

Sawflies (Hymenoptera, Symphyta) newly recorded from Norway

ERIK HEIBO, OLE JØRGEN LØNNVE, TROND ELLING BARSTAD, STEPHAN MARTIN BLANK, ANDREW LISTON, MARKO PROUS & ANDREAS TAEGER

Heibo, E., Lønnve, O.J., Barstad, T.E., Blank, S.M., Liston, A., Prous, M., & Taeger, A. 2014. Sawflies (Hymenoptera, Symphyta) newly recorded from Norway. *Norwegian Journal of Entomology* 61, 15–26.

22 species are newly recorded in Norway: *Cladardis hartigi* Liston, 1995; *Cladius rufipes* Serville, 1823; *Dineura stilata* (Klug, 1816); *Dolerus (Poodolerus) varispinus* Hartig, 1837; *Empria basalis* Lindqvist, 1968; *Empria camtschatica* Forsius, 1928; *Empria excisa* (Thomson, 1871); *Empria minuta* Lindqvist, 1968; *Eutomostethus punctatus* (Konow, 1887); *Fenusella wuestneii* (Konow, 1895); *Gilpinia virens* (Klug, 1812); *Phyllocerus linearis* (Schrank, 1781); *Heterarthrus nemoratus* (Fallén, 1808); *Hoplocampa crataegi* (Klug, 1816); *Hoplocampa flava* (Linné, 1760); *Metallus albipes* (Cameron, 1875); *Nematus steini* Blank, 1998; *Nematus cadderensis* Cameron, 1875; *Pamphilus marginatus* (Serville, 1823); *Pseudodineura enslini* (Hering, 1923); *Pseudodineura fuscula* (Klug, 1816); *Tenthredo semicolon* Mol, 2013. Comments are made on the European distribution. Hostplants of the presented sawflies are remarked upon in the light of the distribution of the plants in Norway.

Key words: Cephidae, Pamphiliidae, Diprionidae, Tenthredinidae, new records.

* Erik Heibo, Ento Consulting, Rypeveien 34A, NO-3420 Lierskogen, Norway.
E-mail: eheibo@yahoo.no

Ole J. Lønnve, BioFokus, Gaustadalèen 21, NO-0349 Oslo, Norway. E-mail: ole@biofokus.no

Trond Elling Barstad, Department of Natural Sciences, Tromsø University Museum, NO-9037, Tromsø, Norway. E-mail: trond.elling.barstad@uit.no

Stephan M. Blank, Andrew Liston, Marko Prous & Andreas Taeger, Senckenberg Deutsches Entomologisches Institut, Eberswalder Str. 90, DE-15374 Müncheberg, Germany.
E-mails: stephan.blank@senckenberg.de; andrew.liston@senckenberg.de;
marko.prous@senckenberg.de; andreas.taeger@senckenberg.de

* Corresponding author

Introduction

Siebke (1880), Strand (1898) and Kiær (1898) published important works on the Symphyta of Norway, with smaller additions by Strand (1900, 1901, 1903). Since then, sawfly research in Norway has not been continuously performed and until the last decade, few articles containing new records were published (e.g. Heibo & Lønnve

2005, Nuorteva *et al.* 2005, Lønnve 2006, Lønnve 2007, Heibo *et al.* 2008, and Lønnve 2009).

All sawfly larvae are herbivorous (Wagner & Raffa 1993, Liston 1995, Viitassari 2002), except for those of the Orussidae, which are ecto- and endoparasitic on Buprestidae, Cerambycidae and Siricidae (Kraus 1998). Among the plant feeding sawflies both monophagy and oligophagy are common, while polyphagy is probably not that

frequent. Groups of related sawfly species also seem to feed on related host plants. For instance, species of *Empria* Lepeletier & Serville, 1828 are (mostly) monophagous or oligophagous on representatives of the plant families Betulaceae, Rosaceae, and Salicaceae (Prous 2012). Many host plants are still unknown, and this is a huge challenge for conservation biology. The main aim of this study was to report new records of sawfly species from Norway. In addition, we comment on the host plants of these sawflies in Norway.

Material and methods

The specimens listed below are deposited in the following collections: Zoological Museum, University of Bergen, Norway (ZMUB); Natural History Museum, Oslo, Norway (NHMO); Tromsø University Museum, Norway (TUMN); Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (SDEI); collection of Erik Heibo, Norway (CEHL), collection of Ole J. Lønnve, Norway (COLN), and collection of BioFokus, Oslo, Norway (CBFO). In the collections studied at the natural history museums of Oslo, Bergen, Trondheim and Tromsø, no further specimens of these species were found. Regional abbreviations are given in accordance to Økland (1981). The coordinates are given in decimal degrees (Grid: *Lat/Lon hddd.dddd°*). Nomenclature follows Taeger *et al.* (2010) and Liston & Prous (2014), while plant names are according to Lid & Lid (2005). A review of the nematine genera is soon to be published which will affect some names used in this paper (Prous *et al.* in press).

Comments on species

CEPHIDAE

Phylloecus linearis (Schrank, 1781)

Material. AK, Oslo: Lilleaker, Mustad (EIS 28), N59.920489° E10.631367°, 1♂1♀, 25 May–19 June 2011 (Malaise trap), leg. S. Olberg & Ø. Gammelmo, det. O.J. Lønnve, (COLN);

same locality 1♂, 30 May 2011, leg. O.J. Lønnve, det. O.J. Lønnve (COLN). BØ, Hole: Søhol (EIS 36), N60.073951° E10.209734°, 1♀, 2–28 June 2010 (Malaise trap), leg. F. Ødegaard, det. O.J. Lønnve (COLN). VE, Nøtterøy: Østre Bolærene (EIS 19), N59.2° E10.59°, 1♂, 1 June 2007, leg. E. Heibo, det. E. Heibo (CEHL).

Remarks. *Phylloecus linearis* (formerly *Hartigia linearis*, see Liston & Prous 2014) has a wide distribution in Europe (Taeger *et al.* 2006). The host plant is *A. eupatoria* L. (Kontuniemi 1960). *Agrimonia eupatoria* is found north to Trøndelag in dry places in woods and along roads (Lid & Lid 2005), but so far, records of *P. linearis* are only found in coastal areas of southeast Norway. *Phylloecus linearis* is very similar to *Phylloecus xanthostoma* (Eversmann, 1847) and correct identification can be challenging. The characters (relative length of antennomeres and shape of the sawsheath) (Jansen 1998) used to distinguish *P. linearis* from *P. xanthostoma* do not fit the Norwegian specimens, but fall into an overlap zone between those species. However, the localities where these specimens were collected strongly indicate that they are *P. linearis*. At both localities, *A. eupatoria* was present, and at Lilleaker one male specimen was swept from *A. eupatoria*. The hostplant of *P. xanthostoma* is *Filipendula ulmaria* (L.). At Lilleaker, *F. ulmaria* was not present.

PAMPHILIIDAE

Pamphilius marginatus (Serville, 1823)

Material. AK, Bærum: Kolsås (EIS 28), N59.91737° E10.52158°, 1♀, 6 May 2012, leg. S. Olberg, det. O.J. Lønnve (COLN).

Remarks. According to Stritt (1937) the host plants are *Corylus avellana* L. and *Carpinus betulus* L. Collecting data from Greece also indicate *Ostrya carpinifolia* Scop. as a potential larval host, another representative of Corylaceae (Shinohara & Blank 2003). *Carpinus betulus* is found in gardens, but occasionally also naturalised (Lid & Lid 2005). *Corylus avellana* is distributed in Norway north to Nordland (Lid & Lid 2005). *Pamphilius marginatus* has a wide distribution in Europe (Taeger *et al.* 2006).

DIPRIONIDAE

***Gilpinia virens* (Klug, 1812)**

Material. Ø, Hvaler: Prestegårdskog (EIS 12), N59.02396° E11.02628°, 1♀, 1–20 August 2010 (Malaise trap), leg. T.J. Olsen, det. O.J. Lønnve (COLN). BØ, Hole: Søhol (EIS 36), N60.073951° E10.209734°, 1♀, 8 May–2 June 2010 (Malaise trap), leg. F. Ødegaard, det. O.J. Lønnve (COLN).

Remarks. The only recorded host plant of *G. virens* in northern and central Europe is *Pinus sylvestris* L. *Pinus sylvestris* is common in Norway north to Porsanger (Lid & Lid 2005). It is unknown why there are few records of *G. virens* in Norway, although its host plant is very common. *Gilpinia virens* has a wide distribution in Europe (Taeger *et al.* 2006).

TENTHREDINIDAE

Allantinae

***Empria basalis* Lindqvist, 1968**

Material. Ø, Fredrikstad: Ramseklovene (EIS 20), N59.19698° E 10.79632°, 1♀, 18 May 2002, leg. E. Heibo & O.J. Lønnve, det. O. J. Lønne (COLN). AK, Bærum: Kjaglidalen (EIS 28), N59.95340° E10.41417°, 1♂, 21 June 2001, leg. O.J. Lønnve, det. E. Heibo (CEHL). OS, Lunner: Grindvoll (EIS 36), 60.29663° 10.49242°, 1♂, 8 June 2003, leg. O.J. Lønnve, det. E. Heibo (CEHL). BØ, Lier: Lierskogen (Elveroa) (EIS 28), N59.82222° E10.33358°, 1♂, 3 June 2007, leg. E. Heibo, det. E. Heibo (CEHL); same locality, N59.82459° E10.33479°, 216m.a.s.l., 1♂, 8 May 2011, leg. E. Heibo, det. E. Heibo (CEHL); Lierskogen (South of Liertoppen/Modulbygg) (EIS 28), N59.80506° E10.29814°, 244m.a.s.l., 1♂, 14 May 2011, leg. E. Heibo, det. E. Heibo (CEHL); same locality, 1♀, 4 June 2013, leg. E. Heibo, det. E. Heibo (CEHL); Lierskogen (Svingkulpen) (EIS 28), N59.82266° E10.33269°, 229m.a.s.l., 1♂, 31 May 2008, leg. E. Heibo, det. E. Heibo (CEHL); same locality, 1♂, 31 May 2009, leg. E. Heibo, det. E. Heibo (CEHL). TEI, Tinn: Tessungdalen (Austbygda) (EIS 34), 60.03437° 8.82315°, 342m.a.s.l., 1♀, 3 June 2013, leg. Erik Heibo, det. E. Heibo (CEHL); Spjeldset (Spjeldsetmyra) (EIS 27), N59.93765°

E9.03520°, 1♀, 6 June 2013, leg. O.J. Lønnve, det. M. Prous (COLN). Spjeldset (the distance Spjeldset-Nystul) (EIS 27), N59.9526° E9.0372°, 1♀, 6 June 2013, leg. O.J. Lønnve, det. M. Prous (COLN). HOI, Eidfjord: Fossli (Alpine meadow with *Dryas octopetala* L.) (EIS 42), N60.46996° E7.33475°, 1126m.a.s.l., 1♀, 22 June 2009, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL). NNØ, Narvik: Vassdal (EIS 146), N68.55452° E17.73161°, 1♂, 17 June–10 September 2005, Malaise trap, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL). SFI, Aurland: Aurlandsvegen (Nedre Kaldeklettane Lok 2.) (EIS 51), 61.02073° 7.33157°, 1112m.a.s.l., 1♂2♀, 3 July 2010, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL); same locality, 2♂2♀, 26 June 2011, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL); Stemmerdalen (Brubotnvtotni)(EIS 42), E60.75287° N7.57169°, 1108m.a.s.l., 1♀, 26 June 2011, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL). NSI, Rana: Sandheia (EIS 123), N66.39396° E14.26634°, 1♀, 31 May–29 June 2002, Malaise trap, leg. E. Heibo & O. Lønnve, det. E. Heibo (CEHL); Saltdal: Junkerdalen (EIS 127), N66.82501° E15.50645°, 9♂, 17 May–31 May 2002, Malaise trap, leg. E. Heibo & O.J. Lønnve, det. E. Heibo (CEHL); Junkerdalen (Skiferbrukhammaren) (EIS 127), N66.78426° E15.69337°, 1♂, 12 May–31 August 2004, Malaise trap, leg. E. Heibo, det. E. Heibo (CEHL); Rognan (EIS 127), N67.084056° E15.361400°, 1♂, 31 May–29 June 2002, Yellow pan trap, leg. E. Heibo & O. Lønnve, det. E. Heibo (CEHL). FI, Alta: Trangdalen (EIS 165), N69.76399° E23.33476°, 260m.a.s.l., 2♂1♀, 21 June–12 September 2005, Malaise trap, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL); Kautokeino: Masi (EIS 165), N69.40755° E23.61439°, 1♂1♀, 21 June–12 September 2005, Malaise trap, leg. E. Heibo, det. E. Heibo, ver. M. Prous (CEHL).

Remarks. Recorded host plants are *Geum rivale* L. and possibly *Geum urbanum* L. (Prous *et al.* 2011). *Geum rivale* is widespread and common in Norway, while *G. urbanum* is only found north to Lofoten (Lid & Lid 2005). Since *G. urbanum* does not occur in Finnmark, the records of *E. basalis* in Finnmark should have *G. rivale* as host plant. *Empria basalis* has only lately been

recognised as a separate species and has a wide distribution in Europe (Taeger *et al.* 2006, Prous 2012). Interestingly, the specimens from alpine and arctic environments have smaller eyes, but no other morphological differences were found.

Empria camtschatica Forsius, 1928

Material. TEI, Tinn: Spjeldset (Spjeldsetmyra) (EIS 27), N59.93765° E9.03520°, 2♀, 6 June 2013, leg. O.J. Lønnve, det. M. Prous (COLN).

Remarks. Based on specimens from Sweden, *Empria camtschatica* was recently recorded as new for the West Palaearctic (Prous *et al.* in press). The host plant is unknown, but the specimens listed above were collected on *Salix* L. and small birches (*Betula pubescens* L. and *B. nana* L.).

Empria excisa (Thomson, 1871)

Material. VE, Larvik: Karto, sumpskog (EIS 19), N59.02480° E10.20535°, Malaise-trap, 2♂, 14 May–15 June 2010, leg. S. Olberg, det. O.J. Lønnve, ver. M. Prous, (COLN).

Remarks. The only known host plant, *Filipendula vulgaris* Moench (Prous 2012), is rather rare in Norway and mainly found in the south-east of the country on calcareous ground (Lid & Lid 2005). If *E. excisa* is monophagous the distribution of *F. vulgaris* will certainly be a limiting factor. In addition, *F. vulgaris* is known to be declining in Norway due to changes in agricultural practices (Artsdatabanken 2010, Kålås *et al.* 2010). *Empria excisa* has a wide distribution in Europe (Taeger *et al.* 2006).

Empria minuta Lindqvist, 1968

Material. AK, Oslo: Sandermosen in Maridalen (EIS 36), N60.009693° E10.804695°, 1♀, 22 May 2002, leg. O.J. Lønnve, det. M. Prous (CEHL). BØ, Lier: Lierskogen (South of Liertoppen/Modulbygg), N59.80506° E10.29814°, 244m.a.s.l., 1♂, 10 May 2011, leg. E. Heibo, det. M. Prous (CEHL).

Remarks. The host plant of *E. minuta* is unknown, but we suspect it to be a member of the Rosaceae, because most of the known host plants of *Empria* belong to this family (Prous 2012). In Europe, it has been collected in Finland, Estonia, Sweden, and Russia (Prous 2012). The record from

Ukraine, under the name *E. gussakovski* Dovnar-Zapolskij, 1929, by Zombori & Ermolenko (1999) and followed by Taeger *et al.* (2006), is doubtful.

Blennocampinae

Cladardis hartigi Liston, 1995

Material. BØ, Lier: Lierskogen (Løvåsdal) (EIS 28), N59.827061° E10.341041°, Yellow pan trap, 2♂, 21 May–8 June 2002, leg. E. Heibo & O.J. Lønnve, det. A. Liston (CEHL). VAY, Kristiansand: Nedre Timenes (EIS 2), N58.16110° E8.09929°, 4 June 2011, 1♀, leg. K. Berggren, det. A. Liston (COLN).

Remarks. Many Blennocampinae use host plants belonging to the Rosaceae. *Cladardis elongatula* (Klug, 1817), for example, it is recorded from *Rosa* L. (Scheibelreiter 1973), but the host plant of *C. hartigi* is unknown. However the relationship of *C. hartigi* to other Blennocampinae is quite unclear, and host plants of species of *Cladardis* Benson, 1952 could therefore be diverse. *Cladardis hartigi* is known from a few central European countries (Taeger *et al.* 2006) and the presented records together with those from Sweden and Estonia are probably the most northern records of the species. *Cladardis hartigi* is considered a rare species.

Eutomostethus punctatus (Konow, 1887)

Material. AK, Oslo: Ringerike in Sørkedalen (EIS 36), N59.99822° E10.62667°, 1♂, 6–25 June 2002, Yellow pan trap, leg. E. Heibo & O.J. Lønnve, det. O.J. Lønnve (NHMO). BØ, Lier: Elveroa, Lierskogen (EIS 28), N59.82459° E10.33479°, 216m.a.s.l., 1♂, 31 May 2009, leg. E. Heibo, det. E Heibo (CEHL); Lierskogen (Svingkulpen), N59.82266° E10.33269°, 229m.a.s.l., 3♂, 3 June 2007, leg. E. Heibo, det. E Heibo (CEHL, COLN); same locality, 3♂, 31 May 2008, leg. E. Heibo, det. E Heibo (CEHL); same locality 1♂, 21 June 2008, leg. E. Heibo, det. E Heibo (CEHL); same locality, 2♂, 9 June 2009, leg. E. Heibo, det. E Heibo (CEHL); 1♀, 16 June 2010, leg. E. Heibo, det. E Heibo (CEHL);

Remarks. The host plant *Carex paniculata* L. (Liston 1995) is, in Norway, only distributed along the coast from Østfold to Sør-Trøndelag.

The localities comprise wet, nutrient-rich sites close to lakes or rivers (Lid & Lid 2005). The host plant distribution certainly may limit the distribution of *E. punctatus* in Norway. This species has not previously been recorded from Scandinavia, and the above records may be the northernmost of the species. The closest known record is from Denmark (Taeger *et al.* 2006). *Eutomostethus punctatus* has a wider distribution in central Europe, even if it has been collected in relatively few countries.

Heterarthrinae

Fenusella wuestneii (Konow, 1895)

Material. AK, Asker: Dikemark (between Ulvenvannet and Verkensvannet) (EIS28), N59.8076° E10.36022°, 185m.a.s.l., 1♀, 13 June 2011, leg. E. Heibo, det. A. Liston, (CEHL).

Remarks. The only definite host of *Fenusella wuestneii* is *Salix viminalis* L. *Salix triandra* L. needs to be confirmed as a host, whereas records in the literature of other species of *Salix* as hosts of *F. wuestneii* refer to *F. septentrionalis* (Koch, 1990) (*Salix lapponum* L.; Lorenz & Kraus 1957) and *F. alaskana* (Kincaid, 1900) (some Nearctic *Salix* spp.: Smith 1971) (Liston 2007). It is uncertain if *S. viminalis* is present at the locality, because this is a garden plant in Norway. This might indicate use of host plants other than *S. viminalis*. *Fenusella wuestneii* has a wide distribution in Europe, but has been collected in relatively few countries (Taeger *et al.* 2006).

Heterarthrus nemoratus (Fallén, 1808)

Material. AK, Asker: Spirabukta, Konglungen (EIS 28), N59.83154° E10.49666°, 1♀, 28 June 2008, leg. O. Sørlibråten, det. O.J. Lønnve, (NHMO). VAI, Åseral: Tjaldal (EIS 9), N58.79182° E7.49418°, 1♀, 20 June 2011, leg. K. Berggren, det. O.J. Lønnve, ver. A. Liston, (COLN).

Remarks. Both *Betula pendula* Roth, and *Betula pubescens* Ehrh., are reported as host plants of *H. nemoratus* (Viramo 1969, Taeger *et al.* 1998) besides a wide range of additional birch species in Canada (Digweed *et al.* 2009). The first two birch species are common in Norway, but *B.*

pendula occurs only north to Trøndelag (Lid & Lid 2005). *Heterarthrus nemoratus* has a wide distribution in Europe (Taeger *et al.* 2006).

Metallus albipes (Cameron, 1875)

Material. AK, Bærum: Tanum (EIS 28), N59.89887° E10.47826°, 1♀, 24 July 2012, leg. S. Olberg, det. O.J. Lønnve, (COLN). TEI, Tinn: Vemork (EIS 26), N59.87225° E8.49830°, 1♀, 16. July 2013, leg. O.J. Lønnve, det. O.J. Lønnve (COLN). VAY, Kristiansand: Nedre Timenes (EIS 2), N58.16110° E8.09929°, 1♀, 19 August 2012, leg. K. Berggren, det. O.J. Lønnve (COLN).

Remarks. *Rubus idaeus* L. is more or less common all over Norway, but rare in the far north. *Rubus fruticosus* agg. L. is a collective name of a group of plants that are more common in southern Norway, which can undergo apomixis (asexual reproduction without fertilization). Both these plants are reported as host plants (Kontuniemi 1960), and all specimens collected in July were from *R. idaeus*. *Metallus albipes* is widely distributed in Europe, but has been collected in few countries (Taeger *et al.* 2006).

Nematinae

Cladius rufipes Serville, 1823

Material. VE, Larvik: Karto, strandberg (EIS 19), N59.02414° E10.20500°, 19 July 2012, 1♂, leg. S. Olberg, det. O.J. Lønnve (COJN).

Remarks. The recorded host plant *Ulmus glabra* Huds. (Pschorn-Walcher & Altenhofer 2006) is distributed in Norway north to Beiarn in Nordland. It is more or less common (Lid & Lid 2005), but because of Dutch elm disease (DED) is considered to be in decline. *Cladius rufipes* is oligophagous on elm (e.g., Halstead 2001, Liston 2007) and has a wide distribution in Europe (Taeger *et al.* 2006).

Dineura stilata (Klug, 1816)

Material. VAY, Kristiansand: Nedre Timenes (EIS 2), N58.16110° E8.09929°, 1♀, 25 May 2008, leg. K. Berggren, det. O.J. Lønnve, ver. A. Liston (COLN).

Remarks. The larvae feed on *Crataegus* L. according to Lorenz & Kraus (1957). In Norway

three species of *Crataegus* occur, among which *Crataegus laevigata* (Poir.) is a garden plant, whereas *C. monogyna* Jacq. and *C. calycina* Peterm. are naturally distributed along the coastline north to Nordmøre. In addition *Sorbus aucuparia* L. (Boevé 1990) and *Cotoneaster niger* (Wahlb.) (= *C. melanocarpa*) (Verzhutskii 1981) have been recorded as hosts. *Sorbus aucuparia* is common throughout Norway, while *C. niger* is much more restricted, occurring only in southeast Norway usually on calcareous rocks. *Dineura stilata* has a wide distribution in Europe (Taeger et al. 2006). The Norwegian record may be the most northern record in Europe.

***Hoplocampa crataegi* (Klug, 1816)**

Material. VAY: Kristiansand: Beltevigga (EIS 2), N58.06588° E7.97965°, 1♀, 30 May 2009, leg. K. Berggren, det. O.J. Lønnve (COLN).

Remarks. The larvae feed on plants of *Crataegus* sp. according to Lorenz & Kraus, 1957. For details on distribution of *Crataegus* in Norway, see paragraph with *D. stilata*. *Hoplocampa crataegi* has a wide distribution in Europe (Taeger et al. 2006).

***Hoplocampa flava* (Linnaeus, 1760)**

Material. VE, Larvik: Mølen (EIS 11), N58.97633° E9.82046°, (Malaise-trap), 1♀, 30 April–1 June 2009, leg. Ø. Gammelmo, S. Olberg & K.M. Olsen, det. O.J. Lønnve, ver. A. Liston (COLN). TEY, Kragerø: Øytangen N (EIS 11), N58.8837° E9.60993°, (Malaise-trap), 1♂1♀, 13 May–21 June 2009, leg. F. Ødegaard & Hanssen, O., det. O.J. Lønnve, ver. A. Liston (CBFO)

Remarks. Several species of *Prunus* L. are reported to be host plants. *Prunus domestica* L. (Conde 1927), *Prunus mahaleb* L. (Masutti & Covassi 1980) and *Prunus cerasus* L. (Lorenz & Kraus 1957) are mostly found in gardens, while *Prunus avium* L. (Lorenz & Kraus 1957) and *Prunus spinosa* L. (Masutti & Covassi 1980) are found along the coast in southern Norway (Lid & Lid 2005). It is likely that the distribution of the wild host plants may limit the distribution of *H. flava* in Norway. *Hoplocampa flava* has a wide distribution in Europe (Taeger et al. 2006), and is common on *P. spinosa*.

***Nematinus steini* Blank, 1998**

Material. BØ, Lier: Lierskogen (Heiabeite South) (EIS28), 229m.a.s.l., N59.82277° E10.33861°, 1♀, 7. June 2013, leg. E. Heibo, det. E. Heibo (CEHL); Lierskogen (Rypeveien number 34) (EIS 28), N59.82194° E10.33669°, 214m.a.s.l., 1♂, 6 June 1997, leg. E. Heibo & O. Lønnve, det. E. Heibo, (CEHL).

Remarks. *Alnus incana* L. and *Alnus glutinosa* L. are recorded host plants for *N. steini* (Kontuniemi 1960, Lindqvist 1965, Pieronek 1984). *Alnus incana* is widely distributed and common throughout Norway, while *A. glutinosa* usually only grows near the coast in the south (Lid & Lid 2005). *Nematinus steini* has a wide distribution in Europe (Taeger et al. 2006).

***Nematus cadderensis* Cameron, 1875**

Material. ON, Øystre Slidre: Valdresflye (EIS 61), N61.39921° E8.80925°, 1386m.a.s.l., 1♂11♀, 5 July 2013, leg. E. Heibo, det. E. Heibo (CEHL); same locality, 3♂8♀, 5 July 2013, leg. E. Heibo, ver. A. Liston (CEHL, SDEI).

Remarks. Along the roadside at the highest point (1386m.a.s.l.) of the road at Valdresflye there was an isolated patch of 10 to 15 bushes of *S. lapponum*. All specimens of both male and female *N. cadderensis* were netted on the bushes on Valdresflye. At a somewhat lower altitude (1150m.a.s.l.) around Heimdalsmunnen no *N. cadderensis* were found. One could claim there was some kind of swarming of *N. cadderensis* on 5–6 July 2013 at the locality, even if the number was not that great. One female and male of *N. cadderensis* were netted while in copula. They are accordingly labeled (CEHL). One female was observed ovipositing for three minutes on a *S. lapponum* bush. The specimen had the head orientated downwards on the half expanded leaves. The leaves projected only 2cm out of the bud and were still clustered. To our knowledge, this host plant has not previously been recorded. The original description mentions *Salix cinerea* L. and *Betula* L., although Benson mentions only *Betula*, but Kontuniemi (1960) gives *Betula* and *Salix* (*Salix phylicifolia* L., *Salix caprea* L.) while Kangas (1985) reared specimens from *S. phylicifolia*. Based on our observations we

consider *S. lapponum* to be a new host plant record for this species. Further, we can definitely associate the male and female of *N. cadderensis*. Males of many *Nematus* are still unknown or may be wrongly associated with females. *Nematus cadderensis* has a wide distribution, but has been collected in few countries (Taeger *et al.* 2006). Imagines are externally very similar to *Nematus ferrugineus* Förster, 1854, but *N. cadderensis* differs in having shorter, higher saw teeth, as illustrated by Benson (1958).

Pseudodineura enslini (Hering, 1923)

Material. TRI, Målselv: Rostadalen (EIS 154), E 19.86885° N68.94828°, 1♀, 1 July 2007, leg. T.E. Barstad, det. T.E. Barstad (TUMN); Høgskaret (Midtre Dividalen) (EIS 154), E19.53986° N68.83497°, 1♀, 6 July 2007, leg. T.E. Barstad, det. T.E. Barstad (TUMN).

Remarks. Larvae of *P. enslini* are oligophagous on numerous species of *Trollius* L. (Hering 1923, Buhr 1941, Kontuniemi 1960, Roller *et al.* 2006). *Trollius europaeus* L. is the only *Trollius* species native to Norway. It is widely distributed in Troms County and common throughout except for western parts of Norway where it is missing (Lid & Lid 2005). Altenhofer & Pschorn-Walcher (2006) found *P. enslini* in subalpine fields in the Alps. They observed the imago to fly from the end of April to the middle of May. *Pseudodineura enslini* has a wide distribution in Europe (Taeger *et al.* 2006). The two *P. enslini* records from Norway are from two locations only 15km apart and collected in July. In Norway, the distribution of *P. enslini* is limited due to absence of the host plant in the western part. There are no records known from southern Norway, despite the abundance of the host plant there. Lack of collecting early in spring may be an explanation.

Pseudodineura fuscata (Klug, 1816)

Material. Ø, Hvaler: Arekilen Nature Reserve (EIS12), N59.03468° E 11.02018°, 1♀, 2 June 2010, leg. O.J. Lønnve, det. O.J. Lønnve (COLN); Sarpsborg: Sandbakken (EIS 20), N59.24986° E11.17609°, 1♀, 23 April 2002, leg. T.J. Olsen, det. O.J. Lønnve (NHMO). AK, Ås: Loppfolet, Årungen (EIS 28), N59.67662° E10.75166°, 1♀,

12 June 2006, leg. O.J. Lønnve, det. O.J. Lønnve (NHMO); Frogn: Bonn, (EIS 28), N59.71913° E10.71459°, 1♀, 7 May 2002, leg. O.J. Lønnve, det. E. Heibo (CEHL); Nesodden: Rør (EIS 28), N59.81316° E10.68129°, 1♂, 24 May 2006, leg. O.J. Lønnve, det. O.J. Lønnve (NHMO); Berger skole (EIS 28), N59.83743° E10.67959°, 1♀, 25 May 2013, leg. O.J. Lønnve, det. O.J. Lønnve (COLN); Enebakk: Nordre Bøler (EIS 29), N59.72623° E11.18023°, 1♂, June 1996, leg. H. Solberg & H. Breilid, det. O.J. Lønnve (ZMUB); Oslo: Vestre Aker (EIS 28), N59.93741° E10.72695°, 1♂1♀, 29. May 1891, leg. H. Kiær, det. O.J. Lønnve (NHMO). HES, Eidskog: Leirsjøen (EIS 38), N59.89079° E12.16199°, 1♀, 9 May–3 June 2010 (Malaise trap), leg. F. Ødegaard, det. O.J. Lønnve (COLN); Kongsvinger: Åranstorpet (EIS 38), N60.20284° E12.43464°, 1♀, 22 April–16 May 2004 (Malaise trap), leg. K. Sund, det. O.J. Lønnve (NHMO). OS: Jevnaker: Gulla (EIS 36), N60.26497° E10.41841°, 1♀, 24 May 2011, leg. O.J. Lønnve, det. O.J. Lønnve (COLN). BØ, Lier: Lierskogen (Heiabeite South) (EIS 28), 229m.a.s.l., N59.82277° E10.33861°, 1♀, 9 June 2009, leg. E. Heibo, det. E. Heibo (CEHL). TEI, Tinn: Spjeldset (Spjeldsetmyra) (EIS 27), E 578478 N 6681764, 660m.a.s.l., 1♀, 31 May 2013, leg. O.J. Lønnve, det. O.J. Lønnve (COLN). VAY, Kristiansand: Nedre Timenes (EIS 2), N58.16110° E8.09929°, 1♀, 26 May 2006, leg. K. Berggren, det. O.J. Lønnve (NHMO).

Remarks. Larvae of *Pseudodineura fuscata* are oligophagous on at least 16 species of *Ranunculus* L. (see, e.g., Buhr 1941, Huber 1969, Taeger *et al.* 1998, Pschorn-Walcher & Altenhofer 2000, Altenhofer & Pschorn-Walcher 2006). Some of the host plants like *Ranunculus repens* L., and *Ranunculus acris* L. are common throughout Norway, while *Ranunculus auricomus* L. and *Ranunculus plataniifolius* L. are more common in the south of Norway (Lid & Lid 2005). Since some of the host plants are common throughout Norway, they probably do not limit the distribution of *P. fuscata*. Still, the records may indicate a more southern distribution of *P. fuscata* in Norway, and perhaps indicate a factor limiting its distribution other than the host plant distribution. *Pseudodineura fuscata* has a wide

distribution in Europe (Taeger *et al.* 2006) and is common, although the mines are much easier to collect than adult specimens (as is usual in all leaf-mining sawflies).

Selandriinae

***Dolerus (Poodolerus) varispinus* Hartig, 1837**

Material. **AK**, Asker: Semsveien (NW of rifle range) (EIS 28), N59.84219° E10.37363°, 245m.a.s.l., 1♂, 14 June 2009, leg. E. Heibo, det. E. Heibo (CEHL); Oslo: Sørkedalen (Bogstad Lake North) (EIS 28) N59.9786° E10.62228°, 156m.a.s.l., 3 June 2008, leg. E. Heibo, det. E. Heibo (CEHL). **HES**, Trysil: Gira (EIS 65), N61.38076° E12.72411°, 1♂, 25 June 2011, leg. A. Laugsand, det. O.J. Lønnve (COLN). **BØ**, Lier: Lierskogen (Elveroa) (EIS 28) N59.82459° E10.33479°, 216m.a.s.l., 9 June 2009, leg. E. Heibo, det. E. Heibo (CEHL).

Remarks. *Dactylis glomerata* L. is a recorded host plant (Weiffenbach 1985). Barker (2006) reared larvae on *Festuca rubra* L., *Lolium perenne* L. and *Nardus stricta* L. Conde (1938) reported, under the name *D. rugosulus* Dalla-Torre, 1894, the oviposition into leaves of *Poa trivialis* L. All hosts are common and distributed throughout Norway while some of them may be less common in the far north (Lid & Lid 2005). *Dolerus varispinus* has a wide distribution in Europe (Taeger *et al.* 2006).

Tenthredininae

***Tenthredo semicolon* Mol, 2013**

Material. **Ø**, Fredrikstad: Ødegård (Onsøy) (EIS 20), E 10.809743° N 59.20336108°, 3 August 2012, leg. O.J. Lønnve, det. E. Heibo, (COLN). **AK**, Nesodden: Skoklefall (EIS 28), N59,8501° E10,6688°, 4 July 2003, leg. O. Lønnve, det. E. Heibo (CEHL), same locality, 1♀, 20 July 2009, leg. O.J. Lønnve, det. O.J. Lønnve; Blåbærstien (EIS 28), N59.8523° E10.6697°, 1♂, 27 June–31 July 2011, leg. O.J. Lønnve, det. O.J. Lønnve. **BØ**, Lier: Lierskogen (Rypeveien 34) (EIS28), N59.82194° E10.33669°, 6 June 2007, leg. E. Heibo, det. E. Heibo, ver. A. Liston (SDEI); same locality, 1♀, 8 July 1997, leg. E. Heibo,

det. E. Heibo (CEHL); same locality, 1♀, 9 July 1997, leg. E. Heibo, det. E. Heibo (CEHL); same locality, 1♂1♀, 15 July 1997, leg. E. Heibo, det. E. Heibo (CEHL).

Remarks. *Tenthredo semicolon* was recently recognized as distinct from *Tenthredo colon* Klug, 1817 (Taeger 2013). It is separated from *T. colon* by having more red on the hind legs, while *T. colon* has more or less red hind legs but especially the femur with some black markings dorsally. In addition, the mesonotum is more finely or densely punctured in *T. semicolon*, making it appear shinier. Scrutinizing the collection of E. Heibo and O.J. Lønnve, only these specimens were found, giving the impression that *T. semicolon* might be much rarer than *T. colon* (166 specimens from all over Norway in CEHL). Furthermore, the few records of *T. semicolon* are from the Oslofjord area while *T. colon* is common all over Norway. Since many different plant species have been formerly recorded as hosts of *T. colon*, it is likely that one or more of them could belong to *T. semicolon*, but this needs to be clarified. The distributions of *T. semicolon* and *T. colon* in Europe are still not elucidated.

Discussion

Twenty-two species of Tenthredinidae are recorded for the first time in Norway: *Cladardis hartigi*, *Cladius rufipes*, *Dineura stilata*, *Dolerus (Poodolerus) varispinus*, *Empria basalis*, *Empria camtschatica*, *Empria excisa*, *Empria minuta*, *Eutomostethus punctatus*, *Fenusella wuestneii*, *Gilpinia virens*, *Phylloecus linearis*, *Heterarthrus nemoratus*, *Hoplocampa crataegi*, *Hoplocampa flava*, *Metallus albipes*, *Nematinus steini*, *Nematus cadderensis*, *Pamphilus marginatus*, *Pseudodineura enslini*, *Pseudodineura fuscula* and *Tenthredo semicolon*. Taeger *et al.* (2006) collated data on the occurrence of 365 Symphyta species in Norway, although the 222 given in the species number table was wrong. The work of Taeger *et al.* (2006) was not meant to answer the question of exactly how many species occur in each European country as many publications were in native languages and also hard to know

about and obtain. Not surprisingly, some articles were overlooked. Now the number of sawflies occurring in Norway is assumed to be close to 700, this being the number recorded for Finland (Taeger *et al.* 2006). A study in progress (Lønnve *et al.* in prep.) will address this issue and review all the publications on sawflies from Norway.

One species, *E. basalis*, seems to be widely distributed in Norway, as are its host plants. Interestingly, a morph with smaller eyes seems to occur in alpine and arctic environments. At least in northern Norway, *E. basalis* may face a more restricted range of host plants.

A little less than half of the discussed species (*D. stilata*, *D. (Poodolerus) varispinus*, *G. virens*, *H. nemoratus*, *M. albipes*, *N. steini*, *N. cadderensis*, *P. fuscula* and *T. semicolon*) seem to be limited in their distribution, with either a southern distribution, or a northern one (only *P. enslini*), or an alpine one (only *N. cadderensis*). However, they are not limited by their host plant distribution except for *P. enslini* in western parts of Norway where the native host plant is not present. Therefore, it is likely that a factor other than host plant distribution limits the range of these species. Furthermore, additional records are to be expected if the previous lack of records is due to inadequate collecting effort.

Seven of the presented species (*C. rufipes*, *E. excisa*, *E. punctatus*, *P. linearis*, *H. crataegi*, *H. flava*, *P. marginatus*) have a very limited distribution in the coastal area of southern Norway. They seem to be somehow limited by their host plant distribution and are represented by few records. This could lead one to believe that they are rare in Norway, taking into account that some considerable effort has been made to collect sawflies in southern Norway during the last decade. However, restriction of the distribution of a sawfly due to host plant distribution is to be expected. Many plants in Europe have the northern edge of their range along the coastline in southern Norway and partly or fully in the nemoral and hemiboreal (boreonemoral) vegetation zone (Gjærevoll 1992). In the nemoral zone, oak dominates and typical boreal species such as Norway spruce and grey alder are lacking, while the boreo-nemoral zone has mixed coniferous and broad-leaved forests. A

southern element of sawflies is expected in these areas, and not surprisingly, several of the newly recorded species are only known from there.

The normal host plant (*Salix viminalis*) of *F. wuestneii* is in Norway a garden plant, but is occasionally found naturalized in southern Norway. It is common that insects get a free ride to a new country with dispersal of garden plants. Still, we cannot exclude that *F. wuestneii* might have another host plant not yet known to science. The host plants of some of the other presented species are still unknown (*C. hartigi*, *E. camtschatica*, and *T. semicolon*). *C. hartigi* seems to be rare in Norway, with few records, while *E. camtschatica* and *T. semicolon* were only lately recognized as separate taxa and further records could be hidden in collections amongst material identified respectively as *E. immersa* or *T. colon*. This demonstrates that there is still much work to be done in sawfly research.

Acknowledgements. We wish to thank K. Berggren, Ø. Gammelmo, L.O. Hansen, A. Laugsand, S. Olberg, K.M. Olsen, T.J. Olsen, O. Sørlibråten and F. Ødegaard who gave sawfly specimens to O.J. Lønnve. The Swedish Taxonomy Initiative supported this work.

References

- Artsdatabanken 2010. *The 2010 Norwegian Red List for Species; NT Filipendula vulgaris*. Norwegian Biodiversity Information Centre, Norway. Available from: <http://www.artsportalen.artsdatabanken.no/#/Rodliste2010/Vurdering/Filipendula+vulgaris/46805> (Date of access 14. April 2014).
- Altenhofer, E. & Pschorn-Walcher, H. 2006. *Zur Faunistik, Biologie und Parasitierung der minierenden Blattwespen der Tribus Pseudodineurini (Hymenoptera: Tenthredinidae)*. Pp. 73–82 in Blank, S.M., Schmidt, S., & Taeger, A. (Eds.), *Recent Sawfly Research: Synthesis and Prospects*. Goecke & Evers, Keltern.
- Barker, A. 2006. *Further Descriptions of Dolerus Larvae (Hymenoptera: Tenthredinidae), with Notes on Larval Identification and Feeding Habits*. Pp. 83–96 in Blank, S.M., Schmidt, S., Taeger, A. (Ed.), *Recent Sawfly Research: Synthesis and Prospects*.

- Goecke & Evers, Kelttern: 704 pp.
- Benson, R.B. 1951–1958. Hymenoptera, Symphyta. *Handbooks for the Identification of British Insects*, London 6(2a–c), 1–252 + [6] pp.
- Boevé, J.-L. 1990. Nematinenlarven (Hymenoptera, Tenthredinidae) in der Umgebung von Bayreuth und ihre Beziehung zu Wirtspflanzen. *Bericht Naturwissenschaftliche Gesellschaft Bayreuth* 21, 235–253.
- Buhr, H. 1941. Beobachtungen über Nahrungspflanzen, Verbreitung und Auftreten von minierenden Blattwespen. *Mitteilungen der Münchner Entomologischen Gesellschaft* 31, 903–926.
- Conde, O. 1927. Ostbaltische Tenthredinoidea. *Korrespondenzblatt des Naturforscher -Vereins zu Riga* 59, 67–91.
- Conde, O. 1938. Ostbaltische Tenthredinoidea IV. *Notulae Entomologicae* 18, 10–20.
- Digweed, S.C., MacQuarrie, C.J.K., Langor, D.W., Williams, D.J.M., Spence, J.R., Nystrom, K.L., Morneau 2009. Current status of invasive alien birch-leafmining sawflies (Hymenoptera: Tenthredinidae) in Canada, with keys to species. *Canadian Entomologist* 141, 201–235.
- Gjærevoll, O. 1992. *Plantegeografi*. 200 pp. Tapir forlag.
- Halstead, A. 2001. The sawflies (Hymenoptera: Symphyta) of Buckingham Palace Garden. *The London Naturalist*, 80 (supplement), 279–282.
- Heibo, E. & Lönnve, O.J. 2005. *Tenthredo amoena* Gravenhorst, 1807, *T. mandibularis* Fabricius, 1804 and *Rhogogaster californica* (Norton, 1872) (Hymenoptera, Symphyta, Tenthredinidae) in Norway. *Norwegian Journal of Entomology* 52, 145–149.
- Heibo, E. Lönnve, O.J. & Skartveit J. 2008. *Aglaostigma alpinum* (Thomson, 1871) and *Tenthredo velox* Fabricius, 1798 in Norway (Hymenoptera, Symphyta, Tenthredinidae). *Norwegian Journal of Entomology* 55, 229–232.
- Hering, M. 1923. Minenstudien III. *Deutsche Entomologische Zeitschrift*, Berlin 1923, 188–206.
- Huber, J.A. 1969. Blattminen und Pflanzengallen Schwabens. *Bericht der Naturforschenden Gesellschaft Augsburg* 23(127–129), 1–204.
- Jansen, E. 1998. *Die Gattung Hartigia Schiodte, 1838 in Europa (Hymenoptera: Cephidae)*. Pp. 301–318 in Taeger, A., Blank, S.M. (Eds.), *Pflanzenwespen Deutschlands (Hymenoptera, Symphyta)*. Kommentierte Bestandsaufnahme. Goecke & Evers, Kelttern.
- Kangas, J.K. 1985. Pälkäneen Sahapistiäisfauna 1953–1983. *Pälkäne-Seuran-Julkaisu* 5, 1–113.
- Kiær, H. 1898. Uebersicht der phytophagen Hymenopteren des arktischen Norwegens. *Tromsø Museums Aarshefter* 19[1896], 1–111.
- Kontuniemi, T. 1960. Die Futterpflanzen der Sägewespenlarven (Hymenoptera Symphyta) Finnlands. *Animalia Fennica* 9, 1–104.
- Kraus, M. 1998. *Die Orussidae Europas und des Nahen Ostens (Hymenoptera: Symphyta)*. Pp. 283–300 in Taeger, A., Blank, S.M. (Eds.), *Pflanzenwespen Deutschlands (Hymenoptera, Symphyta)*. Kommentierte Bestandsaufnahme. Goecke & Evers, Kelttern.
- Kålås, J.A., Viken, Å., Henriksen, S. & Skjelseth, S. 2010. *The 2010 Norwegian Red List for Species*. 480 pp. Norwegian Biodiversity Information Centre, Norway.
- Lid, J. & Lid, D.T. 2005. *Norsk Flora*. 1230 pp. Det Norske Samlaget, Oslo.
- Lindqvist, E. 1965. Bemerkungen über einige Tenthrediniden (Hym. Symphyta). *Notulae Entomologicae* 45, 17–32.
- Liston, A.D. 1995. *Compendium of European Sawflies*. 190 pp. Chalastos Forestry, Daibersdorf/Gottfrieding.
- Liston, A.D. 1997. Hostplant list for European and North African Megalodontoidea and Tenthredinoidea (Hym.). *Sawfly News* 1(3), 30–58.
- Liston, A.D. 2007. Notes on Palaearctic sawflies, with particular reference to the German fauna (Hymenoptera, Symphyta). *Nachrichtenblatt der Bayerischen Entomologen* 56 (3–4), 82–97.
- Liston, A.D. & Prous, M. 2014. Sawfly taxa (Hymenoptera, Symphyta) described by Edward Newman and Charles Healy. *ZooKeys* 398, 83–98. doi: 10.3897/zookeys.398.6595
- Lorenz, H. & Kraus, M. 1957. Die Larvalsystematik der Blattwespen (Tenthredinoidea und Megalodontoidea). *Abhandlungen zur Larvalsystematik der Insekten* 1, 1–389.
- Lönnve, O.J. 2006. Notes on Norwegian sawflies (Hymenoptera: Symphyta) I. *Norwegian Journal of Entomology* 53, 43–46.
- Lönnve, O.J. 2007. The sawfly *Janus luteipes* (Lepeletier, 1823) (Hymenoptera, Cephidae) in Norway. *Norwegian Journal of Entomology* 54, 49–50.
- Lönnve, O.J. 2009. Notes on Norwegian sawflies (Hymenoptera, Symphyta) II. 13 species new to the Norwegian Fauna. *Norwegian Journal of Entomology* 56, 50–56.
- Masutti, L. & Covassi, M. 1980. Contributo alla conoscenza delle *Hoplocampa* Hartig italiane

- e descrizione di *H. chamaemespili* n. sp. (Hymenoptera, Tenthredinidae). *Redia* 63, 221–247.
- Nuorteva, M., Nuorteva, J. & Olsen, T.J. 2005. Records of sawflies (Hymenoptera: Symphyta) from Østfold, Southern Norway. *Sahlbergia* 10, 68–79.
- Økland, K.A. 1981. Inndelingen av Norge til bruk ved biogeografiske oppgaver – et revidert Strand-system. *Fauna* 34, 213–231.
- Pieronek, B. 1984. *The larvae of Symphyta (Hymenoptera) feeding on Alnus (Mill.)*. Pp. 119–122 in Kaszab, Z. (Ed.), Verhandlungen des Zehnten Internationalen Symposiums über Entomofaunistik Mitteleuropas (SIEEC), 15.–20. August 1983, Budapest. Hungarian National Committee, SIEEC, 1984.
- Prous, M. 2012. *Taxonomy and phylogeny of the sawfly genus Empria (Hymenoptera, Tenthredinidae)*. 191 pp. Tartu University press, PhD. Thesis nr. 222.
- Prous, M., Blank, S.M., Goulet, H., Heibo, E. Liston, A., Malm, T., Nyman, T., Schmidt, S., Smith, D.R., Vardal, H., Viitasaari, M., Vikberg, V. & Taeger, A., 2014. The genera of Nematinae (Hymenoptera, Tenthredinidae). *Journal of Hymenoptera research*. In press.
- Prous, M., Heibo, E., Lønnve, O., Taeger, A., Vårdal, H. & Liston, A. 2014. Sawflies (Hymenoptera, Symphyta) newly recorded from Sweden. *Entomologisk Tidskrift*. In press.
- Pschorn-Walcher, H., & Altenhofer, E. 2000. Langjährige Larvenaufsammlungen und Zuchten von Pflanzenwespen (Hymenoptera, Symphyta) in Mitteleuropa. *Linzer biologische Beiträge* 32(1), 273–327.
- Pschorn-Walcher, H. & Altenhofer, E. 2006. Neuere Larvenaufsammlungen und Zuchten von mitteleuropäischen Pflanzenwespen (Hymenoptera, Symphyta). *Linzer biologische Beiträge* 38 (2), 1609–1636.
- Roller, L., Beneš, K., Blank, S.M., Holuša, J., Jansen, E., Jänicke, M., Kaluza, S., Kehl, A., Kehr, I., Kraus, M., Liston, A.D., Nyman, T., Nie, H., Savina, H., Taeger, A. & Wei, M. 2006. Contribution to the knowledge of sawfly fauna (Hymenoptera, Symphyta) of the Low Tatras National Park in Central Slovakia. *Naturae Tutela, Liptovský Mikuláš* 10, 57–72.
- Scheibelreiter, G.K. 1973. Die Tenthrediniden der Rose (*Rosa spec.*). *Zeitschrift für angewandte Entomologie* 72(3), 225–259.
- Shinohara, A. & Blank, S.M. 2003. New Records of Three Leaf-rolling Sawflies of the Genus *Pamphilius* (Hymenoptera, Pamphiliidae) from Greece and Macedonia. *Bulletin of the National Science Museum, Series A, Zoology* 29(2), 103–106.
- Siebek, H. 1880. *Enumeratio Insectorum Norvegorum Fasc. V, Pars I. Catalogum Hymenopterorum Continent. Christiania*.
- Smith, D.R. 1971. Nearctic Sawflies. III. Heterarthrinae: Adults and larvae (Hymenoptera: Tenthredinidae). *Technical Bulletin, U.S. Department of Agriculture* 1420, 1–84.
- Strand, E. 1898. Enumeratio hymenopterorum norvegorum. *Entomologisk Tidskrift* 19, 71–112.
- Strand, E. 1900. Om nogle Staphylinider og Phytophage Hymenoptera. *Archiv for Matematik og Naturvidenskab. B, Oslo u. a.* 22 (3), 1–15.
- Strand, E. 1901. Orthoptera og hymenoptera samlede i 1900. *Archiv for Matematik og Naturvidenskab. B* 23 (6), 1–7.
- Strand, E. 1903. Hymenopterologisk bidrag til Norges fauna. *Christiania Videnskabs-Selskabs Forhandlinger* 8, 1–8.
- Stritt, W. 1937. Die Larve des *Pamphilius marginatus* Lep. (Hym., Tenth.). *Mitteilungen der Deutschen Entomologischen Gesellschaft e.V.* 8(2), 20–22.
- Taeger, A. 2013. The type specimens of *Tenthredo* Linnaeus, 1758 (Hymenoptera: Tenthredinidae) deposited in the Hungarian Natural History Museum. *Zootaxa* 3626(2), 201–244.
- Taeger, A., Altenhofer, E., Blank, S.M., Jansen, E., Kraus, M., Pschorn-Walcher, H. & Ritzau, C. 1998. *Kommentare zur Biologie, Verbreitung und Gefährdung der Pflanzenwespen Deutschlands (Hymenoptera, Symphyta)*. Pp. 49–135 in Taeger, A. & Blank, S.M. (Eds.), *Pflanzenwespen Deutschlands (Hymenoptera, Symphyta)*. Kommentierte Bestandsaufnahme. Goecke & Evers, Keltern.
- Taeger, A., Blank, S.M. & Liston, A.D. 2006. *European Sawflies (Hymenoptera: Symphyta) - A Species Checklist for the Countries*. Pp. 399–504 in Blank, S.M., Schmidt, S. & Taeger, A. (Eds.), *Recent Sawfly Research: Synthesis and Prospects*. Goecke & Evers, Keltern.
- Taeger, A., Blank, S.M. & Liston, A.D. 2010. World Catalog of Symphyta (Hymenoptera). *Zootaxa* 2580, 1–1064.
- Verzhutskii, B.N. 1981. *Rastitel'nyadnye nasekomye v ekosistemach vostochnoj sibiri*. 303 pp. Nauka Novosibirsk.
- Viitasaari, M. 2002. *Sawflies (Hymenoptera, Symphyta) Vol I: a review of the suborder, the Western Palearctic taxa of Xyeloideae and Pamphilioidae*. 516 pp. Tremex Press Ltd. Helsinki.
- Viramo, J. 1969. Zur Kenntnis der Minerierfauna

- Finnlands. Über die Wirtspflanzen und die Verbreitung der minierenden Blattwespen (Hym., Tenthredinoidea). *Annales Entomologici Fennici* 35, 3–44.
- Wagner, M.R. & Raffa, K.F. 1993. *Sawfly life history adaptations to woody plants*. 581 pp. Academic Press Inc, San Diego.
- Weiffenbach, H. 1985. Symphyta (Hymenoptera) von Süd-Niedersachsen, Nord- und Mittelhessen. *Mitteilungen der Münchner Entomologischen Gesellschaft* 75, 5–44.
- Zombori, L. & Ermolenko, V.M. 1999. The history of the Symphyta fauna of the Carpathian Basin (Hymenoptera) - Part III/1. *Folia Entomologica Hungarica* 60, 239–250.

Received: 6 March 2014

Accepted: 11 April 2014