Further knowledge on the distribution and biology of two species of the genus *Celtisaspis*
(Homoptera: Psylloidea: Spondyliaspididae)

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抄録：従来、エノキを食樹とするカイガラキジラミ属(*Celtisaspis*)の内、エノキカイガラキジラミ(*C. japonica*)は長野県を東限として西日本の各地に、クロオピカイガラキジラミ(*C. usubai*)は関東地方のみに分布することが知れていた。ところが、その後の学見では、前者は栃木県から発見され、後者は東海から近畿地方に広く分布することが判って、両種の分布図は全く変わったものになった。また、前者は東日本でも2化し、後者は西日本でも1化であることが確かめられた。本稿では、両種の分布と生活史に関するその後の知見をまとめた。

Abstract: Concerning with the distribution of two species of *Celtisaspis* on the Japanese hackberry, *C. japonica* was known mainly from the western part of Japan and *C. usubai* seemed to distribute only in the Kanto District so far. It has however recently appeared that the former occurs in the northern part and the latter occurs in the western part in Japan recently. It becomes clear that the former species is bivoltine even in the northern part and the latter is univoltine even in the western part in Japan. Further knowledge on the distribution and biology of these two species is given in the present paper.

Key Words: *Celtisaspis*; *C. japonica*; *C. usubai*; Spondyliaspididae; lerp-forming; Japan.

Two species of the lerp-forming psylids, *Pachyysylla japonica* Y. Miyatake, 1968 and *P. usubai* Y. Miyatake, 1980, on the Japanese hackberry, *Celtis sinensis* var. *japonica*, were transferred to the genus *Celtisaspis* by Yang and Li (1982), which was newly erected only basing on the lerp-forming habit of the nymphal stage.

For these over ten years many information on the Japanese species of *Celtisaspis* accumulated especially concerning with their distribution and biology. When *C. usubai* was described it was known only from the Kanto District around Tokyo and seemed to be allopatriically distributed with the other species, *C. japonica* by the Itoigawa - Shizuoka Tectonic Line which was the supposed border line (Y. Miyatake, 1980). However, the former species has been widely found from the Tokai District to various parts of the Kinki District, Obama, Fukui Pref. in the north and Shingu, Wakayama Pref. (personal communication from Mr. S. Usuba) in the south. Although galls and a lerp collected at the Kyōka Park, Kuwana City on July 31, 1976 by Miss Kadowaki were identified as *C. japonica* with some doubt (Y. Miyatake, 1980), it became clear that those should be identified as *C. usubai* according to the

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succeeding field examination. On the contrary, galls & lerps of the summer form and nymphs & lerps of the autumn form of *C. japonica* were found at the ruins of the Ootawara Castle, Tochigi Pref., the northernmost distributional range of the genus. Remarkably the host plant was different species of hackberry, *Celtis bungeana* var. *jessoensis* (Usuba, 1989).

Thus, two species of the Japanese *Celtisaspis* are not clearly separated in the distributional range, though it appears that *C. japonica* inhabits comparatively in montane and inland areas and *C. usubai* rather in lowland and coastal areas, with some exceptions.

In the present paper, further knowledge on the distribution and biology of these two species is added. Most of the material treated here are deposited in the collection of the Osaka Museum of Natural History.

Before going further, I wish to express my appreciation to Mr. Shigeshi Usuba, Mrs. Kazuko Sometani, Mrs. Umeko Niki, Dr. Motoharu Okamoto and Mr. Hitoshi Ishikawa for their help in getting the material and biological information.

**Further knowledge on Celtisaspis japonica**

*Distribution:* Japan (Tochigi, Nagano, Yamanashi, Nara, Osaka, Hyogo, Okayama, Tottori, Shimane and Fukuoka Prefectures); Korea.

The data of Yamanashi Prefecture is originated from the notebook of Mr. Hisashi Masuda, but the exact locality is not sure (Usuba, 1989).


*Biology:* According to the observation of Mr. Shigeshi Usuba at the ruins of the Ootawara Castle, Tochigi Prefecture, it is certain that this species is also bivoltine even in the northern part of Japan. From the fact that Mrs. Niki found the first instar nymphs of the autumn form on July 2nd, they seem to hatch from late in June to early in July.

**Further knowledge on Celtisaspis usubai**

*Distribution:* Japan (Ibaragi and Saitama Prefectures, Tokyo Metro., Chiba, Shizuoka, Fukui, Mie, Shiga, Kyoto, and Wakayama Prefectures).

*Further material examined:* 1♂, Left bank of Kano-gawa, Kamishima, Oohito-cho, Tagata-gun, Shizuoka Pref., alt. ca. 40 m (52385605), on a leaf of *Boehmeria nivea*, 20. vi. 1992, H. Ishikawa leg. Galls & lerps, Imatomi-jinjya, Obama, Fukui Pref., alt. ca. 20m (53351589), on *Celtis sinensis* var. *japonica*, 29. vii. 1980, M. Okamoto leg. 6♂, galls & lerps, Nishi-

**Biology:** As this species is sometimes found on the planted hackberry trees, there is a possibility that some population come from other places.

According to the observations at the Kamo-gawa, Kyoto and the Echi-gawa, Yohkaichi, they seem to hatch late in April, and get the maturity early in June after the nymphal stage for nearly one month as shown in Plate 2. They emerge in the middle of June and soon copulate before oviposition. It is apparent that this species is also univoltine in the Kinki District.

The galls of this species are not conspicuously projected nor horn-like, but just small swelling-like as shown in Plate 2 (Fig. E).
Literature Cited

Explanation of Plate 2
Figs. A–B. Adults on a leaf stem and twig (14. vi. 1983, Kojinden, Yohkaichi, Shiga Pref.).
Fig. C. Lerp of the first instar nymph (28. iv. 1991, Kamo-gawa, Kyoto).
Fig. D. Lerp of the 3rd instar nymph (5. vii. 1991, Kamo-gawa, Kyoto).
Fig. E. Galls of the fifth instar nymphs (14. vi. 1983, Kojinden, Yohkaichi, Shiga Pref.).
Fig. F. Lerp of the fifth instar nymphs (5. vi. 1983, Kojinden, Yohkaichi, Shiga Pref.).
Fig. G. Lerp of the fifth instar nymph (5. vi. 1991, Kamo-gawa, Kyoto).
Fig. H. The fourth instar (left) and the fifth instar (right) nymphs of which lerp are removed (14. vi. 1983, Kojinden, Yohkaichi, Shiga Pref.).