

New Record of *Macromyzus woodwardiae* (Sternorhyncha, Aphididae) on *Cyrtomium falcatum* from Korea

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ABSTRACT

Macromyzus woodwardiae (Takahashi, 1921) is recognized on *Cyrtomium falcatum* (L.f.) C. Presl (Dryopteridaceae), a hitherto unknown host plant, from Jeju Island, Korea. Apterous viviparous female and alate viviparous female are described. This is the first record of genus *Macromyzus* in Korea.

Key words: Sternorhyncha, Aphididae, *Macromyzus woodwardiae*, *Cyrtomium falcatum*, Korea

INTRODUCTION

Macromyzus is a small genus of the tribe Macrosiphini, living on various ferns, and characterized as follows: body surface reticulated or strongly wrinkled with 2-10 pigmented tubercles at the base of dorsal setae on each abdominal segment; siphunculi reticulated at distal end; head densely spinulated on dorsum and ventral surface; cauda short and triangular; antennae without secondary rhinaria in apterae.

Takahashi (1960) established the genus *Macromyzus* based on *Myzus woodwardiae* Takahashi 1921 as the type species, which was previously described on *Woodwardia* sp. (Blechnaceae) and *Polystichum* sp. (Dryopteridaceae) from Taiwan by himself. Thereafter, two more species (*Macromyzus indicus* David and Narayanan 1968; *M. manoji* Raha and Raychaudhuri, 1978) have been described in nominotypical subgenus from Indian Subregion. Basu (1969) established a new genus *Anthracosiphoniella* based on *A. maculatus* Basu, 1969 as type species which is

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presently treated as a subgenus of *Macromyzus* (Raychaudhuri *et al.*, 1980). So far, four species in two subgenera have been described and reported from the subtropical region of South Eastern and Eastern Asia (Remaudière and Remaudière, 1997). However, it has not been reported from Korea yet.

In October 2000, large colonies of *Macromyzus woodwardiae* were collected on underside of *Cyrtodmium falcatum* (L.f.) C. Presl (Dryopteridaceae) in Jeju Island, South Korea. As the first record of the genus and species from Korea, the descriptions for apterous viviparous female and alate viviparous female are given.

Abbreviations used in this paper as follows: Ant. I, II, III, IV, V, VIb, antennal segment I, II, III, IV, V, and the base of Ant. VI, respectively; PT, processus terminalis; URS, ultimate rostral segment; 2HT, second segment of hind tarsus; SIPH, siphunculus.

Materials used in this paper are deposited in the National Institute of Agricultural Science and Technology (NIAST), Suwon, Korea.

SYSTEMATIC ACCOUNTS

Family Aphididae 진딧물과

Subfamily Aphidinae 진딧물아과

Tribe Macrosiphini 수염진딧물족

Genus *Macromyzus* Takahashi, 1960, 고비수염진딧물속 (신칭)

Type species: *Myzus woodwardiae* Takahashi, 1921

***Macromyzus woodwardiae* (Takahashi, 1921) 고비수염진딧물 (신칭) (Fig. 1, Table 1)**

Myzus woodwardiae Takahashi, 1921, p. 20.

Myzus woodwardiae subsp. *hinoi* Moritsu, 1952, p. 26.

Macromyzus woodwardiae: Takahashi, 1960, p. 225.

Material examined. 25 apterous viviparous females and 10 alate viviparous females, Gongcheon-po, Namweon, Namjeju-gun, Jeju-do, Korea, 26 October 2000, leg. S. H. Lee, coll.# 001023-sh-86, on *Cyrtodmium falcatum* (L. f.) C. Presl (Dryopteridaceae); 30 alate viviparous female and 9 alate viviparous females, Sarabong, Jeju-si, Jeju-do, Korea, 26 October 2000, leg. S. H. Lee, coll.# 001023-sh-72, on *C. falcatum*.

Description. Apterous viviparous female. Colour (in life): body blackish brown. Legs black on distal half of femur, distal 1/5 of tibia, and tarsus. Siphunculi black. Colour (in macerated specimens): Head, thorax and abdomen brown. Ant. I-II dark brown; Ant. III-V pale except dark apex; Ant. VI dark brown. Legs pale brown, except apical half of femur, distal 1/8 of tibia, and tarsus dark brown. Siphunculi dark brown.

Morphology: Body spindle-shaped, 2.38-2.85 mm long. Head spinulated dorsally and ventrally with 4 pairs of dorsal hairs (Fig. 1A). Antennal tubercle well-developed with two hairs on each side, inner side parallel. Frons with conspicuous median tubercle with 2 hairs; longest hair on dorsum 1.5x as long as basal width of Ant. III; Ant. I-II spinulated with 6-8 and 3-4 hairs respectively; Ant. III mostly smooth except base spinulated, bearing ca. 32 hairs (Fig. 1E); Ant. IV-V weakly

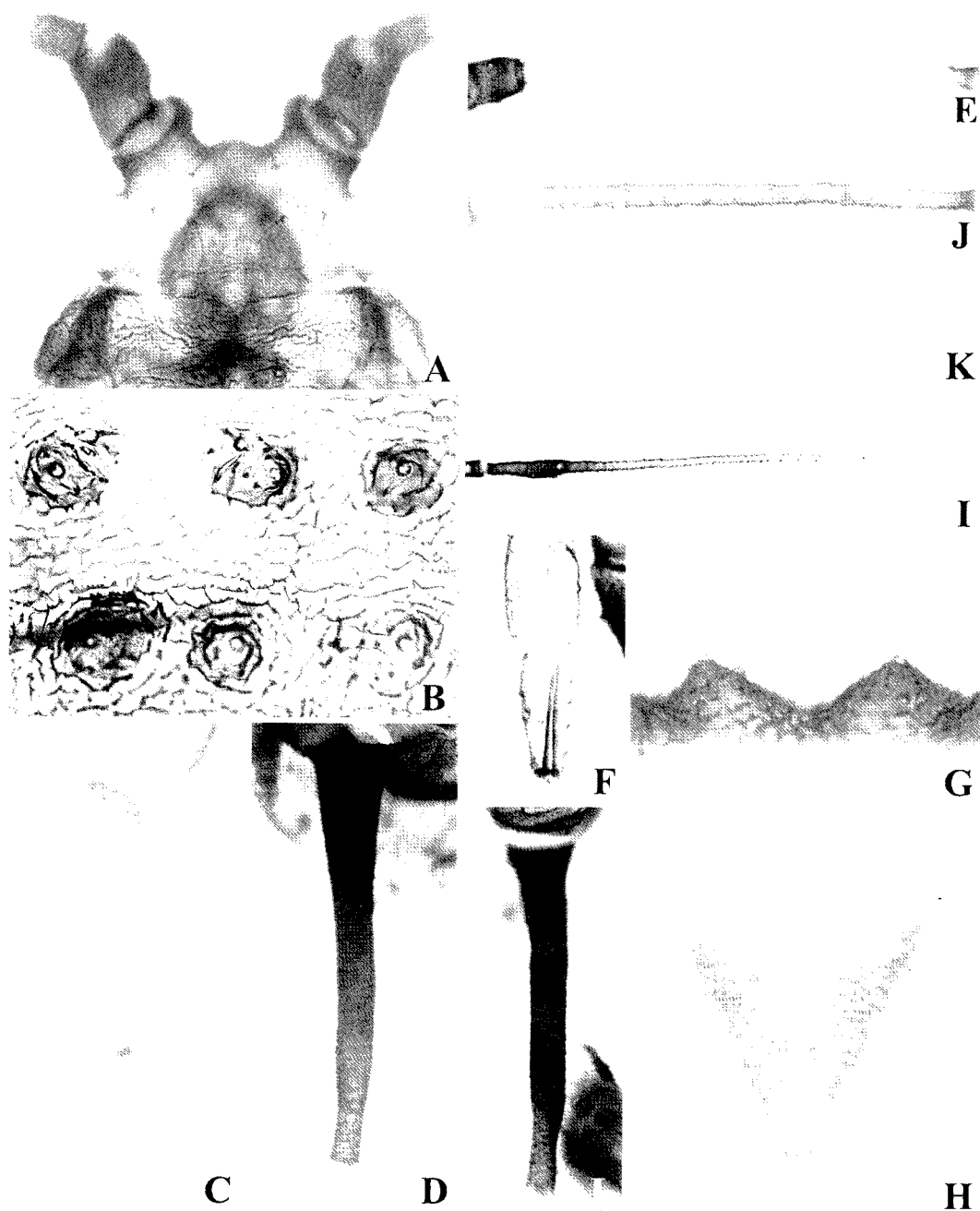


Fig. 1. Apterous viviparous female (A-I) and alate viviparous female (J-L) of *Macromyzus woodwardiae* (Takahashi, 1921). A, head (focused on dorsal surface); B, abdominal tergites III-IV; C, hind tarsus; D, siphunculus; E, antennal segment III; F, ultimate rostral segment (URS); G, dorsal setae on abdominal tergite; H, cauda; I, antennal segment VI; J, K, antennal segment III-IV (alate); L, siphunculus (alate).

Table 1. Biometric data of *Macromyzus woodwardiae* on *Cyrtodinium falcatum* (L.f.) C. Presl (Dryopteridaceae) from Jeju-do, Korea

Part		Apterous vivipara (n = 10)			Alate vivipara (n = 10)		
		Min.	Max.	Avr.	Min.	Max.	Avr.
Length of (in mm)	body length (L)	2.38	2.85	2.60	2.55	2.78	2.66
	whole antennae (A)	2.55	2.90	2.77	2.88	3.20	3.10
	antennal segment I (Ant. I)	0.15	0.17	0.16	0.13	0.16	0.15
	antennal segment II (Ant. II)	0.10	0.12	0.11	0.11	0.13	0.12
	antennal segment III (Ant. III)	0.72	0.82	0.77	0.79	0.92	0.86
	antennal segment IV (Ant. IV)	0.43	0.54	0.49	0.55	0.64	0.60
	antennal segment V (Ant. V)	0.42	0.47	0.45	0.44	0.54	0.50
	antennal segment VI base (Ant. VIb)	0.12	0.14	0.13	0.12	0.15	0.14
	processus terminalis (PT)	0.65	0.75	0.72	0.73	0.82	0.78
	ultimate rostral segment (URS)	0.18	0.19	0.183	0.17	0.19	0.183
	hind tibia	1.90	2.20	2.08	2.00	2.38	2.22
	hind femur	1.10	1.20	1.15	0.95	1.20	1.11
	hind tarsus II (2HT)	0.10	0.12	0.109	0.10	0.12	0.108
	Siphunculi	0.80	0.87	0.84	0.69	0.86	0.80
	Cauda	0.17	0.20	0.19	0.14	0.16	0.15
Ratio	A/L	1.02	1.11	1.07	1.13	1.22	1.17
	URS/2HT	1.50	1.90	1.68	1.55	1.90	1.70
	URS/Ant. VIb	1.29	1.58	1.39	1.13	1.50	1.30
	PT/Ant. VIb	5.00	6.25	5.44	5.07	6.08	5.55
	S/C	4.15	5.06	4.54	4.93	5.86	5.41
No. of hairs on	Ant. I	6	8	6.75	6	8	6.75
	Ant. II	3	4	3.75	3	4	3.75
	ML	3	5	3.88	4	5	4.25
	URS	10	13	11.75	10	13	11.75
	tergite III	13	15	13.50	13	15	13.50
	tergite VI between SIPH	8	10	9.00	8	10	9.00
	tergite VIII	7	11	8.25	7	11	8.25
	cauda	4	4	4.00	4	4	4.00
No. of rhinaria on	Ant. III	0	0	0	15	22	18.63
	Ant. IV	0	0	0	3	10	7.83

imbricated, primary rhinarium on Ant. V ciliate, longest diameter shorter (3/4x) than middle width of segment; Ant. VI imbricated, bearing 2 hairs at base, 4-6 hairs on processus terminalis (PT), PT 5.00-6.25x as long as base of Ant. VI. Rostrum attaining in middle between mesocoxae and hind coxae; mandibular laminae with 3-5 hairs on each side; ultimate rostral segment wedge-shaped

with 10–13 secondary hairs, 1.50–1.90x as long as second segment of hind tarsus, 1.29–1.58x as long as base of Ant. VI (Fig. 1F). Thorax strongly wrinkled or reticulated, 3–4 spinal hairs and 2 marginal hairs anteriorly; basal sclerite of hairs elevated like tubercle. Hind coxae spinulated with 7–10 hairs; trochanter smooth with 3 hairs; femur smooth, longest hair on femur 3/4x as long as base of femur. Tibia smooth with longest hair slightly longer than middle width of hind tibia; first tarsus smooth, first tarsal chaetotaxy 3:3:3; 2HT weakly imbricated with 5 dorsal and 3 ventral hairs (Fig. 1C). Abdomen strongly wrinkled or reticulated on tergite and sternite (Fig. 1B), bearing 13–17 hairs on tergite III, hairs based on dark elevated sclerite (Fig. 1G). Hairs paired on some dorsal sclerites, longest hair on Ant. III as long as or slightly longer than base of hind femur. Tergite VI with 8–10 hairs between siphunculi; tergite VIII with 10 hairs. SIPH cylindrical, sparsely spinulated, reticulated on distal 1/8, widest at base, gradually tapering to apex, 4.15–5.06x as long as cauda (Fig. 1D). Cauda short, triangular, 3–4 hairs, strongly spinulated (Fig. 1L). Genital plate weakly spinulated, hairy with 9–16 median hairs and 14–24 hairs on posterior margin.

Alate viviparous female. Colour (in life): head and thorax dark brown. Antennae and siphunculi black. Abdomen pale yellow with large, dark reddish brown patch on tergite III–VII. Legs pale except distal half of femur, distal 1/8 of tibia and tarsus black. Colour (in macerated specimens): head, thorax, antennae, SIPH, and cauda dark brown. Legs pale except distal half of femur, distal 1/8 of tibia and tarsus dark brown. Wings pale, transparent, costa and stigma pale brown. Abdomen with dark brown transverse band on tergite III–VII. Postsiphuncular sclerite large, dark brown; tergite I–II and marginal region of abdomen with many small dark sclerites on bases of setae.

Morphology: Body 2.55–2.78 mm long. Head smooth, partly spinulated on antennal tubercle and ventral surface. Ant. III–IV with 15–22 and 3–10 secondary rhinaria in a line respectively (Fig. 1J, K). Thorax and abdomen smooth; the basal sclerites of dorsal hairs smooth, not elevated. Otherwise like as apterous viviparous female.

Host plants. *Dryopteris monticola*, *Rumobra mutica*, *Dryopteris varia* (Japan, after Miyazaki, 1968; Miyazaki, 1971); *Woodwardia* sp. (Blechnaceae) and *Polystichum* sp. (in Taiwan, after Takahashi, 1921 and Tao, 1963); *Asplenium curicularium*, *A. esculentum* (India, after Ghosh, 1974). *Cyrdomium falcatum* (L.f.) C. Presl is newly added to the list of host plants.

Biology. The aphids are found on the underside of new leaves, before the host fern making spores in Jeju, Korea.

Distribution. Korea (Jeju-do), Japan, Taiwan, India

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요 약

현재까지 국내발생이 확인되지 않았던 고비수염진딧물 (신칭), *Macromyzus woodwardiae* (Takahashi, 1921)이 제주도에 서식하는 도깨비고비에서 확인되었다. 유시성충과 무시성충에 대해 기재하고, 기주식물 기록을 정리하였다. 도깨비고비는 *Macromyzus woodwardiae* (Takahashi, 1921)의 기주식물로 처음으로 보고되며, *Macromyzus*속은 한국에서 처음으로 기록되는 속이다.