

Two New Species of the Genus *Amblyseiullela* Muma (Acari: Phytoseiidae) from Korea

Myon Ok Ryu and Won Koo Lee

(Department of Biology, College of Natural Sciences, Chonbuk National University, Chonju, Chonbuk 560-756, Korea)

ABSTRACT

Two new species of the phytoseiid mites, *Amblyseiullela chombongensis* n. sp. and *A. odowdi* n. sp. are described from Korea. The genus *Amblyseiullela* belonging to the family Phytoseiidae is recorded for the first time in this country.

Key words: *Amblyseiullela*, Acari, Phytoseiidae, new species, Korea.

INTRODUCTION

Phytoseiid mites are facultative and obligatory predators of phytophagous mites, tetranychids and tenuipalpids. On this account, many phytoseiids have much been studied by many investigators of the world in the field of taxonomy, biology, ecology, and biological control. Diagnostic characters of the genus *Amblyseiullela* Muma, 1961 compared to those of the genus *Amblyseius* Berlese, 1914 are absence of satae J2, S4 and S5 on dorsal shield, generally proscutum of dorsal shield with lateral margin incision indented and a pair of large and distinct pores near seta z5. In this paper, 2 new species of the genus *Amblyseiullela* are described from Korea. The genus *Amblyseiullela* is recorded for the first time in this country. The type series of the new species is deposited in the Department of Biology, College of Natural Sciences, Chonbuk National University.

MATERIALS AND METHODS

The materials of the *Amblyseiullela chombongensis* n. sp. were collected on leaves of the plant, *Ulmus davidiana* Planch. from Mt. Chombong, Kangwon Province, Korea in 1992 and those of the

Amblyseiullela odowdi n. sp. were collected on leaves of the plant *Broussonetia kazinoki* Sieb. from Is. Sonyu, Chonbuk Province, Korea in 1989 and 1994. The specimens of *Amblyseiullela chombongensis* were cleared in Nesbitt's fluid and were mounted in Hoyer's medium and those of *Amblyseiullela odowdi* were kept in 70% alcohol and mounted on slides with Down's (1943) PVA solution. The setal nomenclature was based on that of Rowell et al. (1978). All measurements are given in micrometers.

DESCRIPTIONS

Family Phytoseiidae Berlese 이리응애과

Subfamily Amblyseiinae Muma 순이리응애아과

Genus *Amblyseiullela* Muma 거치이리응애속(신칭)

***Amblyseiullela chombongensis* n. sp.** 거치이리응애 (Figs. 1-9)

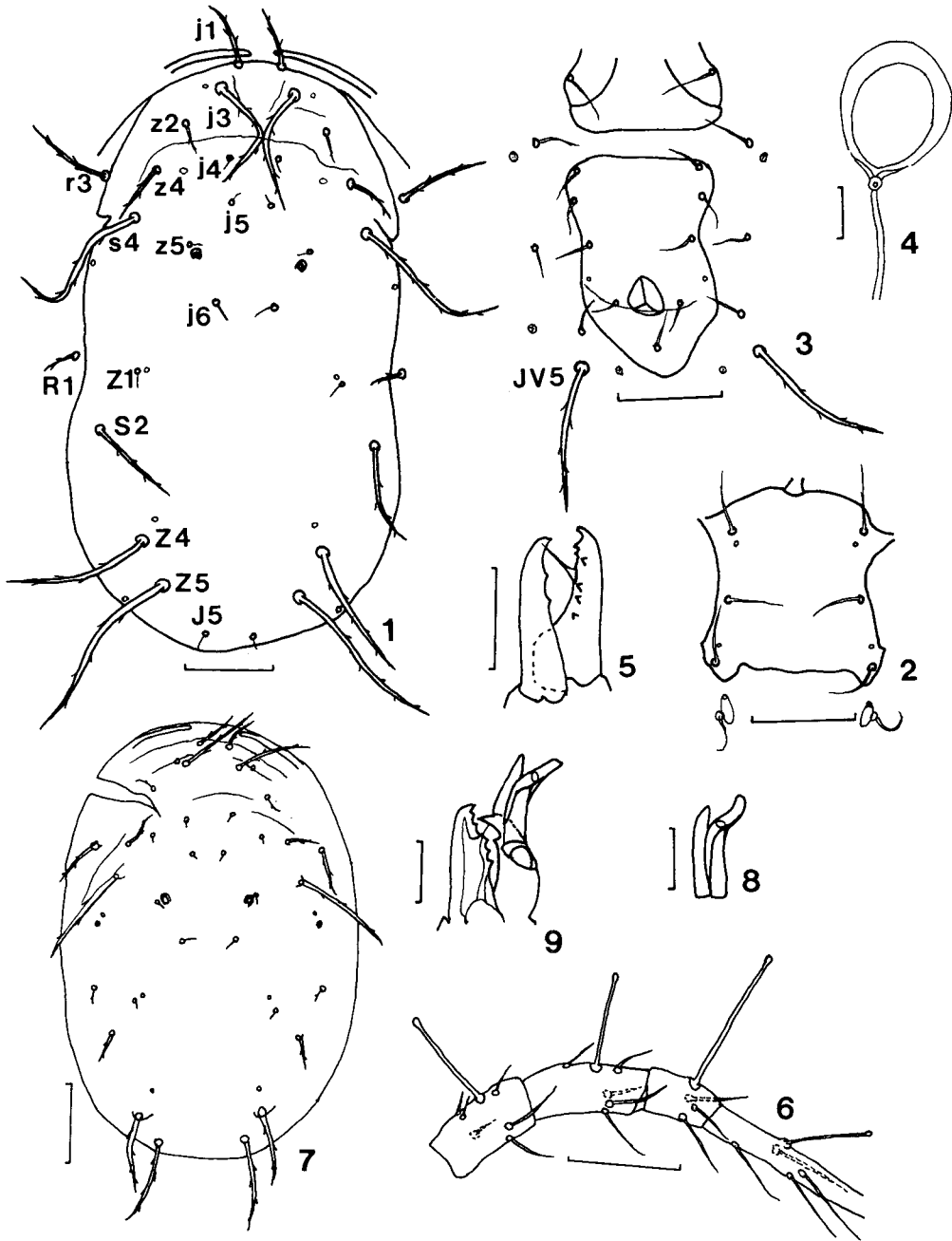
Type series. Holotype: ♀, Kangwon, Mt. Chombong (38°03' N, 128°25' E), 3 Sep. 1992 (D. O'Dowd leg.), on *Ulmus davidiana*. Paratypes: 1♀, 2 ♂♂, with the same above data except 7 Sep. 1992.

Female. Dorsal shield almost smooth; 342 long, 182 wide; with proscutum lateral margin incision indented, with a pair of large and distinct pores posterior to seta z5 and at least 6 pairs of small pores. Setae on dorsal shield: j1, j3, z4, s4, S2, Z4, and Z5 stout, serrate; z2 shorter, slightly serrate, the remaining setae much shorter, smooth. Sternal shield with posterior margin almost straight except lateral corners, with 3 pairs of setae; metasternal platelets longer than wide. Ventrianal shield much longer than wide, with lateral margins scarcely concave, almost as wide as genital shield; 3 pairs of preanal setae; a pair of small pores. Seta JV5 stout, serrate. Spermatheca with short cervix. Fixed digit of chelicera 6 teeth, with pilus dentilis; movable digit with 2 teeth. Peritreme extending beyond of seta j1; peritrematal shield fused anteriorly with dorsal shield. Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 4 macrosetae, those on genu, tibia, basitarsus and telotarsus with capitate. Lengths of setae (n = 2, mean): j1 34.2, j3 68.9, j4 6.7, j5 5.9, j6 10.9, J5 6.7, z2 18.5, z4 33.6, z5 6.7, Z1 8.1, Z4 80.9, Z5 100.2, s4 92.0, S2 46.4, r3 51.9, R1 22.7, JV5 69.2, macrosetae on leg IV: genu 48.1, tibia 42.8, basitarsus 66.8, telotarsus 39.1.

Male. Dorsal shield almost smooth, 256 long, 165 wide; a pair of large and distinct pores near seta z5, at least 4 pairs of small pores. Setae r3 and R1 on dorsal shield. Peritreme not extending to seta j1. Ventrianal shield with 3 pairs of preanal setae; a pair of preanal pores. Fixed digit of chelicera with 5 teeth, with pilus dentilis; movable digit unidentate. Spermatodactyl as figured. Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 4 macrosetae, those on genu, tibia, basitarsus and telotarsus with capitate. Lengths of setae (n = 2, mean): j1 24.8, j3 48.3, j4 5.0, j5 5.0, j6 9.7, J5 4.2, z2 13.5, z4 27.3, z5 5.9, Z1 6.7, Z4 50.0, Z5 60.1, s4 63.5, S2 22.3, r3 31.5, R1 12.6, JV5 21.0, macrosetae on leg IV: genu 31.9, tibia 28.2, basitarsus 45.5, telotarsus 31.5.

Etymology. The specific name is derived from the type locality, Mt. Chombong.

Remark. *Amblyseiullela chombongensis* is very close to *A. amanoi* Ehara 1994 described from Japan. But the female of *A. chombongensis* differs from that of *A. amanoi* by the seta j3 about as



Figs. 1-9. *Amblyseiuella chombongensis* n. sp.: 1, dorsum of idiosoma (♀); 2, sternal shield (♀); 3, posterior of ventral surface (♀); 4, spermatheca; 5, chelicera (♀); 6, genu, tibia and tarsus of leg IV (♀); 7, dorsum of idiosoma (♂); 8, spermatodactyl; 9, chelicera (♂). (Scales: 1-3, 6-7 = 50 μm; 4, 8-9 = 10 μm; 5 = 20 μm).

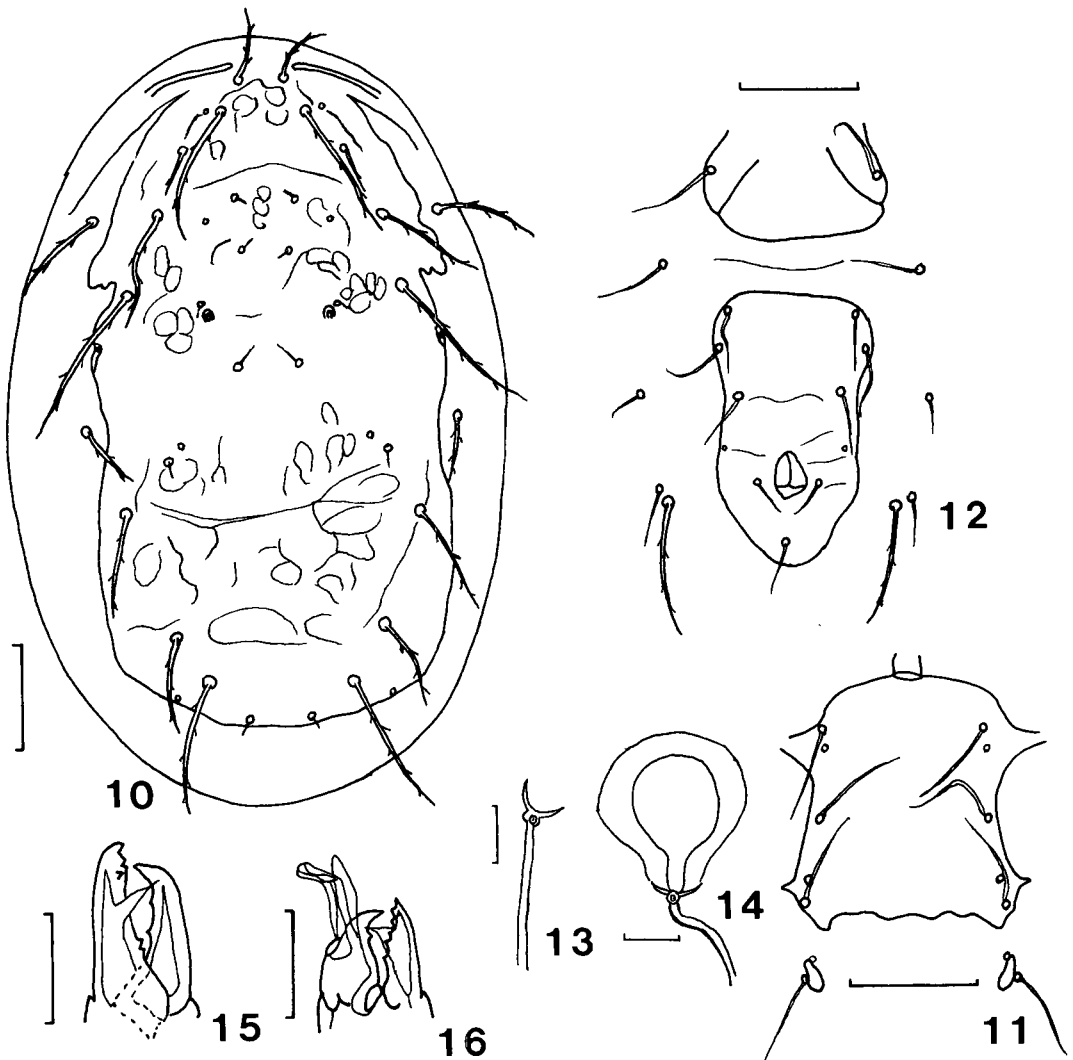
long as JV5 (j3 much longer than JV5 in *A. amanoi*). by the macroseta on genu IV longer than that on telotarsus IV (shorter than in *A. amanoi*), and by the shorter than r3, R1, macroseta on tibia IV and macroseta on basitarsus IV (62.8, 31.1, 51.8 and 82.4 in *A. amanoi*). Moreover, *A.*

chombongensis resembles *A. heveae* (Oudemans, 1930) (Sumatra and redescribed by Ehara, 1977 from Thailand). But, the female of *A. chombongensis* differs from that of *A. heveae* by the seta Z5 slightly longer than s4 (slightly shorter than in *A. heveae*), by the seta j3 about as long as JV5 (longer than in *A. heveae*), by the fixed digit of chelicera with 6 teeth (9-10 teeth in *A. heveae*), and by the movable digit of chelicera with 2 teeth (3 teeth in *A. heveae*).

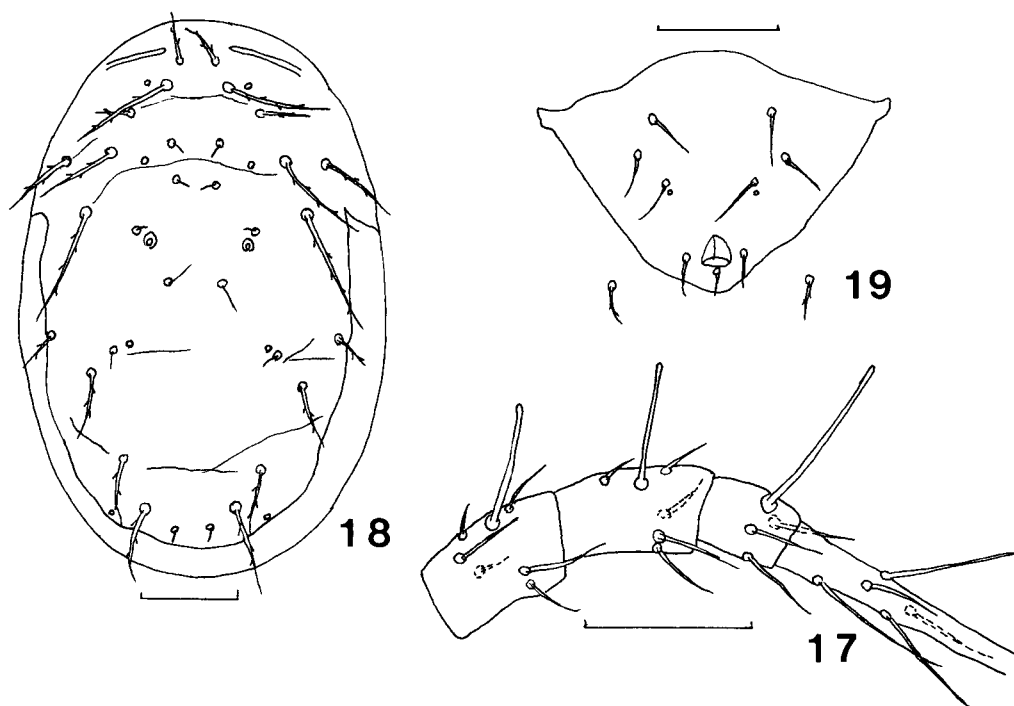
***Amblyseiulella odowdi* n. sp.** 섬이리응애 (Figs. 10-19)

Type series. Holotype: ♀, Chonbuk, Is. Sonyu (35°49'N, 126°25' E), 18 July 1994 (M. O. Ryu leg.), on *Broussonetia kazinoki*. Paratypes: 10 ♀♀, 4 ♂♂, with the same above data.

Additional material examined. 8 ♀♀, Chonbuk, Is. Sonyu, 18 July 1994 (M. O. Ryu leg.), on



Figs. 10-16. *Amblyseiulella odowdi* n. sp.: 10, dorsum of idiosoma (♀); 11, sternal shield (♀); 12, posterior of ventral surface (♀); 13-14, spermatheca; 15, chelicera (♀); 16, chelicera (♂). (Scales: 10-12 = 50 μ m; 13-14 = 10 μ m; 15-16 = 20 μ m).



Figs. 17-19. *Amblyseiuella odowdi* n. sp.: 17, genu, tibia and tarsus of leg IV (♀); 18, dorsum of idiosoma (♂); 19, ventrianl shield (♂). (Scales = 50 μ m).

Broussonetia kazinoki; 19 ♀♀, 5 ♂♂, Chonbuk, Is. Sonyu, 13 Aug. 1989 (N.G. Ko leg.), on *B. kazinoki*.

Female. Dorsal shield almost smooth; 324 long, 173 wide; with proscutum lateral margin incision indented, with a pair of large and distinct pores near seta z5 and at least 5 pairs of small pores. Setae on dorsal shield: j1, j3, z4, s4, S2, Z4, and Z5 stout, serrate; z2 shorter, slightly serrate, the remaining setae much shorter, smooth. Sternal shield with posterior margin not straight, with 3 pairs of setae; metasternal platelets longer than wide. Ventrianl shield much longer than wide, with lateral margins scarcely concave, narrower than genital shield; 3 pairs of preanal setae; a pair of small pores. Seta JV5 stout, serrate. Spermatheca with short cervix. Fixed digit of chelicera 5 teeth, with pilus dentilis; movable digit with 2 teeth. Peritreme not extending to seta j1; peritrematal shield fused anteriorly with dorsal shield. Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 4 macrosetae, those on genu, tibia, and basitarsus with blunt-ended or weakly capitate and that on telotarsus with whip-like or weakly blunt-ended. Lengths of setae (n = 10, mean \pm S.E.): j1 32.7 \pm 0.4, j3 68.3 \pm 0.5, j4 5.9 \pm 0.2, j5 6.2 \pm 0.2, j6 14.3 \pm 0.3, J5 4.7 \pm 0.1, z2 24.0 \pm 0.4, z4 58.6 \pm 0.5, z5 6.7 \pm 0.3, Z1 10.8 \pm 0.4, Z4 47.5 \pm 0.5, Z5 67.6 \pm 0.6, s4 81.6 \pm 0.6, S2 54.4 \pm 0.5, r3 53.8 \pm 0.5, R1 36.6 \pm 0.5, JV5 53.4 \pm 0.5, macrosetae on leg IV: genu 36.8 \pm 0.5, tibia 36.2 \pm 0.5, basitarsus 53.8 \pm 0.5, telotarsus 39.2 \pm 0.5.

Male. Dorsal shield almost smooth, 240 long, 155 wide; a pair of large and distinct pores near seta z5, at least 4 pairs of small pores. Setae r3 and R1 on dorsal shield. Peritreme not extending to seta j1. Ventrianl shield with 3 pairs of preanal setae; a pair of preanal pores. Fixed digit of chelicera

with 5 teeth, with pilus dentilis; movable digit unidentate. Spermatodactyl as figured. Chaetotaxic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with 4 macrosetae, those on genu, tibia, and basitarsus blunt-ended or weakly capitate and that on telotarsus with whip-like or weakly blunt-ended. Lengths of setae ($n = 8$, mean \pm S.E.): j1 25.0 ± 0.4 , j3 50.0 ± 0.5 , j4 5.6 ± 0.3 , j5 5.8 ± 0.2 , j6 12.4 ± 0.4 , J5 4.6 ± 0.3 , z2 18.1 ± 0.4 , z4 45.3 ± 0.7 , z5 6.4 ± 0.3 , Z1 9.1 ± 0.3 , Z4 34.6 ± 0.6 , Z5 41.6 ± 0.6 , s4 58.3 ± 0.7 , S2 33.0 ± 0.6 , r3 36.8 ± 0.6 , R1 20.1 ± 0.5 , JV5 18.9 ± 0.4 , macrosetae on leg IV: genu 25.4 ± 0.4 , tibia 24.4 ± 0.3 , basitarsus 38.1 ± 0.5 , telotarsus 29.1 ± 0.4 .

Etymology. This species is named in honor of Dr. Dennis O'Dowd, Department of Ecology and Evolutionary Biology, Monash University, Australia.

Remark. *Amblyseiullela odowdi* resembles *A. heveae* (Oudemans, 1930) (Sumatra and redescribed by Ehara, 1977 from Thailand), *A. amanoi* Ehara 1994 (Japan), *A. chombongensis* Ryu and Lee, 1995 (Korea), *A. prunii* (Liang and Ke, 1982) (China) and *A. omei* (Wu and Li, 1984) (China). But, the female of *A. odowdi* differs from the females of those species by the seta z4 longer than Z4 (z4 shorter than Z4 in those species). Furthermore, the female of *A. odowdi* differs from that of *A. heveae* by the fixed digit of chelicera with 5 teeth (9-10 in *A. heveae*), by the movable digit of chelicera with 2 teeth (3 in *A. heveae*), by the longer than S2 (44 in *A. heveae*), and by the shorter than macrosetae on leg IV, genu, tibia, basitarsus, and telotarsus (52, 50, 76 and 50 in *A. heveae*), the female of *A. amanoi* by the Z5 shorter than s4 (about as long as in *A. amanoi*), by the shorter than j3 (82.1 in *A. amanoi*), by the r3 less than twice R1 (about twice in *A. amanoi*), and by the shorter than macrosetae on leg IV, genu, tibia, basitarsus and telotarsus (51.7, 51.8, 82.4 and 58.1 in *A. amanoi*), the female of *A. chombongensis* by the seta Z5 shorter than s4 (slightly longer than in *A. chombongensis*), by the r3 less than twice R1 (more than in *A. chombongensis*), and by the shorter than macrosetae on leg IV, genu, tibia and basitarsus (48.1, 42.8 and 66.8 in *A. chombongensis*), the female of *A. prunii* by the fixed digit of chelicera with 5 teeth (8 teeth in *A. prunii*), by the longer than seta S2 (43.0 in *A. prunii*), the r3 less than twice R1 (more than in *A. prunii*), and by the macroseta on genu IV as long as that on tibia IV (longer than in *A. prunii*) and the female of *A. omei* by the shorter than Z5 and s4 (82.5-86.5 and 97.5-102.5 in *A. omei*), by the longer than S2 (33.75-35 in *A. omei*), the fixed digit of chelicera with 5 teeth (10-12 in *A. omei*), by the movable digit 2 teeth (3 in *A. omei*), and by the shorter than macrosetae on leg IV, genu, tibia, basitarsus and telotarsus (65, 58.75-60, 92.5-100 and 60-62.5 in *A. omei*).

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한국산 *Amblyseiullela*속(진드기목: 이리응애과)의 2신종

류 면 옥 · 이 원 구

(전북대학교 자연과학대학 생물학과)

요 약

한국산 이리응애과(Phytoseiidae)에 속하는 *Amblyseiullela*속의 2신종인 *Amblyseiullela chombongensis*와 *A. odowdi*를 기재하였다. *Amblyseiullela*속은 한국에 처음으로 보고되었다.