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On Some Psyllids from Mt. Sobaek, with the Descriptions of One New Species arising on the *Acer* (Homoptera: Psylloidea)

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A new species, *Psylla koreana*, arising on the *Acer* is described from Korea, and nineteen psyllid species from Mt. Sobaek are listed.

KEY WORDS: Homoptera, Psyllidae, *Psylla koreana*, Mt. Sobaek, Korea.

There are few faunistic studies on the harmful Homopteran insects for the plants from the Sobaek National Park and Mt. Sobaek which is major mountain of Sobaek mountain range, inspite of it's biogeographical and natural conservative importances. Until now, the distribution records of the psyllid insects or jumping plant lice on this mountain were just only known 11 species by Park and Lee (1982) and Kwon (1983).

The first author collected many specimens belonging to the nineteen psyllid species from Mt. Sobaek from 1980 to 1989. Among them, there were two unidentified species and one new species of genus *Psylla* arising on the *Acer* plants. Some North Korean specimens for the comparision of this new species were borrowed from Hungarian Natural History Museum collected by Hungarian specialists at Kaesung, North Korea, during the zoological expedition to North Korea in 1970. And by adding this new species, it will be three species in the number of psyllids sticking to the maple tree from Korean peninsula, and eleven species and two genera in the number of psyllids inhabitating on the *Acer* plants in the Palaearctic region, The systematics of the Psylloidea used in here followed White and Hodkinson (1985, 1989). All of the specimen examined are deposited in the Department of Biology, Kyungpook National University. And some paratype specimens of new species will be deposited at following places: Hungarian Natural History Museum and Liverpool Polytechnic College.

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Systematics

Suborder Sternorryncha
Superfamily Psylloidea
Family Aphalaridae

1) *Aphalara polygoni* Förster, 1948

Specimen Examined: 1♂, 5. viii. 1980.

Host Plant: *Polygonum* spp.

Distribution: Korea (Mt. Sobaek-new record), Japan, USSR, Europe.

Family Psyllidae

2) *Acizzia jamatonica* (Kuwayama, 1908)(Fig. 2-G)

Specimen Examined: 8♂, 8, vii. 1981. Temple Heebang at Mt. Sobaek: 3♂, 19. vii. 1982, at same place, leg. Y. S. Bae: 1♀, 5. vii. 1980. Temple Buseok at Mt. Sobaek.

Host Plant: *Albizzia julibrissin.*

Distribution: Korea (Mt. Sobaek-new record), Japan.

3) *Acizzia sasaki* (Miyatake, 1963)(Fig. 2-F)
Specimen Examined: 21♂, 5. viii. 1980, Temple Buseok.
Host Plant: *Albizzia julibrissin.*
Distribution: Korea (Mt. Sobaek-new record), Japan.

4) *Anomoneura mori* Schwarz, 1986
Specimen Examined: 1♂, 8, vii. 1981, Temple Heebang at Mt. Sobaek.
Distribution: Korea (Mt. Sobaek-new record), Japan, China.

5) *Cyamophila hexastigma* (Horvath, 1899)
Specimen Examined: 3♀, 8. vii. 1981, Mt. Sobaek.
Host Plant: *Sophora japonica.*
Distribution: Korea, Japan, USSR (Far East).

6) *Psylla alni* (Linnaeus, 1758)
Specimen Examined: 3♀, 16. viii. 1989.
Host Plant: *Alnus* sp.
Distribution: Korea, Japan, USSR, Europe.

7) *Psylla elaeagni* Kuwayama, 1908
Specimen Examined: 2♀, 16. vi. 1989. Mt Sobaek.
Host Plant: *Elaeagnus* spp.
Distribution: Korea, Japan.
Remarks: Compared with the specimen of Kyushu in Japan, it could not find any differences in the wing venation, and male and female genital organs.

8) *Psylla elaeagnicola* Miyatake, 1963
Specimen Examined: 5♀, 16. vi. 1989. Mt. Sobaek.
Host Plant: *Elaeagnus* spp.
Distribution: Korea, Japan.

9) *Psylla rhodoendri* Puton, 1871
Specimen Examined: 2♀, 16. vi. 1989. Mt. Sobaek.
Host Plant: *Rhododendron* sp.
Distribution: Korea, Japan.

10) *Psylla coccinea* Kuwayama, 1908
Specimen Examined: 1♀, 16. vi. 1989. Mt. Sobaek.
Host Plant: *Akebia quinata.*
Distribution: Korea, Japan, USSR (Far East).

11) *Psylla* sp. 1
Specimen Examined: 20♂, 4♀, 16. vi. 1989. Mt. Temple Heebang at Mt. Sobaek.
Remarks: This species is very similar to *Psylla sorbi* from *Sorbus* spp. but, differed from male genitalia.

12) *Psylla danpunga* Park and Lee, 1982
Specimen Examined: 2♀, 9. viii. 1989. Mt Sobaek.
Host Plant: *Acer* sp.
Distribution: Korea.

13) *Psylla koreana* Park, n. sp. (Fig. 1-E, F, H, Fig. 2-C. D. E.)
Descrpiton: Body colour generally yellowish brown with reddish brown thorax in dorsal. Wing brown and abdomen green. Compound eyes dark brown and ocellus reddish brown, Antennae with last two segments and proximal parts of the 4th, 5th, 6th and 7th segments black. Both of vertex and genal cones obliquely declined on the same plane. Head as nearly broad as thorax. Proximal parts of genal cones blunt and truncated with compact hairs. Forewing membrane broad and nearly rectangular with round shape apically. Wing length 1.87-2.03 times as long as width of wings (Fig. 1-E). Vein Rs weakly sinuous. Pterostigma short and broad. M cell large, larger than Cu cell: Ratio of M cell height to width about 1.7 times. Cu cell somewhat rectangular and erected. Ratio of Cu cell about 1.47 times width to heigh (Fig. 1-F).

Male forceps very long, thin and smoothly arched with dark and pointed terminal. Upper genital plate of female little longer than lower genital plate (Fig. 2-E).
Measurements: Body length male 3.4 mm with wing, female 3.4-3.7 mm with wing. Head width with eyes: male 0.78 mm, female 0.88 mm.
Head lenth: male 0.25 mm, female 0.28 mm.
Holotype (♂): Temple Beelosa at Mt. Sobaek, 9. viii. 1989, on *Acer pseudo-sieboldianum* Komarov.
Allotype (♀): North Korea. Kaesong City. Mt. Bagyon-san, the Bagyon falls about 27 Km SW from Kaesong, 7. vi, 1970. Hung. Zool. Exp. I in Korea. No. 100. Dr. S. Mahunka et Dr. H. Steinmann leg (The original english descriptions about the local names on the lavel written by the Hungarian Natural History Museum was slightly revised). The North Korean specimen was borrowed from HNHM. This allotype and paratype specimens from North Korea were smaller than

the specimens of southern part of the peninsula in size.

Paratype: 3♂, 2♀, North Korea, Kaesong City. Mt. Bagyon-san, Bagyon falls about 27 km SW from Kaesong. 7. June, 1970. Hung. Zool. Exp. I in Korea. No. 100. Dr. S. Mahunka et Dr. H. Steinmann leg.: 1♂, 14. viii. 1981, Mt. Halla: 1♂, 15. viii. 1981. at near Mt. Sanbang in Chejudo: 1♀, 21. viii. 1985, Youngsil at Mt. Halla: 1♂, 14. 1980, Mt. Bohyun: 2♂, 3♀, 11. vi. 1978, Temple Yongyeun: 2♂, 3♀, 31. v. 1981, Mt. Taebaek: 1♀, 29. vi. 1980, Mt. Bohyun: 2♂, 3♀, 6. vi. 1983, Baemsa valley at Mt. Jiri: 1♀, 5. vi. 1983, at same place: 5♂, 3♀, 7. viii. 1982, Mt. Odae

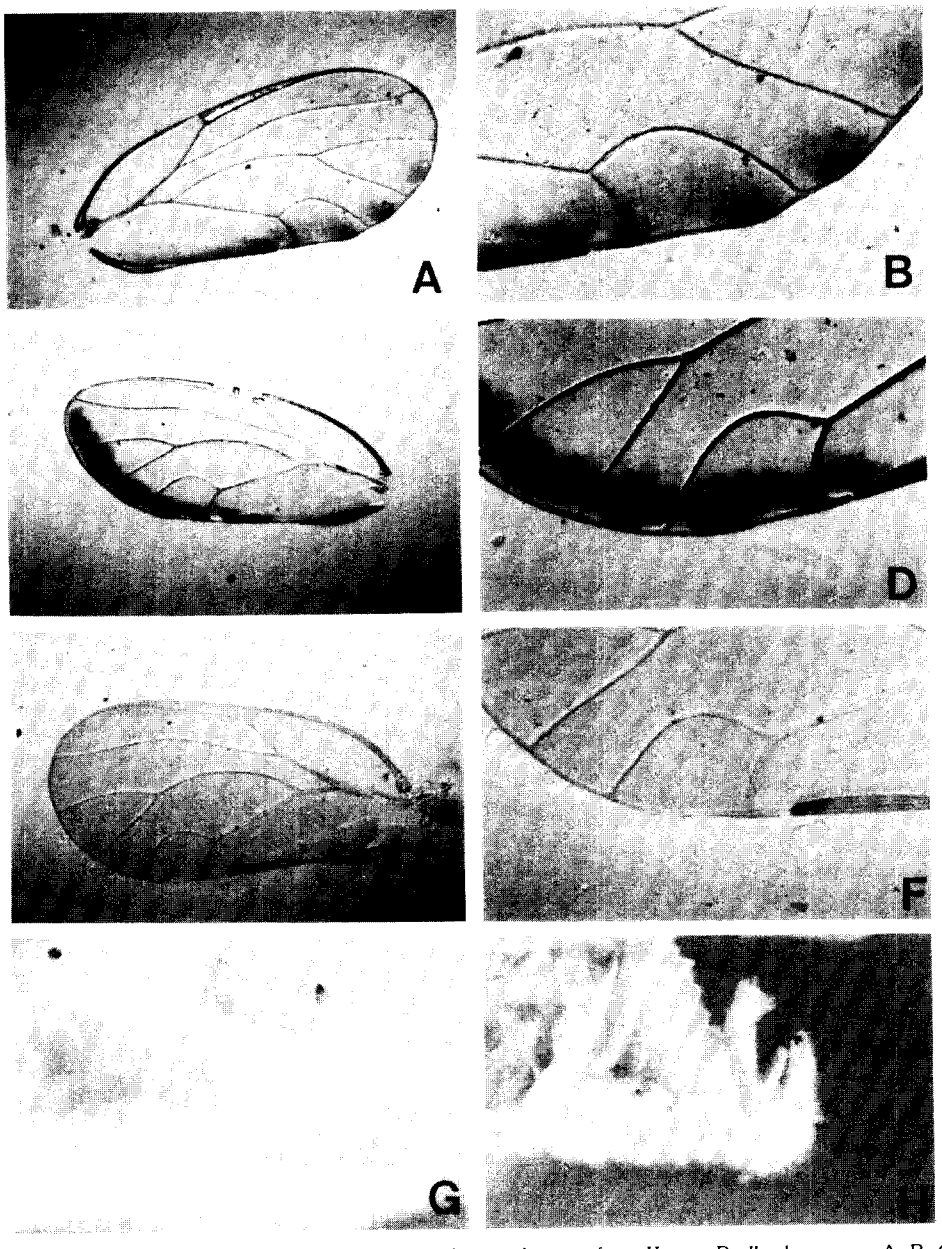

Fig. 1. Wing and male genitalia of psyllids occuring on the maple trees from Korea. *Psylla danpunga:* A. B. G. *Psylla lineaticeps:* C. D. *Psylla koreana:* E. F. H.

with multiple materials: 13♂, 8♀, 24. v. 1981, Mt. Juwang: 13♂, 10♀, 24. v. 1981, Mt. Sogri: 10♂, 10♀, 23. v. 1981, Sieuidong at Mt Sogri: 3♂, 1♀, 3. viii. 1981, Mt. Seolak: 3♂, 3♀, 8. viii. 1981. 1♀, 9. vii. 1981, 1♀, 10. vii. 1981, 1♂, 4♂, 16. vi. 1989, 3♂, 4♀, 9. viii. 1989, Temple Heebang at Mt Sobaek: 2♂, 3♀, 5. vii. 1980, Mt. Kumoh.

Remarks and discussion: Until now, this new species was treated as *Psylla abieti* Kuwayama arising on

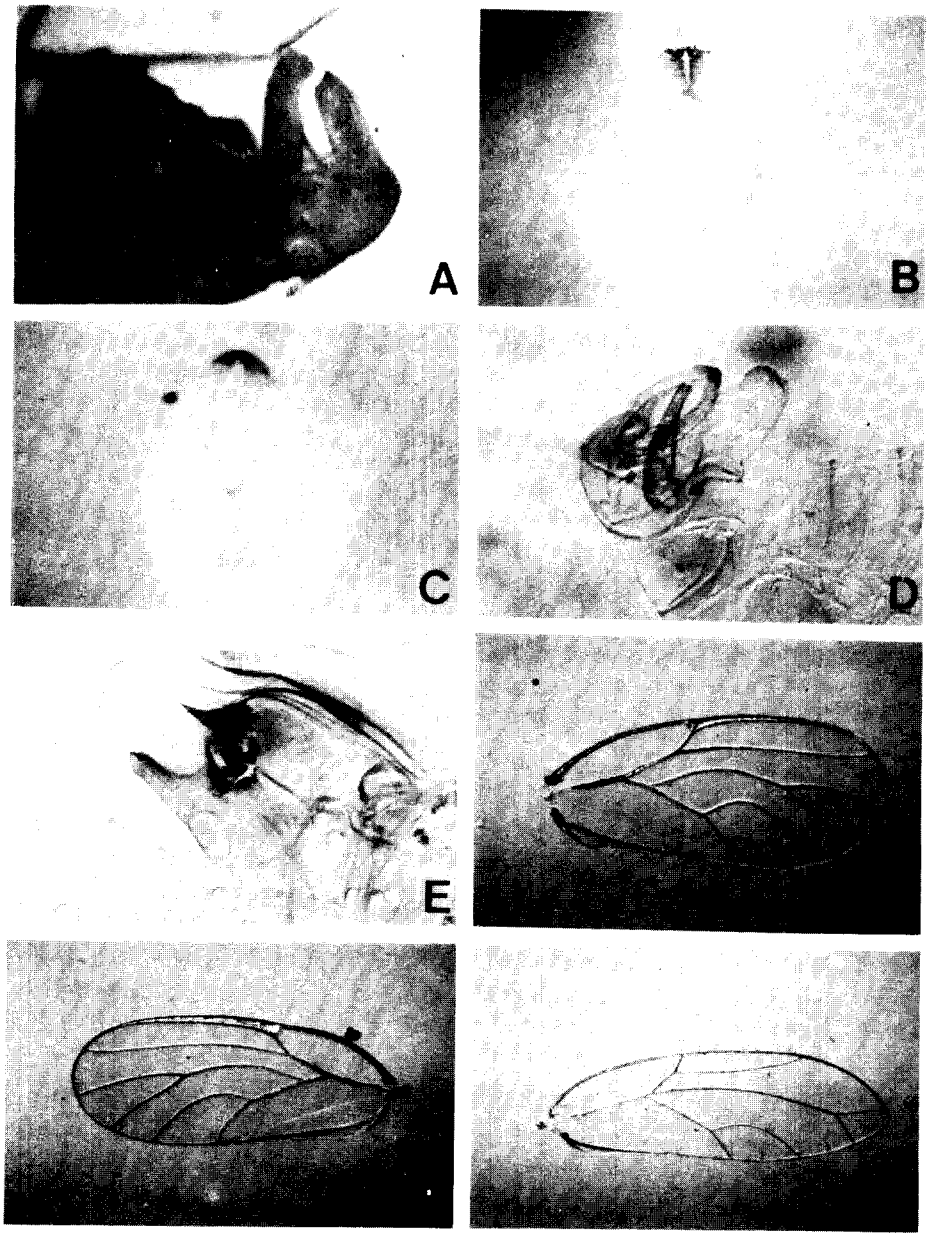

Fig. 2. Shapes of wing and genitalia of Korean psyllids from Mt. Sobaek. A. Male genitalia at lateral view of *Psylla lineaticeps*. B. Male forceps at posterior view of *P. danpunga*. C. Male forceps at posterior view of *P. koreana*. D. *Clarified male genitalia of P. koreana*. . E. Female genitalia of *P. koreana*. F. Wing of A. *yamatonica*. H. Wing of *Trioza chilgia*.

Abies plant in Japan by Korean and Japanese specialists. But, there was some confusion in the species concept of this species complex parasiting on the *Acer* trees. Miyatake (1971) commented Korean specimens from Mt. Sudo had some differences in the wing venation, body colour and genitalia. However, he indentified this species as *P. abieti* and he thought this species as a variation of *P. abieti*. Park and Lee (1982) discribed *Psylla danpunga* arising on *Abies* and *Acer* plants (figs. 1-A, B, 2-B), which was similar to one type of Japanese *abieti* -species with dark brown band along the posterior margin of the forewing (Miyatake, 1972). The first author found the wing venation of *P. abieti* figured by Kwon (1983) was similar to *P. danpunga* with posterior dark banding on the wing margin (fig. 1-A. B). The character like this dark marginal banding on the wing did also appear in *P. lineaticeps* (figs. 1-C) the third species of the maple psyllids.

Kwon (1983) confused both *P. danpunga* and *P. koreana* as a same species and he indentified these two species as an Japanese species of *abieti*. However these two species had very similar genal shape and body structure, especially male genitalia, *P. koreana* could be easily divided from *P. danpunga* with male genitalia features with short and round forceps and flat and broad inner margin at posterior view (fig. 2-B), and different wing venation of Cu cell and M cell (fig. 1-A, B).

P. koreana differs from *P. lineaticeps* at male forceps with broad and blunt forceps at lateral view (fig. 2-A) and nearly oblique apical margin of the wing (fig. 1-C).

Table 1. Psyllid species arising on the genus *Acer* plants from the Palaearctic region.

species	Host plants	Distributions
Rhinocola aceris	*Acer campestre* *A. platanoides* *A. pseudoplatanus* *A. tataricum*	All over Europe USSR (Asia part) Middle Asia
Psylla aceris	*A. turkestanica*	USSR (Kirghizia Tadzhikkistan) China
P. abieti	*Acer sp.* *Abies mariesii* *Picea glehnii* *P. jezoensis* *Cryptomeria japonica*	Japan China
P. danpunga	*Pinus* sp. *Acer pseudo-sieboldianum* var. spp.	Korea
P. emeljanovi	*A. semenovi*	USSR (Kazachstan)
P. ginnali	*A. ginnala*	USSR (Far East)
P. japonica	*Acer rufinerve* *A. ukurunduense*	Japan USSR (Far East)
P. koreana	*A. pseudo-sieboldianum* var. spp. (larva confirmed)	Korea
P. lineaticeps	*A. ginnala* (larva confirmed)	Korea
P. moni	*A. mono*	USSR (Far East)
P. pseudosieboldiani	*A. pseudosieboldianum*	USSR (Far East)

With the addition of new species, it will be eleven psyllid species sticking on *Acer* plants occuring from the Palaearctic region (Table 1). Among them. eight species arise from Far East Asia including Korea, Japan and Far East USSR. Therefore, it could be supposed that the maple psyllids had experienced very fast and plentiful speciation in this region.

There are 202 maple tree species belonging to two genera (200 of *Acer* and 2 of *Dipteronia*) in the family Aceraceae known to be distributed at north temperate and tropical mountain areas in the world (Jones and Luchsinger, 1979). Among them, only eleven species of the maple trees distributed in the Palaearctic region are related as a host plants of psyllids.

Distribution: Korea.

Key to Korean Species of Maple Psyllids

1. Wing with black banding at posterior margin (figs. 1-A, C) 2
   wing without black banding at posterior margin (fig. 1-E) ..... *koreana*
2. Male forceps with broad and blunt at lateral shape (fig. 2-A) ..... *lineaticeps*
   Male forceps with thin and sharp at lateral shape (fig. 2-G) ..... *danpunga*

Family Triozidae

14) *Trichochermes grandis* Loginova, 1965

Specimen Examined: 1♂, 9. viii. 1989, Mt. Sobaek.

Host plant: *Rhamnus davurica.*

Distribution: Korea, Japan, USSR (Far East Asia).

Remarks: This species has some variations on the wing colour, Yang and Li (1985) supposed Korean materials belonged to one of the species, which were discribed by them. It will be more detail considerations about this genus from Korea in near future.

15) *Epitrioza mizuhonica* Kuwayama, 1910

Specimen Examined: 2♀, 9. viii. 1989. Mt. Sobaek.

Host Plant: *Elaeagnus* sp. (It needs more detail examination about the host plant of psyllid species occurring on genus *Elaeagnus* from Korea.

Distribution: Korea, Japan.

16) *Epitrioza yasumatsui* Miyatake, 1978.

Specimen Examined: 2♂, 1♀, 9. viii. 1989. Mt. Sobaek.

Host Plan: *Elaeagnus* sp.

Distribution: Korea, Japan.

Remarks: When the materials from Mt. Sobaek compared with the specimen from Osaka and Kyushu in Japan, there was no differences in the structures of the wing and male genitalia.

17) *Trioza nigra* Kuwayama, 1910

Specimen Examined: 3♂, 2♀, 7. vi. 1986, Mt. Sobaek.

Host Plant: *Styrax japonica.*

Distribution: Korea, Japan.

18) *Trioza chilgia* Park and Lee, 1980 (Fig. 2-H)

Heterotrioza chilgia: Kwon and Lee: 1981, 1983.

Specimen Examined: 1♀, 7. vi. 1986, Mt Sobaek.

Host Plant: *Celtis sinensis.*

Distribution: Korea (Mt. Sobaek-new record).

Remarks: This is native psyllid from korea. The host plant of this species was exactly confirmed by first author, it was not *Pueraria thunbergiana* Benth, but *Celtis sinensis* Pers.

19) *Trioza* sp 1.

Specimen Examined: 1♂, 1♀, 4. viii. 1980, Yongju city.

Remarks: This species is very similar to *Trioza myohyangi* Klimaszewsk, but different in wing venation.

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소백산의 나무이류(동시목 : 나무이상과)

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소백산 일대의 나무이류조사에서 모두 19종을 정리하고, 그 중 단풍나무에 서식하는 1 신종, *Psylla koreana*(한국단풍나무이 : 신칭)을 기재하였으며, 한국산 단풍나무이종군의 생식기형태를 비교하고, 구북구지역에서 단풍나무에 서식하는 나무이류의 기주식물과 그 분포를 정리하였다.