

# The First Record of *Periphyllus acerihabitans* Zhang, 1982 (Hemiptera: Aphididae: Chaitophorinae) from South Korea

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## 한국의 미기록종 *Periphyllus acerihabitans* Zhang, 1982 (노린재목: 진딧물과: 털진딧물아과)에 대한 보고

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**ABSTRACT:** In this study, *Periphyllus acerihabitans* Zhang, 1982 is reported for the first time in Korea. Species distribution, measurement, host plants, description, key to Korean species of the genus *Periphyllus*, and illustrations of diagnostic characters for apterous viviparous females are provided.

**Key words:** *Periphyllus acerihabitans*, Chaitophorinae, *Acer buergerianum*, Korea

**초록:** 본 연구에서 *Periphyllus acerihabitans*를 국내에서 최초로 보고한다. 이 종의 분포지역, 기주식물, 무시성충의 형태학적 정보와 분류키를 제공하였다.

**검색어:** 중국단풍진사진딧물(신칭), 털진딧물아과, 중국단풍나무, 한국

The genus *Periphyllus* van der Hoeven, 1863 (Aphididae: Chaitophorinae) consists of 50 monoecious and holocyclic species (Blackman and Eastop, 2021; Favret, 2021). Most of species in this genus are living on Aceraceae, and some others with Sapindaceae and Hippocastanaceae as host plants (Higuchi, 1972). In Korea, a total of seven species have been recorded: *Periphyllus californiensis* (Shinji, 1917) was the first recorded by Takahashi (1933); *P. koelreuteriae* (Takahashi, 1919) and *P. viridis* (Matsumura, 1919) were recorded by Paik (1972); *P. gimalae* (Paik ex Szelegiewicz, 1974) was recorded

by Szelegiewicz (1974); *P. allogenes* (Szelegiewicz, 1981) was recorded by Szelegiewicz (1981); *P. kuwanaii* (Takahashi, 1919) was recorded by Lee and Seo (1992); *P. unmoonsanensis* (Park and Park, 1996) was recorded by Park and Park (1996). In 2021, we newly collected samples of *Periphyllus acerihabitans* Zhang, 1982 on *Acer buergerianum* in Korea.

*P. acerihabitans* is common species in *A. buergerianum*, which was firstly described in China (Zhang and Zhong, 1982), providing a simple diagnosis of apterous and alate viviparous individuals. Since then, several morphs including the aestivating nymph and oviparous female of *P. acerihabitans* were reported in Japan (Wieczorek et al., 2016). In this study, we report apterous viviparous of *P. acerihabitans* for the first time in Korea.

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## Materials and Methods

Samples were preserved in 95% ethanol and then mounted Canada balsam, following the method of Blackman and Eastop (2000) methods. Images and measurements were taken by LEICA (DM3000 LED) and LEICA (CTR6 LED). All specimens were deposited Institute of Agriculture & Life Science, Gyeongsang National University. The following abbreviations are used in morphological features: BL - body length from the head to the end of cauda; BW - body width across the abdomen; HW - head width across compound eyes; ANT. I-VI - antennal segments respectively; LS ANT.III - longest seta on ANT.III; LS HEAD - length of longest hair of the head; BD.III - basal articular diameter of ANT.III; BASE - base of ANT.VI; PT - processus terminalis of ANT.VI; URS - Ultimate rostrum segment; FEMORA - hind femora; TIBIAE - hind tibiae; HT.I - first segment of hind tarsus; HT.II - second segment of hind tarsus; ABD.I-VI - stout and long setae of abdominal tergites I-VI; ABD.VII-VIII - stout and long setae of abdominal tergites VII-VIII. Abbreviations were used for the region: JB, Jeollabuk-do; GN, Gyeongsangnam-do.

## Systematic Accounts

*Periphylus acerihabitans* Zhang, 1982 중국단풍진사진딧물(신칭) (Table 1; Figs. 1-2)

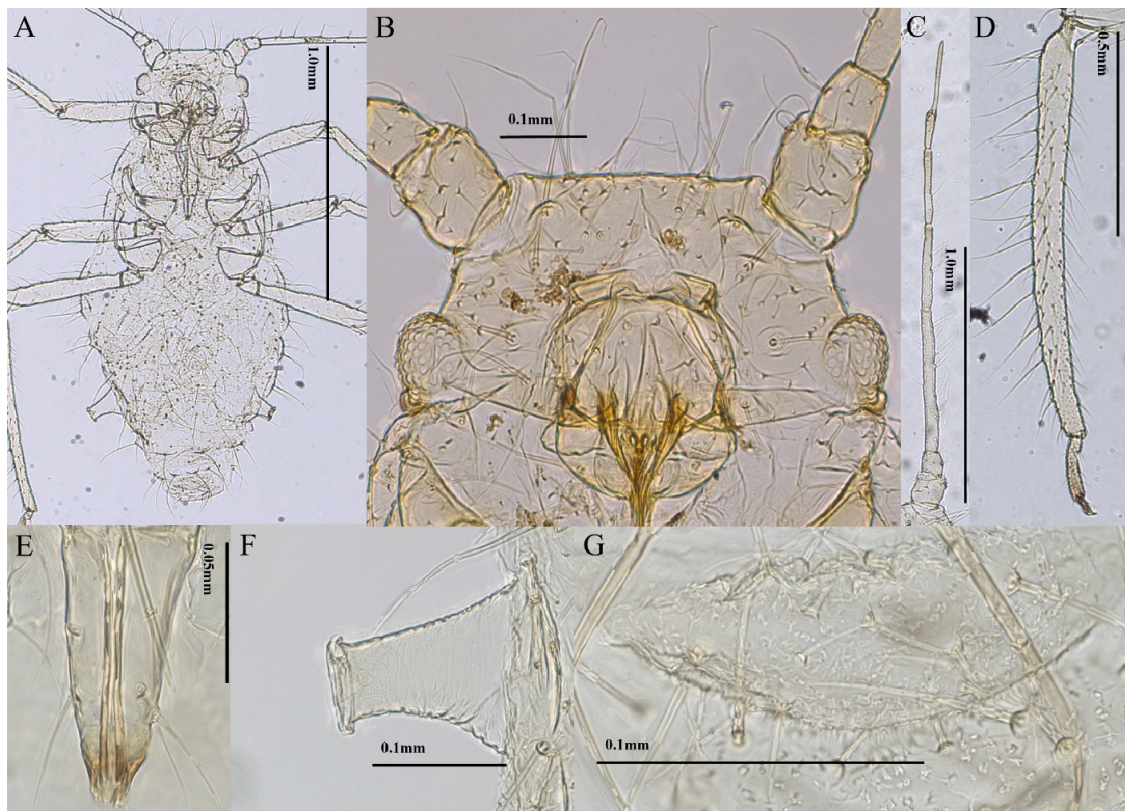
**Description of apterous viviparous female. Color.** In life: deep green; in mounted specimens: whole body pale, dark brown with tarsus, apices of ANT.III-V, basal, PT.

**Morphological characters.** Body oval and BL 1.540-2.680 mm (Fig. 1A). Head flat with numerous dorsal hairs (Fig. 1B). ANT 6 segmented, ANT 1.242 - 1.543 mm,  $0.575 - 0.806 \times BL$ , and  $2.857 - 3.112 \times HW$ . ANT.I 0.084 - 0.116 mm, with 3 - 9 hairs. ANT.II 0.057 - 0.073, with 4 - 7 hairs. ANT.III 0.380 - 0.470 with 4 - 14 hairs. ANT.IV 0.210 - 0.270 with 2 - 4 hairs. ANT.V 0.199 - 0.250 mm with 2-3 hairs. BASE 0.112 - 0.138 mm with 2 hairs. PT 0.200 - 0.226 mm without hairs. ANT setae fine pointed. LS ANT.III  $4.001 - 7.447 \times BD.III$  (Fig. 1C). FEMORA 0.387 - 0.750 mm. TIBIAE 0.651 - 1.140 mm, rows of short spinules on whole TIBIAE (Fig. 1D). HT 2 segmented, HT.I 0.041

**Table 1.** The biometric measurement of the apterous viviparous females of *P. acerihabitans* in Korea

Characters	Mean (n=9)	Range (min. - max.)
BL	2.110	1.540 - 2.680
BW	0.895	0.590 - 1.200
HW	0.470	0.399 - 0.540
ANT.I	0.100	0.084 - 0.116
ANT.II	0.065	0.057 - 0.073
ANT.III	0.425	0.380 - 0.470
ANT.IV	0.240	0.210 - 0.270
ANT.V	0.225	0.199 - 0.250
BASE	0.125	0.112 - 0.138
PT	0.213	0.200 - 0.226
LS ANT.III	0.202	0.120 - 0.283
LS HEAD	0.184	0.129 - 0.238
length URS	0.111	0.097 - 0.124
FEMORA	0.569	0.387 - 0.750
TIBIAE	0.896	0.651 - 1.140
HT.I	0.047	0.040 - 0.054
HT.II	0.150	0.130 - 0.170
Siphunculus length	0.130	0.089 - 0.170
Siphunculus width	0.152	0.116 - 0.188
Cauda width	0.157	0.107 - 0.206
ABD.I-VI	0.185	0.149 - 0.221
ABD.VII-VIII	0.256	0.202 - 0.310
BD.III	0.034	0.030 - 0.038
Ant.I	6	3 - 9
Ant.II	5	4 - 7
Ant.III	10	4 - 14
Ant.IV	3	2 - 4
No. of hairs on Ant.V	2	1 - 2
BASE	1	0 - 2
URS	2	2 - 3
Cauda	14	10 - 22
Dorsal hair	39	26 - 53
Ant apice hair	3	1 - 4

- 0.054 mm, HT.II 0.131 - 0.170 mm, first tarsal chaetotaxy 5:5:5. Rostrum reaching to middle coxae, URS 0.097 - 0.124 mm with 1 - 2 accessory setae,  $0.255 - 0.263 \times ANT.III$  and  $0.729 - 0.746 \times HT.II$  (Fig. 1E). Abdominal tergites numerous, pointed setae, sometimes present with slightly forked apices on setae. Stout



**Fig. 1.** *Periphyllus acerihabitans*: A, Whole body; B, Head; C, Antenna; D, Hind tibia; E, URS; F, SIPH; G, Cauda.



**Fig. 2.** Apterous viviparous female of *Periphyllus acerihabitans* on *Acer buergerianum*.

and long setae in spino-pleural areas on abdominal tergites I-VI 0.149 - 0.221 mm long. Abdominal tergites VII-VIII 0.202 - 0.310 mm long, slightly longer than abdominal tergites I-VI. SIPH length 0.089 - 0.170 mm, SIPH width 0.116 - 0.188 mm, with 2 - 3 rows of reticulations formed flange (Fig. 1F). Cauda width 0.107 - 0.206 mm, broadly rounded with 10 - 22 setae (Fig. 1G).

**Specimens examined.** 3 apterous viviparous from *Acer buergerianum* Coll.#210429JH88, GNU, Jeonju-si, JB, 29.IV.2021; 6 apterous viviparous from *Acer buergerianum* Coll.# 210414 JH34, GNU, Jinju-si, GN, 14.IV.2021.

**Host plant.** *Acer buergerianum* Miq, 1865

**Distributions.** Korea (new record), China, Japan

**Remark.** *P. acerihabitans* is similar to *P. unmoonsanensis* in the morphological features. However, *P. acerihabitans* is noticeable from the host plant, smaller whole body, antenna, and numerous dorsal hairs on the head.

#### Key to species of the genus *Periphyllus* in Korea

1. Abdominal dorsum absent dot or band marking ..... 2
  - Abdominal dorsum present dot or band marking ..... 4
2. ANT ratio shorter 0.56-0.82 than BL ..... 3
  - ANT ratio longer or equal 1.02-1.2 than BL, HT.I chaetotaxy 7:7:7, living on *Acer mono* ..... *P. viridis*
3. BL 1.54-2.68 mm, dorsum of the head with 26-53 of setae, living on *Acer buergerianum* ..... *P. acerihabitans*
  - BL 2.62-3.27 mm, dorsum of the head with 18 setae, living on *Acer palmatum* ..... *P. unmoonsanensis*
4. Dorsum of the head with 4-5 pairs, TIBIAE uniformly dark ..... 5
  - Dorsum of the head with 6-9 pairs, TIBIAE pale with middle region ..... 6
5. 6th abdominal tergites with 11-14 setae between cornicles, living on *Acer* spp. .... *P. californiensis*
  - 6th abdominal tergite with 8-15 setae between cornicles, living on *Koelreuteria paniculata* ..... *P. koelreuteriae*
6. PT and BASE ratio more than 2.0. living on *Acer mono*

- ..... *P. kuwanaii*
- PT and BASE ratio less than 2.0 ..... 7
- 7. Body small, length about 1.1-1.3 mm, URS reaching to middle coxae, living on *Acer triflorum* ..... *P. allogenes*
- BL about 2 mm, abdominal tergite pigmentation nearly continuous among segments, living on *Acer ginnala* ..... *P. ginnalae*

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#### Statements for Authorship Position & Contribution

- Ko, J.H.: Gyeongsang National University, Student in M.S.;  
Designed the research, wrote the manuscript and examined specimens
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Examined specimens and designed the research

All authors read and approved the manuscript.

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