

NEW RECORDS OF PHYTOSEIID MITES FROM GREECE,
WITH A DESCRIPTION OF *TYPHLODROMUS KRIMBASI* SP. NOV.
(ACARINA: PHYTOSEIIDAE)

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ACARI
PHYTOSEIIDAE
TYPHLODROMUS KRIMBASI
QUERCUS COCCIFERA
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SUMMARY: Six species of phytoseiid mites, *Amblyseius aurescens* Athias-Henriot, *A. obtusus* (Berlese), *A. tauricus* Livshitz & Kuznetzov, *Typhlodromus pritchardi* Arutunjan, *T. triporus* Chant & Yoshida-Shaul and *T. tuberculatus* Wainstein are recorded for the first time in Greece. The female of *Typhlodromus krimbasi* sp. nov. found on *Quercus coccifera* L. is described and illustrated.

RÉSUMÉ : Six espèces de la famille Phytoseiidae, *Amblyseius aurescens* Athias-Henriot, *A. obtusus* (Berlese), *A. tauricus* Livshitz & Kuznetzov, *Typhlodromus pritchardi* Arutunjan, *T. triporus* Chant & Yoshida-Shaul et *T. tuberculatus* Wainstein sont signalées pour la première fois en Grèce. La femelle de *Typhlodromus krimbasi* sp. nov. récoltée sur *Quercus coccifera* L. est décrite et illustrée.

INTRODUCTION

The present study deals with six new records of Phytoseiidae from Greece and describes a new species *Typhlodromus krimbasi*, collected from *Quercus coccifera* L.

Setal nomenclature is based on the system of LIN-DQUIST & EVANS (1965) as adapted for the family Phytoseiidae by ROWELL *et al.* (1978). Other terminology follows ATHIAS-HENRIOT (1975, 1977) for organotaxy, EVANS & TILL (1979) for the ventral pores and leg chaetotaxy and WAINSTEIN (1973b) for the spermatheca. The dorsal and ventral setal pattern notations follow CHANT & YOSHIDA-SHAUL (1989b, 1991, 1992). All measurements are given in micrometres for an average of 3 females.

Permanent slide mounts of these Acari have been deposited in the collection of mites in the Laboratory of Agricultural Zoology & Entomology, Agricultural University of Athens.

NEW RECORDS FOR GREECE

1. *Amblyseius aurescens* Athias-Henriot

Amblyseius aurescens ATHIAS-HENRIOT, 1961: 441; SCHUSTER & PRITCHARD, 1963: 261; ATHIAS-HENRIOT, 1966: 215; LIVSHITZ & KUZNETZOV, 1972: 25; WAINSTEIN & SHCHERBAK, 1972: 43; SCHICHA, 1987: 115-116.

Neoseiulus aurescens (Athias-Henriot); TUTTLE & MUMA, 1973: 20.

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Amblyseius (Amblyseius) aurescens ATHIAS-HENRIOT; WAINSTEIN, 1977: 1415; UECKERMAN & LOOTS, 1988: 146.

Specimens examined — Katsikas, Co. Ioannina, 1994, on grass; Voras Mountain (2300 m altitude), Co. Pella, 1994 on unidentified low-growing plants.

Previous records — The type specimens were collected from litter under cut *Ulex europaeus* in Spain. This species has also been recorded from Algeria, U.S.A. (California, Arizona), the former U.S.S.R. (Ukraine, Crimea, Georgia) and Australia.

2. *Amblyseius obtusus* (Koch)

Zercon obtusus Koch, 1839; CANESTRINI & FANZAGO, 1876: 130-141; OUDEMANS, 1930: 71.

Sejus obtusus (Koch); BERLESE, 1889: 7.

Amblyseius obtusus (Koch); BERLESE, 1914: 144; ATHIAS-HENRIOT, 1957: 340-341; LIVSHITZ & KUZNETZOV, 1972: 23; WAINSTEIN & SHCHERBAK, 1972: 35; DENMARK & MUMA, 1989: 7-8.

Typhlodromus obtusus (Koch); CHANT, 1957: 306; KARG, 1960: 443.

Typhlodromus (Amblyseius) obtusus (Koch); CHANT, 1959: 90.

Amblyseius (Amblyseius) obtusus (Koch); MUMA, 1961: 287; EHARA, 1966: 22; WAINSTEIN, 1973a: 178; WAINSTEIN, 1975: 916; UECKERMAN & LOOTS, 1988: 68-70.

Typhlodromus perlóngisetus affásetus WAINSTEIN, 1960: 683. (Synonymy by KARG, 1971; WAINSTEIN, 1975).

Amblyseius microsetae MUMA, 1961: 289 (Synonymy by DENMARK & MUMA, 1989).

Amblyseius hamíensis ATHIAS-HENRIOT, 1961 (Synonymy by ATHIAS-HENRIOT, 1966; WAINSTEIN, 1975).

Amblyseius rhabdus DENMARK, 1965: 95 (Synonymy by DENMARK & MUMA, 1989).

Amblyseius kurashvili GOMELAURI, 1968: 515-517 (Synonymy by WAINSTEIN, 1975)

Amblyseius bajulus CHAUDHRI, 1979: 70 (Synonymy by DENMARK & MUMA, 1989)

Specimens examined — Katsikas, Co. Ioannina, 1994, on grass; Voras Mountain (2300 m altitude), Co. Pella, 1994, on unidentified low-growing plants.

Previous records — The type locality is unknown. BERLESE (1889) collected his specimens from moss in Florence, Italy. This species has also been recorded from Algeria, Germany, Pakistan, Sweden, U.S.A. (Florida) and the former U.S.S.R., mainly on grass, in moss, soil and litter.

3. *Amblyseius tauricus* Livshitz & Kuznetzov

Amblyseius tauricus LIVSHITZ & KUZNETZOV, 1972: 24; KOLODOCHKA, 1973; KOLODOCHKA, 1978.

Specimens examined — Voras Mountain (2300 m altitude), Co. Pella, 1994, on unidentified low-growing plants; Smolikas Mountain (2500 m altitude), Co. Ioannina, 1994, on unidentified herbaceous plants.

Previous records — The type specimens were collected on *Teuctrium polium*, *Stachys cretica*, *Asperula humifusa*, *Achillea* sp., *Medicago* sp., in Crimea (former U.S.S.R.). This species has been recorded on *Echium* sp., *Leanurus cardiaca*, litter, soil and rodent nests in Ukraine (former U.S.S.R.).

4. *Typhlodromus pritchardi* Arutunjan

Typhlodromus pritchardi ARUTUNJAN, 1971: 306; ARUTUNJAN, 1977: 45; WAINSTEIN, 1975: 138; KOLODOCHKA, 1981: 18; CHANT & YOSHIDA-SHAUL, 1987: 1800-1801; DENMARK, 1992a: 13-15; DENMARK, 1992b: 23-24.

Specimens examined — Parnis Mountain (1200 m altitude), Co. Attiki, 1994, in moss.

Previous records — The type specimens were collected on *Fragaria* sp. in Armenia (former U.S.S.R.). This species has been recorded on *Pinus* sp., *Primula vulgaris*, *Prunus spinosa* in Crimea (former U.S.S.R.) and on herb, linden and mountain ash in Yavoslave Province (former U.S.S.R.).

5. *Typhlodromus triporus* Chant & Yoshida-Shaul

Typhlodromus triporus CHANT & YOSHIDA-SHAUL, 1982: 3029-3031.

Specimens examined — Rodopi Mountain (1400 m altitude), Co. Drama, 1992, on *Quercus* sp.

Previous records — The type specimens were collected from miscellaneous plants in Italy. This species has also been recorded from Canada, England, Germany, Portugal, U.S.A. (California) and the former U.S.S.R. (Crimea, Georgia, Kazakstan, Lenigrad, Moldavia).

6. *Typhlodromus tuberculatus* Wainstein

Typhlodromus tuberculatus WAINSTEIN, 1958: 205–206; WAINSTEIN, 1961: 160; HIRSCHMANN, 1962: 12; CHANT & YOSHIDA-SHAUL, 1989a: 1015.

Typhlodromus (Seiulus) tuberculatus Wainstein; EHARA, 1966: 17.

Typhloctonus (Typhloctonus) tuberculatus (Wainstein); WAINSTEIN, 1973a: 176.

Typhloctonus tuberculatus (Wainstein); ARUTUNIAN, 1977: 55; DENMARK & RATHER, 1984: 175–176.

Seiulus (Typhloctonus) tuberculatus (Wainstein); BEGLYAROV, 1981: 19.

Seilus sexapori KARG & EDLAND, 1987: 388 (synonymy by CHANT & YOSHIDA-SHAUL, 1989a).

Specimens examined – Kotyli (1500 m altitude), Co. Kastoria, 1994, on *Acer* sp.

Previous records – The type specimens were collected on *Acer* sp. in Georgia (former U.S.S.R.). This species has been recorded from Caucasus, Moldavia (former U.S.S.R.) and Norway.

Typhlodromus krimbasi sp. nov.

(Figs 1–8)

Female (Figs 1–8) – Dorsum (Fig. 1) – Dorsal setal pattern 12A: 8A (r3 and R1 off shield). Dorsal shield strongly sclerotized, reticulated with distinct waist, bearing 5 pairs of solenostomes: between j4 and z4, posterolaterally to s4, posteromedially to s6, anterior to Z4, near to S5. Small pores (sensillae) not visible on dorsal shield. Muscle marks (sigilla) visible only on podosoma. Length of dorsal shield (j1–J5) 312 (308–317); width (distance between bases of S2) 161. All dorsal setae (except j1, j4, j5, z2, z5 which are smooth) slightly (j3, j6, J2, J5, z3, z4) to distinctly (Z4, Z5, s4, s6, S2, S4, S5) serrated. Setae Z4, Z5, S2, S4, S5 located on tubercles; Z5 with bulbous tip, longer than others. Sublateral setae r3 and R1 on interscutal membrane, smooth. Measurements of setae as follows: j1 26 (25–27), j3 35 (34–36), j4 17 (16–18), j5 21 (20–22), j6 29 (27–31), J2 36, J5 13, z2 23, z3 32 (31–32), z4 37 (36–38), z5 23, Z4 49, Z5 62 (59–65), s4 39 (38–40), s6 43 (41–45), S2 47, S4 48 (47–49), S5 41 (40–41), r3 27 (25–29) and R1 30 (29–31). Peritreme 193 (188–197) in length (from stigma to apex) extended at level of j1.

Venter (Figs 2–4) – Ventral setal pattern 15: JV: ZV. Sternal shield smooth faintly sclerotized; three pairs of sternal setae (ST1, ST2, ST3) and two pairs of pores (pst1, pst2); posterior margin of sternal shield not visible, so that ST3 may be on or off the sternal shield. Width of sternal shield (ST2–ST2) 62 (61–63). Metasternal setae (MS) and a pair of pores (pst3) on ventral interscutal membrane. Genital shield smooth, slightly sclerotized; width (at level of setae G) 63; pst5 laterally to posterior part of genital shield. Ventrianal shield smooth, not reticulated with 4 pair of preanal setae (JV1, JV2, JV3, ZV2), anal setae (a1, a2, a3), a pair of small crescentic solenostomes posteromedially between of setae JV2 and muscle marks posterolaterally. Length of ventrianal shield 100 (97–103); width 89 (88–90). Setae JV4, JV5, ZV1, ZV3 on integument surrounding ventrianal shield. Setae JV5 serrated much longer 41 (40–41) than others. Metapodal plates as shown in Fig. 6; length of primary metapodal plates 23; width 5. In addition to pst5 at least 6 pairs of pores are present on ventral interscutal membrane.

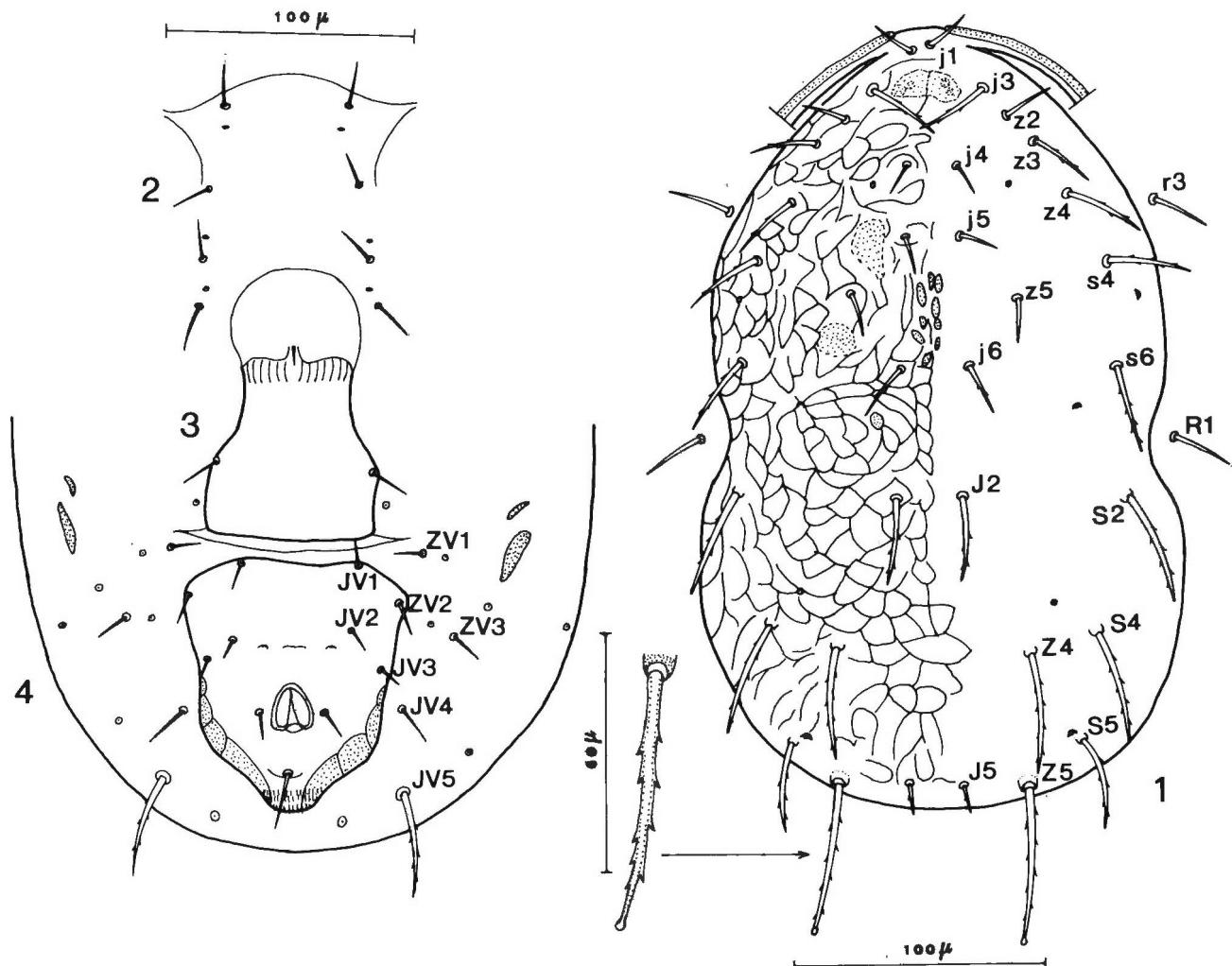
Chelicerae (Fig. 5) – Fixed digit 24 (23–25) long with 4 visible teeth and *pilus dentilis*; movable digit 25 long with 3 teeth.

Legs, Palps (Fig. 8) – Measurements of legs (base of coxae to base of claws) and palp (base of trochanter to apex of tarsus) as follows: Leg I 287 (280–294), Leg II 250 (248–252), Leg III 250 (243–257), Leg IV 330 (327–333) and palp 101. Leg IV carries 3 macrosetae with bulbous tip: on genu 20 long, on tibia 20 and on basitarsus 29. Genu II with 7 setae. Chaetotactic formulae of leg segments as follows: femur I 2-5/3-2; genu I 2-2/1, 2/1-1; tibia I 2-2/1, 2/1-2; femur II 2-5/2-1; genu II 2-2/0, 2/0-1; tibia II 2-1/1, 2/1-1; femur III 1-3/1-1; genu III 1-2/1, 2/0-1; tibia III 1-1/1, 2/1-1; femur IV 1-3/1-1; genu IV 1-2/1, 1/1-1; tibia IV 1-1/1, 1/1-1.

Spermatheca (Fig. 7) – Cervix tube-shaped with a raised ring-like area in its middle distance. Atrium bulbous connected with the cervix; major duct long and narrow; minor duct not visible. Length of spermatheca 16.

Male – Unknown.

Type material – The holotype female collected on *Quercus coccifera* L. at Hymmetos Mountain near Kaessariani Monastery on 20 October, 1987 and



Figs. 1-4: *Typhlodromus krimbasi* sp. nov., female.
1.—Dorsal shield. 2.—Sternal shield. 3.—Genital shield. 4.—Ventrianal shield.

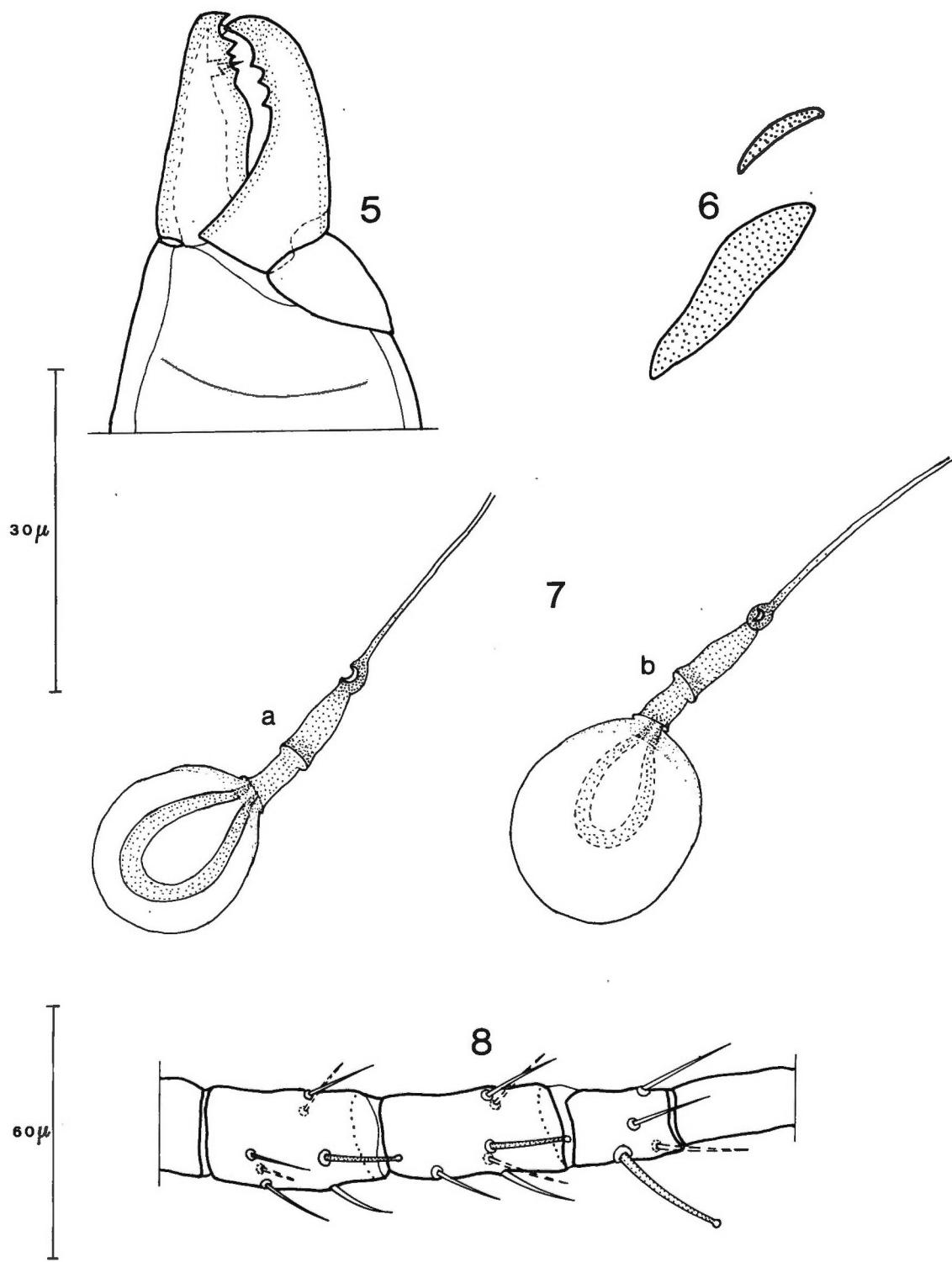
2 female paratypes found on the same host and the same region on 5 February, 1988, are deposited in the Acari Collection, Laboratory of Agricultural Zoology & Entomology, Agricultural University of Athens, Greece.

Etymology — This species is named in honour of Constantinos KRIMBAS, Professor of Genetics at the Agricultural University of Athens.

TAXONOMIC NOTES – DIAGNOSIS

T. krimbasi resembles the species: *T. brisbanensis* Schicha (1978), *T. caudiglans* Schuster (1959), *T. fles-*

chneri Chant (1960), *T. porathi* Swirski & Amitai (1967) and *T. wainsteini* (Abbasova, 1970) which possess bulbous tip of setae Z5 and similar shape of spermatheca; it can be distinguished, however, by the following combination of characters: longer length of dorsal setae, serration of many setae of dorsal shield, 5 solenostomes of dorsal shield, 3 teeth of movable digit of chelicerae, 3 bulbous tipped macrosetae of leg IV and solenostomes of ventrianal shield.



Figs. 5-8: *Typhlodromus krimbasi* sp. nov., female.
5. — Chelicerae. 6. — Metapodal plates. 7. — Spermatheca (a, b various aspects). 8. — Leg IV.

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