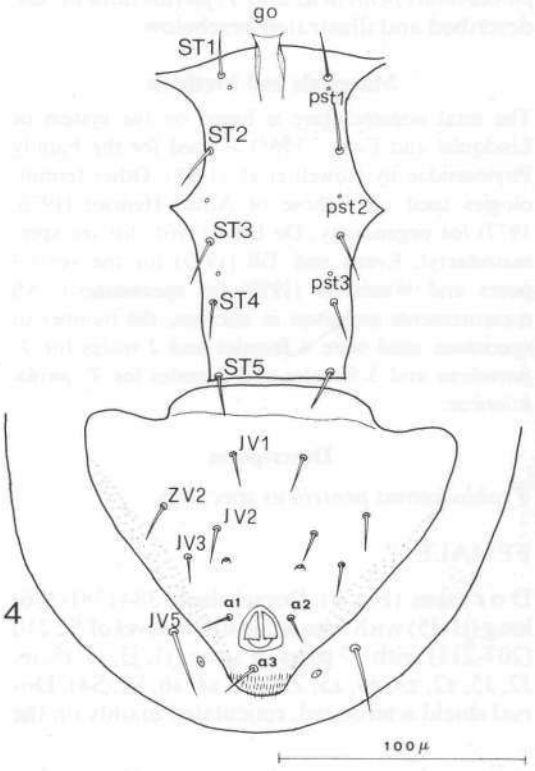


FIG. 4. *Typhlodromus pentelicus* spec. nov. male, venter.

ST2) 69 (66-72). Metasternal platelets with a pair of setae (MS) and a pairs of pores (pst3). Genital shield smooth; width (at level of setae G) 81(78-84); pst5 laterally to posterior part of genital shield. Ventroanal shield smooth, not reticulated with 4 pairs of preanal setae (JV1, JV2, JV3, ZV2), anal setae (α1, α2, α3), a pair of large pores (solenostomes) and muscle marks posteriolaterally. Length of ventroanal shield 140 (132-147); width at level of setae ZV2 106(104-107). Setae JV4, JV5, ZV1, ZV3, on integument surrounding ventroanal shield. Setae JV5 smooth much longer 51 (49-55) than others. Metapodal plates as shown in Fig. 7; length of primary metapodal plates 33 (31-34); width 5. Besides pst5, at least 6 pairs of pores are present on the ventral interscutal membrane.

Chelicerae (Fig. 5). Fixed digit with 2-3 teeth and pilus dentilis; movable digit 29 long with 2 teeth.

Spermatheca (Fig. 8). Atrium close to the posterior part of the more or less bell-shaped cervix; minor duct not visible. Cervix 16 long.

Legs, Palps (Fig. 9). Measurements of legs (base of coxae to base of claws) and palp (base of trochanter to apex of tarsus) as follows: Leg I 366 (363-367), Leg II 294 (285-303), Leg III 287 (280-294), Leg IV 379 (376-381) and palp 126 (124-129). There are glands (sensu Fain 1966) on coxa I with 6 glandular openings. Basitarsus IV with macroseta 49 long.

MALE

Dorsum (Fig. 3). Dorsal shield suboval with a waist; sclerotized and reticulated only on opisthosoma, with 18 pairs of setae (j1, j3, j4, j5, j6, J2, J5, z2, z3, z4, z5, Z4, Z5, s4, s6, S2, S4, r3); length (j1-J5) 303; width (S2-S2) 138. Four pairs of large pores (solenostomes) are present on dorsal shield: one between j4 and z4, another laterally and at level of setae s4, a third posteriomedially to s6 and a fourth between Z4 and Z5. Seven small pores (sensillae) visible on dorsal shield. Sigilles or muscle marks discredible, visible mainly on podosoma. All dorsal setae except Z5 which is faintly serrated, smooth and tapering to fine points. Sublateral setae r3 (on dorsal shield) and R1 (on interscutal membrane), smooth. Measurements of setae as follows: j18 17, j3 23, j4 14, j5 14, j6 17, J2 18 (17-20), J5 9, z2 14, z3 23, z4 20, z5 17, Z4 27 (26-29), Z5 35, s4 23, s6 23, S2 27 (26-29) S4 25(23-26), r3 20 and R1 20. Peritremes short 72 long (from stigma to apex), extended to level of setae z4; peritremal shield fused with dorsal shield at level of setae z4.

Venter (Fig. 4). Sternogenital shield smooth, with 5 pairs of setae (ST1, ST2, ST3, ST4, ST5) and 3 pairs of pores (pst1, pst2, pst3). Genital organ (go) at anterior margin of sternogenital shield. Length (ST1-ST5) 130; width (ST3-ST3) 55. Ventroanal shield with 4 pairs of preanal setae (JV1, JV2, JV3, ZV2), 3 anal setae (α1, α2, α3), a pair of large pores (solenostomes) posteriorly of setae JV2 and faintly developed muscle marks lateraly. Surrounding membrane with 1 pair of setae (JV5) and 1 pair of pores.

Legs, Palps. Measurements of legs and palps as follows: Leg I 308, Leg II 243, Leg III 243, Leg IV 321 and palp 110. There are glands on coxa I with 6 glandular openings. Basitarsus IV with macroseta 35 long.

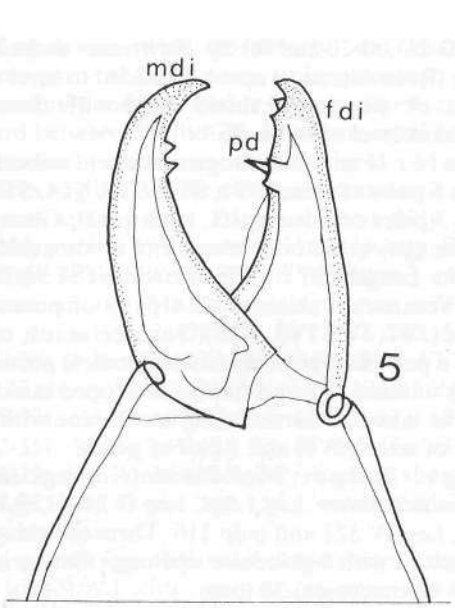
Chelicerae (Fig. 6). Fixed digit (fdi) with 1-2 visible teeth and pilus dentilis (pd); movable digit (mdi) with 1 tooth. Spermatodactyl bears the following structures: base (ba), connective membrane (cm), foot (ft), heel (h), lateral process (lp) and toe (t); length of spermatodactyl foot 22.

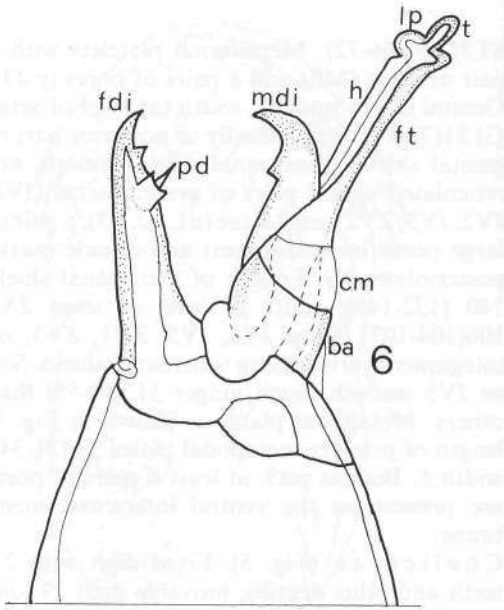
TAXONOMIC NOTES – DIAGNOSIS

Typhlodromus pentelicus belongs to the *pyri* species group and it is most similar with *T. andrei* Kärg and *T. pritchardi* Arutunjan. However it can be readily distinguished from those two species, as in *T. pentelicus* there are only three pairs of large pores (solenostomes) on dorsal shield. *T. andrei* and *T. pritchardi* possess a fourth pair of large pores (solenostomes) associated with seta Z4. Other salient characters for the new species are the presence of a pair of large pores (solenostomes) on the ventroanal shield and the short peritremes extending to level of z4.

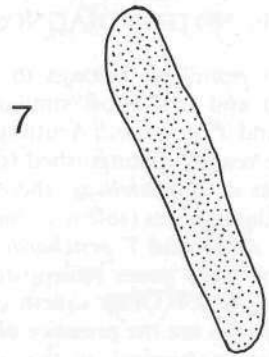
TYPE MATERIAL

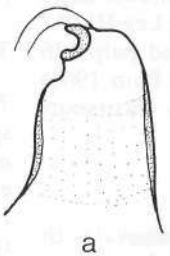
The holotype female, allotype male collected on *Olea europea* L. at Spata Attiki on 2 October 1987, and 3 females and 1 male paratypes found on *Pyrus communis* L. and *P. amygdaliformis* L. at Villia and Hymmitos mountain Attiki on 16 June 1988 and 28 February 1988, respectively, are deposited at the Acari Collection, Laboratory of Agricultural Zoology and Entomology,

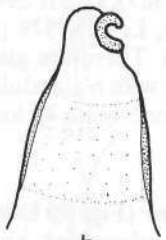


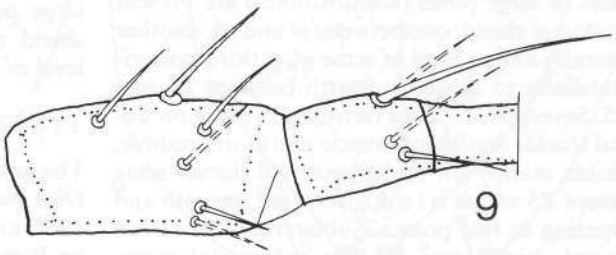


30 μ









60 μ

FIGS. 5-9. *Typhlodromus pentelicus* spec. nov.: 5 chelicerae of female, 6 chelicerae of male, 7 primary and secondary metapodal plates of female, 8 spermatheca (a, b, various aspects), 9 basitarsus IV of female.

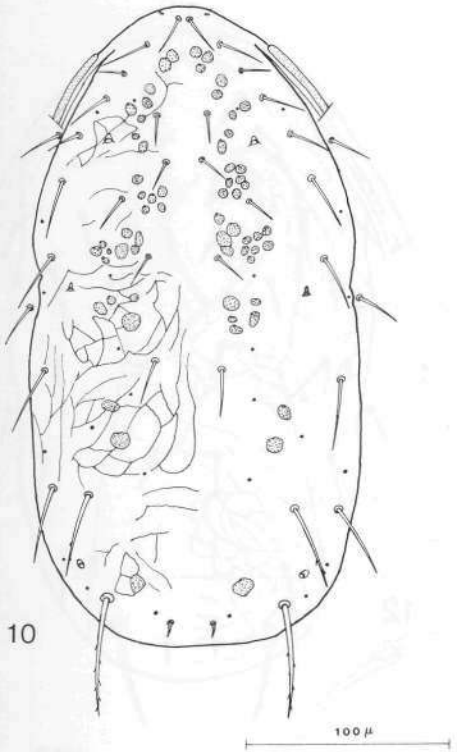


FIG. 10. *Typhlodromus phylaktioticus* spec. nov. female, dorsal shield.

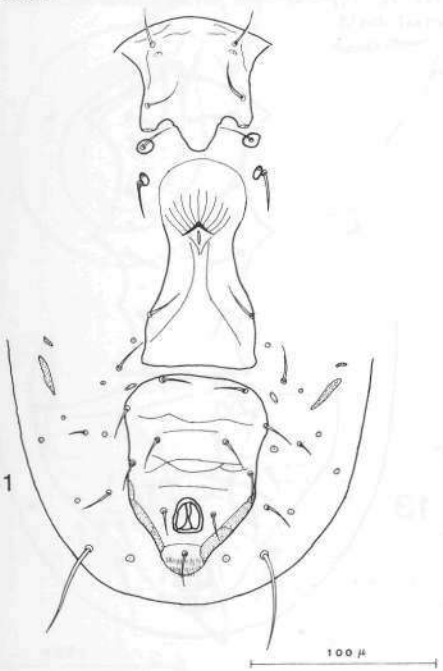


FIG. 11. *Typhlodromus phylaktioticus* spec. nov. female, venter.

Agricultural University of Athens. Although other parts (leaves and twigs) of the aforementioned trees were also sampled, *T. pentelicus* was found only on the bark.

ETYMOLOGY

The name of this new species is derived from Penteli, a mountain near Spata where it was found.

Typhlodromus phylaktioticus spec. nov.

FEMALE

Dorsum (Fig. 10). Dorsal shield 304 (289-321) long (j1-j5) with waist; width at level of S2 151 (147-161) with 17 pairs of setae (j1, j3, j4, j5, j6, J2, J5, z2, z3, z4, z5, Z4, Z5, s4, s6, S2, S4). Dorsal shield oval, sclerotized, reticulated mostly centraly and bearing three pairs of large pores (solenostomes): one between j4 and z4, another posteriomedially to s6 and a third between Z4 and Z5. Fourteen small pores (sensillae) visible on dorsal shield. Sigilles or muscle marks visible mostly on podosoma. All dorsal setae except serrated Z5 and faintly serrated Z4, smooth and tapering to fine points. Sublateral setae r3 and R1 on interscutal membrane, smooth. Measurements of setae as follows: j1 22 (20-23), j3 26, j4 17, j5 17, j6 18 (17-20), J2 22 (20-23), J5 6, z2 17, z3 26, z4 23, z5 17, Z4 37 (35-40), Z5 56 (52-58), s4 29, s6 30 (29-32), S2 33 (32-35), S4 34 (32-35), r3 28 (26-29) and R1 23. Peritremes 128 (127-130) long extended to level of setae j3.

Venter (Fig. 11). Sternal shield with posterior margin as figured, bearing 2 pairs of setae (ST1, ST2) and two pairs of pores (pst1, pst2); third pair of sternal setae (ST3) on platelets. Length of sternal shield (distance between anterior and exterior extremities) 74 (72-78); width (ST2-ST2) 55 (52-58). Metasternal platelets with a pair of setae (MS) and a pair of pores (pst3). Genital shield smooth; width (G-G) 60; pst 5 laterally to posterior part of genital shield. Ventroanal shield smooth, sclerotized, sparsely reticulated with 4 pairs of preanal setae (JV1, JV2, JV3, ZV2) and anal setae (α1, α2, α3); muscle marks (sigilles) are present posteriolaterally. Length of ventroanal shield 103 (98-109); width (at level of setae ZV2) 83 (75-86). Setae JV4, JV5, ZV1 and ZV3 on integument

surrounding ventroanal shield. Setae JV5 smooth much longer 44 (43-46) than others. Metapodal plates as shown in Fig. 17. Length of primary metapodal plate 24 (23-27); width 4. A pair of platelets lies between setae ZV1 and ZV2. Besides pst5 at least 6 pairs of pores present on the ventral interscutal membrane.

Chelicerae (Fig. 14). Fixed digit with 3 teeth and pilus dentilis; movable digit 25 long with 2 teeth.

Spermatheca (Fig. 16). With characteristic very long neck 19 (18-22) in length. Cervix bell-shaped 9 (7-9) in length. Minor duct not visible.

Legs, Palps (Fig. 18). Measurements of legs and palps as follows: Leg I 283 (271-298), Leg II 222 (216-229), Leg III 215 (207-225), Leg IV 296 (285-321) and palp 103 (101-106). There are glands on coxa I with 6 glandular openings. Basitarsus IV with macroseta 34 (32-35) long.

MALE

Dorsum (Fig. 12). Dorsal shield suboval, with a waist; sclerotized and reticulated only on opisthosoma with 18 pairs of setae (j1, j3, j4, j5, j6, J2, J5, z2, z3, z4, z5, Z4, Z5, s4, s6, S2, S4, r3). Length (j1-j5) 243 (239-248); width (s2-s2) 110. Four pairs of large pores are present on dorsal shield: one between j4 and z4, another laterally and at level of setae s4, a third posteriomedially to s6 and a fourth between Z4 and Z5. Sigilles or muscle marks discredible visible mainly on podosoma. All dorsal setae except Z5 which is slightly serrated, smooth and tapering to fine points. Sublateral setae r3 (on dorsal shield) and R1 (on interscutal membrane), smooth. Measurements of setae as follows: j1 8 17, j3 23, j4 14, j5 14, j6 14, J2 17, J5 6, z2 14, z3 20, z4 17, z5 14, Z4 35, Z5 42 (40-43), s4 20, s6 23, S2 24, S4 24, r3 23 and R1 14. Peritremes 108 long (from stigma to apex), extended to level of setae z2; peritremal shield fused with dorsal shield at level of setae r3.

Venter (Fig. 13). Sternogenital shield smooth, with 5 pairs of setae (ST1, ST2, ST3, ST4, ST5) and 3 pairs of pores (pst1, pst2, pst3). Genital organ (go) at anterior margin of sternogenital shield. Length (ST1-ST5) 105 (101-109); width (ST3-ST3) 46. Ventroanal shield sclerotized and sparsely reticulated, with 5 pairs of preanal setae (JV1, JV2, JV3, ZV1, ZV2) and 3 anal setae (α1, α2, α3). Surrounding mem-

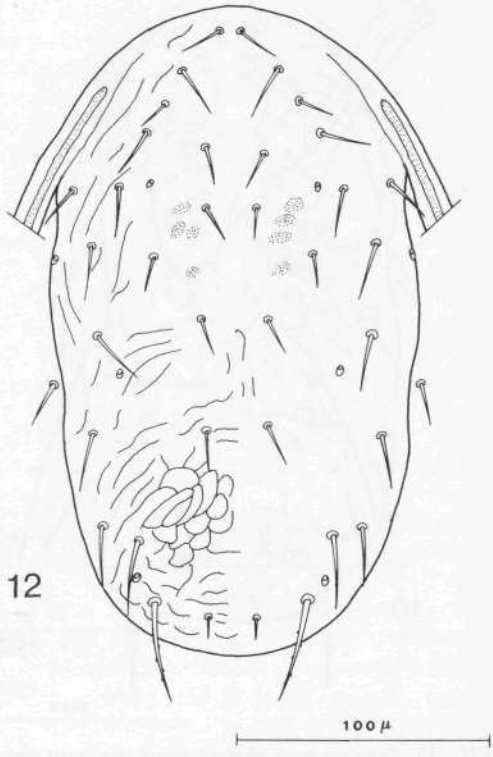


FIG. 12. *Typhlodromus phylaktioticus* spec. nov. male, dorsal shield.

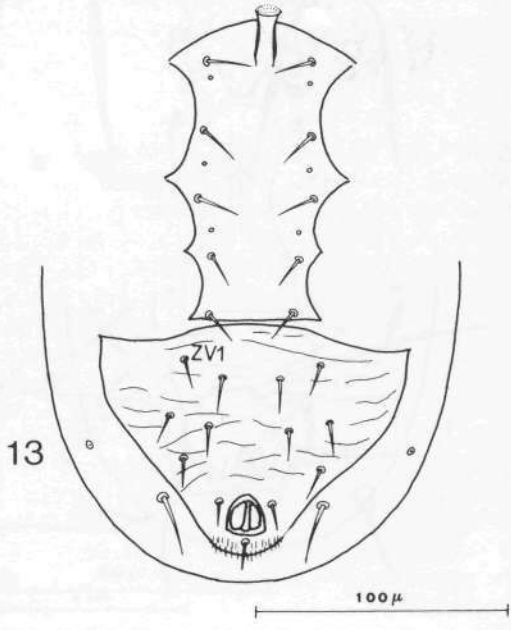
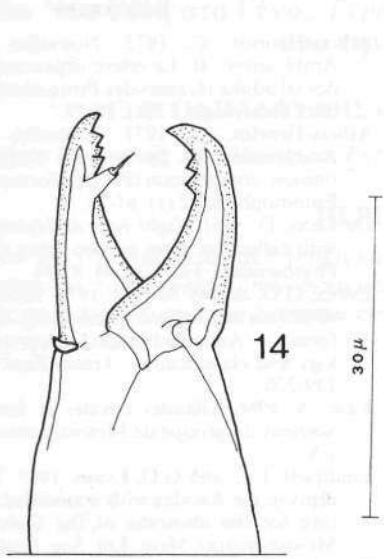
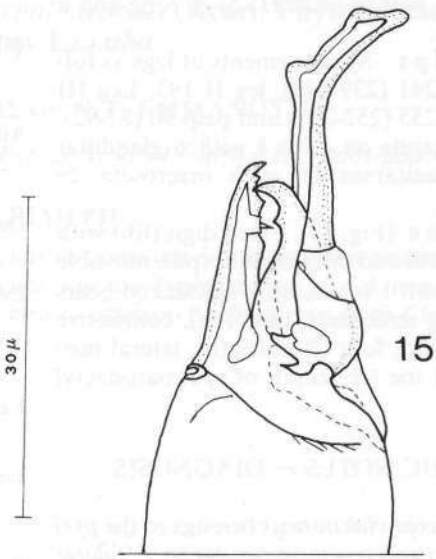
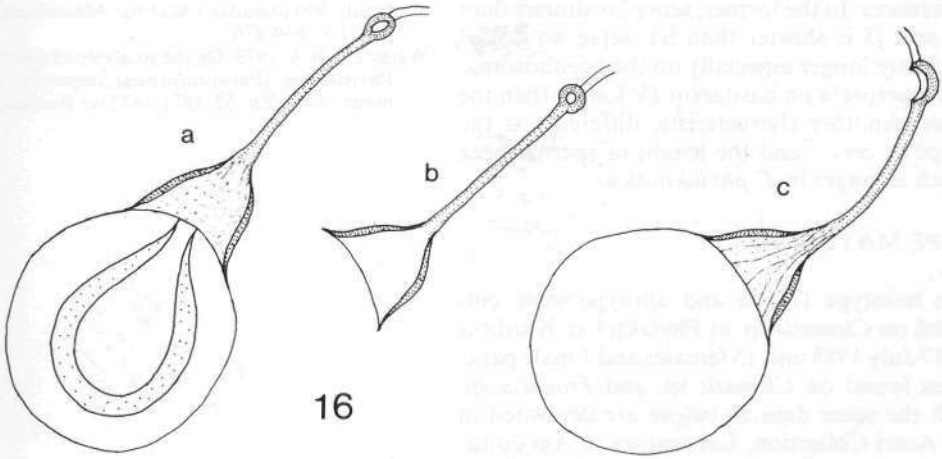
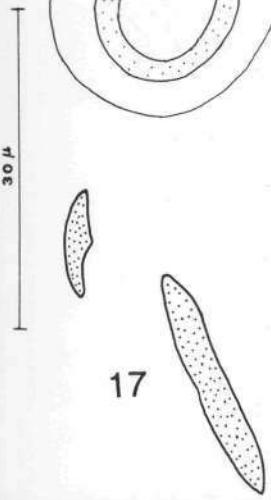


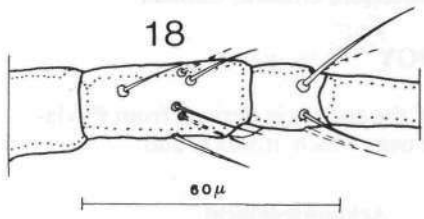
FIG. 13. *Typhlodromus phylaktioticus* spec. nov. male, venter.











FIGS. 14-18. *Typhlodromus phylaktioticus* spec. nov.: 14 chelicerae of female, 15 chelicerae of male, 16 spermatheca (a, b, c, various aspects), 17 primary and secondary metapodal plates of female, 18 basitarsus IV of female.

brane with 1 pair of setae (JV5) 29 long and a pair of pores.

Legs, Palps. Measurements of legs as follows: Leg I 241 (239-243), leg II 193, Leg III 184, Leg IV 255 (252-257) and palp 90 (87-92). There are glands on coxa I with 6 glandular openings. Basitarsus IV with macroseta 26 long.

Chelicerae (Fig. 15). Fixed digit (fdi) with 2-3 visible teeth and pilus dentilis (pd); movable digit (mdi) with 1 tooth. Spermatodactyl bears the following structures: base (ba), connective membrane (cm), foot (ft), heel (h), lateral process (lp) and toe (t); length of spermatodactyl foot 24.

TAXONOMIC NOTES – DIAGNOSIS

Typhlodromus phylaktioticus belongs to the *pyri* species group and it is most similar to *T. tubifer* Wainstein. There are however a number of differences: In the former, seta z2 is shorter than z3; seta j3 is shorter than S4; setae on dorsal shield are longer especially on the opisthosoma; and macroseta on basitarsus IV longer than the latter. Another characteristic difference is the shape of cervix and the lenght of spermatheca which is longer in *T. phylaktioticus*.

TYPE MATERIAL

The holotype female and allotype male collected on *Clematis* sp. at Phylakti Co. Karditsa on 17 July 1988 and 15 females and 1 male paratypes found on *Clematis* sp. and *Fragaria* sp. with the same data as before are deposited in the Acari Collection, Laboratory of Agricultural Zoology and Entomology, Agricultural University of Athens, Greece. In addition, female and male paratypes are in the Canadian National Collection, Ottawa, Canada.

ETYMOLOGY

The name of the species is derived from Phylakti, a village near which it was found.

Acknowledgment

We are grateful to Prof. D.A. Chant and Mrs. E. Shaul, University of Toronto, for their prompt and useful suggestions concerning the identity of these species.

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KEY WORDS: *Acari, Typhlodromus pentelicus* spec. nov., *Typhlodromus phylaktioticus* spec. nov., Phytoseiidae, *Clematis* sp., *Fragaria* sp.

Δύο Νέα Είδη στο Γένος *Typhlodromus* (Acari: Phytoseiidae) από την Ελλάδα

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ΠΕΡΙΛΗΨΗ

Περιγράφονται και σχεδιάζονται τα θηλυκά και τα αρσενικά δύο νέων ειδών ακάρεων της οικογένειας Phytoseiidae, του *Typhlodromus pentelicus* και του *Typhlodromus phylaktioticus*. Το πρώτο είδος βρέθηκε σε κορμό διαφόρων δέντρων ενώ το δεύτερο βρέθηκε στα φυτά *Clematis* sp. και *Fragaria* sp. στην Ελλάδα.