Bull. Natl. Mus. Nat. Sci., Ser. A, 50(1), pp. 19–32, February 22, 2024
DOI: 10.50826/bnmnszool.50.1_19

Taxonomic Notes and New Distribution and Host Plant Records for Sawflies and Woodwasps (Hymenoptera, Symphyta) of Japan IX

Akihiko Shinohara[1], Shinichi Ibuki[2] and Hideho Hara[3]

[1]National Museum of Nature and Science,
4–1–1 Amakubo, Tsukuba, Ibaraki, 305–0005 Japan
E-mail: shinohar@kahaku.go.jp
[2]Wami 1355–13, Nakagawa, Tochigi, 324–0612 Japan
E-mail: banbi-fa@ktd.biglobe.ne.jp
[3]Nishi 4 Kita 3–4–29, Bibai, Hokkaido, 072–0033 Japan
E-mail: harahideho@bell.ocn.ne.jp

(Received 3 December 2023; accepted 20 December 2023)

Abstract Based on the examination of new material, *Neurotoma harai* Shinohara, 1994, is synonymized with *Neurotoma atrata* Takeuchi, 1930. The larvae of *Neurotoma atrata*, *Pamphilius komonensis* Takeuchi, 1930, *Armitarsus watanabei* Shinohara, 2002, *Periclista erythrogramma* Togashi, 1999 and *Periclista shiritakensis* Togashi, 1999, are briefly described. New distribution records are *Onycholyda esakii* (Takeuchi, 1930) from Tottori Prefecture, *Pamphilius komonensis* from Ibaraki Prefecture and Tokushima Prefecture, *Xiphydria camelus* (Linné, 1758) from Tochigi Prefecture, and *Pleroneura itoi* Shinohara, 2016, from Miyazaki Prefecture and Kyushu. New host plant records are given for *Neurotoma atrata*, *Onycholyda esakii*, *Onycholyda viriditibialis* (Takeuchi, 1930), *Pamphilius komonensis*, *Armitarsus watanabei*, *Empria takeuchii* Prous and Heidemaa, 2011, *Fagineura fulvistriata* Hara, 2022, *Fagineura glabella* Hara, 2022, *Fenusa dohrnii* (Tischbein, 1846), *Periclista erythrogramma*, *Periclista shiritakensis*, *Siobla ferox* (Smith, 1874), *Xiphydria camelus* and *Xiphydria eborata* Konow, 1899. The host plants of *Armitarsus watanabei* and *Periclista shiritakensis* are recorded for the first time.

Key words: Pamphiliidae, Tenthredinidae, Xiphydriidae, Xyelidae, distribution, host plant, life history, larva.

Introduction

This is a ninth paper of the series of works concerning sawflies and woodwasps of Japan (e.g., Hara and Shinohara, 2017; Shinohara and Hara, 2020) and here we treat 15 species of the families Pamphiliidae, Tenthredinidae, Xiphydriidae and Xyelidae. Most of the new findings reported in this paper are results of the study of the material recently acquired by rearings by S. Ibuki in Nakagawa, Tochigi Prefecture, in the last several years.

Materials and Methods

The material used in this study is kept in the National Museum of Nature and Science, Tsukuba, unless otherwise indicated. Morphological examination was undertaken with a Leica MS5 and an Olympus SZ60 stereo binocular microscopes and Olympus BH-2 light microscope. Photographs were taken with Canon PowerShot S95, CASIO EX-ZR1000, NIKON E990, Olympus TG-4, Olympus TG-5, Panasonic DMC-FZ30 and RICOH CX3 digital cameras and a Sony DSC-RX100 digital camera with a Leica MS5 and an Olympus BH-2 light microscopes. The digital images were processed and arranged

with Adobe Photoshop Elements 15 and GIMP 2.10 software. Rearing was done in rooms in Bibai, Hokkaido, and Nakagawa, Tochigi Prefecture, Honshu. The temperature and day length were not controlled in the rearing rooms, but a hibernating individual was stored outdoors in a container and moved in April to an air-conditioned room at 15–25℃ in Bibai. For the morphological terminology, we generally follow Viitasaari (2002a). Notes on the distribution, larva, host plant and life history are given only for the species for which new information is available.

Results and Discussion

Pamphiliidae

Neurotoma atrata Takeuchi, 1930

Japanese name: Kuro-hirata-habachi

(Fig. 1)

Neurotoma atrata Takeuchi, 1930: 8; Shinohara, 1980: 91; Taeger *et al.*, 2010: 82; Shinohara, 2019: 6; Shinohara, 2020: 8, 232; Shinohara *et al.*, 2022: 58.

Neurotoma harai Shinohara, 1993: 126; Shinohara, 1997: 70; Shinohara, 2002a: 418; Katayama, 2004: 48; Shinohara and Yamada, 2005: 53; Shinohara and Hara, 2005: 273; Shinohara *et al.*, 2007: 68; Taeger *et al.*, 2010: 82; Shinohara, 2019: 6; Shinohara, 2020: 8, 232; Anonymous, 2023. **N. Syn.**

For more references, see Shinohara *et al.* (2022).

Material examined. HONSHU: Tochigi Pref.: 1 ♂, Nakagawa, Bato, 36°47'N 140°10'E, coll. larva on *Quercus serrata*, 30. IV. 2018, mat. 7. V., em. 27. III. 2019, S. Ibuki; 1 ♂, same data except em. 5. IV. 2019. Tokyo Met.: 1 ♀, Hodokubo, Hino-shi, Tokyo, 16. IV. 2003, H. Takahashi.

Larva. Middle instar (Fig. 1C–E): Head black with frontal surface creamy white; mandible and antenna mostly black; trunk slightly greenish creamy white, dorsal midline darker and lateral margins and ventral midline whitish; lateral and dorsal prothoracic shields marked with black; cervical sclerite, thoracic legs and subanal appendage black; last abdominal sternum narrowly blackish. *Late instar* (Fig. 1F–H): Head pale brown with frontal surface pale olive and lateral surface marked with dark brown; mandible and antenna mostly dark brown; trunk sordid greenish white, dorsal midline darker; lateral prothoracic shield and cervical sclerite marked with black; thoracic legs and subanal appendage whitish. *Mature larva* (Fig. 1I, J): Head, including mandible and antenna, olive; trunk, thoracic legs and subanal appendage vivid pale green; lateral prothoracic shield and cervical sclerite marked with black.

Distribution. Japan (Hokkaido, Honshu), Russia (Primorskij kraj), Korea and China (Zhejiang province).

Host plant. Fagaceae: *Quercus acutissima* Carruth. (Shinohara, 1980), *Q. crispula* Blume var. *crispula* (Shinohara, 1993), *Q. serrata* Murray (new record).

Field observations and rearing records. On April 30, 2018, Ibuki found a nest of gregarious pamphiliid larvae on a small tree of *Q. serrata* in Nakagawa Town, Tochigi Prefecture. The nest was located at the apex of a branch near the top of the tree and contained three middle instar larvae. The nest was originally made of one young leaf loosely folded below with silk. After rearing in a container for a few days, adjacent leaves were added to form a partly web nest (Fig. 1A). On the midvein on the undersurface of the original nest leaf, remains of two eggshells were found (Fig. 1B). The two eggshells were found far apart and another eggshell was probably present on the halfway between them, suggesting that the eggs were laid on the midvein in a row with some space between them but not in a compact group. On May 2, the larvae probably molted because the head color changed from black to pale brown (Fig. 1F, G). On May 3, one of the three larvae died. On May 7, two larvae matured (Fig. 1 I, J) and soon entered the soil. One male each emerged on March 27 and April 5, 2019.

On May 8, 2019, a larval nest was found on *Q. serrata* in Kitazawa, Wami, with only one late-instar larva inside. Weather the larva was originally solitary or gregarious was not confirmed.

Fig. 1. *Neurotoma atrata* on *Q. serrata*, photographed in Nakagawa by S. Ibuki in 2018 and 2019. — A, Nest containing three larvae, seen from above, May 3, 2018 (deformed after three days of rearing in a container); B, inside of nest, seen from below, remains of two egg shells arrowed, April 30, 2018; C–E, middle instar larva, April 30, 2018 (C, E) and May 8, 2019 (D); F–H, late instar larva, May 2 (F), May 3 (G) and May 4, 2018 (H); I, J, mature larva, May 7, 2018.

To check if the larva also feeds on *Q. acutissima*, only the leaves of *Q. acutissima* were given to the larva on May 9 and thereafter. The larva fed on *Q. acutissima* without apparent problems and matured on May 14. No adult emerged in the following year.

On May 13, 2019, a gregarious larval nest, containing four larvae, was found on *Q. acutissima* in Wami. Three larvae matured on May 21 and one larva matured on May 22. Three parasitoid wasps emerged on April 17 to 21, 2020.

Variation of the adults. The two male adults obtained by rearing in this work lived in larval stage in the same nest and therefore are doubtless

offsprings of the same female. They are about the same size and quite similar in structure but differ in coloration. One of them (emerged on March 27) has the head and hind femur (except for the trochantellus) entirely black and the pale areas on the mandibles and legs distinctly greenish, whereas the other specimen (emerged on April 5) has the clypeus and the hind femur (on apical dorsal surface) marked with creamy white. The former is more similar to the only previously known male (Shinohara, 1980; Shinohara *et al.*, 2022, fig. 20), though the latter old specimen collected in 1960 has no distinct greenish tint on the mandible and legs and the antennal scape largely marked with creamy white ventrally. Therefore, the coloration of the clypeus, antennal scape and hind femur in the three known male specimens are not quite stable.

Remarks. *Neurotoma atrata* was described from two females collected in Gifu Prefecture, Honshu, Japan (Takeuchi, 1930). Shinohara (1980) examined nine females (one specimen from Mabashi was wrongly cited as a male) and one male from Honshu, Japan, and four females from Korea. Two females, one each from Japan and Korea, were reared specimens and the host was "Kunugi" (= *Q. acutissima*). This species was later recorded from Primorskij kraj, Russia, based on one female and one male specimens by Shinohara (1992). Shinohara (1993) described *N. harai* based on two female and one male specimens, all of them, except one female, reared from larvae feeding on "*Quercus mongolica* var. *grosseserrata*" in Hokkaido. Shinohara (1993) distinguished *N. atrata* and *N. harai* by the different color patterns of the frons, antennal scape and legs, host plants and distribution.

Since 1993, two females and one male of "*N. harai*" have become available from Japan (Shinohara, 1997; Katayama, 2004; Anonymous, 2023) and here we add one female and two reared males of "*N. atrata*" with a new host plant record of *Q. serrata*. From Korea and China, collection records of three females were added (Shinohara and Lee, 1997; Shinohara and Xiao, 2006; Shinohara and Tripotin, 2021).

After a close examination of all currently available information, we conclude that all the specimens previously identified as *N. atrata* and *N. harai* belong to the same species and the two names are synonymous (*Neurotoma harai* Shinohara, 1980 = *Neurotoma atrata* Takeuchi, 1930, new synonym). The addition of the new material, though small in number, has shown that the distinguishing characters used to separate *N. atrata* and *N. harai* by Shinohara (1993) are variable as discussed above. *Neurotoma atrata*, thus newly defined, is distributed in Japan (Hokkaido, Honshu), Russia (Primorskij kraj), Korea and China (Zhejiang province) and the larvae feed on *Q. acutissima*, *Q. crispula* var. *crispula* and *Q. serrata*.

The larva of *N. atrata* is distinguished from that of *N. mandibularis*, feeding on *Quercus robur* L. (Green, 2023), by the pale brown or olive head and the lack of black areas on the dorsal prothoracic shield in the late feeding instar and after maturation (Fig. 1F–J). The larva feeding on "Sangsurinamu" (= *Q. acutissima*) determined as "*Caliroa oishii* (Takeuchi)" (Tenthredinidae) by Lee and Chung (1997) is probably *N. coreana*, because the photograph of the adult on the same page is probably this species. This larva is similar to that of *N. atrata* but differs from it in having the head and the lateral prothoracic shield nearly concolorous to the trunk. An undetermined pamphiliid larva on *Q. mongolica* photographed in Korea by Sohn (2006) is very similar to the middle instar larva of *N. atrata* (Fig. 1C–E), though the last abdominal sternum of this Korean specimen has no blackish spot. This Korean larva may possibly belong to *N. atrata*, and in this case *Q. mongolica* is also a host plant of *N. atrata*.

Onycholyda esakii (Takeuchi, 1930)

Japanese name: Esaki-hirata-habachi

(Fig. 2D, E)

Distribution. Japan (Honshu, Shikoku, Kyushu). New record from Tottori Prefecture (see *Remarks*

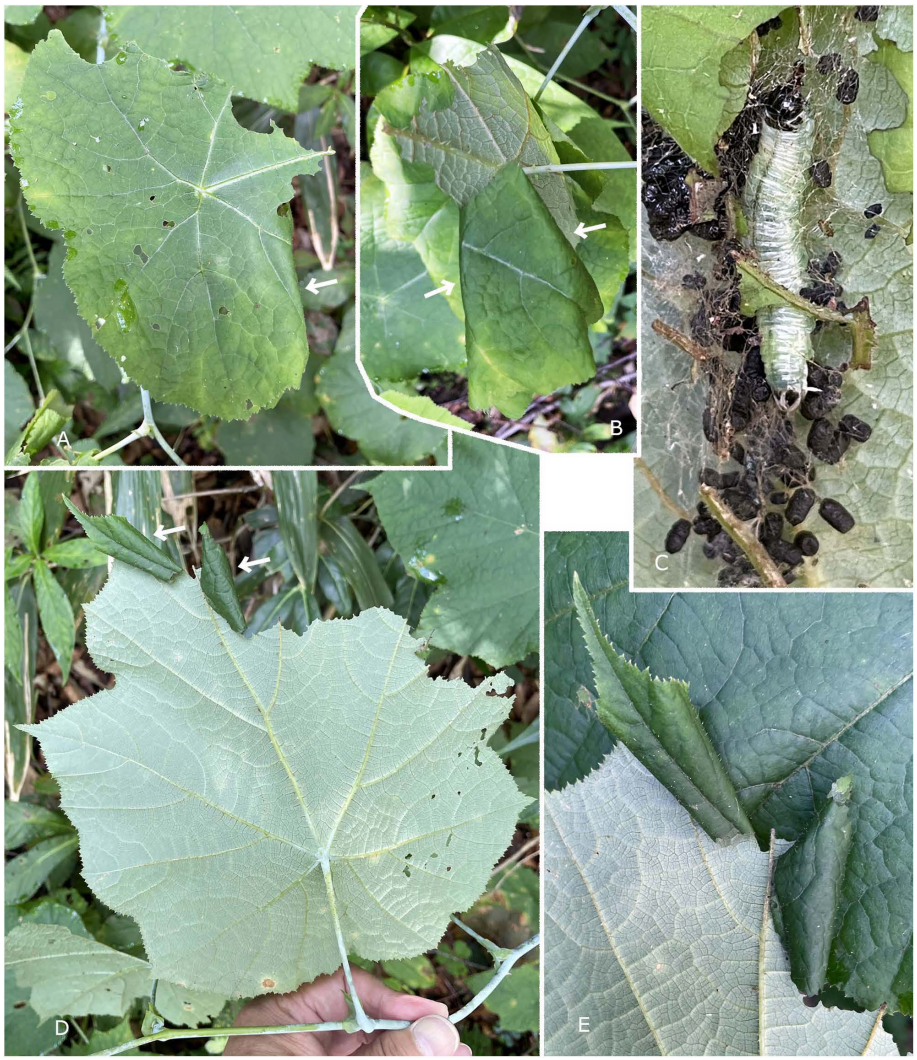

Fig. 2. *Onycholyda viriditibialis* (A–C) and *O. esakii* (D, E), photographed in Kagamiganaru by A. Shinohara on September 2, 2023. — A, Larval abode (arrowed), upper surface; B, same abode (arrowed), under surface; C, late-instar larva in abode with frass; D, two larval abodes (arrowed), under surface; E, close-up of larval abodes.

below).

Host plant. Rosaceae: *Rubus crataegifolius* Bunge (Shinohara and Kojima, 2009), *R. peltatus* Maxim. (new record; see *Remarks* below).

Remarks. Shinohara and Kojima (2009) reported on the bionomics of this sawfly. On September 2, 2023, Shinohara found two leaf-rolls of pamphiliid larvae on a leaf of *R. peltatus* (Fig. 2D, E) in Kagamiganaru, Tottori Prefecture. The leaf-rolls contained one larva each, and the larvae were identified as *O. esakii* when they matured on September 7. The mature larvae were well characterized by the head black and the prothoracic shields and the last abdominal segment without black areas and perfectly agreed with *O. esakii* as described by Shinohara and Kojima (2009). This observation represents the first distribution record of *O. esakii* from Tottori Prefecture and the first host plant record of *R. peltatus* for the species.

Onycholyda viriditibialis (Takeuchi, 1930)

Japanese name: Aosune-hirata-habachi

(Fig. 2A–C)

Host plant. Rosaceae: *R. crataegifolius* (Okutani and Fujita, 1956; Shinohara and Kojima, 2009), *R. microphyllus* L.f. (Hara and Shinohara, 2017). *R. peltatus* (new record; see *Remarks* below).

Remarks. Bionomics of this species was studied by Okutani and Fujita (1956), Shinohara and Kojima (2009) and Hara and Shinohara (2017). On September 2, 2023, Shinohara found one larval leaf-roll of this species on a leaf of *R. peltatus* (Fig. 2A, B) in Kagamiganaru, Tottori Prefecture. The leaf-roll was loose and contained one late-instar larva and frass (Fig. 2C). The larva had the head entirely black and the prothoracic shields and both the dorsal and ventral sides of the terminal abdominal segment marked with black (Fig. 2C). This color pattern is characteristic of *O. viriditibialis* (Okutani and Fujita, 1956; Shinohara and Kojima, 2009). *Rubus peltatus* is the first host plant record for the sawfly.

Pamphilius komonensis Takeuchi, 1930

Japanese name: Kaede-hirata-habachi

(Fig. 3; Table 1)

Material examined. HONSHU: Tochigi Pref.: 7 ♀1 ♂ listed in Table 1. Ibaraki Pref.: 3 ♀ listed in Table 1. SHIKOKU: Tokushima Pref.: Ochiai-toge, Miyoshi, 8. VI. 2021, A. Watanabe. For more records, see Shinohara and Zhou (2006) and Anonymous (2023).

Larva. *Early instar* (Fig. 3C): Head black; trunk creamy white. *Late instar* (Fig. 3D, G): Head and antenna pale olive. Trunk greenish white; dorsal prothoracic field dark olive; lateral prothoracic shield and cervical sclerite black; thoracic legs and subanal appendage creamy white; lateral basin of suranal plate, suranal hook and subanal plate blackish. *Mature larva* (Fig. 3H): Head pale olive or pale brownish green with antennae dark brown. Trunk including all appendages vivid pale green; dorsal prothoracic field concolorous to head or blackish; lateral prothoracic shield and cervical sclerite black; lateral basin of suranal plate, suranal hook and subanal plate dark olive to black; central basin of suranal plate often blackish.

Distribution. Japan (Honshu, Shikoku, Kyushu). New record from Ibaraki Prefecture and Tokushima Prefecture.

Host plant. Sapindaceae: *Acer pictum* Thunb. (Shinohara and Okutani, 1983), *A. amoenum* Carrière var. *amoenum* (new record), *A. palmatum* Thunb. (new record), *A. pictum* Thunb. subsp. *dissectum* (Wesm.) H.Ohashi f. *connivens* (G.Nicholson) H.Ohashi (new record).

Life history. The collection records of over 1000 specimens (Shinohara and Zhou, 2006; Anonymous, 2023) show that the adults are active in the field mainly in May, the earliest record being April 21, 2007, in the lowland of Hiratsuka City, Kanagawa Prefecture and the latest record being July 10–13, 1995, in Hachimantai (ca.1000–1300 m alt.), Iwate Prefecture. In Nakagawa, Tochigi Prefecture, the larvae of this species were found in late May to early July, they matured in mid-June to late July, and the adults emerged in mid-April to early May of the following year (Table 1). This species is regarded as univoltine as other pamphiliine sawflies.

The larva is a solitary leaf-roller (Fig. 3). The leaf-roll is made always on the underside of the leaf. It is a specialized, tight, screw-like tube, with the apex closed (Fig. 3E, F; type b of Viitasaari, 2002b). The late instar larva occasionally moves onto another leaf carrying the screw-like abode.

Remarks. Shinohara and Okutani (1983) first recorded the host plant of this species, but the immature stages and biology have not been studied before. As shown above, *P. komonensis* may be associated with various species of maples. This pamphiliid is widely distributed in Honshu, Shikoku and Kyushu (Shinohara and Zhou, 2006; Anonymous, 2023). Here we record this species from Ibaraki Prefecture and Tokushima Prefecture for the first time.

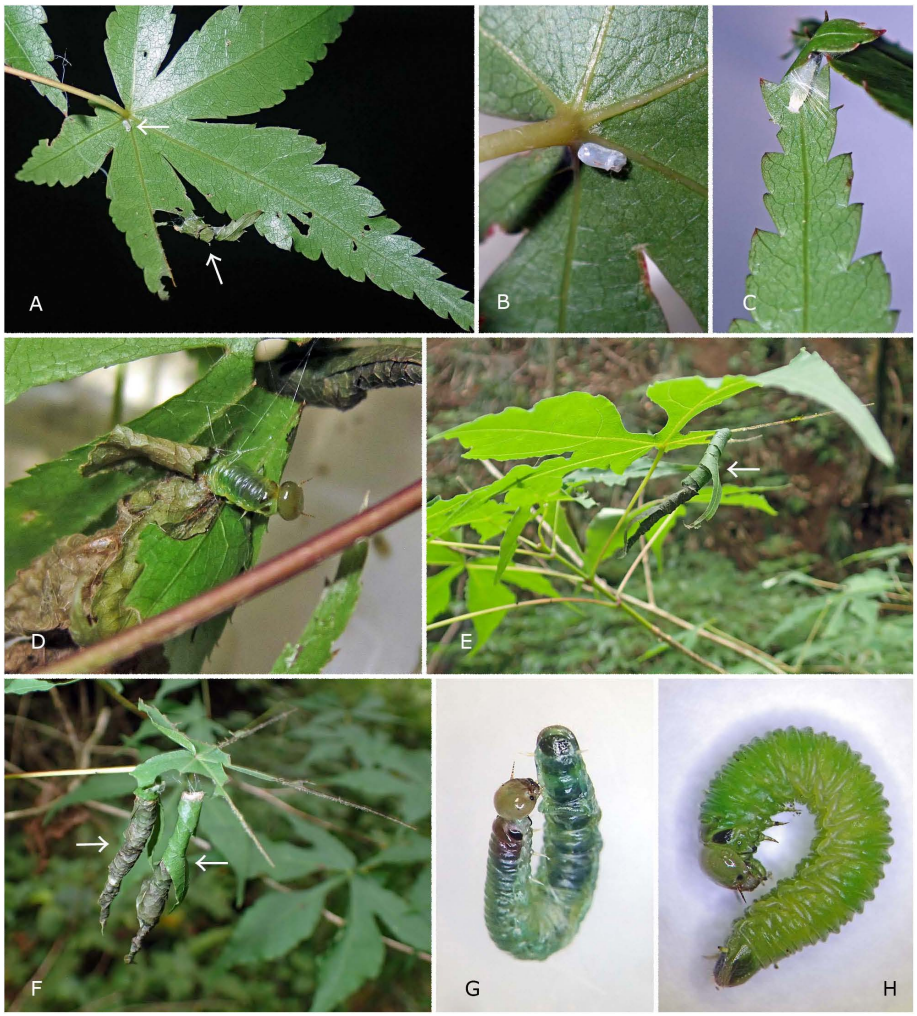

Fig. 3. *Pamphilius komonensis* on *A. palmatum* (A–D) and *A. pictum* subsp. *dissectum* f. *connivens* (E–H) photographed in Nakagawa (G, H in Tsukuba) by S. Ibuki (A–E) and A. Shinohara (E–H). — A, Eggshell (upper arrow) and larval abode of early-instar larva (lower arrow), June 5, 2023; B, eggshell, May 29, 2023; C, early-instar larva beginning to make abode, May 29, 2023; D, middle-instar larva, June 27, 2016; E, F, larval abodes (arrowed), June 8, 2023; G, late-instar larva, June 11, 2023; H, mature larva, June 21, 2023.

Tenthredinidae

Armitarsus watanabei Shinohara, 2002

Japanese name: O-koshijiro-togeashi-habachi

(Fig. 4)

Material examined. HOKKAIDO: 1♀, Chitose, Horoka, 42°54'N 141°47'E, coll. larva on *Cerasus sargentii* var. *sargentii* 24. VIII. 2022, mat. 25. VIII., em. 23. IV. 2023, H. Hara.

Larva. *Late instar* (Fig. 4A, B): Head black, laterally dark brown; trunk opaque, blackish, broad lateral margins and apical segment pale brown; paired transverse lines of four or six small tubercles on each segment and numerous small subtriangular projections along lateral margin white; prothoracic segment dorsally with paired white projections along anterior margin; four long subtriangular projections along apical margin of last abdominal segment. *Mature larva* (Fig. 4C): Pale reddish brown, surface smooth, without small tubercles or projections.

Table 1. Rearing records of *Pamphilius komonensis* in 2015 to 2023 in Ibaraki Prefecture (Hitachiomiya) and Tochigi Prefecture (all other localities). Reared by Ibuki except for the last two entries by Shinohara.

Collection of larvae			Locality	Maturation		Emerged adults	Emergence date			Host plants
2015	June	8	Wami, Nakagawa							*A. palmatum*
2015	June	16	Wami, Nakagawa							*A. palmatum*
2015	June	19	Wami, Nakagawa							*A. palmatum*
2016	May	27	Uwadai, Wami, Nakagawa							*A. pictum**
2016	June	19	Sukusukunomori, Bato, Nakagawa	June	28					*A. palmatum*
2016	June	22	Bicchuzawa, Koguchi, Nakagawa	July	4					*A. palmatum*
2016	June	27	Sukusukunomori, Bato, Nakagawa	June	29					*A. palmatum*
2016	June	27	Sukusukunomori, Bato, Nakagawa	July	19					*A. palmatum*
2016	July	1	Uwadai, Wami, Nakagawa	July	4	1 ♀	2017	April	28	*A. pictum**
2017	June	23	Uwadai, Wami, Nakagawa	July	1					*A. pictum**
2017	June	23	Uwadai, Wami, Nakagawa	July	5					*A. pictum**
2017	June	23	Uwadai, Wami, Nakagawa	July	8	2 ♀	2018	April	16	*A. pictum**
2017	June	30	Uwadai, Wami, Nakagawa	July	3					*A. pictum**
2017	July	2	Banboku-toge, Tomiyama, Nakagawa	July	8					*A. pictum**
2017	July	5	Otsuhata, Yaita	July	27					*A. palmatum*
2017	July	6	Bicchuzawa, Nakagawa	July	11	1 ♂	2018	April	18	*A. palmatum*
2017	July	6	Bicchuzawa, Nakagawa	July	16					*A. palmatum*
2018	June	3	Nagai, Yaita							*A. pictum**
2018	June	8	Yamata, Nakagawa	July	5	1 ♀	2019	April	25	*A. palmatum*
2018	June	9	Hanadate Natural Park, Takabu, Hitachiomiya	June	22	3 ♀	2019	April	24	*A. pictum**
2018	June	9	Banboku-toge, Tomiyama, Nakagawa							*A. amoenum***
2018	June	14	Tomiyama, Nakagawa	June	20	2 ♀	2019	May	1	*A. pictum**
2018	June	15	Koisago, Nakagawa	July	19					?
2019	June	23	Uwadai, Wami, Nakagawa	June	26	1 ♀	2020	April	19	*A. pictum**
2023	May	28	Wami, Nakagawa							*A. palmatum*
2023	June	8	Tomiyama, Nakagawa	June	12					*A. pictum**
2023	June	8	Uwadai, Wami, Nakagawa	June	15					*A. pictum**

**Acer pictum* subsp. *dissectum* f. *connivens*
***Acer amoenum* var. *amoenum*

Fig. 4. *Armitarsus watanabei*, late-instar larva (A, B) and mature larva (C), photographed by H. Hara. A, B, Chitose, August 24, 2022; C, August 25, 2022 in captivity.

Distribution. Japan (Hokkaido, Honshu). New record from Hokkaido.

Host plant. Rosaceae: *Cerasus sargentii* (Rehder) H.Ohba var. *sargentii* (new record).

Remarks. This species was described from Tokyo, central Honshu (Shinohara, 2002b) and

later recorded from Hyogo Prefecture, western Honshu (Okutani, 1954, as *A. albicinctus*; Naito *et al.*, 2004, as *A. albicinctus*; Yoshida, 2014b) and Tochigi Prefecture, central Honshu (Katayama, 2011). This is the first distribution record from Hokkaido. The type series of this species was collected on cherry trees (Shinohara, 2002b) but the immature stages and host plant were unknown. The larva (Fig. 4) has not been clearly differentiated from the larva of *A. albicinctus* (Anonymous, 2014).

Empria takeuchii Prous and Heidemaa, 2011

Japanese name: Tsutsuji-mado-habachi

(Fig. 5)

Material examined. HONSHU: Tochigi Pref.: 1 ♀, Nakagawa, Wami, 36°46'N 140°10'E, coll. larva on *Rhododendron kaempferi* var. *kaempferi* 9. VI. 2022, mat. 14. VI., em. 30. III. 2023, S. Ibuki.

Host plant. Ericaceae: *Rhododendron molle* (Blume) G.Don subsp. *japonicum* (A.Gray) K.Kron. (Shinohara *et al.*, 2015), *R. kaempferi* Planch. var. *kaempferi* (new record).

Remarks. The female specimen examined agrees with the holotype of *E. takeuchii* except that it has partly blackish trochanters and trochantelli. The lancet of this specimen (Fig. 5) is almost identical with that of the holotype (fig. 19 in Prous *et al.*, 2011). *Rhododendron molle* subsp. *japonicum* was recorded as a host plant of this species in Hokkaido (Shinohara *et al.*, 2015) and *R. kaempferi* Planch. var. *kaempferi* is newly recorded here as a host plant in Honshu. *Empria takeuchii* is likely to feed also on other *Rhododendron* species.

Fagineura fulvistriata Hara, 2022

New Japanese name: Kisuji-nara-habachi

Material examined. HONSHU: Tochigi Pref.: 2 ♀, Nakagawa, Wami, 36°47'N 140°10'E, coll. larvae on *Quercus serrata* 3. V. 2022, mat. 7, 8. V., em. 26, 29. III. 2023, S. Ibuki.

Host plant. Fagaceae: *Q. acutissima* (Hara and Ibuki, 2022), *Q. serrata* (new record).

Oviposition. One of the emerged females stated above was kept alive in a cage with a twig of *Q. serrata*. The female laid eggs into the current-year shoot.

Remarks. We here record the new host (*Q. serrata*) and the previously unknown oviposition site for this species. This and the following species belong to the *F. quercivora* group, whose members are associated with deciduous species of *Quercus* and have one generation per year, with the adults emerging in early spring and females laying eggs on the current year's shoots (Hara and Ibuki, 2022; present study).

Fagineura glabella Hara, 2022

Japanese name: Tsuya-aka-nara-habachi

Material examined. HONSHU: Tochigi Pref.: 1 ♀, Nakagawa, Koisago, 36°47'N 140°08'E, coll. larva on *Q. serrata* 5. V. 2022, coc. 9. V., em. 27. III. 2023, S. Ibuki.

Host plant. Fagaceae: *Q. acutissima* (Hara and

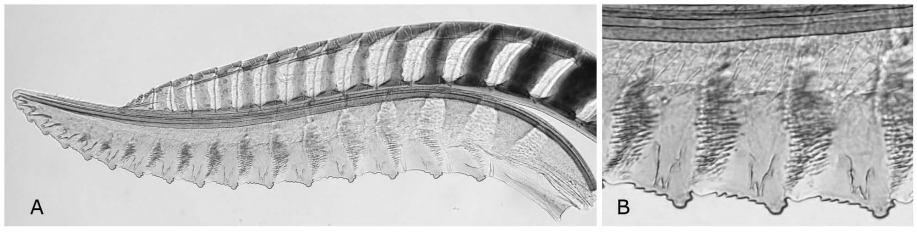

Fig. 5. *Empria takeuchii*, ovipositor (A) and serrulae 5–7 (B), Nakagawa. Photographed by H. Hara.

Ibuki, 2022), *Q. serrata* (new record).

Oviposition. The emerged female mentioned above laid eggs into the current-year shoot of *Q. serrata* in a cage.

Remarks. The new host (*Q. serrata*) and the previously unknown oviposition site are reported here for this species. See also the remarks of the preceding species.

Fenusa dohrnii (Tischbein, 1846)

Japanese name: Hanno-hamuguri-habachi

Material examined. HONSHU: Tochigi Pref.: 1 ♀, Nakagawa, Yamata, coll. larva mining leaf of *Alnus hirsuta* var. *hirsuta* 28. V. 2023, mat. 31. V., em. 16. VI. 2023, S. Ibuki.

Host plant. Betulaceae: *Alnus fauriei* H.Lév. et Vaniot (Togashi, 1972), *A. hirsuta* Turcz. var. *hirsuta* (new record), *A. japonica* (Thunb.) Steud. (Okutani, 1959, 1967). "*Alnus rugosa*, *A. incana*, *A. glutinosa*" in Europe (Taeger *et al.*, 1998).

Remarks. This Holarctic species is associated with various species of *Alnus* (Okutani, 1959, 1967; Togashi, 1972; Taeger *et al.*, 1998), but *A. hirsuta* var. *hirsuta* has not been recorded as a host plant so far.

Periclista erythrogramma Togashi, 1999

Japanese name: Naragashiwa-maru-habachi

(Fig. 6A–B)

Material examined. HONSHU: Tochigi Pref.: 1 ♀, Nakagawa, Wami, coll. larva on *Q. serrata* 19. V. 2011, mat. 22. V., em. 10. IV. 2012, S. Ibuki (Fig. 6A–B) (cited by Naito, 2020); 1 ♀, same data but, Wami, 36°47'N 140°10'E, coll. larva 3. V. 2021, mat. 5. V., em. 27. III. 2022.

Larva. *Final feeding-instar* (Fig. 6A–B): Yellow green almost entirely; spines white; bifurcate spines apically pale gray, but those on dorsum of thorax apically black; bifurcate spines relatively long, about 1/4 as long as height of trunk; subspiracular lobe with two simple spines; surpedal lobe with two simple spines.

Host plant. Fagaceae: *Q. aliena* Blume (Yoshida, 2014a), *Q. crispula* (Shinohara and Hara, 2020), *Q. serrata* (new record).

Remarks. Although the female specimen examined differs from the original description in having an entirely black mesepisternum, we regard the color difference as an intraspecific variation. The larva observed by us (Fig. 6A) is similar to the larva of *P. erythrogramma* figured by Yoshida (2014a, fig. 4). We here record a new host (*Q. serrata*) for this species.

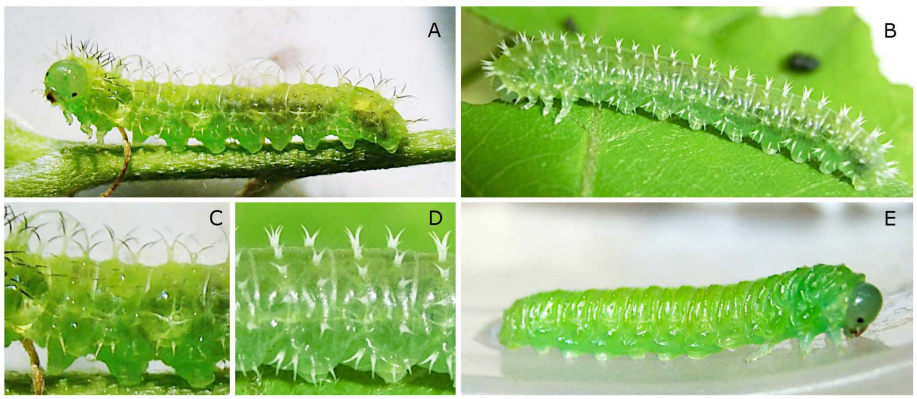

Fig. 6. *Periclista erythrogramma*, final feeding-instar larva, 19. V. 2011 (A, C), *P. shiritakensis*, final feeding-instar larva, 12. V. 2019 (B, D) and mature larva, 15. V. 2019 (E). Photographed in Nakagawa by S. Ibuki.

Periclista shiritakensis Togashi, 1999

Japanese name: Zuaka-maru-habachi

(Fig. 6C–E)

Material examined. HONSHU: Tochigi Pref.: 1 ♀, Nakagawa, Wami, 36°46'N 140°10'E, coll. larva on *Quercus serrata* 7. V. 2019, mat. 17. V., em. 10. IV. 2020, S. Ibuki (Fig. 6C–E).

Larva. *Final feeding-instar* (Fig. 6C–D): Yellow green almost entirely; spines completely white; bifurcate spines relatively long, about 1/5 as long as height of trunk; subspiracular lobe with anterior spine bifurcate, posterior spine simple; surpedal lobe with two simple spines. *Mature larva* (Fig. 6E): Yellow green almost entirely, without spines.

Host plant. Fagaceae: *Q. serrata* (new record).

Remarks. The host plant and larva of *P. shiritakensis* have been unknown until now.

The larva of this species is similar to the larva of *P. erythrogramma* in having an entirely yellow green head and trunk, but they are easily distinguished by the color and shape of the spines.

Siobla ferox (Smith, 1874)

Japanese name: O-koshiaka-habachi

Material examined. HONSHU: Tochigi Pref.: 3 ♂, Nakagawa, Ouchi, 36°44'N 140°14'E, coll. larva on *Ampelopsis glandulosa* var. *heterophylla* 22. VI. 2021, mat. 15–22. VII., em. 27. IV. 2022, S. Ibuki; 1 ♂, same data but mat. 20. VII., em. 29. IV. 2022; 1 ♂, same data but 22. VII., em. 1. V. 2022.

Host plant. Vitaceae: *Ampelopsis glandulosa* (Wall.) Momiy. var. *heterophylla* (Thunb.) Momiy. (new record). For more records, see Hara *et al.* (2021).

Remarks. *Siobla ferox* is a polyphagous sawfly previously known to feed on six species of five families of plants (Hara *et al.*, 2021). This is the first record of Vitaceae and *Ampelopsis glandulosa* var. *heterophylla* as the host of *S. ferox*.

Xiphydriidae

Xiphydria camelus (Linné, 1758)

Japanese name: Akaashi-kubinaga-kibachi

Material examined. HOKKAIDO: 1 ♂, Shimizu, 42°58'N 142°50'E, dead standing tree of *Cerasus* sp., coll. 5. IX. 2019, em. 25. V. 2020, H. Hara; 1 ♀, same data but em. 29. V. 2020; 1 ♀, same data but em. 31. V. 2020; 1 ♀, same data but em. 4. VI. 2020; 1 ♀, same data but em. 10. VI. 2020; 1 ♀, same data but em. 13. VI. 2020. HONSHU: Tochigi Pref.: 1 ♀, Shobugahama, Nikko, 26. VI. 2019, S. Maehara.

Distribution. Europe, Russia (Sakhalin), Korea, Japan (Hokkaido, Honshu: Gunma, Tochigi, Yamanashi, Nagano prefectures). New record from Tochigi Prefecture.

Host plant. Rosaceae: *Cerasus* sp. (new record based on adult emergence). Previous European records with good evidence are *Acer campestre*, *Alnus* spp., *Betula verrucosa*, *Ulmus carpinifolia*, *Quercus*, *Ostrya carpinifolia*, *Populus* (Schimitschek, 1974). Previous Japanese records for "*X. camelus*" (e.g., Okutani, 1967) refer to one or more of the three closely related species (Shinohara and Kameda, 2019) and thus need confirmation.

Remarks. There are uncertain European records of "Kirsche" (Schimitschek, 1974) or *Prunus* spp. (Eichhorn, 1982; Taeger *et al.*, 1998) as a host plant of *X. camelus*. Schimitschek (1974) included "Kirsche (Rudow, 1878)" in the list of host plants of *X. camelus* and mentioned "Rudow (1888) zog *X. camelus* aus Weide und Kirsche". However, Rudow (1878, 1888) never referred to "Kirsche" as a host plant of this species.

Xiphydria eborata Konow, 1899

Japanese name: Kubinaga-kibachi

Material examined. HONSHU: Nagano Pref.: 1 ♀1 ♂, Yumine, 1350 m, Takayama, em. from dead branch of *Alnus hirsuta* 23. VII. 2023, H. Kojima; 1 ♀, Karasawa, 1700 m, Kyowa, Saku,

dead branch of *Betula ermanii*, coll. 11. VIII. 2023, em. 23. VIII. 2023, A. Shinohara.

Host plant. Betulaceae: *Betula grossa* Siebold et Zucc. (Shinohara and Kameda, 2019), *B. ermanii* Cham. (new record), *Alnus hirsuta* Turcz. (new record). Juglandaceae: *Juglans mandschurica* Maxim. var. *sachalinensis* (Komatsu) Kitam. (Shinohara and Kameda, 2019).

Remarks. This is the commonest species of Xiphydriidae in Japan, sometimes found in numbers on dead or cut trunk of alders or birches in Hokkaido and on mountains in Honshu. The host plant records for *X. eborata* based on good evidence (observation of oviposition or adult emergence) are *B. grossa* and *J. mandschurica* (Shinohara and Kameda, 2019), and *B. ermanii* and *A. hirsuta* are newly added here.

Xyelidae

Pleroneura itoi Shinohara, 2016

Japanese name: Hoso-maru-naginata-habachi

Material examined. KYUSHU: Miyazaki Pref.: 1 ♀, Ôkôchi, Shiiba, 24. V. 1974, K. Kanmiya (Museum of Nature and Human Activities, Hyogo, Sanda).

Distribution. Japan (Honshu, Kyushu). New record from Kyushu.

Remarks. *Pleroneura itoi* was described from a female holotype collected on Mt. Wasamatayama, Nara Prefecture, southwestern Honshu (Shinohara, 2016) and no additional collection records have been available since. This is the first record of *P. itoi* from Kyushu.

Acknowledgments

We thank Haruyoshi Kojima (Nagano), Satoshi Maehara (Shimotsuke). Hideo Takahashi (Higashikurume), Akihiko Watanabe (Kurashiki) and Takeshi Yamasaki (Museum of Nature and Human Activities, Hyogo, Sanda) for the gift or loan of the material. We also thank Tatsuya Ide (National Museum of Nature and Science, Tsukuba) for his careful review of the manuscript.

References

Anonymous 2014. *Armitarsus albicinctus*. In: Insects that feed on trees in Hokkaido. Hokkaido Research Organization, Forestry Research Institute, Bibai. https://www.hro.or.jp/list/forest/research/fri/zukan/konchu/00 data/hati/habati/kosijiro/note.html (accessed 24 November 2023) (in Japanese).

Anonymous 2023. Collection database of specimens and materials. National Museum of Nature and Science. http://db.kahaku.go.jp/webmuseum_en/ (accessed 27 September 2023).

Eichhorn, O. 1982. Familienreihe Siricoidea. In Schwenke, W. (ed.): Die Forstschädlinge Europas, 4, pp. 196–231. Paul Parey, Hamburg und Berlin.

Green, A. J. 2023. *Neurotoma mandibularis* (Zaddach, 1865). In The Sawflies (Symphyta) of Britain and Ireland. https://www.sawflies.org.uk/neurotoma-mandibularis/ (accessed 6 August 2023).

Hara, H. and S. Ibuki 2022. A study of the genus *Fagineura* (Hymenoptera, Tenthredinidae, Nematinae). Zootaxa 5116(2): 223–252.

Hara, H., S. Ibuki and A. Shinohara 2021. Taxonomic notes and new distribution and host plant records for sawflies and woodwasps (Hymenoptera, Symphyta) of Japan VI. Bulletin of the National Museum of Nature and Science, Series A 47: 163–188.

Hara, H. and A. Shinohara 2017. Taxonomic notes and new distribution and host plant records for sawflies and woodwasps (Hymenoptera, Symphyta) of Japan II. Bulletin of the National Museum of Nature and Science, Series A 43: 53–69.

Katayama, E. 2004. [Hymenoptera of Otawara City VI, Additional records of Symphyta.] Insekuto, Utsunomiya 55: 47–56 (in Japanese).

Katayama, E. 2011. [Additional records of Hymenoptera from Tochigi Prefecture (3).] Insekuto, Utsunomiya 62: 7–11 (in Japanese).

Lee, B.-Y. and Y.-J. Chung 1997. Insect pests of trees and shrubs in Korea. 10 + 459pp. Seong An Dang Publishing Co., Seoul (in Korean).

Naito, T. 2020. Subfamily Allantinae, except genera *Monsoma*, *Empria* and *Emphytopsis*. In Naito, T., A. Shinohara, H. Hara and F. Ito: Sawflies and Woodwasps of Japan, pp. 376–385, 389–394, 395–398. Hokkaido University Press, Sapporo (in Japanese).

Naito, T., H. Yoshida, H. Nakamine, T. Morita, T. Ikeda, H. Suzuki and A. Nakanishi 2004. Species diversity of sawflies in Hyogo Prefecture, central Japan. Museum of Nature and Human Activities, Hyogo, Monograph of Natural History and Environmental Science (1): 1–2 + pls. 1–10 + 1–85 (in Japanese).

Okutani, T. 1954. Studies on Symphyta (I). Symphyta of Sasayama with description of a new species. The Science Reports of the Hyogo University of Agriculture,

Agricultural Biology, Sasayama 1(2): 75–80.
Okutani, T. 1959. [Symphyta.] In Esaki, T., T. Ishii, A. Kawada, T. Shiraki and H. Yuasa (eds.): Illustrated Insect Larvae of Japan, pp. 548–582. Hokuryûkan, Tokyo (in Japanese).
Okutani, T. 1967. Food plants of Japanese Symphyta (II). Japanese Journal of Applied Entomology and Zoology 11: 90–99 (in Japanese with English summary).
Okutani, T. and E. Fujita 1956. Outline of the life-history of a sawfly *Pamphilius viriditibialis* Takeuchi. (Studies on Symphyta V). Science Reports, Hyogo University of Agriculture 2(2): 3–10.
Prous, M., M. Heidemaa, A. Shinohara and V. Soon 2011. Review of the sawfly genus *Empria* (Hymenoptera, Tenthredinidae) in Japan. ZooKeys 150: 347–380.
Rudow, F. 1878. Weitere Beobachtungen an Bienennestern. Societas Entomologica 2: 171–172.
Rudow, F. 1888. Hymenopterologische Mittheilungen. Zeitschrift für die gesammten Naturwissenschaften 51: 231–244.
Schimitschek, E. 1974. Beiträge zur Ökologie von Nadelbaum- und Laubbaum-Holzwespen (Hymenoptera, Siricidae). Zeitschrift für Angewandte Entomologie 75: 225–247.
Shinohara, A. 1980. East Asian species of the genus *Neurotoma* (Hymenoptera, Pamphiliidae). Transactions of the Shikoku Entomological Society 15: 87–117.
Shinohara, A. 1992. Records of *Neurotoma atrata* and *N. sibirica* (Hymenoptera, Pamphiliidae) from the Russian Far East. Japanese Journal of Entomology 60: 826.
Shinohara, A. 1993. *Neurotoma harai* n. sp. (Hymenoptera, Pamphiliidae) feeding on *Quercus* in Hokkaido, northern Japan. Japanese Journal of Entomology 61: 125–131.
Shinohara, A. 1997. New or noteworthy distribution records of six Palaearctic species of pamphiliid sawflies (Hymenoptera). Bulletin of the National Science Museum, Series A 23: 69–72.
Shinohara, A., 2002a. Systematics of the leaf-rolling or webspinning sawfly subfamily Pamphiliinae: a preliminary overview. In Viitasaari, M. (ed.): Sawflies 1 (Hymenoptera, Symphyta), pp. 359–438. Tremex Press, Helsinki.
Shinohara, A. 2002b. *Armitarsus watanabei*, a new sawfly (Hymenoptera, Tenthredinidae) from central Honshu, Japan. Special Bulletin of the Japanese Society of Coleopterology, Tokyo 5: 473–479.
Shinohara, A. 2016. The sawfly genus *Pleroneura* (Hymenoptera, Xyelidae) of Japan: *P. itoi* n. sp. and a key to species. Zootaxa 4121: 495–500.
Shinohara, A. 2019. Family Pamphiliidae. In Editorial Committee of Catalogue of the Insects of Japan (ed.): Catalogue of the Insects of Japan, Volume 9 Hymenoptera (Part 1 Symphyta), pp. 3–13. Entomological Society of Japan, Kyoto (in Japanese).
Shinohara, A. 2020. Family Pamphiliidae. In Naito, T., A. Shinohara, H. Hara and F. Ito: Sawflies and Woodwasps of Japan, pp. 3–23, 222–254. Hokkaido University Press, Sapporo (in Japanese).
Shinohara, A. and H. Hara 2005. Pamphiliidae. In Ishiwata, S. *et al.*: Insect Larvae of Japan, pp. 272–276. Gakken, Tokyo (in Japanese).
Shinohara, A. and H. Hara 2020. Taxonomic notes and new distribution and host plant records for sawflies and woodwasps (Hymenoptera, Symphyta) of Japan V. Bulletin of the National Museum of Nature and Science, Series A 46: 183–202.
Shinohara, A., H. Hara and M. Prous 2015. Host plants of *Empria* sawflies (Hymenoptera, Tenthredinidae) in Japan include *Rhododendron* (Ericaceae). Zootaxa 4007: 143–148.
Shinohara, A. and Y. Kameda 2019. DNA barcodes and morphology revealed three species masquerading in *Xiphydria camelus* of authors (Hymenoptera, Xiphydriidae) in Northeast Asia: *X. eborata* sp. rev. and *X. albopicta* sp. nov. Zootaxa 4612: 171–186.
Shinohara, A. and H. Kojima 2009. Host plants and larvae of three species of the sawfly genus *Onycholyda* (Insecta, Hymenoptera, Pamphiliidae) in Japan. Bulletin of the National Museum of Nature and Science, Series A 35: 103–111.
Shinohara, A., K. Kramp and A. Taeger 2022. The Pamphiliinae of the Russian Far East and Korea (Hymenoptera, Pamphiliidae). Zootaxa 5167(1): 1–251.
Shinohara, A. and J.-W. Lee 1997. Collection records of Pamphiliid sawflies (Hymenoptera, Pamphiliidae) from Korea. Bulletin of the National Science Museum, Series A 23: 213–220.
Shinohara, A. and T. Okutani 1983. Host-plants of Japanese Pamphiliidae (Hymenoptera, Pamphiliidae). Kontyû, Tokyo 51: 276–281.
Shinohara, A., H. Suda and H. Takahashi 2007. Pamphiliid sawflies (Insecta, Hymenoptera) from Yamanashi Prefecture, central Honshu, Japan. Bulletin of the National Museum of Nature and Science, Series A 33: 67–83.
Shinohara, A. and P. Tripotin 2021. Collection records of Pamphiliidae and Xiphydriidae (Hymenoptera) from Korea, with notes on *Xiphydria jakovlevi.* Japanese Journal of Systematic Entomology 27: 196–201.
Shinohara, A. and G.-R. Xiao 2006. Some leaf-rolling sawflies (Hymenoptera, Pamphiliidae, Pamphiliinae) from China in the collection of the Research Institute of Forest Protection, Chinese Academy of Forestry, Beijing. In Blank S. M., S. Schmidt and A. Taeger (eds.): Recent Sawfly Research: Synthesis and Prospects, pp. 273–284. Goecke & Evers, Keltern.
Shinohara, A. and M. Yamada 2005. Pamphiliid sawflies (Hymenoptera) from Aomori Prefecture, northern Honshu, Japan. Bulletin of the National Science Museum,

Series A 31: 51–64.

Shinohara, A. and H.-Z. Zhou 2006. Leaf-rolling sawflies of the *Pamphilius komonensis* complex (Hymenoptera, Pamphiliidae). Bulletin of the National Science Museum, Series A 32, 153–189.

Sohn, J.-C. 2006. [Larva of a pamphiliid sawfly feeding on the leaf of *Quercus mongolica*.] In [Pocketable Pictorial Handbook of Larvae], p. 111. Hwangso Geoleum, Seoul (in Korean).

Taeger, A., E. Altenhofer, S. M. Blank, E. Jansen, M. Kraus, H. Pschorn-Walcher and C. Ritzau 1998. Kommentare zur Biologie, Verbreitung und Gefährdung der Pflanzenwespen Deutschlands (Hymenoptera, Symphyta). In Taeger A. and S. M. Blank (eds.): Pflanzenwespen Deutschlands (Hymenoptera, Symphyta), Kommentierte Bestandsaufnahme, pp. 49–135. Goecke & Evers, Keltern.

Taeger, A., S. M. Blank and A. D. Liston 2010. World catalog of Symphyta (Hymenoptera). Zootaxa 2580: 1–1064.

Takeuchi, K. 1930. A revisional list of the Japanese Pamphiliidae, with description of nine new species. Transactions of the Kansai Entomological Society 1: 3–16.

Togashi, I. 1972. Food plants of five species of sawflies. Japanese Journal of Applied Entomology and Zoology 16: 217–218 (in Japanese).

Viitasaari, M. 2002a. The suborder Symphyta of the Hymenoptera. In Viitasaari, M. (ed.): Sawflies (Hymenoptera, Symphyta) I, pp. 11–174. Tremex Press, Helsinki.

Viitasaari, M. 2002b. The Northern European taxa of Pamphiliidae (Hymenoptera). In Viitasaari, M. (ed.): Sawflies (Hymenoptera, Symphyta) I, pp. 235–358. Tremex Press, Helsinki.

Yoshida, H. 2014a. Host plant record for *Periclista erythrogramma* (Hymenoptera, Tenthredinidae). Tsunekibachi (24): 41–43 (in Japanese).

Yoshida, H. 2014b. [Additional records of sawflies and woodwasps from Hyogo Prefecture.] Kiberihamushi 36: 15–25 (in Japanese).