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Host-plant Records for Six Pamphiliine Sawflies (Hymenoptera, Pamphiliidae) in Hokkaido, Japan

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Abstract Based on rearing in Hokkaido, host-plant records for six pamphiliine sawflies are given. *Sorbaria sorbifolia* var. *stellipila* is reconfirmed as a host-plant of *Neurotoma sibirica*. New host-plant records are: *Crataegus chlorosarca* for *Neurotoma iridescens*, *Populus tremula* var. *davidiana* for *Pamphilius histrio*, *Prunus sargentii*, *P. maximowiczii* and *Crataegus chlorosarca* for *Pamphilius volatilis*, *Betula ermani* and *B. platyphylla* var. *japonica* for *Pamphilius varius*, and *Alnus hirsuta* for *Pamphilius archiducalis*.

Key words: Pamphiliidae, *Neurotoma*, *Pamphilius*, host-plant, Japan.

Larvae of pamphiliid sawflies of the subfamily Pamphiliinae feed on the leaves of angiosperms, spinning webs or making leaf-rolls. Shinohara and Okutani (1983) summarized information on the host-plants of the Japanese species then available, giving host-plant records for 17 species based on rearing or observation of oviposition. Since then, seven host-plants for seven pamphiliine species have been clarified (Shinohara,1987, 1993; Shinohara & Hara, 1991, 1992, 1993, 1995, 1997 b).

The new host-plant records given in the following lines are part of the results of rearing by the second author in Hokkaido. The material is preserved in the National Science Museum, Tokyo, and Hokkaido Forestry Research Institute, Bibai. For the scientific names of host-plants, we follow Ohwi (1965).

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Neurotoma sibirica Gussakovskij, 1935

[Japanese name: Hime-kuro-hiratahabachi]

Host-plants. Previous record: *Sorbaria sorbifolia* var. *stellipila* (Shinohara, 1980).

Material examined. 1♀ "HR920715A" "Oketo, Abashiri, Hokkaido, H. Hara"

"Coll. 15. VII. 1992 in larval stage, matured 23. VII. 1992, em. 21. II. 1993" "Host: *Sorbaria sorbifolia* var. *stellipila*"; 1♂ "HR920715A" "Oketo, Abashiri, Hokkaido, H. Hara" "Coll. 15. VII. 1992 in larval stage, matured 23. VII. 1992, em. 23. II. 1993" "Host: *Sorbaria sorbifolia* var. *stellipila*."

Remarks. Shinohara (1980) recorded *Sorbaria sorbifolia* var. *stellipila* as a host-plant of this species based on the observation of oviposition and young larvae. The above specimens represent the first case of successful rearing. The two specimens emerged from a group of larvae together forming a web-nest ("HR920715A"); one parasite, an unidentified ichneumon, also emerged from the same group of larvae.

Neurotoma iridescens (André, 1881)

[Japanese name: Sakura-hiratahabachi]

Host-plants. New record: *Crataegus chlorosarca*. Previous records: *Prunus avium*, *P.* ×*yedoensis*, *P. jamasakura*, *Sorbus commixta* in Japan (Okutani, 1967) and *Sorbus aucuparia*, *Prunus cerasus* and *P. padus* in Europe (Kontuniemi, 1960).

Material examined. 1♀ "Part of HH950712A" "Bibai, Hokkaido, H. Hara" "Coll. 12. VII. 1995 in larval stage, matured 13. VII. 1995, em. 2. IV. 1996" "Host: *Crataegus chlorosarca*"; 1♀ "Part of HH960626A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 7–12. VII. 1996, em. 25. III. 1997" "Host: *Crataegus chlorosarca*"; 1♂ "Part of HH960626A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 7–12. VII. 1996, em. 21. III. 1997" "Host: *Crataegus chlorosarca*"; 1♂ "Part of HH960626A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 7–12. VII. 1996, em. 24. III. 1997" "Host: *Crataegus chlorosarca*."

Remarks. *Neurotoma iridescens* is known as a gregarious web-spinner on *Prunus* spp. and *Sorbus* spp. (Forsius, 1911; Okutani & Mikata, 1958), and this is the first record from *Crataegus*. Two larval nests on *Crataegus* were found and reared in Bibai: 1) "HH950712A": a web-nest close to its final stage with only five mature larvae, all of which soon left the nest; one female *N. iridescens* and three unidentified ichneumons emerged in the next spring. 2) "HH960626A": a web-nest, with remains of 25 egg shells; three specimens listed above and six unidentified ichneumons emerged in the next spring.

Pamphilius histrio Latreille, 1812

[New Japanese name: Ô-kiiro-hiratahabachi]

Host-plants. New record: *Populus tremula* var. *davidiana*. Previous records: *Populus tremula* (Stritt, 1935) and ?*Populus nigra* (Midtgaard, 1989) in Europe.

Material examined. 1♂ "HH960626C" "Bibai, Hokkaido, H. Hara" "Coll. 25.

VI. 1996 in larval stage, matured 12. VII. 1996, em. 20. III. 1997" "Host: *Populus tremula* var. *davidiana*."

Remarks. This species was first found in Japan in 1996 (Shinohara & Hara, 1997 a). The observed larval abode ("HH960626C") was the type C of Stritt (1935) and quite similar to the one described and illustrated by Chambers (1952).

Pamphilius volatilis (Smith, 1874)

[Japanese name: Shima-hiratahabachi]

Host-plants. New records: *Prunus sargentii*, *P. maximowiczii*, *Crataegus chlorosarca*. Previous records: *Prunus*×*yedoensis*, *P. jamasakura*, *P. nipponica* in Japan (Shinohara & Okutani, 1983).

Material examined. 1♀ "HH940613B" "Bibai, Sorachi, Hokkaido, H. Hara" "Coll. 13. VI. 1994 in larval stage, matured 26. VI. 1994, em. 28. III. 1995" "Host: *Prunus sargentii*"; 1♂ "Bibai, Sorachi, Hokkaido, H. Hara" "Coll. 21. VI. 1994 in larval stage, matured 4. VII. 1994, em. 22. III. 1995" "Host: *Prunus sargentii*"; 1♀ "Part of colony No. PMC96A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 2. VII. 1996, em. 17. III. 1997" "Host: *Prunus maximowiczii*"; 1♀ "Part of colony No. PMC96C" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 30. VI. 1996, em. 16. III. 1997" "Host: *Prunus maximowiczii*"; 1♀ "Part of colony No. PMC96D" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 30. VI. 1996, em. 16. III. 1997" "Host: *Prunus maximowiczii*"; 1♂ "Part of colony No. PMC96D" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 28. VI. 1996, em. 16. III. 1997" "Host: *Prunus maximowiczii*"; 3♀ "Part of colony No. CCC96A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 2. VII. 1996, em. 17. III. 1997" "Host: *Crataegus chlorosarca*"; 1♂ "Part of colony No. CCC96A" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 2. VII. 1996, em. 11. III. 1997" "Host: *Crataegus chlorosarca*"; 1♂ "Part of colony No. CCC96B" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 29. VI. 1996, em. 11. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "Part of colony No. CCC96D" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 28. VI. 1996, em. 17. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "Part of colony No. CCC96D" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 29. VI. 1996, em. 19. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "HH960626B" "Bibai, Hokkaido, H. Hara" "Coll. 25. VI. 1996 in larval stage, matured 30. VI. 1996, em. 19. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "Part of HH960626F" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 1. VII. 1996, em. 18. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "Part of HH960626F" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 1. VII. 1996, em. 19. III. 1997" "Host: *Crataegus chlorosarca*"; 1♀ "CCC96E" "Bibai, Hokkaido, H. Hara" "Coll. 25. VI. 1996 in larval stage, matured 26. VI. 1996,

em. 17. III. 1997" "Host: *Crataegus chlorosarca*"; 1♂ "CCC96F" "Bibai, Hokkaido, H. Hara" "Coll. 26. VI. 1996 in larval stage, matured 27. VI. 1996, em. 14. III. 1997" "Host: *Crataegus chlorosarca*."

Remarks. The life history of this species was studied in detail by Okutani and Mikata (1958) and three species of *Prunus* given above have been recorded as the host-plants (Shinohara & Okutani, 1983). Two *Prunus* and one *Crataegus* species are newly recognized here as the host-plants based on the rearing of 12 larval nests. This is one of the four species of *Pamphilius* which have the gregarious larval habit (Shinohara & Hara, 1997 b). The eggs of this species are always laid on the underside of the leaf and the leaf is always rolled below. The leaf-rolls are of the type A or B of Stritt (1935).

The code such as "HH940613B" in the "Material examined" section above refers to each larval nest. Additional information on each of them is as follows: 1) "HH940613B": a leaf-roll containing three larvae and remains of five egg shells; one female emerged. 2) "PMC96A": a type B leaf-roll containing five mature larvae, remains of five egg shells and two unhatched eggs on the underside of the same leaf; one female emerged. 3) "PMC96C": a leaf-roll containing five mature larvae, remains of five egg shells on the underside of another leaf nearby; one female emerged. 4) "PMC96D": a leaf-roll containing two mature larvae, remains of two egg shells on the underside of the same leaf; one female and one male emerged. 5) "CCC96A": a leaf-roll containing eight mature larvae, remains of eight egg shells on the underside of the same leaf; three females and one male emerged. 6) "CCC96B": a type A leaf-roll containing five mature larvae, remains of five egg shells on the underside of another leaf nearby; one male emerged. 7) "CCC96D": a type B leaf-roll containing two mature larvae, remains of egg shells not found; two females emerged. 8) "HH960626B": a leaf roll with one mature larva, nearby a leaf with an empty nest and remains of nine egg shells on the underside. 9) "HH960626F": a type B leaf-roll with seven mature larvae, remains of seven egg shells on the underside of the same leaf; two females emerged. 10) "CCC96E": a leaf-roll containing one mature larva, remains of six egg shells on the underside of the same leaf; one female emerged. 11) "CCC96F": a type B leaf-roll containing one mature larva, an empty nest and remains of four egg shells on the underside of a leaf nearby; one male emerged.

Pamphilius varius (Serville, 1823)

[Japanese name: Tsuyazu-kanba-hiratahabachi]

Host-plants. New records: *Betula ermani*, *Betula platyphylla* var. *japonica*. Previous records: *Betula verrucosa* (Stritt, 1936) in Europe.

Material examined. 1♀ "HH950727A" "Yamada-onsen near Shikaribetsu-ko, Tokachi, Hokkaido, 21. IV. 1996, H. Hara" "Coll. 27. VII. 1995 in larval stage, matured 2. VIII. 1995, em. 21. IV. 1996" "Host: *Betula ermani*" "egg shell and larval

abode on underside of leaf"; 1♀ "larva similar to HH950727A" "Yamada spa, near Shikaribetsu-ko, Tokachi, Hokkaido, 16. IV. 1996, H. Hara" "Coll. 27. VII. 1995 in larval stage, matured 28. VII. 1995, em. 16. IV. 1996" "Host: *Betula ermani*" "egg shell and larval abode on underside of leaf"; 1♀ "HH950717A" "Bibai, Hokkaido, 27. III. 1996, H. Hara" "Coll. 17. VII. 1995 in larval stage, matured 20. VII. 1995, em. 27. III. 1996" "Host: *Betula platyphylla japonica*" "egg shell and larval abode on underside of leaf."

Remarks. This is a widespread Palearctic species associated with *Betula*. European records of *Alnus incana* (e.g., Liston, 1995) need confirmation. For attribution of the authorship of this species to Serville, not Lepeletier, we follow Blank and Taeger (1998). The leaf-roll of this species is the type B of Stritt (1935).

Pamphilius archiducalis Konow, 1897

[New Japanese name: Yumimon-hanno-hiratahabachi]

Host-plants. New record: *Alnus hirsuta*. Previous record: *Alnus maximowiczii* in Honshu, Japan (Shinohara & Okutani, 1983).

Material examined. 1♀ "HH950728D" "Yamada-onsen near Shikaribetsu-ko, Tokachi, Hokkaido, 24. IV. 1996, H. Hara" "Coll. 27. VII. 1995 in larval stage, matured 30. VII. 1995, em. 24. IV. 1996" "Host: *Alnus hirsuta*" "egg shell and larval abode on underside of leaf"; 1♀ "Yamada-onsen near Shikaribetsu-ko, Tokachi, Hokkaido, 21. IV. 1996, H. Hara" "Coll. 27. VII. 1995 in larval stage, matured?, em. 21. IV. 1996" "Host: *Alnus hirsuta*" "egg shell and larval abode on underside of leaf."

Remarks. This species was once reared from larva feeding on *Alnus maximowiczii* in Honshu (Shinohara & Okutani, 1983), and *Alnus hirsuta* is hereby newly recorded as a host-plant in Hokkaido. The leaf-roll of this species is the type B of Stritt (1935).

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