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PENSOFT

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Recent additions to the list of German sawflies (Hymenoptera, Symphyta)

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Abstract

Two tenthredinid sawfly species are newly recorded in Germany: *Pristiphora krausi* (Lacourt, 2006) and *P. melagonia* **sp. nov.** The latter is also recorded from Greece and Spain. These species belong to the *Pristiphora depressa* group, as confirmed by genetic data. Additional data are presented for seven other tenthredinid species which have only rarely been recorded in Germany and for which previously-published data are incomplete. Identification keys to the West Palaearctic species of *Eurhadinoceraea* and the *Pristiphora depressa* group are included. Other species of Symphyta, first recorded in Germany since the publication of the most recent checklist, are listed in a table, with references to literature which describes identification characters.

Key Words

Tenthredinidae, taxonomy, distribution, keys, new species, *Dolerus*, *Empria*, *Endelomyia*, *Eurhadinoceraea*, *Pristiphora*

Introduction

During the early stages of revision of the Red List of German sawflies, we realised the need to place on permanent record the still partly unpublished specimen data for some species first found or identified in Germany in recent years. Only one of the species mentioned below is included in the "Fauna Germanica" checklist of sawflies (Blank et al. 2001) and only a few of them in the most recent national list by Liston et al. (2012). Nevertheless, except for *Pristiphora krausi* and *P. melagonia* sp. nov., all these species have already been stated to occur in Germany in published works. Such data, for example in Schmidt et al. (2017), has sometimes been relegated to the "supplementary material", where it may easily be overlooked. Furthermore, the hitherto published data for German specimens of the species mentioned below are, in various respects, incomplete. As all have, so far, only rarely been found in Germany and accordingly might be considered to be in some way endangered, short notes are given on their wider range and what is known of their biology. Identification characters of some species are described and illustrated. To complete the picture, other species first recorded in Germany since around 2012, but which have a better documented occurrence here, are listed in Table 1. This table also cites the source of the original record and sometimes additional works which contain descriptions of useful identification characters. In the list by Liston et al. (2012), *Athalia longifoliae* Kontuniemi, 1951 was inadvertently omitted, although it was, at that time, already reliably recorded from Germany (Mol 2009).

It seems likely that taxonomic research still in progress will make further name changes necessary before the next list of all German species is published. For this reason, we do not list here the very many nomenclatural and taxonomic changes which have been made since publication of the most recent German checklist (Liston et al. 2012). Most of these changes result from the treatment of several genus names as synonyms of *Euura*, as proposed by Prous et al. (2014). We recommend the online presentation "ECatSym" (Taeger et al. 2018) for checking on currently valid names and synonyms.

Material and methods

Several of the species mentioned below were first found to be present in Germany after the re-examination of specimens whose barcode sequences diverged from those of specimens submitted under the same species name. See Schmidt et al. (2017) for further background and details of sequencing methodology.

Registration numbers are given for most specimens. Names of institutional collections in which the specimens are deposited are abbreviated as:

DEI Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany;
ZSM SNSB, Zoologische Staatssammlung München, Germany.

The decimal degree latitude and longitude coordinates are generally given to a precision of three decimal places, but for trapped specimens up to five decimal places are given if these are recorded on the labels of specimens.

As described in Prous et al. (2019), we sequenced three gene fragments (1078–1087 bp of CO1, 1654 bp of NaK and 2480–2696 bp of POL2) for selected *Pristiphora depressa* group specimens to complement previously-available data from this group. The three gene fragments were newly sequenced for one specimen each of *P. depressa*, *P. cretica*, *P. krausi* and *P. melagonia* sp. nov. In addition, for one specimen of *P. tetrica*, POL2 was newly sequenced to complement previously-obtained CO1 and NaK data (GenBank accessions KY698202 and KY698122). The new sequences obtained here have been submitted to NCBI GenBank (accession numbers MT385398–MT385410).

Results

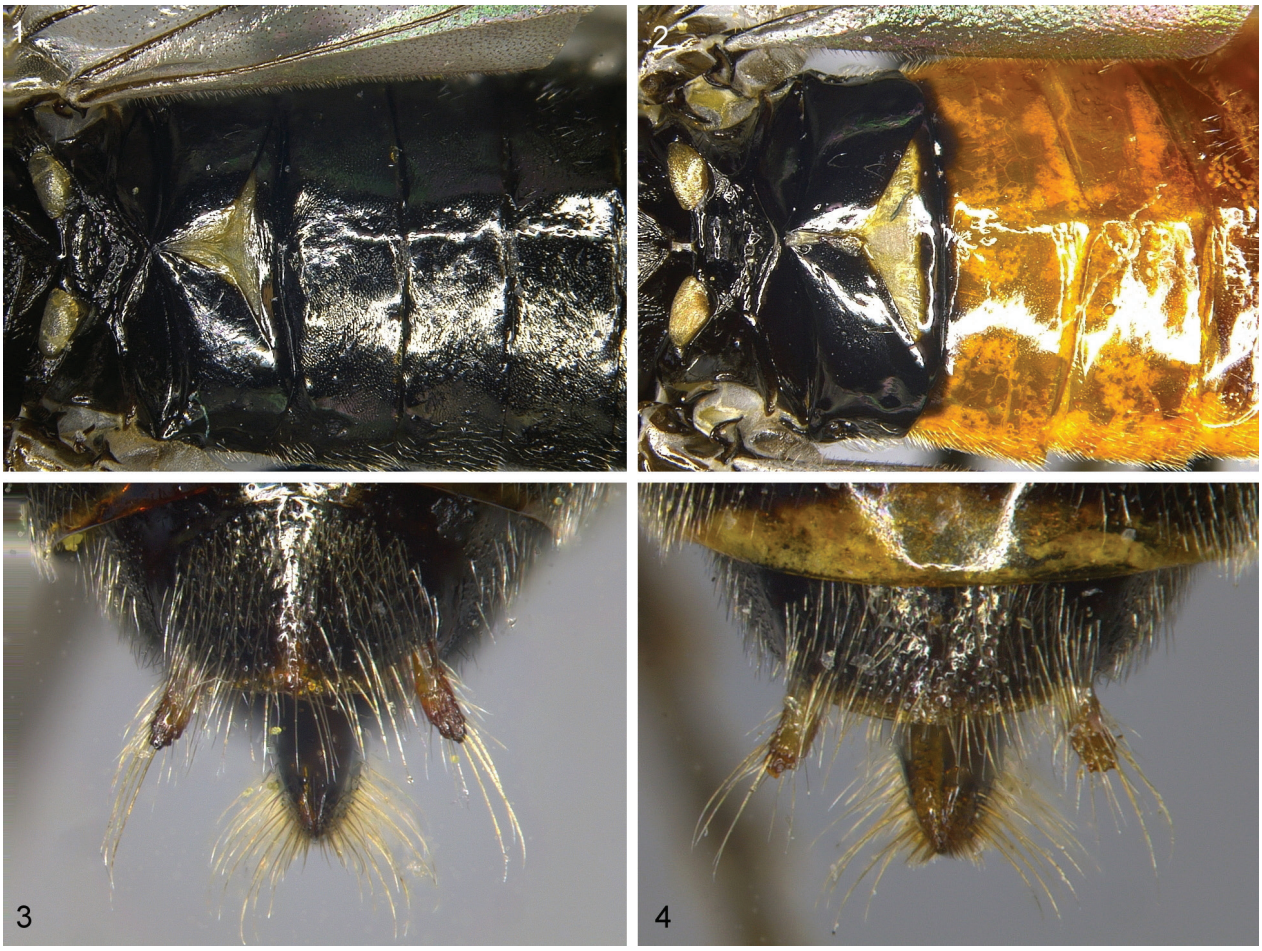
Dolerus yukonensis Norton, 1872

Germany, Bavaria: 1♀ (BC ZSM HYM 04528), Rappenalpental, 1431 m alt., +47.283 +10.200, 17.06.2004, leg. C. Schmid-Egger, det. S. M. Blank (ZSM).

The single currently-known German specimen, above, has already been mentioned by Schmidt et al. (2017). In Europe, this circumpolar species has long been known to occur in the Alps, as well as in Scotland and Fennoscandia (Benson 1961). Its presence in the Carpathians and the Giant Mountains (Czech Republic, Bohemian Massif) was detected more recently (Zombori and Ermolenko 1999; Beneš 2013). As for all *Dolerus yukonensis* specimens examined from Switzerland and Scotland, the abdomen of the Bavarian specimen is completely black. Fennoscandian *D. yukonensis* have a well-developed red girdle on the abdomen. Morphologically, *D. yukonensis* is very similar to *D. cothurnatus*. According to Dr Mikk Heidemaa, occasional specimens of *D. cothurnatus* lack the red girdle which is typical of this species. However, we have not, so far, seen any such specimens. Apart from the body colour of central European specimens, characters which distinguish *D. yukonensis* from *D. cothurnatus* are: abdominal terga 2 and 3 with fine, transverse sculpture contrasting with largely unsculptured tergum 1, Fig. 1 (in *cothurnatus* terga 1–3 equally unsculptured and shiny, Fig. 2); hyaline wing membranes (in *cothurnatus* smoky) and less strongly diverging apical setae of sawsheath in dorsal view, Fig. 3 (*cothurnatus*, Fig. 4). Benson (1961) wrote that *D. yukonensis* is scarce in Central Europe: he knew of only three records from Switzerland. Kofler and Schedl (2012) indicated that *D. yukonensis* is also rarely re-

Table 1. Published records of other Symphyta species recently detected in Germany. The abbreviations used for the federal states are: B-BR Berlin and Brandenburg; BW Baden-Wuerttemberg; BY Bavaria; HE Hesse; MV Mecklenburg-West Pomerania; NS Lower Saxony; NW North Rhine-Westphalia; SA Saxony; SH Schleswig-Holstein; ST Saxony-Anhalt; TH Thuringia.

Taxon	Name as published	German Federal States	First publication of German records:	Identification characters described by:
Aproceros leucopoda Takeuchi, 1939	*Aproceros leucopoda* Takeuchi, 1939	B-BR, BY, MV, SA, ST	Kraus et al. (2012); Blank et al. (2014)	Blank et al. (2010)
Arge annulata Konow, 1891	*Arge annulata* Konow, 1891	B-BR, ST	Liston et al. (2018)	Liston et al. (2018)
Athalia paradoxa Konow, 1886	*Athalia paradoxa* Konow, 1886	BW	Jansen (2017)	Benson (1962)
Birka alpina Lacourt, 1990	*Birka alpina* Lacourt, 1990	BW	Jansen (2017)	Lacourt (1990)
Calameuta punctata (Klug, 1803)	*Calameuta punctata* (Klug, 1803)	B-BR, SA	Liston (2015), Jansen (2019)	Zombori (1978)
Dineura parcivalvis (Konow, 1901)	*Dineura parcivalvis* (Konow, 1901)	B-BR	Liston (2015)	Liston et al. (2019b)
Empria aridicola Macek & Prous, 2019	*Empria aridicola* Macek & Prous, 2019	B-BR, BY, TH	Liston et al. (2019a)	Liston et al. (2019a)
Empria minuta Lindqvist, 1968	*Empria minuta* Lindqvist, 1968	HE	Löhr (2019)	Prous (2012)
Euura anglica (Cameron, 1877)	*Phyllocolpa anglica* (Cameron, 1877)	BW, HE, MV, NW, SH	Kopelke (2011)	Vikberg (2010)
Euura jugicola (Thomson, 1871)	*Nematus jugicola* C. G. Thomson, 1871	BW	Jansen (2017)	Benson (1958)
Euura plicadaphnoides (Kopelke, 2007)	*Euura plicadaphnoides* Kopelke, 2007	B-BR	Liston (2015)	Liston et al. (2017)
Nescianeura noblecourti Lacourt, 2006	*Nescianeura noblecourti* Lacourt, 2006	BW	Jansen (2017)	Prous et al. (2019)
Phylloecus faunus Newman, 1838	*Hartigia helleri* (Taschenberg, 1871)	BW	Jansen (2017)	Jansen (1998)
Pristiphora dedeara Liston & Prous, 2017	*Pristiphora dedeara* Liston & Prous, 2017	B-BR	Prous et al. (2017)	Prous et al. (2017)
Sirex torvus M. Harris, 1779	Specimens identified as *S. cyaneus* from Europe belong mostly to *S. torvus*	[records under the name *Sirex cyaneus* Fabricius, 1781]	Schiff et al. (2012)	Schiff et al. (2012)
Tenthredo semicolon Mol, 2013	*Tenthredo semicolon* Mol, 2013	B-BR	Liston (2015)	Liston (2016)
Xeris pallicoxae Goulet, 2015	*Xeris pallicoxae* Goulet, 2015	NS, SA, ST, TH	Goulet et al. (2015)	Goulet et al. (2015)
Xyela menelaus Benson, 1960	*Xyela menelaus* Benson, 1960	BW	Jansen et al. (2018)	Blank et al. (2013)



Figures 1–4. *Dolerus*. **1.** *yukonensis* DEI-GISHym12682 male, basal abdominal terga; **2.** *cothurnatus* DEI-GISHym12681 male, basal abdominal terga; **3.** *yukonensis* DEI-GISHym12679 female, valvulae 3; **4.** *cothurnatus* DEI-GISHym12680 female, valvulae 3.

corded in Austria. However, in the collection of the late Bruno Peter are approximately one hundred specimens of this species collected from localities in many areas of Switzerland, at altitudes of 800–2065 m above sea level. The host plant is almost certainly one or more species of *Equisetum*, based on observations of adults and because the known hosts of related *Dolerus* species are *Equisetum.* However, neither details of its biology nor a description of the larva appears to have been published.

Empria granatensis Lacourt, 1988

Germany, Bavaria: 1♀ (BC ZSM HYM 04619), Günthersbühl, 401 m alt., +49.534 +11.222, 06.06.1991, leg. M. Kraus, det. M. Prous (ZSM).

The German specimen, above, has already been mentioned by Schmidt et al. (2017). *Empria granatensis* is only known from a very few specimens collected in Europe. Other previously-published records comprise the two type specimens from Grenada, Spain and two males from Ardèche, France (Lacourt 1993). We have examined the following additional specimens:

Portugal, Viana do Castelo: 1♀ (DEI-GISHym15217), Paredes de Coura 4 km N, 480 m alt., +41.937 -8.533, 11.05.2012, leg. Blank, Jacobs, Liston and Taeger, det. M. Prous (DEI).

Spain, Aragón: 1♂ (DEI-GISHym80007), E of Parque Natural Puebla de San Miguel, 1540 m alt., +40.087 -1.069, 05.05.2014, leg. Liston, Prous and Taeger, det. M. Prous (DEI).

Morphological identification of this species is possible using the characters described by Prous (2012). The larval host plant is unknown. Lacourt (1993) speculated that it could be *Alchemilla vulgaris* L., but gave no explanation for his comment.

Endelomyia filipendulae Lacourt, 1998

Germany, Bavaria: 1♀ (DEI-GISHym21008), Sammern bei Moos, Brennen, +48.772 +12.959, 22.04.2007, leg. et det. A. Liston (DEI).

In Germany, previously only recorded from the Rosenau Nature Reserve, which, like Sammern, supports a Mesobrometum community, growing on calcareous shingle of

the River Isar. Liston et al. (2019a) commented adversely on the suitability of the ovipositor characters described by Lacourt (1998) for separating *Endelomyia filipendulae* from the only other known European species in the genus, *E. aethiops* (Gmelin, 1790). Subsequent examination of a larger number of specimens suggests that the appearance of the sawsheath (i.e. valvulae 3) in dorsal view will, in fact, separate them. In *E. filipendulae*, the longest setae are nearly as long as the breadth of the sheath (Fig. 5), whereas in *E. aethiops*, they are much shorter (Fig. 6).

Eurhadinoceraea amauros (Zombori, 1977)

Germany, Bavaria: Lkr Dingolfing-Landau, NSG Rosenau, +48.662 +12.579; 2♀ (including DEI-GISHym11581), 26.05.2002, DEI; 1♀ (DEI-GISHym4841), 13.05.2004, DEI; 1♀ (BC ZSM HYM 06555), 25.05.2007, ZSM. All leg. A. Liston, det. A. Liston. Collected on or near the host plant, *Clematis recta*.

Rearing record. Switzerland, Ticino: Crocifisso near Meride, +45.905 +8.935, 1♀ reared from larva collected 19.06.2002, emerged 02.08.2002, leg. A. Barker, det. S. M. Blank (coll. S. M. Blank, Müncheberg); the only adult reared from a batch of about 40 larvae collected on *Clematis recta* (A. Barker, pers. comm.). Male specimen examined. Switzerland, Ticino: 1♂ (DEI-GISHym12684), Maroggia, +45.92 +8.98, 08.05.1893, leg. G. C. Krüger, det. A. Liston (DEI, ex Coll. B. Peter).

Eurhadinoceraea amauros is currently only known in Germany from the Rosenau Nature Reserve, where it occurs together with *E. ventralis*. There, larval development of both species is only on *Clematis recta*. At present, *E. amauros* is known from a rather small number of specimens collected at a few localities in central and southern Europe (Germany, Switzerland, Slovakia and Italy south into the Abruzzi). Males of *E. amauros* have been recorded at some southern and eastern European localities, whereas most populations of *E. ventralis* are entirely parthenogenetic, according to Müller et al. (2004), although Lønnve (2009) recorded males in Norway. *Eurhadinoceraea amauros* seems only to inhabit semi-natural, steppe-like habitats. By contrast, *E. ventralis* has become a nuisance in gardens, also far outside its original range, damaging numerous cultivated species (Severin 1997; Lønnve 2009).

Superficially, because of their similar size and largely black colouration, adult *E. amauros* (Fig. 7) resemble *Phymatocera aterrima* (Klug, 1816) and *Rhadinoceraea* species. They can be distinguished as follows:

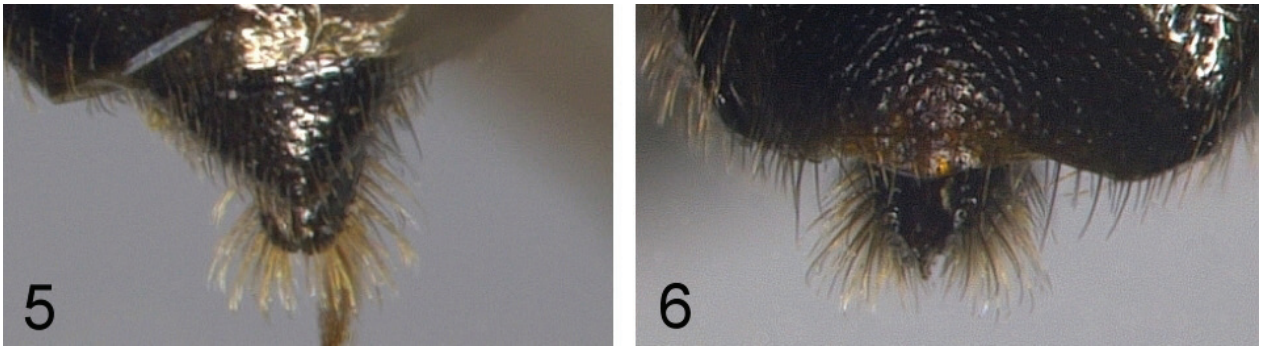
1 Antennomere 3 about 0.6–0.7 as long as antennomere 4. Antennomere 4 about as long as height of eye. [Claw subbifid] ..... *Phymatocera aterrima*
– Antennomeres 3 and 4 nearly equally long. Antennomere 4 only slightly longer than half height of eye....2
2 Forewing vein 2A + 3A (proximal part of anal cell) apically bifurcate or curved upwards towards vein 1A to form a more or less enclosed loop. Male tergum 8 unmodified. Claw usually [*R. micans* (Klug, 1816), *R. bensoni* Beneš, 1961] simple or with minute inner tooth, but variable in *R. reitteri* Konow, 1890 .... *Rhadinoceraea.*
– Forewing vein 2A + 3A (proximal part of anal cell) straight and apically undivided. Male tergum 8 with median excision to about a third of length of tergum (Fig. 14). Claw subbifid ....*Eurhadinoceraea amauros*

The key to the five West Palaearctic (and European) *Eurhadinoceraea* Enslin, 1920 species by Zombori (1977; as *Sterigmos* Zombori, 1977) works adequately, but could have been simplified by making more use of colour characters, which are very constant in the European species. The following key is offered as an alternative.

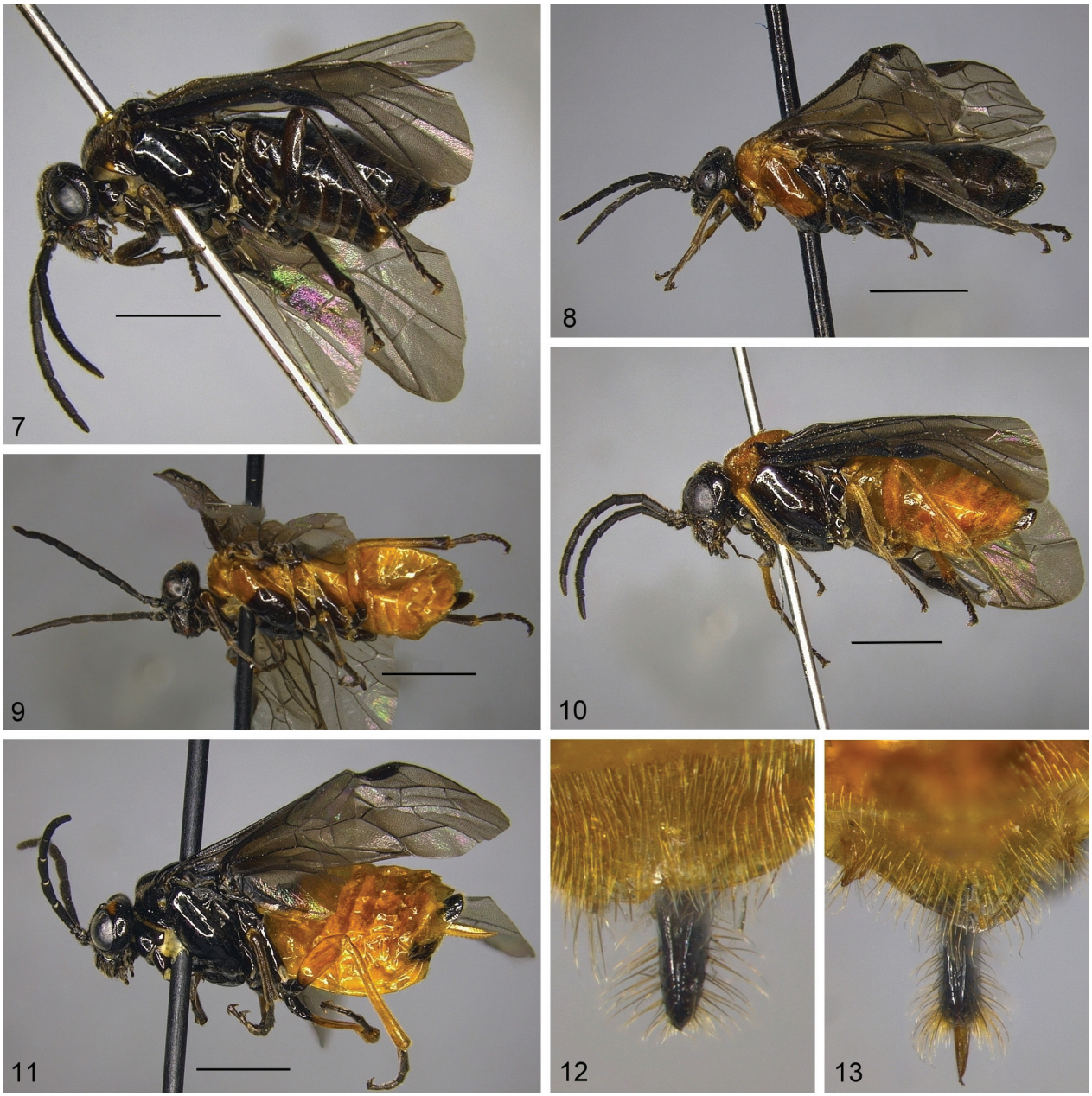
Only the European distribution of the species is given. *Eurhadinoceraea amauros* is only known in Europe, whereas the other species were all mentioned in older literature as having been recorded in the East Palaearctic. However, the presence of *E. ventralis* and *E. fulviventris* in the East Palaearctic requires checking, because several other similarly coloured species are now known there (Wei 1999).

Zombori (1990) mentioned that he had captured large numbers of males and females of *E. sanguinicollis* at Kerecsend, but omitted any morphological description of the male, which was not previously known. We examined two males in the collection of the Hungarian Natural History Museum, Budapest:

Hungary, Heves: 1♂ (DEI-GISHym17319), Kerecsend, +47.80 +20.35, 30.04.1987, leg. Ádám. See figures in Taeger et al. (2018). 1♂ (DEI-GISHym17318),



Figures 5–6. *Endelomyia* females, valvulae 3. **5.** *filipendulae* DEI-GISHym12688; **6.** *aethiops* DEI-GISHym12687.



Figures 7–13. *Eurhadinoceraea* females. **7.** *amauros* DEI-GISHym11581; **8.** *sanguinicollis* DEI-GISHym17317; **9.** *athalioides* DEI-GISHym12685; **10.** *fulviventris* DEI-GISHym11606; **11.** *ventralis* DEI-GISHym12686; **12.** *fulviventris* DEI-GISHym4840 valvulae 3; **13.** *ventralis* DEI-GISHym19386 valvulae 3. Scale bars 2 mm.

locality as previous, 25.04.1988, leg. L. Zombori. See figures in Taeger et al. (2018).

As the male of *E. sanguinicollis*, unlike the female, has an entirely black body, it could be mistaken for *E. amauros*.

Key to the West Palaearctic *Eurhadinoceraea* species (adults)*

1 Female 2
– Male 6
2 Body and legs completely black, except sometimes for small brown flecks on pronotum (Fig. 7) .... *E. amauros* (Zombori, 1977) [Host: *Clematis recta*. South-central Europe]
– Thorax and /or abdomen extensively red-orange (Figs 8–11) 3

* Notes: We have not examined a male of *E. fulviventris* and only a single male of *E. ventralis*. The difference in the length of the antennae is according to Enslin (1920). The differences in punctation of the mesoscutellum are evident between females of these species and probably also apply to males.

3 Abdomen entirely black or dark brown; whole thorax reddish, except for black mesosternum; legs mainly black with bases of tibiae and apices of femora obscurely paler (Fig. 8). Claws simple, without inner tooth ..... *E. sanguinicollis* (Mocsáry, 1880) [Host: ? *Clematis integrifolia* (suggestion by Zombori 1990). In Europe, only known from a few localities in Hungary]
– Abdomen extensively yellow-orange; hind legs extensively yellow (Figs 9–11. Claws with at least a small inner tooth ... 4
4 Thorax extensively yellow, including upper part of mesepisternum (Fig. 9); abdominal terga 1 and 2 mostly infuscate; body length 5.5–6.5 mm. Male unknown in Europe ..... *E. athalioides* (Jakovlev, 1891) [Host: *Pulsatilla* spp. (Liston 2008). In Europe, only known from a single German locality (where now extinct) and a very few localities in France]
– Thorax nearly entirely black (Fig. 11), except at most for propleuron and small fleck on posterior pronotum or, if extensively yellow, then mesepisternum entirely black (Fig. 10); only abdominal tergum 1 largely black; wings deeply infuscate; body length 7–9 mm 5
5 Mesonotum, pronotum and mesoscutellum red-orange (Fig. 10); upper head behind eyes entirely black. Sawsheath viewed dorsally with apical setae almost straight and directed outwards (Fig. 12) .... *E. fulviventris* (Scopoli, 1763) [Host: ? *Clematis* species (several females collected on or near unidentified *Clematis* species; A. Liston, personal observations in Greece. South-east Europe north to Styria in Austria and Italy]
– Thorax entirely black (Fig. 11); upper head behind eyes marked with yellow-brown. Sawsheath viewed dorsally with apical setae strongly curved and directed more backwards (Fig. 13)..... *E. ventralis* (Panzer, 1799) [Host: originally within its native range only on *Clematis recta*, but in recent decades, also several cultivated *Clematis* species (Severin 1997). South-central and southern Europe and in gardens north into Fennoscandia]
6 Body entirely black..... 7
– Abdomen partly pale..... 8
7 Claws bifid. Tergum 8 medially excised to about one third of length of tergum (Fig. 14). Body length 7–8 mm....*E. amauros*
– Claws simple. Tergum 8 not medially excised. Body length 5.5–6.5 mm ..... *E. sanguinicollis*
8 Antenna hardly as long as abdomen. Mesoscutellum laterally and posteriorly with numerous deep punctures, separated from each other by about the diameter of a puncture ..... *E. fulviventris*
– Antenna much longer than abdomen. Mesoscutellum with only a few shallow and widely-spaced punctures on extreme posterior lateral margins .....*E. ventralis*

Figure 14. *Eurhadinoceraea amauros* DEI-GISHym12684, male, distal abdominal terga.

Neodineura arquata (Klug, 1816)

Germany, Bavaria: 1♀ (ZSM HYM 25122), Neumarkt, +49.116 +11.349, 555 m alt., 01.05.2014, leg. J. Hable, det. M. Kraus (ZSM).

Klug (1816) gave "Deutschland" as the type locality in the original description, which was based only on a female holotype, now apparently lost. Prous et al. (2019) remarked on the unclear label data of the single known male specimen, previously sometimes considered to have been collected in Germany, but possibly really from Denmark. Thus, the above record refers to the only extant specimen of definite German provenance.

Pristiphora angulata Lindqvist, 1974

Germany, Brandenburg: 1♀, Eberswalde, Finow, ca. +52.84 +13.73, 06.05.1984, leg. A. Taeger, det. M. Prous (DEI).

This is the second German specimen of this neozoon: the German specimen previously recorded by Liston (2015) is also from Eberswalde.

Pristiphora depressa (Hartig, 1840)

Germany, Bavaria: 1♀ (BC ZSM HYM 20220), Pollanten, 388 m alt., +49.105 +11.442, 19.05.2013, leg. M. Kraus, det. S. Schmidt (ZSM).

Germany, Thuringia: 2♀, Jena, Mühltal, Lichtung, 25.05.1986, leg. J. Weipert, det. Liston (DEI). 1♀ (DEI-GISHym17704), Orlamünde NE, Eichenberg, +50.794 +11.531, eclector, 09–12.05.1999, leg. F. Burger, det. Liston (DEI).

Mentioned from Germany by Liston et al. (2013) without any further details and by Prous et al. (2017) based on the Thuringian specimens. Like *Pristiphora krausi* and *P. melagonia* sp. nov., below, this species belongs to the

depressa group, for which, so far, only *Acer* species have been identified as hosts of larvae.

Pristiphora krausi (Lacourt, 2006)

Germany, Saxony-Anhalt: 1♀ (DEI-GISHym83928), Stolberg, Grube Luise, Bachtal, 350 m alt, +51.556 +10.976, 28.05.2019, leg. 23rd Symphyta Workshop, det. M. Prous (DEI).

Germany, Thuringia: 1♀ (DEI-GISHym83947), Ilfeld: Netzkater: Brandesbachtal, 350–400 m alt., +51.600 +10.810, 31.05.2019, leg. 23rd Symphyta Workshop, det. M. Prous (DEI).

The only previous published record of this species is of the female holotype, from Alsace, France. See Prous et al. (2017, 2019) for morphological characters and taxonomic comments. Sequences of three genes from one specimen confirm that *Pristiphora krausi* belongs to the *depressa* species group. Mitochondrial CO1 sequence is closest (distance 6.0%) to a possibly undescribed species from Spain (specimen DEI-GISHym20783 in Prous et al. 2017). Nuclear DNA (combined NaK and POL2) differs from the closest species *P. melagonia* sp. nov. and *P. tetrica* (no nuclear data available for DEI-GISHym20783) by 1.5–1.6%. The holotype has a fully-developed vein 2r-rs in one forewing, but neither of the German specimens shows any trace of this vein. Superficially, in size and colour pattern (Figs 15, 16), *Pristiphora krausi* resembles *Euura papillosa* (Retzius, 1783).

Pristiphora melagonia sp. nov.

http://zoobank.org17AF424A-3764-4277-B496-E0A1C9EC4FBE
Figures 17–26

Material examined. ***Holotype*** female, pinned. Labels: "Greece: N Peloponnes: Achaia: Achaiko Chorio S 38.1371N, 22.0610E 1150 m alt. 25.IV.2017 leg. SDEI Hym-group GR06 [code for collection event, used for databasing]" [white, printed] "DEI-GISHym80284 (see ethanol coll.)" [white, printed: parts of two extracted legs gummed to label] "tissue sample 2017 genetic data Y[yes] [or] N[no]" [blue, printed: check mark at "yes"] "HOLOTYPE ♀ *Pristiphora melagonia* det. Liston & Prous, 2020" [red, printed]. Deposited in the DEI.

***Paratypes*:** Germany, Saxony-Anhalt: 1♀ (DEI-GISHym17900), Rammelburg, GS9 Ra [trap code], Straße zum Strubenberg, Wipperufer vor Brücke/ Waldhang, Bärlauchgebiet, Gelbschale [yellow pan], R: 4453597 H: 5718076 [+51.594 +11.331], 14.–21.5.2001, leg. E. Stolle (DEI). Greece, N Peloponnes, Achaia: 1♀ (DEI-GISHym80270), Kertezi, +37.980 +21.990, 800–1100 m alt., 28.IV.2017, leg. SDEI Hym-group, GR18 (DEI). Spain, Aragón: 1♀ (DEI-GISHym20784), Camarena de la Sierra 2 km S, 1360m alt., 05.05.2014, +40.126 -1.044, leg. Liston Prous Taeger, E021 (DEI).

Type locality. Greece: northern Peloponnese, Achaia, south of Achaiko Chorio, +38.137 +22.061, 1150 m alt.

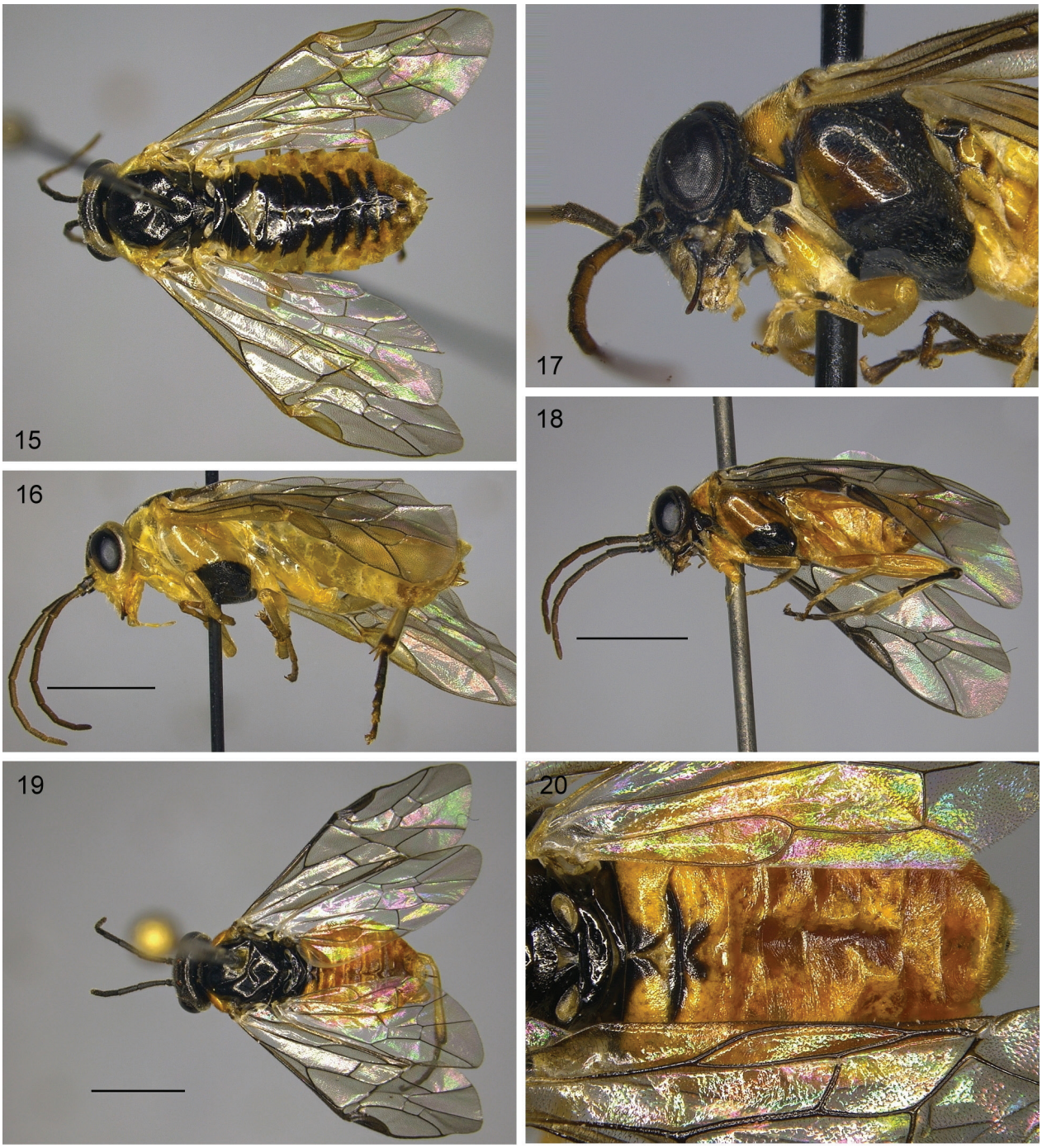
Description [characters of holotype in brackets]. **Female.** Body length 5.0–6.0 mm [5.7 mm]. Head mostly black (Figs 21–23). Pale are: palpi; clypeus entirely (whitish), to medially more or less dark [holotype]; antennal flagellum ventrally; lower inner orbit partly (brownish) [holotype], to entirely black; outer orbit next to eye narrowly (brownish) (Fig. 23), to entirely black [holotype with small, obscurely paler areas]. Thorax mostly black (Figs 17–19). Pale (yellowish) are: pronotum except for extreme ventral and posterior margins; tegula; small anterolateral flecks on median metascutal lobe, to completely black [holotype]; anterodorsal fleck on mesepisternum, to whole dorsal half [holotype]; metapleuron; mesepimeron [holotype], to completely dark. Legs pale (yellow) (Fig. 18). Dark are: metatarsus, at least on upper-side; apex of metatibia; extreme base of procoxa. Wing membranes hyaline. Venation dark brown; forewing pterostigma uniformly medium brown, to edged dark brown with paler centre; basal 0.25–0.33 of costa whitish. Abdomen yellow (Figs 19, 20). Black are: tergum 1 medially and basally; tergum 2 medially, to completely pale; tergum 3 medially, to completely pale; tergum 8 medio-apically, to completely pale; more or less valvula 3 apically [only tergum 1 of holotype medially black].

Head densely setose; vertex, postocellar area and posterior frontal field shiny between the setae; inner orbits and anterior postocellar area duller, with slight sculpture. Postocellar area about as long as diameter of lateral ocellus. Antenna: Fig. 24. Flagellomere 1 slightly curved in lateral view; 3.5–4.1 times as long as apical width [holotype 4.1]. Tarsal claws subbifid: inner tooth slightly shorter than outer. Abdominal terga dull, with fine reticulate sculpture (Fig. 20). Valvulae 3 in dorsal view (Fig. 25): apically subtruncate; about twice as broad as basal width of cercus; setae directed strongly backwards; outermost setae about as long as width of valvulae 3; cercus projecting clearly beyond valvula 3. Valvula 3 in lateral view apically rather acute. Lancet (Fig. 26): approximately 23 annulets; slightly upwardly curved distally; annular setae ("ctenidia") present on sutures 1 to ca. 17 (counted from base); annular setae about 0.33× as long as width of annulus; cypsellae on basal annulets (ca. 1–8) about 0.33× as long as serrula.

Male: unknown.

Variability. The Spanish specimen is the palest and the German specimen the darkest, with the two very similarly coloured Greek specimens intermediate.

Genetics. Mitochondrial CO1 has been sequenced from three specimens, two of which were published by Prous et al. (2017). Sequences of the specimens from Spain and Germany are identical, while the specimen from Greece (holotype) differs by 0.1–0.2%. Three nuclear genes have been sequenced from two specimens, TPI from DEI-GISHym20784 (KY698317, see Prous et al. 2017) and NaK and POL2 from the holotype DEI-



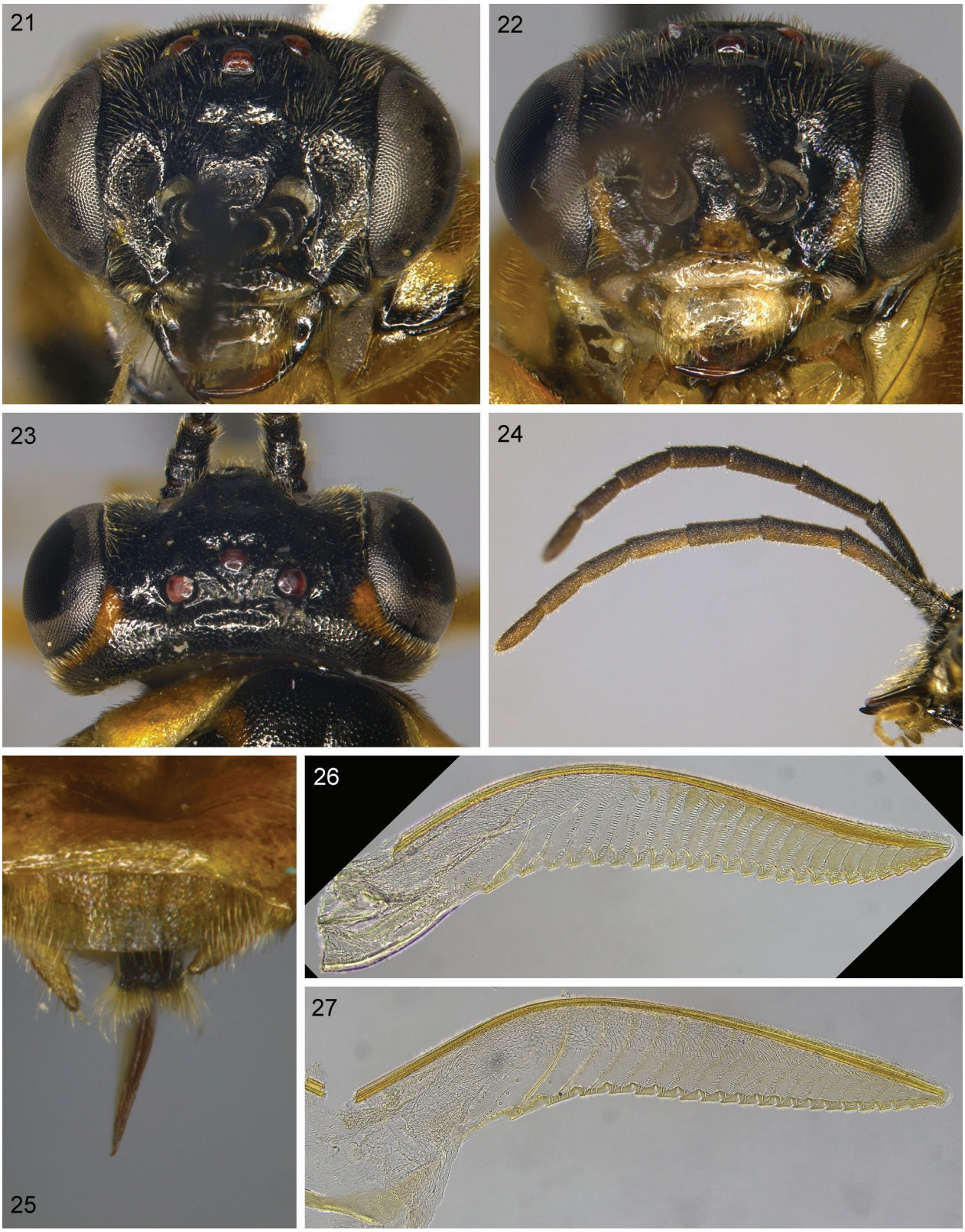
Figures 15–20. *Pristiphora* females. **15–16.** *Pristiphora krausi* DEI-GISHym83928; **17.** *melagonia* sp. nov. DEI-GISHym17900; **18–19.** *melagonia* holotype DEI-GISHym80284); **20.** *melagonia* DEI-GISHym20784. Scale bars 2 mm.

GISHym80284. Closest species are *P. krausi*, *P. tetrica* and the specimen DEI-GISHym20783 from Spain (possibly an undescribed species, see Prous et al. 2017), with a minimum CO1 distance of 6.7% (*P. tetrica*) and a minimum nuclear DNA distance of 1.5% (*P. krausi*).

Host plant. The Spanish specimen was swept from *Acer monspessulanum*. As the known hosts of other species in the *Pristiphora depressa* group are all *Acer* species (Liston et al. 2015, Prous et al. 2017), it is likely that the larva of *P. melagonia* also feeds on *Acer*. Hosts other than *A. monspessulanum* must be used, because this maple species does not occur in the region of Germany where one of the paratypes was collected.

Etymology. *Melagonia*, a Latinised noun in the nominative singular, is derived from parts of the Greek words *melas* (black) and *gonia* (angle, corner) and refers to the angled black marking on the pronotum.

Diagnosis. In the key to north-western Palaearctic species of *Pristiphora* by Prous et al. (2017), *P. melagonia* runs to the couplet containing *P. tetrica* and *P. depressa*, but not clearly to either of these, because the supraclypeal area of *P. melagonia* can be partly pale or



Figures 21–27. *Pristiphora* females. **21.** *melagonia* sp. nov. DEI-GISHym80270; **22–23.** *melagonia* DEI-GISHym20784; **24–25.** *melagonia* DEI-GISHym80270; **26.** *melagonia* DEI-GISHym17900 lancet; **27.** *Pristiphora depressa* DEI-GISHym17704 lancet.

entirely black and the upper head may be marked with pale or entirely black. Externally, *P. melagonia* is most similar to *P. depressa*. External differences between these and other described West Palaearctic species are summarised in a key, below. The lancets of *P. melagonia* (Fig. 26) and *P. depressa* (Fig. 27) exhibit several small differences [character state in *P. depressa* in brackets]: slightly upwardly curved distally [not upwardly curved

distally]; annular setae ("ctenidia") absent on apical ca. six sutures [annular setae absent on ca. apical 2–3 sutures]; setae on basal annular sutures about 0.33× as long as width of annulus [about 0.2× as long]; cypsellae on basal annulets (ca. 1–8) about 0.33× as long as serrula [about 0.12–0.15× as long].

Key to the West Palaearctic species of the *Pristiphora depressa* group (adults)

1 Female 2
– Male 8
2 Forewing costa and stigma largely brown to black (Fig. 18) 3
– Forewing costa and stigma entirely pale (yellowish) (Figs 15, 16) ..... *P. krausi* (Lacourt, 2006) [Central Europe: France, Germany]
3 At least profemur basally or laterally black 4
– All femora completely pale 5
4 At least anterior of labrum pale; clypeus usually partly pale ..... *P. cretica* W. Schedl, 1981 [Southern Europe: Greece and Spain, Aragón; 1♂ (DEI-GISHym20788), Camarena de la Sierra 7 km SSW, 1470 m alt., +40.122 -1.050, 05.05.2014, leg. A. Liston, M. Prous and A. Taeger, DEI]
– Labrum and clypeus entirely dark ..... *P. tetrica* (Zaddach, 1883) [Central and southern Europe and North Africa (Morocco)]
5 Claw nearly bifid (inner tooth slightly longer or shorter than outer) 6
– Inner tooth of claw at most half as long as outer ..... *P. schedli* Liston & Späth, 2008 [Cyprus]
6 Apex of valvulae 3 in dorsal view subtruncate. Inner orbit largely black; face below toruli at least with malar space partly black 7
– Apex of valvulae 3 in dorsal view medially emarginate. Inner orbits continuously pale to top of eye; face below toruli entirely pale ..... *P. subbifida* (Thomson, 1871) [Southern, central and northern Europe, north to southern Sweden; introduced to North America]
7 Posterior of pronotum ventrally black-lined. Black fleck on base of procoxa. Cerci entirely yellow ..... *P. melagonia* [Southern and central Europe, north to middle Germany]
– Posterior of pronotum entirely yellow. Procoxa completely yellow. Cerci more or less fuscous ..... *P. depressa* (Hartig, 1840) [Central and northern Europe, north to central Sweden; Sicily (Italy)]
8 Forewing costa and stigma largely brown to black 9
– Forewing costa and stigma entirely pale (yellowish) ..... *P. ifranensis* Lacourt, 1973* [Morocco: Middle Atlas]
9 Clypeus and labrum at least partly pale 10
– Clypeus and labrum entirely dark ..... *P. tetrica*
10 Dorsum of abdomen at least laterally extensively pale ..... *P. schedli*
– Dorsum of abdomen entirely black ..... *P. cretica*

Discussion

The new data which we present are only for some species of Tenthredinidae (Tenthredinoidea). This is not because we deliberately selected this taxon from amongst the six superfamilies which comprise the German fauna of Symphyta, but merely reflects the authors' focus of interest on the Tenthredinidae, which, in the Palaearctic, is by far the largest tenthredinoid family. It can be seen from Table 1, that additional German species of other superfamilies have also been recently detected.

Several of the German records, which we mention, are currently the most northern of these species in Europe, i.e. *Empria granatensis*, *Endelomyia filipendulae*, *Eurhadinoceraea amauros*, *Pristiphora krausi* and *Pristiphora melagonia*. However, we consider it more likely that these were previously overlooked in Germany, rather than that they are present here as the result of a recent northwards range extension caused by climate change. It may be significant, that, with the exception of *P. krausi*, these are species which are difficult or impossible to identify using published morphological characters. One wonders how long it might have taken to recognise their true identities, had not unexpected barcoding results drawn attention to them.

Five species of the *Pristiphora depressa* species group are now recorded in Germany. This is a remarkable increase, considering that only two of them were included in the checklist by Blank et al. (2001). On the other hand, many gaps exist in our knowledge of these species. Four of them are known only from specimens of a single sex and, because of previous taxonomic confusion, we also know little or nothing about their host plant ranges or biology. Although adults of most species are clearly associated with *Acer* species, which are certainly the main (or only?) host plants, few larvae have yet been reared or identified by DNA sequencing. Most previous studies have tended to name only single *Acer* species as hosts of

* Note that the female of *P. ifranensis*, and the males of *P. subbifida*, *P. depressa*, *P. melagonia* and *P. krausi* are unknown.

Pristiphora depressa group species. This is at least partly caused by lack of data and probably gives a false impression of a greater degree of monophagy in these species than really exists. For example, Liston and Späth (2008) indicated that only *Acer campestre* is a host of *Pristiphora subbifida*, whereas Stankevičienė and Šabūnaitė (2016) identified four distantly-related *Acer* species as its hosts in Kaunas Botanical Garden, Lithuania. As the geographic range of *P. tetrica* and *P. melagonia* in Europe is not congruent with that of any single European *Acer* species, we conclude that they must also use more than one species of *Acer* as hosts. Perhaps more important than host specificity in understanding the diversity of the group, is the synchronisation of the sawfly species' phenology with that of its host, as discussed for *P. tetrica* and *P. cretica* by Liston et al. (2015). At present, CO1 barcoding, using the standard barcode region of the animal kingdom (Hebert et al. 2003), clearly separates the known West Palaearctic species of the *depressa* group, so that it should be rather easy to gain improved data on their host plant ranges.

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