[SHORT COMMUNICATION]

The Occurrence of *Typhlodromus (Anthoseius) transvaalensis* (Nesbitt) (Acari: Phytoseiidae) in Japan

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INTRODUCTION

In recent years, several taxonomic reports on the mite family Phytoseiidae from Japan have been published (Ehara et al., 2000, 2006; Ehara and Amano, 2002, 2004; Ehara, 2007; Ehara and Kishimoto, 2007). Thus a total of eighty-nine species of this family were previously known to occur in this country. Recently specimens of an unfamiliar phytoseiid species were found in Kishimoto's laboratory culture of a phytoseiid *Scapulaseius okinawanus* (Ehara) (cf. Kishimoto, 2005). The former is assigned to *Typhlodromus (Anthoseius) transvaalensis* (Nesbitt), so far unrecorded from Japan, is redescribed, based upon the present specimens.

Setal notations used here follow those of Rowell et al. (1978) for the dorsal surface and Chant and Yoshida-Shaul (1991) for the ventral surface of the idiosoma. Measurements are given in micrometers (µm). The present materials are retained in the collection of the Kuchinotsu Citrus Research Station and Ehara's private collection.

***Typhlodromus (Anthoseius) transvaalensis* (Nesbitt)**

[Japanese name: Toransubāru-kaburidani]

(Figs. 1-8)

Kampimodromus transvaalensis Nesbitt, 1951: 55, not illustrated. [Type locality: Nylstroom,

Transvaal, South Africa; type habitat: ground peanut]

Typhlodromus transvaalensis: Chant 1955: 498.

Typhlodromus (Typhlodromus) transvaalensis: Chant 1959: 60, figs. 68-69.

Neoseiulus transvaalensis: Muma 1961: 295.

トランスバールカブリダニ *Typhlodromus (Anthoseius) transvaalensis* (カブリダニ科) の日本からの発見
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Figs. 1–3. *Typhlodromus (Anthoseius) transvaalensis* (♀). 1, dorsal shield; 2, posterior ventral surface; 3, metapodal shields.

Typhlodromus (Neoseiulus) transvaalensis: Pritchard and Baker 1962: 222.

Clavidromus transvaalensis: Muma and Denmark 1968: 238.

Mumaseius transvaalensis: Abbasova 1970: 1410, fig. 1.

Anthoseius (Anthoseius) transvaalensis: Wainstein and Vartapetov 1973: 104.

Anthoseius transvaalensis: Begljarov 1981: 21.

Typhlodromus (Anthoseius) transvaalensis: Chant and McMurtry 1994: 252, figs. 109–110.

Typhlodromus jackmicleyi De Leon, 1958: 75, figs. 9–11 [Type loc.: Coral Gables, Florida; type hab.: *Conocarpus erecta* L.] Synonymy by Muma and Denmark (1968).

Typhlodromus pectinatus Athias-Henriot, 1958: 179, fig. 1, A–B [Type loc.: Baraki, Alger, Algeria; type hab.: polypore] Synonymy by Muma and Denmark (1968).

Female. Idiosomal setal pattern (Chant and Yoshida-Shaul, 1992): 12A:8A/JV-3:ZV.

Dorsal shield (Fig. 1) reticulate, with 4 pairs of solenostomes. Most of dorsal idiosomal setae long, serrated, capitate; z2, S5, and J5 attenuate: z2 serrated, S5 smooth, much smaller, J5 similar to S5 in size, with basal barbs. Peritreme anteriorly reaching the level of j3 base. Posterior extension of peritrematic shield with termination as illustrated (Fig. 5). Sternal shield with ST1 and ST2, with posterior margin protruded to terminate in a truncate end (Fig. 4); ST3 on platelets. Ventrianal shield much longer than wide, narrower than genital shield, with lateral margins slightly concave; with JV1, ZV2, JV2; preanal solenostomes absent (Fig. 2). JV5 long, serrated, capitate (Fig. 2). Two pairs of slender metapodal shields

Figs. 4–8. *Typhlodromus (Anthoseius) transvaalensis* (♀). 4, sternal shield; 5, posterior termination of peritrematic shield; 6, spermatheca; 7, chelicera; 8, genu, tibia, and basitarsus of leg IV.

(Fig. 3). Spermathecal calyx elongate, with distal portion strongly sclerotized; atrium distinct, situated between proximal extremity of calyx and major duct (Fig. 6).

Fixed digit of chelicera with 3 subapical teeth plus pilus dentilis; movable digit unidentate (Fig. 7). Tibia IV with 3 capitate macrosetae (St, Sti, Sge) (Fig. 8). Legs I–III without macrosetae.

Measurements ($n=10$, mean $\pm$ SE): idiosoma: length 476 ± 10 , width 376 ± 15 ; dorsal shield: length 389 ± 6 , width 253 ± 2 ; ventrianal shield: length 135.6 ± 2.3 , width 83.3 ± 0.6 ; lengths of setae: j1 32.8 ± 0.3 , j3 42.6 ± 0.4 , j4 31.2 ± 0.5 , j5 32.3 ± 0.4 , j6 38.9 ± 0.5 , J2 45.6 ± 0.5 , J5 10.7 ± 0.2 , z2 25.6 ± 0.4 , z3 40.1 ± 0.3 , z4 45.1 ± 0.5 , z5 28.6 ± 0.3 , Z4 55.5 ± 0.5 , Z5 67.1 ± 0.7 , s4 49.5 ± 0.4 , s6 50.1 ± 0.7 , S2 55.9 ± 0.4 , S4 57.2 ± 0.7 , S5 8.5 ± 0.4 , r3 37.8 ± 0.4 , R1 42.6 ± 0.4 , JV5 60.3 ± 0.6 , SgeIV 27.0 ± 0.3 , StiIV 27.8 ± 0.2 , StIV 48.2 ± 0.5 .

Male. Not known. This species reproduces by thelytoky (Wysoki and Bolland, 1983).

Specimens examined. Eight ♀, Kuchinotsu, Minami-Shimabara, Nagasaki Pref., 20–IV–2007, from rearing arena (food: tea pollen; cf. Kishimoto, 2005) of a phytoseiid species *Scapulaseius okinawanus* (Ehara), H. Kishimoto leg; 4 ♀, 10–VII–2007, descendant by rearing for successive generations of associates of the above invaders, H. Kishimoto leg.

Remarks. This species is distinctive in having most of the dorsal idiosomal setae long, serrated and capitate, and the ventrianal shield with 3 pairs of preanal setae and without preanal solenostomes. It resembles *Typhlodromus (Anthoseius) hartlandrowei* Evans, but differs in having the sternal shield with 2 pairs of setae, and the ventrianal shield much longer than wide, as opposed to sternal shield with 3 pairs of setae and ventrianal shield approximately as long as wide in *hartlandrowei* (Evans, 1958). This species, as well as *hartlandrowei*, is assigned to the *transvaalensis* species group of the subgenus *Anthoseius* (Schicha and Corpuz-Raros, 1992).

For *T. (A.) transvaalensis*, the fixed digit of chelicera has been reported to bear 2 teeth. But, as far as the present examination goes, it is provided with 3 teeth, of which 2 are extremely adjacent. In addition, each of setae ST3 is found to occur on a separate platelet, whilst in some of previous papers it was illustrated as being present on interscutal membrane.

Habitats and distribution. This species was originally described from ground peanuts in Transvaal, and *Rattus* sp. in Florida (Nesbitt, 1951). It occurs in many parts of the world, mainly in the tropical and subtropical areas (Moraes et al., 2004), on various kinds of plants including citrus, coconut tree, sugarcane, bean, asparagus, etc. (cf. Muma et al., 1971).

The present materials were detected in laboratory culture of *Scapulaseius okinawanus* in Kyushu. *T. (A.) transvaalensis* is new to the fauna of Japan. Nesbitt (1951) found this species in association with “small Acari.” Prasad (1968) recorded it from laboratory cultures of the mites, *Dermatophagoides* sp. (Pyroglyphidae) and *Nabiseius* (Otopheidomenidae) and from rat nest on tree in Hawaii. In Israel it was found in a dunghill of donkey and on chocolates (Amitai and Swirski, 1978). It was also collected from the stored commodity in the Philippines (Corpuz-Raros et al., 1988). In short, this species is unusual in that it is found not only on plants but also in other various habitats.

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