

# A New Species of the Genus *Amblyseius* (Acari: Phytoseiidae) from Korean Deciduous Plants

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A new acari species, *Amblyseius arcus* n. sp., is described from Korea. This species was collected on the deciduous plants, *Quercus acutissima*, *Morus alba*, and *Viburnum wrightii* at Whasim-ri, Soyang-myon, Wanju-gun, Chollabuk-do, Korea.

Mites of the family Phytoseiidae are predators of plant feeding mites, such as tetranychids, tenuipalpids, tarsonemids and eriophyids and of some insects, most of which are agricultural pests. Therefore many phytoseiid mites are used as biological control agents in a number of agricultural ecosystem. Phytoseiid mites are generally found on the various plant habitats such as deciduous plants, conifers, shrubs, herbs and vines, though a few mites were found from soil in Korea.

The family Phytoseiidae contains three subfamilies, Amblyseiinae, Phytoseiinae, and Typhlodrominae. Of these, the Amblyseiinae is the largest group, represented by more than 986 species, whereas Phytoseiinae and Typhlodrominae has 142 and 452 species, respectively (Chant and McMurtry, 1994).

The key character of the genera in the family Phytoseiidae is the number and placement of the seta on the dorsal shield. The genus *Amblyseius* is characterized by having 17 pairs (j1, j3, j4, j5, j6, J2, J5, z2, z4, z5, Z1, Z4, Z5, s4, S2, S4, and S5) of setae on the dorsal shield of adult female.

In this study, a new species of the genus *Amblyseius* is described based on specimens collected from deciduous plants, *Quercus acutissima*, *Morus alba*, and *Viburnum wrightii* in Korea in 1997. The specimens were kept in 70% alcohol and mounted on slides with PVA solution (Downs, 1943). The setal nomenclature is based on that of Rowell et al. (1978). All measurements are given in micrometers. Length of dorsal shield is distance between seta j1 and J5, width is distance between bases of the seta s4. The type series of the new species is deposited in the Faculty of Biological Sciences, College of Natural Sciences, Chonbuk National University.

## Description

Family Phytoseiidae Berlese, 1916

Subfamily Amblyseiinae Berlese, 1961

Genus *Amblyseius* Berlese, 1914

*Amblyseius arcus* n. sp.

(Korean name: Whal-iriungae)

(Fig. 1)

Type series. Holotype: ♀, collected from the leaves of *Quercus acutissima* on the hill at Whasim-ri, Soyang-myon, Wanju-gun, Chollabuk-do (35° 49' 81" N, 127° 17' 07" E), August 2, 1997. Paratypes: 12 ♀♀, 6 ♂♂, data same as holotype; 1 ♀, data same as holotype except June 8, 1997; 2 ♀♀, data same as holotype except July 13, 1997; 1 ♀, data same as holotype except *Morus alba*, May 23, 1997; 1 ♀, data same as holotype except *Viburnum wrightii*, May 28, 1997. All type specimens were collected by the author.

Adult female: Dorsal shield smooth; 346 (334-358) long, 178 (164-184) wide; at least 6 pairs of small pores. Setae on dorsal shield: Z5 the longest, barbs; Z4 barbs, longer than s4; j1 shorter than j3; remaining setae much shorter, smooth (Fig. 1A). Sternal shield with posterior margin nearly straight, with 3 pairs of setae; metasternal platelets longer than wide (Fig. 1B). Ventrianal shield much longer than wide, with lateral margins concave, narrower than genital shield; 3 pairs of preanal setae; a pair of crescentric pores almost between setae JV2 (Fig. 1C). Setae JV5 smooth. Two pairs of slender metapodal platelets. Spermatheca with bow-shaped cervix in 11.9 (10.4-14.0) wide (Fig. 1D, 1E). Fixed digit of chelicera 13 teeth, with pilus dentilis; movable digit with 4 teeth (Fig. 1F). Peritreme extending beyond seta j1; peritrematal shield fused anteriorly with dorsal shield (Fig. 1A). Number of setae on leg segments: Genua 10-7-7-7; tibiae 10-7-7-6; genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 3 whip-like macrosetae, genu, tibia, and basitarsus; the macroseta on genu about as long as that on basitarsus and longer than that on tibia (Fig. 1G). Lengths of setae (n=10, mean ± S.E.): j1 24.8 ± 0.5, j3 37.7 ±

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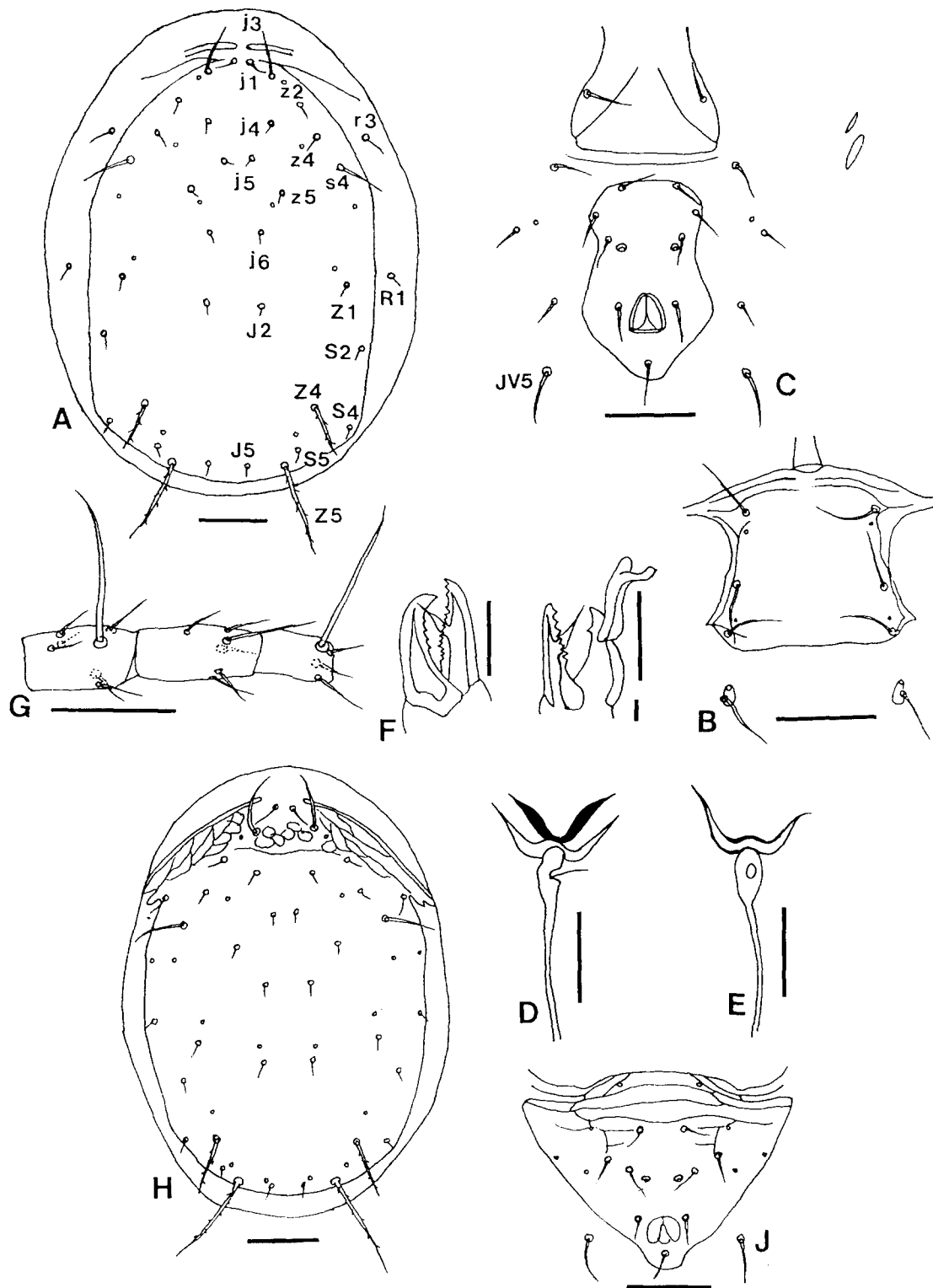


Fig. 1. *Amblyseius arcus* n. sp. A, Dorsum of idiosoma (♀). B, Sternal shield (♀). C, Posterior ventral surface (♀). D, E, Spermatheca. F, Chelicera (♀). G, Genu, tibia, and basitarsus (♀). H, Dorsum of idiosoma (♂). I, Chelicera (♂). J, Ventral shield (♂). Scale bars=10 μm (D, E), 20 μm (F, I), and 50 μm (A, B, C, G, H, J).

0.4, j4  $8.2 \pm 0.2$ , j5  $7.0 \pm 0.2$ , j6  $8.3 \pm 0.4$ , J2  $9.3 \pm 0.4$ ,  
J5  $7.4 \pm 0.2$ , z2  $12.9 \pm 0.2$ , z4  $9.6 \pm 0.4$ , z5  $6.7 \pm 0.2$ ,

Z1  $9.9 \pm 0.2$ , Z4  $48.0 \pm 0.9$ , Z5  $88.9 \pm 1.8$ , s4  $40.4 \pm 1.0$ ,  
S2  $10.1 \pm 0.3$ , S4  $8.5 \pm 0.3$ , S5  $7.6 \pm 0.2$ , r3  $15.9 \pm 0.3$ ,

R1  $9.2 \pm 0.2$ , JV5  $44.3 \pm 0.7$ , macrosetae on leg IV; genu  $77.0 \pm 0.6$ , tibia  $44.2 \pm 0.5$ , basitarsus  $77.3 \pm 0.6$ .

Adult male: Dorsal shield smooth; 270 (256-280) long, 145 (140-150) wide. Setae r3 and R1 on dorsal shield. Peritreme not extending to seta j1 (Fig. 1H). Ventrianal shield fused with peritrematal shield, with 3 pairs of preanal setae; 4 pair of small preanal pores; a pair of large crescentric pores almost between setae JV2 (Fig. 1J). Fixed digit of chelicera 7 teeth, with pilus dentilis; movable digit unidentate. Spermatodactyl as Fig. 1I. The number of setae on leg segments: Genua 10-7-7-7; tibiae 10-7-7-6; genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 3 whip-like macrosetae, genu, tibia, and basitarsus; macroseta on genu shorter than that on basitarsus and longer than that on tibia. Lengths of setae (n=6, mean): j1 23.2, j3 38.9, j4 8.0, j5 6.5, j6 (n=5) 8.2, J2 8.3, J5 6.5, z2 (n=5) 10.6, z4 8.7, z5 6.3, Z1 8.5, Z4 41.6, Z5 (n=5) 67.7, s4 34.8, S2 9.3, S4 7.5, S5 6.8, r3 13.2, R1 8.5, JV5 33.5, macrosetae on leg IV; genu 50.7, tibia 35.3, basitarsus 58.4.

**Etymology:** The specific name *arcus* is derived from the Latin *arcus* which means bow, referring to bow-shape cervix spermatheca.

**Remarks:** The present new species, *Amblyseius arcus* is similar to 3 species, *A. yunnanensis* Wu, 1984 (Yingjiang Country, Yunnan Province, China), *A. napaeus* Wainstein, 1978 (Borok, Yaroslavl District, Russia), and *A. jarooa* Gupta, 1977 (Wandrau, Mandaman Is., India). But *A. arcus* is easily distinguished from those species by the cervix shape of spermatheca, the

lengths of dorsal setae, j1, j3, s4, Z4, and Z5, and the lengths of macrosetae on leg IV.

The female of *A. arcus* differs from that of *A. yunnanensis* by the spermatheca with bow-shape cervix (narrow-neck bottle in *A. yunnanensis*), j3 longer than j1 (almost as long as in *A. yunnanensis*), longer than Z5 (65 in *A. yunnanensis*), and longer than macrosetae on leg IV, genu and basitarsus (67.5 and 55 in *A. yunnanensis*), that of *A. napaeus* by the cervix shape of spermatheca (semi-circular in *A. napaeus*), shorter than setae s4 and Z4 (52 and 68 in *A. napaeus*), longer than macrosetae on leg IV, genu and basitarsus (63 and 63 in *A. napaeus*), and that of *A. jarooa* by the cervix shape of spermatheca (funnel in *A. jarooa*), j3 longer than j1 (shorter than in *A. jarooa*), and longer than macrosetae on leg IV, genu, tibia, and basitarsus (53, 38, and 53 in *A. jarooa*).

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