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Host plants of *Empria* sawflies (Hymenoptera, Tenthredinidae) in Japan include *Rhododendron* (Ericaceae)

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Abstract. New host plant records are given for six *Empria* species from Japan. They are *Rosa multiflora* [Rosaceae] for *E. honshuana* Prous & Heidemaa, 2011, *Rubus* sp. [Rosaceae] for *E. japonica* Heidemaa & Prous, 2011, *Geum japonicum* and *G. calthifolium* var. *nipponicum* [Rosaceae] for *E. loktini* Ermolenko, 1971, *Rosa multiflora*, *Potentilla indica* and probably *Rubus parvifolius* [Rosaceae] for *E. quadrimaculata* Takeuchi, 1952, *Rhododendron molle* subsp. *japonicum* [Ericaceae] for *E. takeuchii* Prous & Heidemaa, 2011, and *Geum japonicum* and *Filipendula camtschatica* [Rosaceae] for *E. tridentis* Lee & Ryu, 1996. This is the first record of Ericaceae as a host plant of *Empria*. The mode of host shifts in the evolution of *Empria* is inferred by using a phylogenetic hypothesis proposed by Prous *et al*. (2011a).

Key words: Rosaceae, Betulaceae, host shifts

Introduction

Empria Lepeletier & Serville, in Latreille *et al*. (1828) is a large genus of the sawfly family Tenthredinidae, comprising 53 valid species-group taxa (Taeger *et al.* 2010; Prous *et al*. 2011a, b; Prous & Heidemaa 2012) distributed in the northern Hemisphere. Prous *et al.* (2011a) revised the Japanese species of the genus and recognized 12 species in the country.

The host plants and immature stages of the Japanese *Empria* species are little known. Of the 12 species, host records are available only for four widely distributed Palearctic species, and the records are based on observations made in Europe (for *E. candidata* (Fallén, 1808), *E. liturata* (Gmelin, 1790) and *E. tridens* (Konow, 1896)) and in East Siberia (for *E. plana* (Jakowlew, 1891)). Okutani (1954) recorded *Geum japonicum* as a host of *E. quadrimaculata* Takeuchi, 1952, but he later noted that the specific identity of the reared *Empria* species was uncertain (Okutani 1967).

The present paper reports the host plants of six *Empria* species from Japan on the basis of our own rearing of *E. takeuchii* Prous & Heidemaa, 2011, in Hokkaido and an examination of the reared adult specimens of *E. honshuana* Prous & Heidemaa, 2011, *E. japonica* Heidemaa & Prous, 2011, *E. loktini* Ermolenko, 1971, *E. quadrimaculata* Takeuchi, 1952, and *E. tridentis* Lee & Ryu, 1996. The reared specimens of the latter five species are in the collection of the late R. Inomata, who reared a great number of sawfly larvae mainly in Hyogo Prefecture in central southwestern Honshu and in Hokkaido for a long period from 1960s to 1990s. Due to his untimely death soon after the disastrous Great Hanshin earthquake that attacked southern part of Hyogo Prefecture, where he lived, in 1995, Inomata's most valuable collection was transferred to the Museum of Nature and Human Activities, Hyogo, Sanda, and was left almost unstudied thereafter.

As a result of the present work, host plant records are now available for all Japanese species, with the exception of *Empria rubicola* Ermolenko, 1971 and one unidentified species. The recorded host plants mainly belong to the subfamily Rosoideae of the family Rosaceae, but *E. takeuchii* was found to be associated with *Rhododendron* (Ericaceae). This is the first record of Ericaceae as the host plant of *Empria*. By incorporating the host records into an available phylogenetic hypothesis proposed by Prous *et al*. (2011a), the mode of host shifts in the evolution of *Empria* is discussed.

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