New records and host plants of Symphyta (Hymenoptera) for Germany, Berlin and Brandenburg

With 10 figures

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Summary

24 species of sawflies are recorded for the first time in Brandenburg and / or Berlin. Four of these are new records for Germany: Dineura parcivalvis (KONOW, 1901), Euura plicadaphnoides (KOPELKE, 2007), Pristiphora angulata LINDQVIST, 1974 and Tenthredo semicolon MOL, 2013. It is not clear whether P. angulata is established in Germany. Empria hungarica (KONOW, 1895) is new for Rhineland-Palatinate. The presence of Calameuta punctata in Brandenburg is confirmed. Dineura testaceipes is removed from the list of Berlin-Brandenburg species. Linum usitatissimum is a new host plant for Rhogogaster chambersi BENSON, 1947 and Salix daphnoides for Ametastegia perla (KLUG, 1818).

Key words
Tenthredinoidea, Pamphiliidae, Cephidae, Xiphydriidae, distribution, host plants

Zusammenfassung


Introduction

During the 19th Century, several entomologists resident in what are now the German federal states of Berlin and Brandenburg laid the foundations for studies on the sawfly fauna of these territories. Most prominent among such pioneers were FRIEDRICH KLUG (1775-1856) and THEODOR HARTIG (1805-1880), whose taxonomic work was based partly on material obtained in the region. Although he published little about Symphyta occurring in or around Berlin, JOHANN P. E. F. STEIN (ca. 1816–1882, exact dates unclear) continued this tradition by building up and curating the collection at the Museum of Natural History in Berlin. The collection of FRIEDRICH WILHELM KONOW (1842–1908), deposited at the Senckenberg Deutsches Entomologisches Institut, Müncheberg, also
contains many specimens from Brandenburg. By contrast, after the publication of the important work by Carl Schirmer (1855–ca. 1919) (Schirmer 1901), investigation of the regional fauna was comparatively neglected during much of the 20th Century. Species lists for Berlin-Brandenburg by Blank et al. (1998) and Blank et al. (2001) drew attention to deficits in the inventory of the fauna. It was accordingly not surprising, that Liston (2006b) was able to present data for 112 species not previously recorded in these German federal states. Since the publication of that work, a number of records of further species new to the regional fauna have accumulated. These are presented here, together with data on species previously unconfirmed, that are only known from very old specimens, or for which new observations on host plants have been made. Notes on larval host plants are included when these were not summarised by Taeger et al. (1998) or Liston et al. (2012).

Material and methods

If not stated otherwise, specimens were collected and determined by the author and are deposited in the Senckenberg Deutsches Entomologisches Institut, Müncheberg (SDEI). Where other specialists are named as having determined specimens, I checked the identity of these, to the best of my ability. The responsibility for any inaccuracies naturally remains my own.

All coordinates (decimal system) are for a central point. The coordinates of localities whose position is fairly precisely known (such as sites of Malaise traps, small private gardens, and main stems of individual trees or bushes), are given to the fifth decimal place after the degrees, with an accuracy of ±20 m. Coordinates of localities named on data labels are more approximate and given either to three decimal places with an accuracy of ±2 km (mostly own records), or to two decimal places with a notional accuracy of ±5 km (mostly older label data).

Photos were taken with a Leica DFC295 camera attached to an Olympus SZX12 microscope. Composite images with an extended depth of field were created using the software CombineZ5. Contrast and brightness of images as having determined specimens, I checked the identity of these, to the best of my ability. The responsibility for any inaccuracies naturally remains my own.

Barcoding of the mitochondrial CO1 gene of Dineura species was undertaken by the Canadian Centre for DNA Barcoding (CCDB). DNA extraction from a single leg of each adult specimen was followed by PCR amplification and sequencing using standardised high-throughput protocols (vanova et al. 2006, DeWaard et al. 2008). The DNA extracts are stored at the CCDB, the vouchers at the SDEI. Sequences were aligned using the BOLD (Barcoding of Life Data Systems) Aligner. Genetic distances were calculated using analytical tools in BOLD, applying the Kimura 2-parameter model, and the interspecific divergence given as the minimum pair-wise distance.

Results

The order of families follows Blank et al. (2001). Genera and species are listed alphabetically. Nomenclature is after Liston et al. (2012), modified for the Nematinae following Prous et al. (2014). Names of species recorded for the first time from Berlin-Brandenburg are preceded by an asterisk (*).

Argidae

*Arge metallic (Klug, 1834)

Brandenburg: 1 ♀, Landkreis Oberhavel, Schildow, 52.64°N 13.37°E, 24.07.1941, leg. Heddie, determined in 1976 as A. clavicornis expansa by W. H. Muche. This species occurs very locally in Central Europe and is generally rarely recorded. Schedl & Altenhofner (2013) presented valuable new data on its larva.

Tenthredinidae

*Allatus melananarius (Klug, 1818)

Berlin: 1 ♀, Berlin, 28.4°N, leg. Schirmer (in coll. Swedish Museum of Natural History, Stockholm). Brandenburg: 1 ♀, Landkreis Märkisch-Oderland, Buckow, 52.56°N 14.08°E, 25/5, leg. Schirmer (in coll. Swedish Museum of Natural History, Stockholm). 1 ♀, Landkreis Märkisch-Oderland, Müncheberg, ZALF Gelände, 52.51°N 14.11°E, 25.07.–01.08.2011. Only Corrus sanguinea is so far recorded as a larval host, but because A. melananarius is found not just in semi-natural habitats in which this shrub occurs, but also in parks and gardens where several other Corrus spp. are planted, it would be interesting to know whether some of these are used as hosts.

*Ametastegia perla (Klug, 1818)

Brandenburg: 1 ♀, Müncheberg, ZALF Gelände, 52.51°N 14.11°E, reared from Salix daphnoides, larva collected 29.06.2014, leg. M. Prous.

*S. daphnoides is a new host plant record for this species.

*Apethymus apicalis (Klug, 1818)

Brandenburg: 1 ♂, Landkreis Märkisch-Oderland, Müncheberg, 52.50°N 14.12°E, Hausgarten, 11.10.2013, leg. S. M. Blank. 5 ♂, Landkreis Frankfurt (?),
The specimens collected by Zeller may either be from Germany, or from the part of former Frankurt (now Slubice), east of the River Oder, that is now in Poland.

*Sapthymus serotinus* (O. F. Müller, 1776)


*Caliroa cathurnata* (Serville, 1823)


*Dineura parcivalvis* (Kovon, 1901)

Brandenburg: 2 ♂, Landkreis Märkisch-Oderland, Waldsieversdorf, 52.548°N 14.065°E, 19/25.05.2006, swept from *Prunus padus*.

First record from Germany.

These specimens were identified by Liston (2006b) as *D. testaceipes* (Klug). Muchie (1968) also recorded *D. testaceipes* from Brandenburg. Although it is highly probable that *D. testaceipes* does occur here, no voucher specimens have so far been examined. Accordingly, *D. testaceipes* is deleted from the faunal list of Berlin-Brandenburg. *D. parcivalvis* und *D. testaceipes* are morphologically very similar, although Lindqvist (1955, 1972) noted conspicuous differences in the structure of the male penis valves. I had no males of *D. parcivalvis* available for examination. The most reliable single external character for distinguishing females seems to be the length of the antenna and proportions of the flagellomeres, at least in European specimens. However, two females in the SDEI from the Russian Far East, with characters that otherwise fit *D. testaceipes*, have more slender flagellomeres, like *D. parcivalvis*. The body colour of *D. parcivalvis* females is always relatively pale, with the abdomen underside extensively pale (yellow). The coloration of *D. testaceipes* varies much more than in *D. parcivalvis*, but most specimens of the former are darker than the latter. Most *D. testaceipes* imagines from northern Europe can be identified using only colour characters: the underside of the abdomen is usually nearly entirely dark (black / dark brown). On the other hand, some Austrian individuals reared from *Sorbus aucuparia* have been examined, that are just as pale as *D. parcivalvis*. Other characters mentioned by Lindqvist seem less useful. The presence or absence of vein 2r-rs in the fore wing is certainly not a good character: this varies in both species. There is indeed a slight difference in the sculpture of the upper head, particularly on the temples, but this is difficult to judge without direct comparison of both species. The colour of the pterostigma, as mentioned by Lindqvist (1955), seems to be of help in identification, but this needs to be checked in a greater number of specimens. Provisionally, females can be distinguished as follows:

- Apical flagellomeres at least 5x as long as greatest width (Fig. 1). Abdominal sternae always mostly pale (Fig. 2). Pterostigma and costa brown (Fig. 2). Upper head more densely punctate, thus less shiny. .......................... *D. parcivalvis*

- Apical flagellomeres at most 4.5x as long as greatest width (Fig. 3). Abdominal sternae entirely black except around hypopygium (Fig. 4), or more or less pale. Pterostigma (at least in middle) and costa yellowish (Fig. 4). Upper head less densely punctate, thus more shiny. .......................... *D. testaceipes*

The identification of the *D. parcivalvis* specimens from Brandenburg is further supported by two non-morphological characters: a significant divergence in CO1 barcoding (4.4 %) from *D. testaceipes* and the fact that both females were collected from *Prunus padus*. Kontuniemi (1960) established that *Prunus padus* is the larval host of *D. parcivalvis*. On the other hand, *D. testaceipes* has generally been regarded as monophagous on *Sorbus aucuparia* (e.g. Benson 1958). Previously, *D. parcivalvis* has been definitely recorded only from Finland, Estonia and Latvia, but possibly also occurs in Moravia, Czech Republic (see Lindqvist 1955). Its global range reaches to the Russian Far East: 1 ♂, Khabarovskiy Kray, Bikin N 20 km, Batoovo, Bobshi Sonspeyok Hill, 47.033°N 134.350°E, 26.05.1993, leg. A. Täger (SDEI); 1 ♂, Primorskiy Kray, Partisan, 13 km S Ussuriysk, 43.691°N 131.957°E, 15.06.1993, leg. A. Täger (SDEI).

*Dolerus brevicornis* Zaddach, 1859

**Dolerus harwoodi** Benson, 1947

**Dolerus uliginosus** (Klug, 1818)
Brandenburg: 1 ♂, Landkreis Barnim, Ziethen, Grumsiner Forst, Langer Berg, Malaisefalle M4, 52.97500°N 13.91667°E, 11.-13.05.1993, leg. DEI; 1 ♂, 26.04.-04.05.1994, leg. DEI; 2 ♂, 11.-18.05.1994, leg. DEI.

**Empria basalis** Lindqvist, 1968

Probably a widespread species in Germany, but here hitherto not distinguished from related taxa (see Prous et al. 2011) and so far only recorded in Hesse (Löhr 2015).

**Empria hungarica** Konow, 1895
Brandenburg: 1 ♂, 3 ♂, Landkreis Märkisch-Oderland, Trebnitzer Schloßpark, 52.533°N 14.222°E, 09.05.2010, det. M. Prous. Netted from *Geum urbanum*, a probable host plant (Prous et al. 2011). Probably a widespread species in Germany, but here hitherto not distinguished from related taxa (see Prous et al. 2011) and so far only recorded in Hesse (Löhr 2015).

**Euura ampla** (Konow, 1895) comb. nov.
[= *Amauronematus amplus* Konow, 1895]
Brandenburg: 1 ♂, Landkreis Barnim, Ziethen, Grumsiner Forst, Langer Berg, Malaisefalle M4, 52.97500°N 13.91667°E, 08.05.1996, leg. DEI.

**Euura ferruginea** ( Förster, 1854) comb. nov.

**Euura longiserrae** (Thomson, 1863) comb. nov.

**Euura milttonota** (Zaddach, 1863) comb. nov.

**Euura plicadaphnoides** (Kopolke, 2007) comb. nov.
[= *Phyllocolpa plicadaphnoides* Kopolke, 2007] Brandenburg: 5 ♂, 2 ♂, Landkreis Märkisch-Oderland, Müncheberg, ZALF Gelände, 52.515°N 14.115°E, 20-26.04.2009; 1 ♂, 30.04.2010. All specimens swept from *Salix daphnoides*. Numerous larvae and leaf-folds (Figs 5-6) on *S. daphnoides*, Münchenberg, Seelower Str., 52.50150°N 14.15320°E, June 2013. First records from Germany. This species was described from the Alpine regions of Austria and Switzerland (Kopolke 2007), and is monophagous on *Salix daphnoides*, which in Germany is native only to the Alps and the associated river systems. However, it has been widely planted outside its natural range because of its attractive appearance and utility as a food source for honeybees. Benteš (2015) recorded *E. plicadaphnoides* from the Czech Republic. In contrast to *Euura acutifoliae* (Zinovjev, 1985), another gall-making sawfly on *S. daphnoides*, that is widespread throughout Germany, galls of *E. plicadaphnoides* have in Germany so far only been found in Münchenberg.

**Euura salicispurpureae** Kopolke, 2014
Macrophya rufipes (Linnaeus, 1758)

Brandenburg: 1 ♀, Landkreis Märkisch-Oderland, Müchelberg, ZALF Gelände, 52.515°N 14.115°E, 10.07.2011. The species had only once been recorded from Berlin-Brandenburg, in the 19th Century in Berlin (Liston 2006b).

*Pristiphora angulata* Linöqvist, 1974


First record from Germany.

The recorded global distribution of Pristiphora angulata comprises only Norway (Lönneve 2009), Finland (type locality: southern Finland), Estonia and north-west Russia (Taeger et al. 2006). Host plants are *Spiraea* species, *S. chamaedryfolia* being a main host (Lönneve 2009; A. Liston, personal observations). No *Spiraea* species is native in Fennoscandia or Germany, and the geographic origin of the neozoon *P. angulata* is unclear.

Pristiphora parva (Hartig, 1837)

Brandenburg: 1 ♀, Landkreis Märkisch-Oderland, Müchelhofe, Gr. Klobichsee, 52.555°N 14.128°E, 10.05.2014. Not found in Berlin-Brandenburg since the type series was collected.

Pristiphora wesmaeli (Tischbein, 1853)


Since 2012 I have seen larvae every year, in greater or lesser numbers, on *Sedum* sp. cf. *telephium* in my garden at Trebnitz. Some plants were approximately 50 % defoliated by the time the larvae stopped feeding.

Tenthredo ignobilis Klug, 1817

Brandenburg; numerous larvae, Landkreis Märkisch-Oderland, Jahnsefelde, 52.50961°N 14.24234°E, field path, on *S. telephium*, 15.05.2010. 1 ♀, Müncheberg, Trebnitz, 52.53143°N 14.21674°E, garden, flying around *Sedum* sp. cf. *telephium*, 21.05.2012; 1 larva (Fig. 9) on *S. sp. cf. telephium*, 23.06.2013. 1 larva, Landkreis Barnim, Friedrichswalde, Parlow, 53.02617°N 13.76203°E, 25.06.2015, garden, on *S. sp. cf. telephium*.

Since 2012 I have seen larvae every year, in greater or lesser numbers, on *Sedum* sp. cf. *telephium* in my garden at Trebnitz. Some plants were approximately 50 % defoliated by the time the larvae stopped feeding.

Tenthredo semicolon Mol., 2013


First records from Germany.

Tenthredo punctulata Konow, 1887 (primary homonym) was only recently removed from synonymy with *Tenthredo colon* Klug, 1817, recognised to be a separate species, and re-named *T. semicolon* by A. Mol (in Taeger 2013). Previously published information under the name *T. colon* on the larva, hosts and distribution may refer to either species. *T. colon* also occurs in Brandenburg; several specimens have been collected at Langer Berg, north of Eberswalde, in the Biosphere Reserve Schorfheide-Chorin, leg. DEI.

Diprionidae

Microdiprion pallipes (Fallén, 1808)

Brandenburg: 1 ♀, Landkreis Märkisch-Oderland, Müncheberg, NSG Gummitz, 52.51°N 14.08°E, 30.04.2006. Previously only known in Berlin-Brandenburg from old records (Liston 2006b).
Pamphiliidae

*Cephalcia erythrogaster* (HARTIG, 1837)


*Cephalcia abietis* (LINNAEUS, 1758)


*Pamphilius palipes* (ZETTERSTEDT, 1838)

Brandenburg: 1 9, Landkreis Barnim, Eberswalde, Finow, 52.84°N 13.74°E, 25.05.1986, leg. A. Taeger (in coll. South Central Forestry University, Changsha, China).

Cephidae

*Calameuta punctata* (KLUG, 1803)

Brandenburg: 1 σ, Landkreis Barnim, Niederfinow 1 km S, 52.828°N 13.937°E, 09.05.2015. 2 9, Landkreis Märkisch-Oderland, Müncheberg, Trebnitz, 52.535°N 14.204°E, damp meadow, 16.05.2015. The females were swept from *Alopecurus pratensis* agg.; one of them while in the nest still ovipositing in a portion of broken stem. *Calameuta punctata* was mentioned as occurring in Germany by LISTON et al. (2012), without any further details, based on specimens collected in recent years by Mr EWALD JANSEN in Saxony. Although the type locality of the species is Germany, probably Berlin-Brandenburg (KLUG 1803), the taxon was not mentioned in the checklists by BLANK et al. (1998) and BLANK et al. (2001). *Alopecurus pratensis* is the only recorded host (VICKBERG 1978; as *Calameuta filum* (Gussakovskij, 1935)). The worldwide distribution extends westwards from Irkutsk in southern Siberia (VIITASAARI 1975), through Uzbekistan, Kasachstan (ZHELOCHOVTVSEV & ZINOVEJ 1996), the Caucasus (VIITASAARI 1975), Turkey (ÇALMUSUR & ÖZBET 2010), and sporadically through much of central and eastern Europe (TAEGGER et al. 2006), reaching the Lake Ladoga Region of Russia (HUMALA & POLEVOI 2011) and southern Finland (VIITASAARI 1984) in the North. TAEGGER et al. (2006) listed *C. punctata* from Spain, citing the records by LLORENTE & GAYUBO (1990) under the name *C. pravei* (DOVNER-ZAPOLSKIJ, 1926). *C. pravei* was treated as a synonym of *C. punctata* by ZOMBORI (1978), but this status requires confirmation. North of the Alps, the German localities seem to be the most westerly so far recorded. Males of *C. punctata* are much rarer than females in the northern parts of its range, and have for example not been found in Finland at all (VIITASAARI 1984).

Xiphydriidae

*Xiphydria megapolitana* (BRAUNS, 1884)

Brandenburg: 1 9, Landkreis Märkisch-Oderland, Müncheberg, NSG Gumnitz, 52.509°N 14.080°E, 20.05.2011. *X. megapolitana* was not listed from Berlin-Brandenburg by BLANK et al. (2001). However, a record of a female collected in 1900 by Oldenburg in “Berlin (Finkenkrug)” [now Brandenburg, Kreis Havelland, Falkensee] has already been published by JANSSEN (1987).

Discussion and conclusions

It remains to be seen, whether *Pristiphora angulata* is actually established in Germany. Attempts to find the species on planted *Spiraea* in Berlin-Brandenburg during early 2015 did not yield any specimens. At present, I consider it premature to formally add *P. angulata* to the list of sawflies occurring in Germany. If found to be established, *P. angulata* would be one of only six neozoon sawfly species recorded in the country (four species so characterised by LISTON et al. (2012), and *Aproceros leucopoda* subsequently added by BLANK et al. (2014)). In analogy with *Coleophora spiraeella* (REBEL, 1916) (Lepidoptera), which also has *Spiraea chamaedryfolia* as a main host, it would be worthwhile searching for *P. angulata* in and near the Oberlausitz (Saxony), where *C. spiraeella* has been recorded (LEUTSCHE 2001).

BLANK et al. (2001) and LISTON (2006b) recorded a total of 467 species of Symphyta in Berlin-Brandenburg. BLANK et al. (2014) added *Aproceros leucopoda* TAKEUCHI, 1939. With the addition here of 24 species newly recorded (excluding *Pristiphora angulata*) and three confirmed, and the deletion of *Dineura testaceipes*, 494 species are now recorded in these provinces. This represents approximately 65% of the total of 758 species currently recorded in Germany.

Of the species newly recorded in Brandenburg, or here confirmed, *Calameuta punctata* is noteworthy because it is one of the small number of sawfly species which have...
a mainly eastern distribution in Europe, and in Germany are so far only recorded from the extreme East of the country. Other such species which occur in Brandenburg are *Caenocephus lumulatus* (Strobl, 1895), *Corynis amoena* (Klug, 1834) and *Nematus lucens* (Enslin, 1918). *Dineura parcivalvis* may have a similar distribution, based on what is so far known, or could have been overlooked in territories further west because it has been confused with *D. testaceipes*.

Acknowledgements

For the opportunity to examine specimens in public collections, I thank the following curators: Dr Sándor Czosz (formerly Hungarian Natural History Museum, Budapest), Dr Frank Koch (Museum für Naturkunde, Berlin), Richard Lyzkowski (National Museums of Scotland, Edinburgh), Dr Stephan Schmidt (Zoologische Staatssammlung, München) and Dr Hege Värdal (Swedish Museum of Natural History, Stockholm). Through Genome Canada and the Ontario Genomics Institute, particularly Dr Julie Stahlhut (Genome Canada and the Ontario Genomics Institute, Ontario Ministry of Economic Development and Innovation for Molecular Biology: Environmental Genetics. Humana Press Inc., Totowa). Dr Andreas Taeger and Dr Marko Prous (Müncheberg) kindly read a draft of the manuscript and suggested some improvements.

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Figs 1–2: *Dineura parcivalvis*, ?, 1: apical flagellomeres. 2: coloration. – Figs 3–4: *Dineura testaceipes*, ?, 3: apical flagellomeres. 4: coloration. – Figs 5–6: *Euura plicadaphnoides*, galls (arrowed) on leaves of *Salix daphnoides*. – Figs 7–8: *Rhogogaster chambersi*, larva on *Linum usitatissimum*. – Fig. 9: *Tenthredo ignobilis*, larva on *Sedum telephium*. – Fig. 10: *Pamphilus inanitus*, leaf rolls on *Rosa* sp.