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Zdeněk Laštůvka, Aleš Laštůvka

Clearwing Moths of Europe Identification, Biology and Distribution (Lepidoptera: Sesiidae)

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Cover
Chamaesphecia tenthrediniformis ([Denis & Schiffermüller], 1775)

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ABSTRACT

The current knowledge of European Sesiidae is summarized. Brief information is presented on morphology, life history and ecological requirements, distribution, methods of determination, systematic position of the family and its classification, an overview of hostplants and a checklist of the European species. To date, 119 species belonging to 13 genera are known from Europe. All species are figured, their diagnostic characters, hostplants, length of larval development, time of seasonal occurrence are described, and distribution maps are provided. Where appropriate, references to publications providing new knowledge and necessary comments are added. A table of known presence in European countries is included. Two new synonyms have been established here: *Synanthedon cruciati* Bettag & Bläsius, 2002, syn. n. of *S. loranthi* (Králíček, 1966), and *Chamaesphecia amygdaloidis* Schleppnik, 1938, syn. n. of *C. euceraeformis* (Ochsenheimer, 1808).

Keywords: checklist, diagnostics, hostplants, distribution maps

ABSTRAKT

Jsou shrnuty aktuální poznatky o evropských nesytkovitých (Sesiidae). V obecné úvodní části jsou předloženy stručné informace o morfologii, způsobu života a ekologických nárocích, rozšíření, metodách determinace, systematickém postavení čeledi a její klasifikaci, přehled hostitelských rostlin a checklist evropských druhů. Podle dosavadních poznatků je z Evropy známo 119 druhů, patřících do 13 rodů. Všechny druhy jsou vyobrazeny, jsou uvedeny jejich diagnostické znaky, hostitelská rostlina, délka vývoje, období výskytu dospělců, charakter jejich areálu a mapka rozšíření. V případě potřeby jsou doplněny odkazy na publikace přinášející nové poznatky a nezbytné komentáře. Je připojena tabulka se známým výskytem v jednotlivých evropských zemích. Jsou stanovena dvě synonyma: *Synanthedon cruciati* Bettag & Bläsius, 2002, syn. n. od *S. loranthi* (Králíček, 1966) a *Chamaesphecia amygdaloidis* Schleppnik, 1938, syn. n. od *Ch. euceraeformis* (Ochsenheimer, 1808).

Klíčová slova: přehled druhů, diagnostika, hostitelské rostliny, mapky rozšíření

CONTENT

OBSAH

1 INTRODUCTION

Sesiidae are an exceptional group among Lepidoptera due to their unique morphology and biology. They often escape the attention of the observer in nature or are mistaken as Hymenoptera. Interest in their study has increased significantly in the last 3–4 decades due to the possibility of collecting them using synthetic sex pheromones. In addition to collections, online records or photographic databases (GBIF.org 2025, iNaturalist.org 2025, Biodiversidad Virtual 2025) are currently also a very important source of faunistic data. This greatly increases the knowledge of their distribution, life histories and ecological requirements. Molecular analyses provide important information on their phylogenetic relationships.

Detailed information on the research history of (European) clearwing moths, morphology, life history, hostplants, ecological requirements, distribution, systematic position among Lepidopera and classification were provided by e.g. de Freina (1997), Špatenka et al. (1999) or Laštůvka & Laštůvka (2001). In these publications, references to the extensive literature on the species of this family from the beginnings of their study in Linnaeus‘ time to the end of the 20th century can be found. After 2000, the family Sesiidae was treated monographically for some European countries (e.g. Whitebread et al. 2000, Bertaccini & Fiumi 2002, Bąkowski 2013, Fazekas 2017, see also Lepiforum e.V. 2025 and Lépi´Net 2025), older collections were revised (e.g. Predovnik 2003, 2010), faunistic data were summarized and species inventories of various large areas were compiled (e.g. Laštůvka 2000, Laštůvka et al. 2000, Dutreix & Morel 2002, Bartsch 2003, Bartsch & Pühringer 2005, Garrevoet et al. 2007, Bąkowski et al. 2011, Laštůvka & Laštůvka 2014, Rämisch & Gelbrecht 2014, Bella et al. 2017, Predovnik 2001, 2018, 2020), many new faunistic records were added and more new species were described from Europe (Kallies & Riefenstahl 2000, Špatenka 2001, Bettag & Bläsius 2002, Bartsch & Pühringer 2005, Gorbunov & Efetov 2018, Gorbunov 2019a, b, c, 2020, 2024a, Bartsch et al. 2021). A worldwide overview of the literature on the family was compiled by Pühringer (2005), and a global checklist is continuously updated by Pühringer & Kallies (2025). Knowledge of the chemical composition of sex pheromones and their uses was summarized by Pühringer & Ryrholm (2000). A comprehensive overview of knowledge about the family is continuously updated by Pühringer (2025).

For the purposes of this publication, the eastern border of Europe is considered as follows: the ridge of the Ural Mountains, the Ural River to the Caspian Sea, from the Caspian Sea through the Kuma-Manych Depression to the Don River, across the Sea of Azov, the Kerch Strait, and the Black Sea, then across the Bosphorus, the Dardanelles, and along the coast of Turkey south to the island of Rhodes (see distribution maps). Cyprus and the Canary Islands are not included.

The aim of this handbook is to summarize the current information on biology and distribution of the European species of Sesiidae, to present brief diagnostic characters of each species, thus providing simple guidelines for their determination.

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1 ÚVOD

Nesytky (Sesiidae) představují mezi motýly výjimečnou skupinu svojí jedinečnou morfologií i způsobem života. Běžnému pozorovateli v přírodě často unikají pozornosti nebo jsou považovány za blanokřídlé. Zájem o jejich studium v posledních 3–4 desetiletích výrazně narostl díky možnosti odchytu pomocí syntetických sexuálních feromonů. Významným zdrojem především faunistických informací jsou v současnosti kromě dokladů ve sbírkách také internetové nálezové a fotografické databáze (GBIF.org 2025, iNaturalist.org 2025, Biodiversidad Virtual 2025). Dochází tak k výraznému obohacování údajů o rozšíření, ale přibývají také poznatky o způsobu života i ekologických nárocích. Molekulárně-genetické analýzy přinášejí důležité informace o fylogenetických vztazích.

Podrobné informace o historii studia (evropských) nesytek, morfologii, způsobu života, hostitelských rostlinách, ekologických nárocích, rozšíření, systematickém postavení v řádu Lepidoptera a klasifikaci uvádějí např. de Freina (1997), Špatenka et al. (1999) nebo Laštůvka & Laštůvka (2001). V těchto publikacích je možné najít odkazy na obsáhlou literaturu o druzích této čeledi od počátků jejich studia v době Linnéově do konce 20. století. Po roce 2000 byla čeleď Sesiidae zpracována monograficky pro některé evropské státy (např. Whitebread et al. 2000, Bertaccini & Fiumi 2002, Bąkowski 2013, Fazekas 2017, viz také Lepiforum e.V. 2025 a Lépi´Net 2025), byl revidován starší sbírkový materiál (např. Predovnik 2003, 2010), shrnuty faunistické informace a sestaveny soupisy druhů různě rozsáhlých území (např. Laštůvka 2000, Laštůvka et al. 2000, Dutreix & Morel 2002, Bartsch 2003, Bartsch & Pühringer 2005, Garrevoet et al. 2007, Bąkowski et al. 2011, Laštůvka & Laštůvka 2014, Rämisch & Gelbrecht 2014, Bella et al. 2017, Predovnik 2001, 2018, 2020), přibylo množství nových faunistických nálezů a dokonce bylo z Evropy popsáno více nových druhů (Kallies & Riefenstahl 2000, Špatenka 2001, Bettag & Bläsius 2002, Bartsch & Pühringer 2005, Gorbunov & Efetov 2018, Gorbunov 2019a, b, c, 2020, 2024a, Bartsch et al. 2021). Soupis literatury věnované této čeledi v celosvětovém měřítku zpracoval Pühringer (2005), celosvětový checklist sestavili a průběžně aktualizují Pühringer & Kallies (2025). Poznatky o chemickém složení sexuálních feromonů a jejich využití shrnuli Pühringer & Ryrholm (2000). Ucelený přehled poznatků o čeledi Sesiidae průběžně aktualizuje Pühringer (2025).

Východní hranice Evropy je pro účely této publikace zvolena z existujících variant následně: hřbet pohoří Ural, řeka Ural až ke Kaspickému moři, od Kaspického moře Kumo-manyčskou sníženinou k řece Don, přes Azovské moře, Kerčský průliv a Černé moře, přes Bospor, Dardanely a podél pobřeží Turecka na jih k ostrovu Rodos (viz mapky rozšíření). Není zahrnut Kypr a Kanárské ostrovy.

Cílem a důvodem zpracování této příručky je shrnout aktuální informace o druhovém spektru, biologii a rozšíření evropských druhů, předložit stručné diagnostické charakteristiky jednotlivých druhů, čímž pokud možno poskytnout jednoduché návody k jejich determinaci.

2 CLEARWING MOTHS – SESIIDAE

Morphology. Clearwing moths are characterized by their Batesian mimicry, from which the overall morphology is derived. The monophyletic origin of this family is indicated by the narrow forewings, the wing transparency, wing venation modifications, a specific wing coupling mechanism and a slender, variously coloured abdomen. However, these characters may also be independent developed adaptations related to the evolution of mimicry, especially in the subfamilies Tinthiinae and Sesiinae.

Antennae are slightly clavate, filiform or setiform, ciliate or pectinate in male. Labial palps are smooth to long-hairy, variously coloured. The colouration of the frons, patagial collar, tegulae and other parts of the thorax are diagnostically important. There may be a light scapular spot at the forewing base. Forewings are transparent to varying degrees, often with three transparent areas – anterior (ATA), posterior (PTA) and external (ETA), a variably wide and coloured discal spot (DS) and a variably wide opaque apical area (AA) (see, e.g. Fibiger & Kristensen 1974). Abdomen may have a variable number of coloured rings, and a differently shaped anal tuft at the end (Plate I).

Caterpillars are cream to yellowish, with more sclerotized dorsal side of the 1st segment. There may be 1–2 small protuberances or spines on the last segment. The pupa is quite mobile and pushes out of the cocoon or emergence hole before hatching. It uses a sharp frontal process and 2 rows of spines on the abdominal segments to do this.

Biology. Larvae are endophagous within plant tissues – xylophagous species under bark, in wood and roots, often in wounded or diseased parts of host trees; herbivorous species in roots, but they may ascend to pupate variously high up the stem. Adults are mostly heliophilous, but the sexual activity of some species is in the early morning or dusk hours.

Habitat. Clearwing moths inhabit both natural and secondary habitats in different stages of succession. Species developing in herbs are often more habitat-demanding than xylophages, being predominantly thermophilous, some of them distinctly xerophilous or requiring sparse vegetation on sandy, stony or rocky substrates, and thus their requirements may be more or less narrower than those of their hostplants.

Distribution. In Europe, clearwing moths are distributed north to the southern edge of the tundra and to the alpine zone in the mountains. This includes species with small ranges, as well as species with extensive Eurosiberian to Holarctic distributions. Towards the north, the proportion of xylophagous species with larger ranges increases. The disjunct ranges currently known for some species may reflect reality caused by the insularity of the hostplant or specific habitat requirements, but more often they may be the result of insufficient knowledge of distribution. See also Bąkowski et al. (2010) and Ulrich et al. (2011).

2 NESYTKOVITÍ – SESIIDAE

Morfologie. Pro nesytky je zcela charakteristické Batesovo mimikry, od kterého je odvozena jejich celková morfologie. Na monofyletický původ čeledi ukazují úzká přední křídla, transparence křídel, modifikace křídelní žilnatiny, specifický spojovací mechanismus křídel a štíhlý, různě zbarvený zadeček. Tyto znaky mohou být ovšem také nezávisle vzniklé adaptace související s vývojem mimikry, zvláště u podčeledí Tinthiinae a Sesiinae.

Tykadla jsou mírně kyjovitá, nitkovitá nebo štětinovitá, u samců obrvená nebo hřebenitá. Pysková makadla (labiální palpy) jsou hladká až dlouze ochlupená, různě zbarvená. Diagnosticky důležité je také zbarvení čela (frons), ohrdlí (patagia), krytek (tegulae) i dalších částí hrudi. Na bázi předních křídel může být světlá skapulární skvrna. Přední křídla jsou do různé míry průhledná, často se třemi skelnými políčky – diskálním (ATA), podélným (PTA) a vnějším (ETA), různě širokou a zbarvenou diskální skvrnou (DS) a různě širokým neprůsvitným apikálním polem (AA) (viz např. Fibiger & Kristensen 1974). Zadeček může mít různý počet pestrých kroužků a na konci různě utvářený chvostek (Plate I).

Housenky jsou krémově až žlutavě zbarvené, hřbetní stranu 1. článku mají více sklerotizovanou. Na posledním článku mohou mít 1–2 drobné hrbolky nebo trny. Kukla je poměrně pohyblivá a před líhnutím se vysouvá z kokonu nebo výletového otvoru. K tomu jí slouží ostrý čelní hrot a 2 řady trnů na článcích zadečku.

Biologie. Housenky se vyvíjejí uvnitř rostlinných pletiv – xylofágní druhy pod kůrou, v lýku, dřevě i kořenech, často v poraněných nebo nemocných částech hostitelských dřevin, bylinné druhy v kořenech, ale ke kuklení mohou vystupovat různě vysoko do lodyh. Dospělci jsou většinou heliofilní, ale sexuální aktivita některých druhů je posunuta do časně ranních nebo soumračných hodin.

Stanoviště. Nesytky obývají přírodní i druhotné biotopy v různých fázích sukcese. Výskyt řady druhů je podmíněn pouhou přítomností hostitelské rostliny. Bylinné druhy jsou stanovištně náročnější oproti xylofágům, jsou převážně termofilní, některé z nich výrazněji xerofilní nebo vyžadují nezapojený porost na písčitém, kamenitém nebo skalnatém podkladu a jejich nároky tak mohou být užší než nároky jejich hostitelských rostlin.

Rozšíření. Nesytky jsou v Evropě rozšířené na sever po jižní okraj tundry a v horách do alpínské zóny. Najdeme mezi nimi jak druhy s malými areály, tak druhy s rozsáhlým eurosibiřským až holarktickým rozšířením. Směrem na sever narůstá podíl xylofágních druhů s rozsáhlejšími areály. Aktuálně prezentované disjunktní areály některých druhů mohou odrážet objektivní skutečnost způsobenou ostrůvkovitým rozšířením hostitelské rostliny, nebo specifickými stanovištními nároky, ale častěji jsou jistě výsledkem nedostatečných znalostí rozšíření. Viz též Bąkowski et al. (2010) a Ulrich et al. (2011).

Systematic position and classification. The systematic position of the family Sesiidae has changed during the 20th century, see e.g. Špatenka et al. (1999) or Laštůvka & Laštůvka (2001) for more details. Clearwing moths were long placed in the superfamily Sesioidea (Heppner & Duckworth 1981). They are now included in the superfamily Cossoidea together with Castniidae, Brachodidae and Cossidae (van Nieukerken et al. 2011). Divergent or convergent development of similar characters during mimicry evolution can complicate classification. Two subfamilies, Tinthiinae and Sesiinae, are generally distinguished. About 1590 "valid" species have been described worldwide (Pühringer & Kallies 2025). From Europe, 13 genera and about 120 species are known.

Opinions on the taxonomic level of some taxa differ and may also change depending on new knowledge, especially the results of molecular analyses. Current parapatric or only partially sympatric occurrence of several pairs (triples) of very closely related taxa is likely the result of postglacial spread. These are in particular *Negotinthia myrmosaeformis* × *cingulata* × *efetovi*, *Paranthrene tabaniformis* × *synagriformis*, *P. insolitus* × *polonica* × *hispanica*, *Synanthedon stomoxiformis* × *riefenstahli* × *amasina*, *S. myopaeformis* × *typhiaeformis* × *cruentata*, *Bembecia sirphiformis* × *albanensis* × *psoraleae*, *Chamaesphecia doleriformis* × *colpiformis* and *C. bibioniformis* × *tengyraeformis*. The taxonomic level of these taxa is subjective. They can be considered separate species or subspecies. Here we list them mostly as subspecies, aware of the growing tendency in lepidopterology to consider such taxa as separate species.

Collecting and rearing. Currently, the most common method for collecting Sesiidae is to capture males using synthetic sex pheromones, but adults can also be found on flowers or in the growth of their hostplants. It is always necessary to know the habitat requirements of a particular species, its time of seasonal occurrence and daily activity. Adults can also be reared from "mature" larvae. Longer rearing of young larvae is difficult or sometimes impossible. Larvae of many xylophagous species can be found by specific symptoms on the host tree. Some species with development in the roots of herbs cause wilting or dieback of plants or give themselves away by a pile of frass and excrements at the base of the plant stem. Larvae or pupae in parts of hostplants, such as roots, last year‘s stems, tumours and stumps, can be successfully reared in containers with sand or clay granules, provided adequate moisture is always maintained.

Identification. Identification requires experience and is usually possible on the basis of the overall habitus or specific diagnostic characters. These are found on the head, thorax, wings, legs and abdomen (Plate I). We include a key for the identification of subfamilies, tribes and genera. For each species, we provide diagnostic characters both in the text and directly in the plates. The morphology of genitalia may help in damaged or atypical specimens or very similar species (we attach figures where appropriate), but in some species groups of the genera *Bembecia*, *Pyropteron* and *Chamaesphecia*, clear diagnostic characters (differences) in the genitalia are lacking. In such cases, knowledge of the hostplant, the geographical location of the record, the nature of the habitat or molecular analysis may help.

Systematické postavení a klasifikace. Systematické postavení čeledi Sesiidae se v průběhu 20. století měnilo, blíže např. Špatenka et al. (1999) nebo Laštůvka & Laštůvka (2001). Nesytky byly dlouho řazeny do nadčeledi Sesioidea (Heppner & Duckworth 1981). V současné době jsou zahrnovány s kastniemi (Castniidae), stepníčky (Brachodidae) a drvopleni (Cossidae) do nadčeledi Cossoidea (van Nieukerken et al. 2011). Divergentní nebo konvergentní vznik obdobných znaků při vývoji mimikry může komplikovat klasifikaci. Nejčastěji jsou rozlišovány dvě podčeledi, Tinthiinae a Sesiinae. Celosvětově je popsáno asi 1590 „validních“ druhů (Pühringer & Kallies 2025). Z Evropy je známo 13 rodů a asi 120 druhů.

Názory na taxonomickou úroveň některých taxonů nejsou jednotné a mění se také v závislosti na nových, zvláště molekulárně-genetických poznatcích. Nynější parapatrický nebo jen částečně okrajový sympatrický výskyt více dvojic (trojic) velmi blízkých taxonů je výsledkem postglaciálního šíření. Jsou to zejména *Negotinthia myrmosaeformis* × *cingulata* × *efetovi*, *Paranthrene tabaniformis* × *synagriformis*, *P. insolitus* × *polonica* × *hispanica*, *Synanthedon stomoxiformis* × *riefenstahli* × *amasina*, *S. myopaeformis* × *typhiaeformis* × *cruentata*, *Bembecia sirphiformis* × *albanensis* × *psoraleae*, *Chamaesphecia doleriformis* × *colpiformis* a *Ch. bibioniformis* × *tengyraeformis*. Taxonomické pojetí těchto taxonů je subjektivní. Mohou být chápány stejně tak jako samostatné druhy tak poddruhy. Zde je vedeme většinou jako poddruhy i s vědomím rostoucí tendence v lepidopterologii považovat takové taxony za samostatné druhy.

Sběr a chov. V současné době je nejčastěji využívaný odchyt samců pomocí syntetických sexuálních feromonů, dospělce najdeme také na květech nebo v porostu hostitelských rostlin. Vždy je nutné znát stanovištní nároky konkrétního druhu, jeho roční dobu výskytu a denní aktivitu. Dospělce lze rovněž odchovat z dorostlých housenek. Delší odchov mladých housenek je obtížný nebo nemožný. Housenky řady xylofágních druhů lze najít podle specifických symptomů na hostitelské dřevině. Některé druhy s vývojem v kořenech bylin způsobují vadnutí nebo odumírání rostliny nebo se prozradí hromádkou trusu nebo drtinek na bázi lodyhy rostliny. Housenky, příp. kukly dochováme v odpovídajících částech hostitelských rostlin – kořenech, loňských lodyhách, nádorcích a pařezech, které umístíme do nádob s pískem. Vždy je nutné udržovat patřičnou vlhkost.

Determinace. Determinace vyžaduje určitou zkušenost a je možná na základě celkového habitu nebo konkrétních determinačních znaků. Ty se nacházejí na hlavě, hrudi, křídlech, končetinách i na zadečku (Plate I). Zařazujeme klíč k orientačnímu určení podčeledí, tribů a rodů. Ke každému druhu uvádíme diagnostické znaky jak v textu, tak přímo v tabulích. Při determinaci silně poškozených nebo atypických jedinců, příp. velmi podobných druhů může pomoci studium kopulačních orgánů (kde je to účelné, obrázky připojujeme), ale v některých druhových skupinách rodů *Bembecia*, *Pyropteron* a *Chamaesphecia* se na kopulačních orgánech jasné determinační znaky (rozdíly) nenacházejí. Pak může pomoci znalost hostitelské rostliny, geografická poloha nálezu, charakter biotopu nebo molekulárně-genetická analýza.

3 CHECKLIST / PŘEHLED DRUHŮ

For synonyms see, e.g. Špatenka et al. (1999) or Laštůvka & Laštůvka (2001).

SESIIDAE Boisduval, 1828

TINTHIINAE Le Cerf, 1917

TINTHIINI Le Cerf, 1917

Microsphecia Bartel, 1912
1. *brosiformis* (Hübner, [1813])
2. *tineiformis* (Esper, [1789])

Negotinthia Gorbunov, 2001
3. *myrmosaeformis* (Herrich-Schäffer, 1846)
   3a. *m. myrmosaeformis* (Herrich-Schäffer, 1846)
   3b. *m. cingulata* (Staudinger, 1870)
   3c. *m. efetovi* Gorbunov, 2019
4. *hoplisiformis* (Mann, 1864)

PENNISETIINI Naumann, 1971

Pennisetia Dehne, 1850
5. *hylaeiformis* (Laspeyres, 1801)
6. *bohemica* Králíček & Povolný, 1974

SESIINAE Boisduval, 1828

SESIINI Boisduval, 1828

Sesia Fabricius, 1775
7. *apiformis* (Clerck, 1759)
8. *bembeciformis* (Hübner, [1806])

Eusphecia Le Cerf, 1937
9. *pimplaeformis Oberthür, 1872*
10. *melanocephala Dalman, 1816*

OSMINIINI Duckworth & Eichlin, 1977

Sazonia Gorbunov & Arita, 2001
11. *fenusaeformis* (Herrich-Schäffer, 1852)

PARANTHRENINI Niculescu, 1964

Paranthrene Hübner, [1819]
12. *tabaniformis* (Rottemburg, 1775)
   12a. *t. tabaniformis* (Rottemburg, 1775)
   12b. *t. synagriformis* (Rambur, 1866)
13. *insolitus* Le Cerf, 1914
   13a. *i. polonica* Schnaider, [1939]
   13b. *i. hispanica* Špatenka & Laštůvka, 1997
14. *diaphana* Dalla Torre & Strand, 1925

SYNANTHEDONINI Niculescu, 1964

Synanthedon Hübner, [1819]
15. *scoliaeformis* (Borkhausen, 1789)
16. *mesiaeformis* (Herrich-Schäffer, 1846)
17. *losmanovi* Gorbunov & Ivanov, 2024
18. *spheciformis* ([Denis & Schiffermüller], 1775)
19. *stomoxiformis* (Hübner, 1790)
   19a. *s. stomoxiformis* (Hübner, 1790)
   19b. *s. amasina* (Staudinger, 1856)
   19c. *s. riefenstahli* Špatenka, 1997
20. *culiciformis* (Linnaeus, 1758)
21. *formicaeformis* (Esper, 1783)
22. *flaviventris* (Staudinger, 1883)
23. *aurivillii* (Lampa, 1883)
24. *polaris* (Staudinger, 1877)
25. *andrenaeformis* (Laspeyres, 1801)
26. *soffneri* Špatenka, 1983
27. *melliniformis* (Laspeyres, 1801)
28. *martjanovi* Sheljuzhko, 1918
29. *uralensis* (Bartel, 1906)
30. *myopaeformis* (Borkhausen, 1789)
   30a. *m. myopaeformis* (Borkhausen, 1789)
   30b. *m. typhiaeformis* (Borkhausen, 1789)
   30c. *m. cruentata* (Mann, 1859)
   30d. *m. graeca* (Staudinger, 1870)
31. *vespiformis* (Linnaeus, 1761)
32. *codeti* (Oberthür, 1881)
33. *theryi* Le Cerf, 1916
34. *conopiformis* (Esper, 1782)
35. *geranii* Kallies, 1997
36. *loranthi* (Králíček, 1966)
   = *cruciati* Bettag & Bläsius, 2002, **syn. n.**
37. *cephiformis* (Ochsenheimer, 1808)
38. *spuleri* (Fuchs, 1908)
39. *tipuliformis* (Clerck, 1759)

Bembecia Hübner, [1819]

uroceriformis group
40. *flavida* (Oberthür, 1890)
41. *uroceriformis* (Treitschke, 1834)
42. *himmighoffeni* (Staudinger, 1866)
43. *hymenopteriformis* (Bellier, 1860)

ichneumoniformis group
44. *lomatiaeformis* (Lederer, 1853)
45. *sareptana* (Bartel, 1912)
46. *pallasi* Gorbunov, 2020
47. *volgensis* Gorbunov, 1995
48. *crimeana* Gorbunov & Efetov, 2018
49. *rossica* Gorbunov, 2019
50. *abromeiti* Kallies & Riefenstahl, 2000
51. *ichneumoniformis* ([Denis & Schiffermüller], 1775)

52. *albanensis* (Rebel, 1918)
  52a. *a. albanensis* (Rebel, 1918)
  52b. *a. garganica* Bertaccini & Fiumi, 2002
53. *sirphiformis* (Lucas, 1849)
54. *psoraleae* Bartsch & Bettag, 1997

scopigera group
55. *pavicevici* Toševski, 1989
  55a. *p. pavicevici* Toševski, 1989
  55b. *p. dobrovskyi* Špatenka, 1997
56. *fibigeri* Laštůvka & Laštůvka, 1994
57. *scopigera* (Scopoli, 1763)
58. *priesneri* Kallies, Petersen & Riefenstahl, 1998
59. *iberica* Špatenka, 1992

megillaeformis group
60. *fokidensis* Toševski, 1991
61. *blanka* Špatenka, 2001
62. *megillaeformis* (Hübner, [1813])
63. *puella* Laštůvka, 1989
64. *eversmanni* Gorbunov, 2024
65. *astragali* (Joannis, 1909)
66. *sanguinolenta* (Lederer, 1853)

Pyropteron Newman, 1832

Subgenus ***Pyropteron*** s. str.
67. *chrysidiformis* (Esper, 1782)
  67a. *ch. chrysidiformis* (Esper, 1782)
  67b. *ch. sicula* Le Cerf, 1922
68. *minianiformis* (Freyer, 1842)
69. *nigrobarbata* (Rebel, 1916)
70. *doryliformis* (Ochsenheimer, 1808)
71. *icteropus* (Zeller, 1847)

Subgenus ***Synansphecia*** Căpuşe, 1973
72. *meriaeformis* (Boisduval, 1840)
73. *hispanica* (Kallies, 1999)
74. *koschwitzi* (Špatenka, 1992)
  74a. *k. koschwitzi* (Špatenka, 1992)
  74b. *k. lusohispanica* Laštůvka & Laštůvka, 2007
75. *muscaeformis* (Esper, 1783)
76. *hellenicum* Bartsch, Pühringer, Lingenhöle & Kallies, 2021
77. *kautzi* (Reisser, 1930)
78. *aistleitneri* (Špatenka, 1992)
79. *leucomelaena* (Zeller, 1847)
  79a. *l. leucomelaena* (Zeller, 1847)
  79b. *l. blaesii* Bartsch, Pühringer, Lingenhöle & Kallies, 2021
80. *affinis* (Staudinger, 1856)
81. *triannuliformis* (Freyer, 1842)
82. *cirgisa* (Bartel, 1912)
83. *umbrifera* (Staudinger, 1870)
84. *mannii* (Lederer, 1853)

Dipchasphecia Căpuşe, 1973
85. *lanipes* (Lederer, 1863)

Chamaesphecia Spuler, 1910

Subgenus ***Scopulosphecia*** Laštůvka, 1990
86. *mysiniformis* (Boisduval, 1840)
87. *anatolica* Schwingenschuss, 1938
88. *chalciformis* (Esper, [1804])
89. *schmidtiiformis* (Freyer, 1836)
90. *maurusia* Püngeler, 1912
91. *aerifrons* (Zeller, 1847)
  91a. *a. aerifrons* (Zeller, 1847)
  91b. *a. sardoa* (Staudinger, 1856)
92. *alysoniformis* (Herrich-Schäffer, 1846)
93. *minoica* Bartsch & Pühringer, 2005
94. *gorbunovi* Špatenka, 1992
95. *osmiaeformis* (Herrich-Schäffer, 1848)
96. *ramburi* (Staudinger, 1866)
97. *doleriformis* (Herrich-Schäffer, 1846)
  97a. *d. doleriformis* (Herrich-Schäffer, 1846)
  97b. *d. colpiformis* (Staudinger, 1856)
98. *annellata* (Zeller, 1847)
99. *staudingeri* (Failla-Tedaldi, 1890)
100. *thracica* Laštůvka, 1983
101. *efetovi* Gorbunov, 2019
102. *dumonti* Le Cerf, 1922
103. *oxybeliformis* (Herrich-Schäffer, 1846)
104. *djakonovi* Popescu-Gorj & Căpuşe, 1966
105. *doryceraeformis* (Lederer, 1853)
106. *proximata* (Staudinger, 1891)
107. *masariformis* (Ochsenheimer, 1808)

Subgenus ***Chamaesphecia*** s. str.
108. *nigrifrons* (Le Cerf, 1911)
109. *bibioniformis* (Esper, 1800)
  109a. *b. bibioniformis* (Esper, 1800)
  109b. *b. tengyraeformis* (Boisduval, 1840)
  109c. *b. myrsinites* Pinker, 1957
110. *anthraciformis* (Rambur, 1832)
111. *palustris* Kautz, 1927
112. *euceraeformis* (Ochsenheimer, 1816)
  = *amygdaloidis* Schleppnik, 1933, **syn. n.**
113. *crassicornis* Bartel, 1912
114. *leucopsiformis* (Esper, 1800)
115. *hungarica* (Tomala, 1901)
116. *empiformis* (Esper, 1783)
117. *tenthrediniformis* ([Denis & Schiffermüller], 1775)
118. *astatiformis* (Herrich-Schäffer, 1846)

Weismanniola Naumann, 1971
119. *agdistiformis* (Staudinger, 1866)

4 HOSTPLANTS / HOSTITELSKÉ ROSTLINY

Occasional and unusual trophic relationships are indicated in smaller font in parentheses. The hostplant names follow WFO Plant List (2025). / Příležitostné a neobvyklé hostitelské vztahy jsou uvedeny menším písmem v závorkách. Jména rostlin jsou podle WFO Plant List (2025).

Asteraceae
Artemisia
29. *S. uralensis*

Betulaceae
Alnus
16. *S. mesiaeformis*
18. *S. spheciformis*
20. *S. culiciformis*
(31. *S. vespiformis*)
Betula
(12. *P. tabaniformis*)
15. *S. scoliaeformis*
18. *S. spheciformis*
20. *S. culiciformis*
38. *S. spuleri*
Carpinus
38. *S. spuleri*
Corylus
(19. *S. stomoxiformis*)
32. *S. codeti*
38. *S. spuleri*

Caprifoliaceae
Lonicera
26. *S. soffneri*
Viburnum
25. *S. andrenaeformis*

Celastraceae
Euonymus
39. *S. tipuliformis*

Cistaceae
Helianthemum, Fumana
80. *P. affinis*

Convolvulaceae
Convolvulus
1. *M. brosiformis*
2. *M. tineiformis*

Cupressaceae
Juniperus
(31. *S. vespiformis*)
38. *S. spuleri*

Ebenaceae
Diospyros
38. *S. spuleri*

Elaeagnaceae
Hippophae
(12. *P. tabaniformis*)
(30. *S. myopaeformis*)

Euphorbiaceae
Euphorbia
109. *C. bibioniformis*
110. *C. anthraciformis*
111. *C. palustris*
112. *C. euceraeformis*
113. *C. crassicornis*
114. *C. leucopsiformis*
115. *C. hungarica*
116. *C. empiformis*
117. *C. tenthrediniformis*
118. *C. astatiformis*

Fabaceae
Anthyllis
43. *B. hymenopteriformis*
51. *B. ichneumoniformis*
59. *B. iberica*
Astragalus
44. *B. lomatiaeformis*
50. *B. abromeiti*
(62. *B. megillaeformis*)
63. *B. puella*
64. *B. eversmanni*
65. *B. astragali*
66. *B. sanguinolenta*
Bituminaria
(51. *B. ichneumoniformis*)
52. *B. albanensis*
53. *B. sirphiformis*
54. *B. psoraleae*
Calicotome
41. *B. uroceriformis*
Chamaecytisus
41. *B. uroceriformis*
(62. *B. megillaeformis*)
Colutea
62. *B. megillaeformis*
65. *B. astragali*
66. *B. sanguinolenta*
Coronilla
42. *B. himmighoffeni*
Corothamnus
41. *B. uroceriformis*
(62. *B. megillaeformis*)
Dorycnium
51. *B. ichneumoniformis*
Erophaca
65. *B. astragali*
Genista
41. *B. uroceriformis*
62. *B. megillaeformis*
Hedysarum
53. *B. sirphiformis*
57. *B. scopigera*
Hippocrepis
41. *B. uroceriformis*
51. *B. ichneumoniformis*
55. *B. pavicevici*
59. *B. iberica*
Lotus
42. *B. himmighoffeni*
43. *B. hymenopteriformis*
50. *B. abromeiti*
51. *B. ichneumoniformis*
53. *B. sirphiformis*
59. *B. iberica*
Lupinus
(51. *B. ichneumoniformis*)
Medicago
40. *B. flavida*
Melilotus
(56. *B. fibigeri*)
Onobrychis
57. *B. scopigera*
Ononis
40. *B. flavida*
42. *B. himmighoffeni*
52. *B. albanensis*
53. *B. sirphiformis*
56. *B. fibigeri*
58. *B. priesneri*
Oxytropis
45. *B. sareptana*
Spartium
41. *B. uroceriformis*
Trifolium
60. *B. fokidensis*
61. *B. blanka*
Ulex
41. *B. uroceriformis*

Fagaceae
Castanea
31. *S. vespiformis*
32. *S. codeti*
Fagus
(12. *P. tabaniformis*)
31. *S. vespiformis*
38. *S. spuleri*
Quercus
(12. *P. tabaniformis*)
13. *P. insolitus*
31. *S. vespiformis*
32. *S. codeti*
34. *S. conopiformis*
38. *S. spuleri*

Geraniaceae
Erodium
77. *P. kautzi*
78. *P. aistleitneri*
Geranium
35. *S. geranii*
79. *P. leucomelaena*
81. *P. triannuliformis*
84. *P. mannii*

Grossulariaceae
Ribes
39. *S. tipuliformis*

Hypericaceae
Hypericum
108. *C. nigrifrons*

Juglandaceae
Carya
32. *S. codeti*
Juglans
(31. *S. vespiformis*)
32. *S. codeti*

Lamiaceae
Ballota
86. *C. mysiniformis*
98. *C. annellata*
Clinopodium
91. *C. aerifrons*
Hyssopus
91. *C. aerifrons*
Lavandula
91. *C. aerifrons*
Marrubium
86. *C. mysiniformis*
101. *C. efetovi*
Melissa
92. *C. alysoniformis*
Mentha
91. *C. aerifrons*
92. *C. alysoniformis*
Micromeria
92. *C. alysoniformis*
Nepeta
87. *C. anatolica*
90. *C. maurusia*
91. *C. aerifrons*
Origanum
88. *C. chalciformis*
91. *C. aerifrons*
Phlomis
96. *C. ramburi*
103. *C. oxybeliformis*
105. *C. doryceraeformis*
Salvia
89. *C. schmidtiiformis*
91. *C. aerifrons*
95. *C. osmiaeformis*
97. *C. doleriformis*
106. *C. proximata*
Satureja
91. *C. aerifrons*
Scutellaria
94. *C. gorbunovi*
Sideritis
86. *C. mysiniformis*
Stachys
86. *C. mysiniformis*
99. *C. staudingeri*
100. *C. thracica*
102. *C. dumonti*
Thymus
88. *C. chalciformis*
91. *C. aerifrons*

Loranthaceae
Loranthus
(12. *P. tabaniformis*)
(31. *S. vespiformis*)
36. *S. loranthi*

Pinaceae
Abies
(31. *S. vespiformis*)
37. *S. cephiformis*
(38. *S. spuleri*)
Picea
(38. *S. spuleri*)

Platanaceae
Platanus
32. *S. codeti*

Plumbaginaceae
Armeria
74. *P. k. lusohispanica*
75. *P. muscaeformis*
76. *P. hellenicum*
Limonium
74. *P. koschwitzi*
82. *P. cirgisa*
83. *P. umbrifera*

Polygonaceae
Rumex
67. *P. chrysidiformis*
68. *P. minianiformis*
69. *P. nigrobarbata*
70. *P. doryliformis*
71. *P. icteropus*
72. *P. meriaeformis*
73. *P. hispanica*
81. *P. triannuliformis*

Rhamnaceae
Rhamnus, Frangula
19. *S. stomoxiformis*

Rosaceae
Crataegus, Cydonia, Mespilus, Pyrus, Eriobotrya
30. *S. myopaeformis*
Malus
30. *S. myopaeformis*
(31. *S. vespiformis*)
32. *S. codeti*
Potentilla
3. *N. myrmosaeformis*
Prunus
(31. *S. vespiformis*)
32. *S. codeti*
38. *S. spuleri*
Rosa
6. *P. bohemica*
Rubus
5. *P. hylaeiformis*
Sanguisorba
4. *N. hoplisiformis*
79. *P. leucomelaena*
Sorbus s. l.
(19. *S. stomoxiformis*)
30. *S. myopaeformis*

Salicaceae
Populus
7. *S. apiformis*
9. *E. pimplaeformis*
12. *P. tabaniformis*
14. *P. diaphana*
(21. *S. formicaeformis*)
27. *S. melliniformis*
28. *S. martjanovi*
31. *S. vespiformis*
38. *S. spuleri*
Salix
8. *S. bembeciformis*
9. *E. pimplaeformis*
12. *P. tabaniformis*
14. *P. diaphana*
21. *S. formicaeformis*
22. *S. flaviventris*
23. *S. aurivillii*
24. *S. polaris*
27. *S. melliniformis*
31. *S. vespiformis*
38. *S. spuleri*

Sapindaceae
Acer
38. *S. spuleri*
Aesculus
(31. *S. vespiformis*)

Santalaceae
Viscum
(31. *S. vespiformis*)
32. *S. codeti*
36. *S. loranthi*

Scrophulariaceae
Scrophularia, Verbascum
107. *C. masariformis*

Ulmaceae
Ulmus
(31. *S. vespiformis*)
38. *S. spuleri*

Tamaricaceae
Tamarix
33. *S. theryi*

5 KEY TO SUBFAMILIES, TRIBES AND GENERA

1. Antennae without terminal scale-pencil, tapering towards the tip → Tinthiinae... 2
- Antennae with terminal scale-pencil, thicker towards the tip → Sesiinae..... 3
2. Fw without transparent areas, antennae filiform, ciliate in male → Tinthiini..... .....*Microsphecia*, *Negotinthia*, p. 20
- Fw with transparent areas, antennae setiform, bipectinate in male → Pennisetiini ..... *Pennisetia*, p. 20
3. Entire fw transparent, or, on the contrary, nearly completely opaque, or DS of fw not sharply delimited towards ATA; male antennae bipectinate 4
- Fw with 2–3 separate transparent areas (or with ETA only); DS of fw sharply delimited from ATA (if ATA present); or fw entirely opaque, at the same time partly or entirely red or with a red spot; male antennae ciliate or without cilia..... 6
4. Fw entirely or mostly transparent, or partly covered with translucent scales; M3 and Cu1 of hw stalked from the crossvein; crossvein of hw without scales; a robust species → Sesiini, p. 22..... 5
- Fw nearly entire opaque with small transparency near base or with some transparent cells distally; M3 and Cu1 not stalked; crossvein of hw with scales → Paranthrenini ..... *Paranthrene*, p. 24
5. Yellow abdominal rings narrow or narrowed above, 4th segment with a narrow ring on the front edge or a ring with a black round or triangular spot in the middle .....*Eusphecia*, p. 22
- Yellow abdominal rings wide, often take up the whole segment, 4th segment without ring.....*Sesia*, p. 22
6. Crossvein of hw shifted distally, without scales; antennae without cilia in both sexes; very small species → Osminiini .....*Sazonia*, p. 24
- Crossvein of hw in normal position, with scales; antennae ciliate in male → Synanthedonini, p. 26..... 7
7. PTA reaches DS (often Cu2); proboscis present ..... *Synanthedon*, p. 26
- PTA does not reach DS; if so, then proboscis reduced 8
8. Proboscis present..... 9
- Proboscis reduced or absent..... 10
9. Antennae not yellow or whitish outside, eyes bordered white or frons entirely white, exceptionally yellow or brown.....*Pyropteron*, p. 46
- Antennae outside yellow – or dark and at the same time frons dark without white border of eyes ..... *Chamaesphecia*, *Dipchasphecia*, p. 52
10. DS of fw partly or entirely orange or yellow; abdomen not very slender ....*Bembecia*, p. 36
- DS of fw without yellow or red spot; transparent areas covered with whitish scales; abdomen very slender .....*Weismanniola*, p. 66

5 KLÍČ PODČELEDÍ, TRIBŮ A RODŮ

1. Tykadla bez štětečku na konci, ke špičce se zužují → Tinthiinae 2
- Tykadla se štětečkem na konci, ke špičce jsou tlustější → Sesiinae 3
2. Přkř bez skelných polí, tykadla nitkovitá, u samce obrvená → Tinthiini .... *Microsphecia*, *Negotinthia*, s. 20
- Přkř se 3 skelnými poli, tykadla štětinovitá, u samce dvojitě hřebenitá → Pennisetiini ..... *Pennisetia*, s. 20
3. Přkř celá průhledná, nebo naopak zcela překrytá šupinkami; pokud jsou skelné partie rozsáhlejší, není DS přkř ostře ohraničená vůči ATA; tykadla samce hřebenitá 4
- Přkř se 2–3 oddělenými skelnými poli (nebo jen s ETA), DS přkř ostře ohraničená vůči ATA (je-li ATA přítomné); nebo přkř bez skelných polí, v tom případě částečně nebo celá červená nebo s červenou skvrnou; tykadla samců nejsou hřebenitá 6
4. Přkř celá nebo téměř celá transparentní, příp. překrytá průsvitnými šupinkami; M3 a Cu1 zkř vycházejí ze společného násadce; příčná žilka zkř není pokrytá šupinkami, velký druh → Sesiini, s. 22 5
- Přkř téměř zcela překrytá šupinkami, někdy s transparentní partií při bázi nebo u špičky; M3 a Cu1 zkř nemají společný násadec; příčná žilka zkř překrytá šupinkami → Paranthrenini ..... *Paranthrene*, s. 24
5. Žluté kroužky na zadečku úzké, nebo nahoře zúžené, 4. článek s úzkým kroužkem na předním okraji nebo kroužek uprostřed s černou skvrnou ..... *Eusphecia*, s. 22
- Žluté kroužky na zadečku široké, často zabírají celý článek, 4. článek bez kroužku ..... *Sesia*, s. 22
6. Příčná žilka zkř posunuta ke špičce křídla, bez šupinek; tykadla samce bez obrvení; velmi malý druh → Osminiini ..... *Sazonia*, s. 24
- Příčná žilka zkř v normální poloze, obvykle s šupinkami; tykadla samce obrvená → Synanthedonini, s. 26 7
7. PTA dosahuje pod DS (často až k Cu2); sosák přítomen. ..... *Synanthedon*, s. 26
- PTA nedosahuje pod DS; pokud dosahuje, je sosák redukován 8
8. Sosák přítomen 9
- Sosák redukován nebo zcela chybí 10
9. Tykadla nejsou vně žlutá, oči jsou zepředu bíle lemované, nebo celé čelo bílé, výjimečně žluté nebo hnědé ..... *Pyropteron*, s. 46
- Tykadla vně žlutá – nebo tmavá a současně čelo tmavé (metalicky lesklé) bez bílého lemu před očima ..... *Chamaesphecia*, *Dipchasphecia*, s. 52
10. DS přkř částečně nebo celá oranžová nebo žlutá; zadeček není velmi štíhlý .... *Bembecia*, s. 36
- DS přkř bez žluté nebo červené skvrny; skelná pole překrytá bělavými šupinkami, bez transparence; zadeček velmi štíhlý ..... *Weismanniola*, s. 66

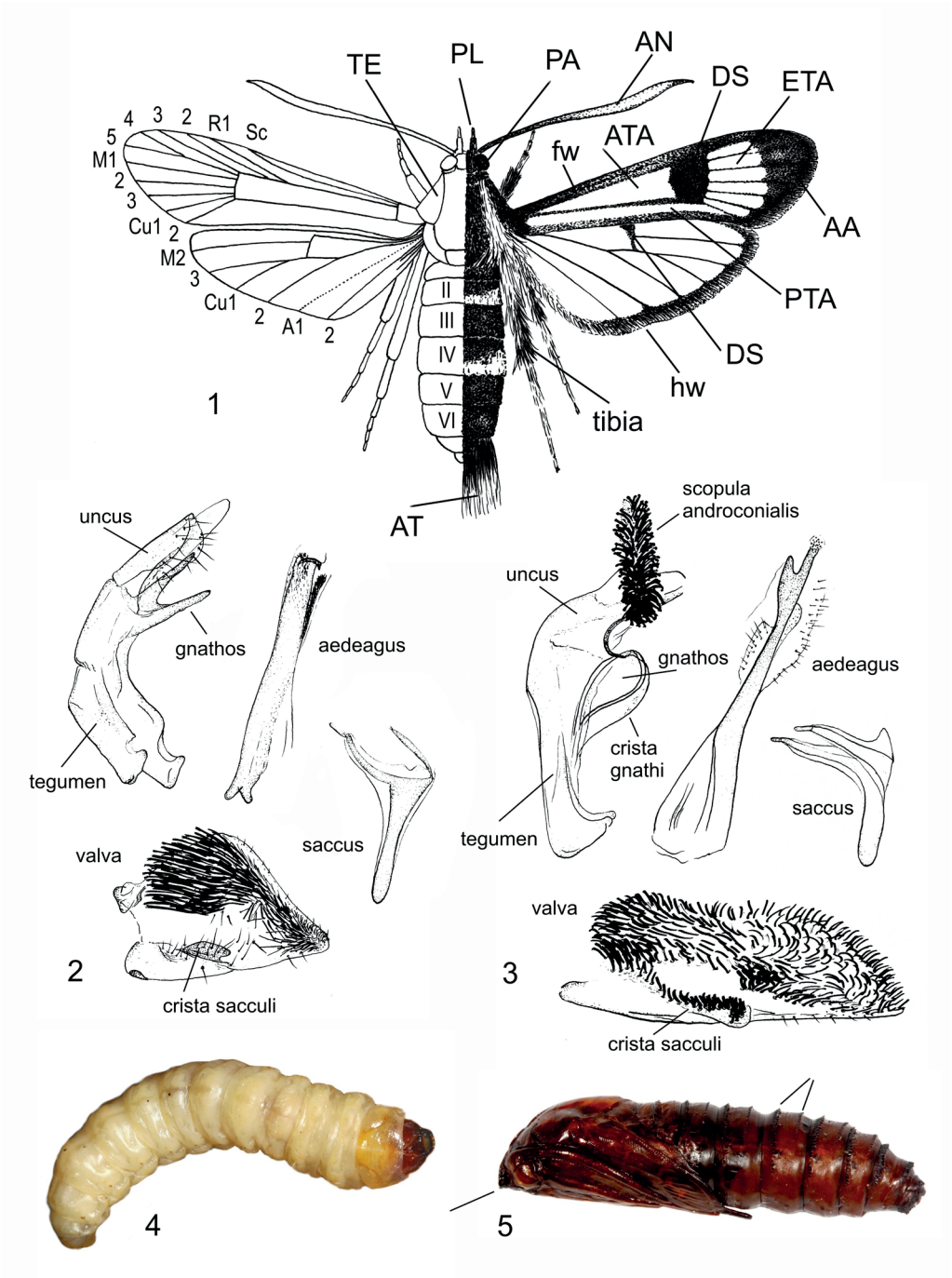

Plate I. Morphology; 1 – adult: TE – tegula, PL – palpus labialis, PA – patagia, AN – antenna, fw – forewing, ATA – anterior transparent area, DS – discal spot, ETA – external transparent area, AA – apical area, PTA – posterior transparent area, hw – hindwing, AT – anal tuft; 2, 3 – important parts of male genitalia, 2 – *Eusphecia melanocephala*, 3 – *Synanthedon mesiaeformis*; 4 – larva; 5 – pupa

6 SYSTEMATIC PART / SYSTEMATICKÁ ČÁST

Structure of texts

Diagnostic characters of subfamilies, tribes, genera, and comments are English and Czech, diagnostic characters of species and notes on biology are only in English. The text for each species has the same structure, e.g.

7. ***Sesia apiformis*** (Clerck, 1759)

⁑ wingspan; diagnostic characters.

B: hostplant (unusual, occasional or local trophic relationships in parentheses), length of larval development (years), additional note if necessary; months of adult occurrence.

D: basic characteristics of distribution.

•C: important new literature or comments.

Struktura textů

Diagnostické znaky podčeledí, tribů, rodů a komentáře jsou psány anglicky a česky, diagnostické znaky druhů a poznámky k biologii pouze anglicky. Text u každého druhu má stejnou strukturu např.

7. ***Sesia apiformis*** (Clerck, 1759)

⁑ rozpětí křídel; diagnostické znaky.

B: hostitelská rostlina (neobvyklé, příležitostné nebo lokální trofické vztahy v závorce), délka vývoje housenky (roky), příp. doplňující poznámka; měsíce výskytu dospělců.

D: základní charakteristika rozšíření.

•C: důležitá nová literatura nebo komentáře.

Abbreviations / Zkratky (see also Plate I)

Fw, Přkř – forewing / přední křídlo
Hw, Zkř – hindwing / zadní křídlo
V – variability / variabilita
U – underside / spodní strana
ATA – anterior transparent area / diskální skelné pole
PTA – posterior transparent area / podélné skelné pole
ETA – external transparent area / vnější skelné pole
AA – apical area / apikální pole
DS – discal spot / diskální skvrna
AT – anal tuft / anální chvost

Tinthiinae – antennae without terminal pencil / tykadla bez koncového štětečku.
Tinthiini – antennae filiform, ciliate in male / tykadla nitkovitá, u samce obrvená.

1. *Microsphecia brosiformis* (Hübner, [1813])

⁑ 10–17 mm; proboscis reduced; fw with yellowish spot; 1st segment yellowish.

B: *Convolvulus arvensis*, 1; VI–IX.

D: Pontomediterranean – C Asiatic.

•C: Gorbunov & Efetov (2025a); Austria: Pühringer (2025).

2. *M. tineiformis* (Esper, [1789])

⁑ 12–17 mm; proboscis developed; fw without yellowish spot; 1st segment not distinctly yellowish.

B: *Convolvulus*, *Convolvulus boissieri*, 1; V–VII.

D: Holomediterranean.

•C: Malta: Mifsud et al. (2019). The relationship between the genera *Microsphecia* Bartel, 1912 and *Tinthia* Walker, [1865] and thus the genus affiliation of the two species mentioned is unresolved. / Vztah rodů *Microsphecia* a *Tinthia* a tím rodová příslušnost uvedených dvou druhů není vyjasněná.

3. *Negotinthia myrmosaeformis* (Herrich-Schäffer, 1846)

⁑ 14–23 mm; fw dark brown to black; hind tibia orange in the middle; abdomen black, sometimes with variously pronounced yellowish rings (ssp. *cingulata* and ssp. *efetovi*, 3b, c).

B: *Potentilla*: *P. astracanica*, *P. pedata*, *P. recta*, 1; V–VII.

D: Pontomediterranean.

•C: *N. efetovi* Gorbunov, 2019 from Crimea with more pronounced rings is considered a subspecies here (3c) (cf. Gorbunov 2019a, Gorbunov & Efetov 2024); the position of the taxa *cingulata* Staudinger, 1870 and *efetovi* requires further study. / *N. efetovi* z Krymu s výraznějšími kroužky je zde považována za subspecii (3c); postavení taxonů *cingulata* a *efetovi* vyžaduje další studium.

4. *N. hoplisiformis* (Mann, 1864)

⁑ 15–24; fw brown; thorax with 4 yellow spots; hind tibia yellow; distinct yellow rings.

B: *Sanguisorba minor*, 1; V–VII.

D: Pontomediterranean.

Pennisetiini – antennae setiform, bipectinate in male / tykadla štětinovitá, u samce dvojitě hřebenitá.

5. *Pennisetia hylaeiformis* (Laspeyres, 1801)

⁑ 18–31 mm; labial palps with black hairs; thorax dark laterally; abdominal rings narrow.

B: *Rubus idaeus*, 2; VII, VIII.

D: Eurosiberian.

6. *P. bohemica* Králíček & Povolný, 1974

⁑ 23–32 mm; labial palps yellow; thorax with yellow spot laterally; end rings wide.

B: *Rosa canina* s.l., *R. arvensis*, 2; VII, VIII.

D: Pontomediterranean, very insular.

•C: Bartsch (2003), Germany (single record): Morawietz (2021), Predovnik (2002, 2004, 2009).

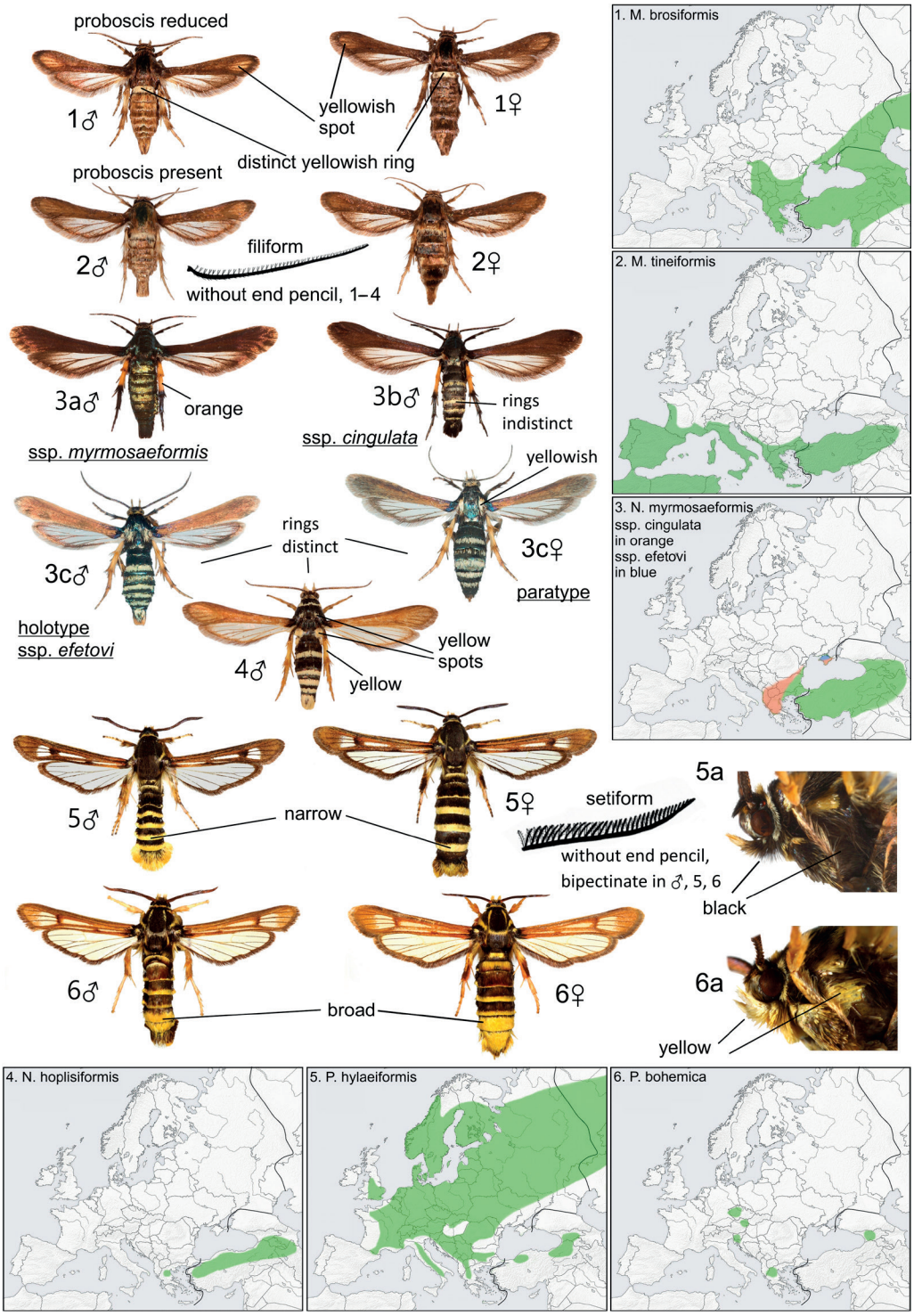

Plate II. 1 – *Microsphecia brosiformis*, 2 – *M. tineiformis*, 3 – *Negotinthia myrmosaeformis*, a – ssp. *myrmosaeformis*, b – ssp. *cingulata*, c – ssp. *efetovi*, 4 – *N. hoplisiformis*, 5 – *Pennisetia hylaeiformis*, 6 – *P. bohemica*, a – head and thorax

Sesiinae – antennae with terminal pencil / tykadla s koncovým štětečkem.
Sesiini – fw mostly transparent, crosswein of hw without scales / přkř převážně transparentní, příčná žilka zkř bez šupinek.

7. *Sesia apiformis* (Clerck, 1759)

⁑ 31–48 mm; patagia black; tegulae yellow; 7a – black form.

B: *Populus*, (*Salix*), 4; in basal part of trunk and in roots; 7b – exit holes; V–VIII.

D: W Palaearctic.

8. *S. bembeciformis* (Hübner, [1806])

⁑ 28–43 mm; patagia yellow; tegulae black.

B: *Salix*: *S. aurita*, *S. caprea*, *S. cinerea*, etc., 4; in basal part of trunk; pupation in fine cocoon at the upper end of gallery (8a); 8b – sawdust at the base of the trunk of *Salix cinerea*; VI–VIII.

D: European (Eurosiberian).

•C: Goossens (2020), Bąkowski (2023), Hirschi (2024).

9. *Eusphecia pimplaeformis* (Oberthür, 1872)

⁑ 27–35 mm; tegulae yellow in the front part; 4th segment of the abdomen yellow from above with a round or triangular black spot.

B: *Populus*, *Salix*, 3, in trunk, pupation without cocoon in gallery; V–VII.

D: E Mediterranean.

10. *E. melanocephala* (Dalman, 1816)

⁑ 27–38 mm; tegulae bordered in yellow at the front and rear; fw partially covered with transparent brownish scales; narrow yellow rings on the abdomen.

B: *Populus tremula*, 3; in trunk, pupation in a dry twig (10a); VI, VII.

D: European (Eurosiberian).

•C: Garrevoet & Garrevoet (2003), Kallies (2011), Wiesmair & Eckelt (2015), Garrevoet & Goossens (2021), GBIF.org (2025).

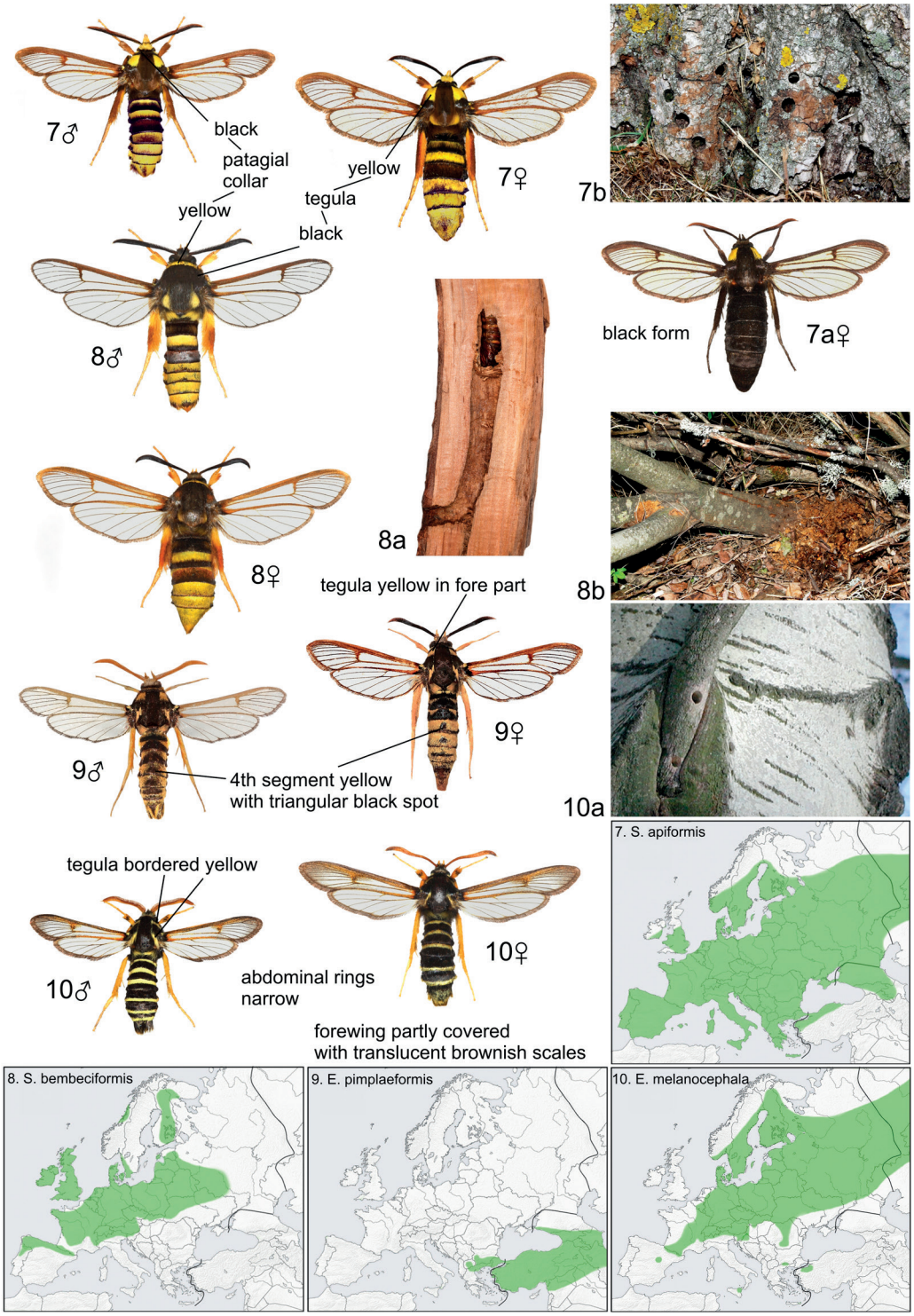

Plate III. 7 – *Sesia apiformis*, a – black form (f. *tenebrioniformis*), b – exit holes in the trunk of *Populus* sp., 8 – *S. bembeciformis*, a – larval gallery and pupa, b – sawdust at the base of the trunk of *Salix cinerea*; 9 – *Eusphecia pimplaeformis*, 10 – *E. melanocephala*, a – exit holes in dry twig of *Populus tremula*

Osminiini – crosswein of hw shifted distally, without scales; male antennae without cilia / příčná žilka zkř posunutá distálně, bez šupinek; tykadla samce bez obrvení.

11. *Sazonia fenusaeformis* (Herrich-Schäffer, 1852)

⁑ 11–15 mm; male antennae not ciliate; hw transverse vein clearly shifted distally.

B: ?; IV–VI.

D: E Mediterranean, in Europe Samos and Turkey, uncertain record from Crete.

•C: Gorbunov & Arita (2001), Bartsch & Pühringer (2005), GBIF.org (2025). The morphological differences between the genera *Sazonia* Gorbunov & Arita, 2001 and *Osminia* Le Cerf, 1917 are not clearly defined; here we have chosen the currently predominant generic combination. / Morfologické rozdíly mezi rody *Sazonia* a *Osminia* nejsou jasně vymezeny, zde jsme zvolili aktuálně převažující rodovou kombinaci.

Paranthrenini – fw mostly opaque, M3 and Cu1 of hw not stalked / přkř převážně pokrytá šupinkami, M3 a Cu1 zkř nemají společný násadec.

12. *Paranthrene tabaniformis* (Rottemburg, 1775)

⁑ 20–38 mm; nominotypical ssp.: antennae and thorax black; fw dark brown without transparent cells distally; 3 (4) yellow rings; f. *rhingiaeformis* (Hübner, 1790): rings on all segments (12c); ssp. *synagriformis* (Rambur, [1866]): antennae and fw yellowish brown; patagia yellow; thorax with 4 yellow spots; rings on all segments (12b).

B: *Populus*, *Salix*, (*Betula*, *Fagus*, *Hippophae*, *Loranthus*, *Quercus*), 2; in trunks, branches or stumps (12d); V–VIII.

D: Holarctic, with ssp. *synagriformis* in SW Europe and N Africa.

•C: Mifsud et al. (2003), GBIF.org (2025).

13. *P. insolitus* Le Cerf, 1914

⁑ 23–33 mm; proboscis short, yellowish; antennae large; tegulae and metathorax bordered with yellow; fw with 1–7 transparent cells in the distal part; the transparent cells most developed in ssp. *polonica* Schnaider, [1939] (13a) and strongly reduced in the nominotypical ssp. (non-European) and in ssp. *hispanica* Špatenka & Laštůvka, 1997 (13b); narrow yellow rings on segments 2, 4–6 (7) in ssp. *polonica* and wide rings on segments 2–6 (7) in ssp. *hispanica*.

B: *Quercus*, 2; in branches or thin trunks; V–VII.

D: W Palaearctic, with ssp. *hispanica* in the Iberian Peninsula, ssp. *polonica* elsewhere in Europe.

•C: Špatenka & Laštůvka (1997), Pühringer & Wieser (2000), Dutreix & Morel (2001), Bąkowski (2009), Bąkowski et al. (2009), Rämisch (2010, 2012), Garrevoet (2022), GBIF.org (2025), Albania: T. Garrevoet (pers. comm.).

14. *P. diaphana* Dalla Torre & Strand, 1925

⁑ 24–27 mm; proboscis developed; antennae finely pectinate; patagia yellow; thorax with 4 yellow spost; fw with 1–3 transparent cells distally; rings on all segments.

B: *Salix*: *S. alba*, *S. caprea*, *Populus alba*, 1–2; in tumours on branches or trunks; VI, VII.

D: Sicilian – E Mediterranean – C Asiatic.

•C: Georgiev (2015), Bąkowski & Askarianzadeh (2023), Manci et al. (2024), iNaturalist.org (2025), D. Bartsch (pers. comm.).

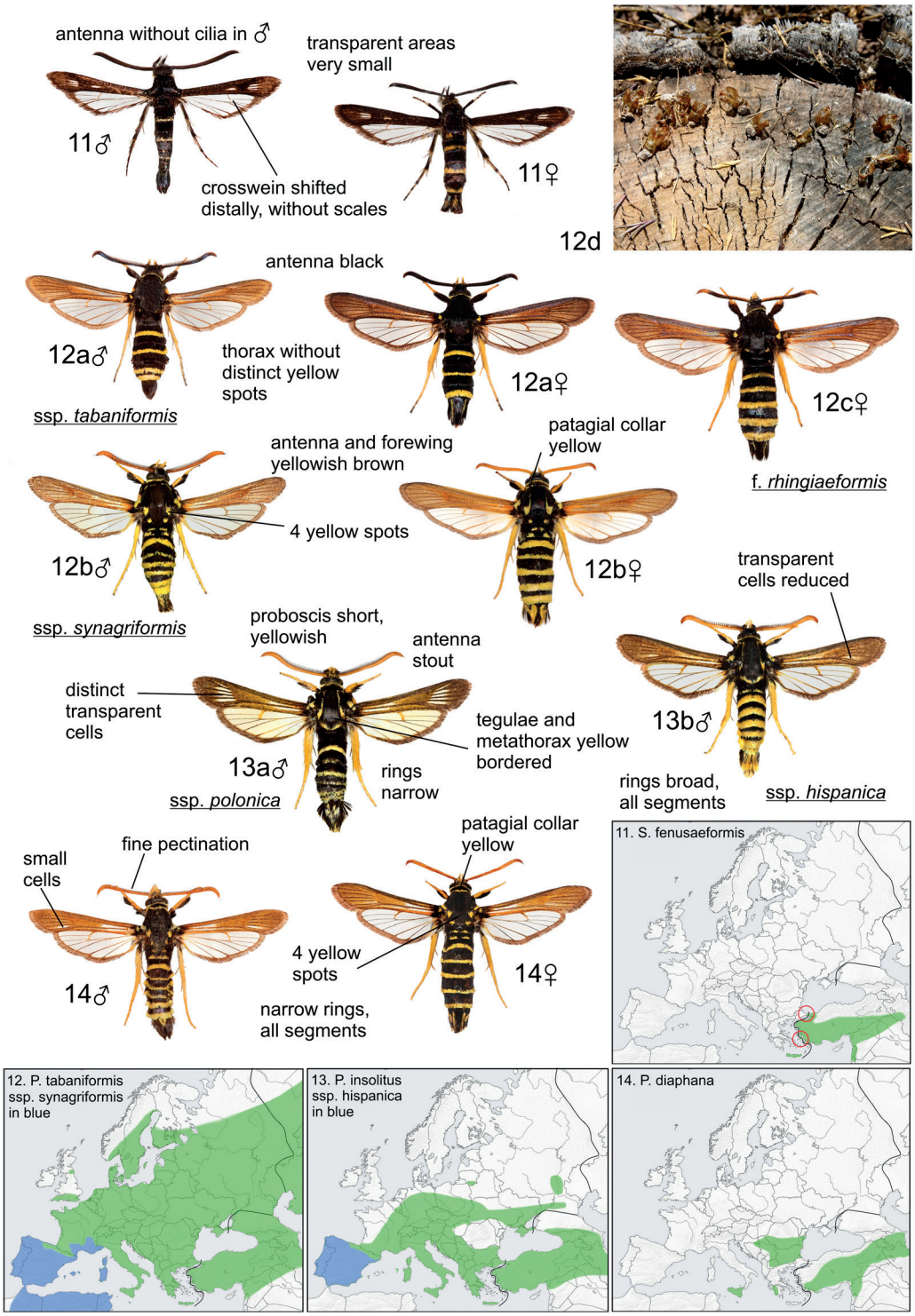

Plate IV. 11 – *Sazonia fenusaeformis*, 12 – *Paranthrene tabaniformis*, a – ssp. *tabaniformis*, b – ssp. *synagriformis*, c – f. *rhingiaeformis*, d – exuviae in the stump of *Populus* sp., 13 – *P. insolitus*, a – ssp. *polonica*, b – ssp. *hispanica*, 14 – *P. diaphana*

Synanthedonini – antennae clavate, ciliate in male; fw with delimited transparent areas / tykadla kyjovitá, u samce obrvená; přkř s oddělenými skelnými poli.

Synanthedon Hübner, [1819]

Proboscis present; PTA reaches as far as under the DS (up to Cu1); larva mostly xylophagous, often with specific feeding pattern; phylogeny and classification cf. also Cognato et al. (2023), Gorbunov (2024b, c, d); 25 species in Europe. / Sosák přítomen; PTA dosahuje pod DS (až k Cu1); larva v naprosté většině xylofágní, často se specifickým požerkem; fylogenie a klasifikace srv. také Cognato et al. (2023), Gorbunov (2024b, c, d); v Evropě 25 druhů.

15. *S. scoliaeformis* (Borkhausen, 1789)

⁑ 25–35 mm; DS of fw conspicuously broad; rings on 2nd and 4th segment; AT rusty.

B: *Betula pendula*, *B. pubescens*, 3; lower part of trunk; V–VII.

D: Eurosiberian.

•C: Predovnik (2008a), Hirschi (2021).

16. *S. mesiaeformis* (Herrich-Schäffer, 1846)

⁑ 19–31 mm; segments 2 and 4 with yellow rings, the ring on the 4th segment distinctly wider; hind tibia orange with black tip.

B: *Alnus glutinosa*, 2; beneath bark of old trees; V–VII.

D: W Palaearctic, insular.

•C: Karalius & Būda (2006), Laštůvka & Laštůvka (2008), Lendel (2011), Predovnik (2012), Aarvik et al. (2017), Goossens (2017), iNaturalist.org (2025), Lepiforum e.V. (2025), Albania: T. Garrevoet (pers. comm.).

17. *S. losmanovi* Gorbunov & Ivanov, 2024

⁑ 19–24 mm; segments 1 and 2 yellowish white laterally; segment 4 with narrow ring.

B: *Alnus* ?; VI, VII.

D: NE Europe.

•C: Gorbunov & Ivanov (2024).

18. *S. spheciformis* ([Denis & Schiffermüller], 1775)

⁑ 23–31 mm; narrow ring on 2nd segment above and on 4th segment below.

B: *Alnus*, *Betula*, 3; lower parts of young trees; V–VII.

D: Eurosiberian.

19. *S. stomoxiformis* (Hübner, 1790)

⁑ 21–31 mm; tegulae bordered with red; 4th segment red, 5th and 6th red laterally and 4th–6th from below (19d); wider dark wing margins and reduction of red parts in ssp. *riefenstahli* Špatenka, 1997 (19b) and ssp. *amasina* (Staudinger, 1856) (19c).

B: *Frangula*, *Rhamnus,* (*Corylus*, *Sorbus*), 2; in the root, pupation in a tube at trunk base (19e); V–VII.

D: W Palaearctic.

•C: Pühringer et al. (1998); Montenegro: F. Pühringer leg. (pers. comm.).

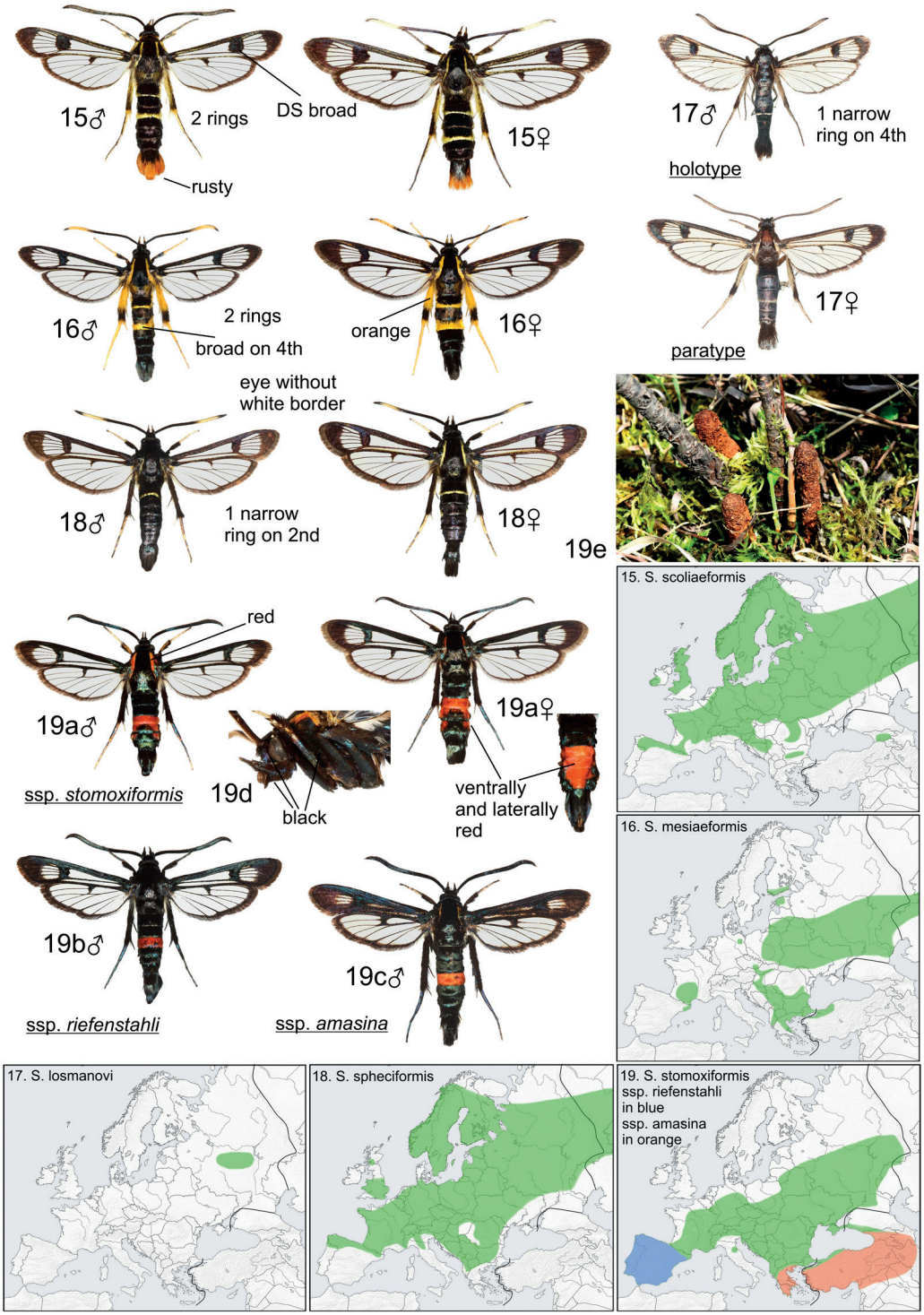

Plate V. 15 – *Synanthedon scoliaeformis*, 16 – *S. mesiaeformis*, 17 – *S. losmanovi*, 18 – *S. spheciformis*, 19 – *S. stomoxiformis*, a – ssp. *stomoxiformis*, b – ssp. *riefenstahli*, c – ssp. *amasina*, d – head and thorax, e – exit tubes near trunks of *Rhamnus cathartica*

20. *S. culiciformis* (Linnaeus, 1758)

⁑ 19–29 mm; labial palps orange below; eyes with narrow white border; thorax red laterally (20a); fw with red scales basally; 4th segment with broad red ring.

B: *Betula*, *Alnus*, 1 (2); in stumps or in sickly or wounded parts of trunks, pupation in a cocoon of long chips (20b); IV–VI (VII).

D: Holarctic.

•C: Specimens from southern Bulgaria show features of (ssp. ?) *S. pamphyla* Kallies, 2003 described from southern Turkey. / Jedinci z jižního Bulharska vykazují znaky (ssp. ?) *S. pamphyla*, popsaného z jižního Turecka.

21. *S. formicaeformis* (Esper, 1783)

⁑ 14–25 mm; labial palps orange below; eyes with white border; thorax black laterally (21a); AA of fw red; 4th (5th) segment with red ring.

B: *Salix*, (*Populus*), 1 (2); in trunks or branches, often in tumours; V–VIII.

D: Eurasiatic.

22. *S. flaviventris* (Staudinger, 1883)

⁑ 13–21 mm; ETA usually very narrow; 4th–6th (7th) segment yellow ventrally (22a).

B: *Salix*: *S. aurita*, *S. caprea*, *S. cinerea*, *S. repens*, etc., 2; in a thin twig, causing a characteristic gall (22b); VI, VII.

D: Eurosiberian.

•C: Predovnik (2002, 2018), Karalius & Būda (2006), Hirschi (2022), iNaturalist.org (2025).

23. *S. aurivillii* (Lampa, 1883)

⁑ 19–23 mm; fw sprinkled with red scales; ETA narrow.

B: *Salix*: *S. alpina*, *S. breviserrata*, *S. glaucosericea*, *S. helvetica*, *S. lapponum*, 2–3; in trunks and twigs (23a); VII, VIII.

D: Eurosiberian, with arctic-alpine disjunction.

•C: Pühringer (2025), F. Pühringer (pers. comm.).

24. *S. polaris* (Staudinger, 1877)

⁑ 19–21 mm; fw sprinkled with red scales; ETA narrow; abdomen without rings.

B: *Salix glauca*, *S. lapponum*, 2–3; in trunks and twigs; VII, VIII.

D: Eurosiberian, arctic.

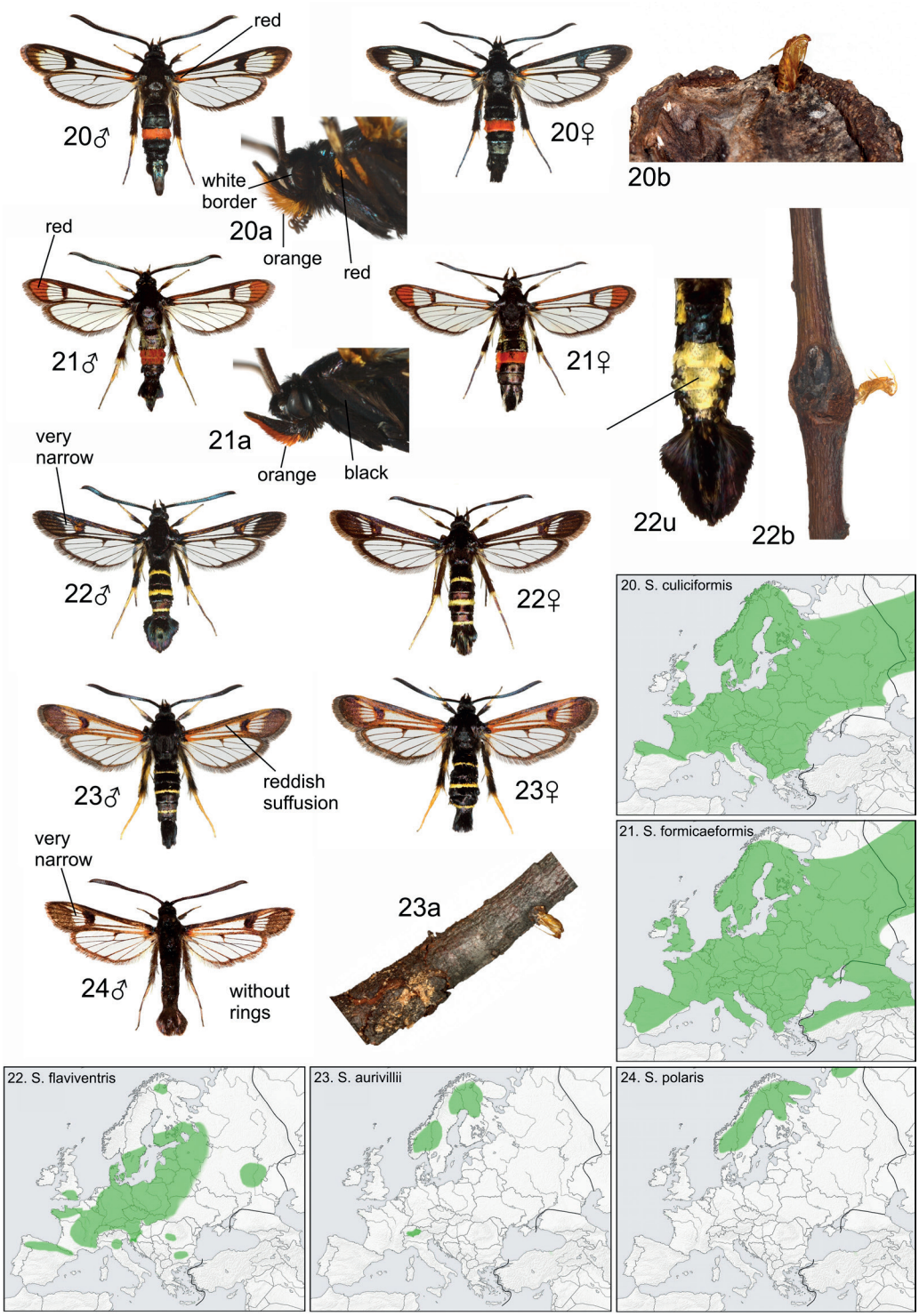

Plate VI. 20 – *Synanthedon culiciformis*, a – head and thorax, b – exuvia in the stump of *Betula*, 21 – *S. formicaeformis*, a – head and thorax, 22 – *S. flaviventris*, u – abdomen underside, b – gall on *Salix caprea* with exuvia, 23 – *S. aurivillii*, a – exuvia in *Salix breviserrata*, 24 – *S. polaris*

25. *S. andrenaeformis* (Laspeyres, 1801)

⁑ 17–26 mm; narrow yellow rings on segments 2 and 4; segments 4–6 (partially 7) in male and 4 in female whitish vetrally; AT large, black, orange at the end.

B: *Viburnum lantana*, *V. opulus*, 2; in the pith of twigs or trunks (25b); V–VII.

D: W Palaearctic, insular.

•C: Torstenius & Lindmark (2000), Dahl & Radtke (2013), Prick (2023), Montenegro: F. Pühringer leg. (pers. comm.).

26. *S. soffneri* Špatenka, 1983

⁑ 17–23 mm; labial palps with long hairs, partially orange; thorax orange laterally (26a); AA of fw broad, dark; broad orange ring on the 4th segment; AT black.

B: *Lonicera*: *L. nigra*, *L. xylosteum*, *L. tatarica*, *L. caerulea*, 2 (3); in branch; V, VI (VII).

D: Eurosiberian, insufficiently known.

•C: Bartsch & Pelz (1997), Predovnik (2005), Wiesmair & Eckelt (2015).

27. *S. melliniformis* (Laspeyres, 1801)

⁑ 17–22 mm; ETA very broad, especially in male; segments 4 and 5 in male and 4 in female yellow ventrally; AT in male black, partially yellow medially in male, and yellow medially and black laterally in female.

B: *Populus*, *Salix*, 1; in tumour parts of trunks, branches or twigs; V–VIII.

D: Adriatico-Mediterranean.

28. *S. martjanovi* Sheljuzhko, 1918

⁑ 16–22 mm; ETA narrow in male, approximately square in female (not shown); 2nd and 4th segments with narrow yellowish rings; segments 4 and 5 in male and 4–6 in female whitish ventrally; AT black in male, yellowish ventrally, in female yellow medially and black laterally.

B: *Populus*: *P. tremula*, 1; beneath bark in sickly parts of trunks or branches; VI, VII.

D: Siberian – E European.

29. *S. uralensis* (Bartel, 1906)

⁑ 18–21 mm; labial palps black, with long hairs in male; segment 4 with a wide orange-red ring; segments 4–7 in male and 4, 5 in female orange ventrally; AT rusty at the end.

B: *Artemisia abrotanum*, 1; in the woody stem; V–VII.

D: Siberian – E European.

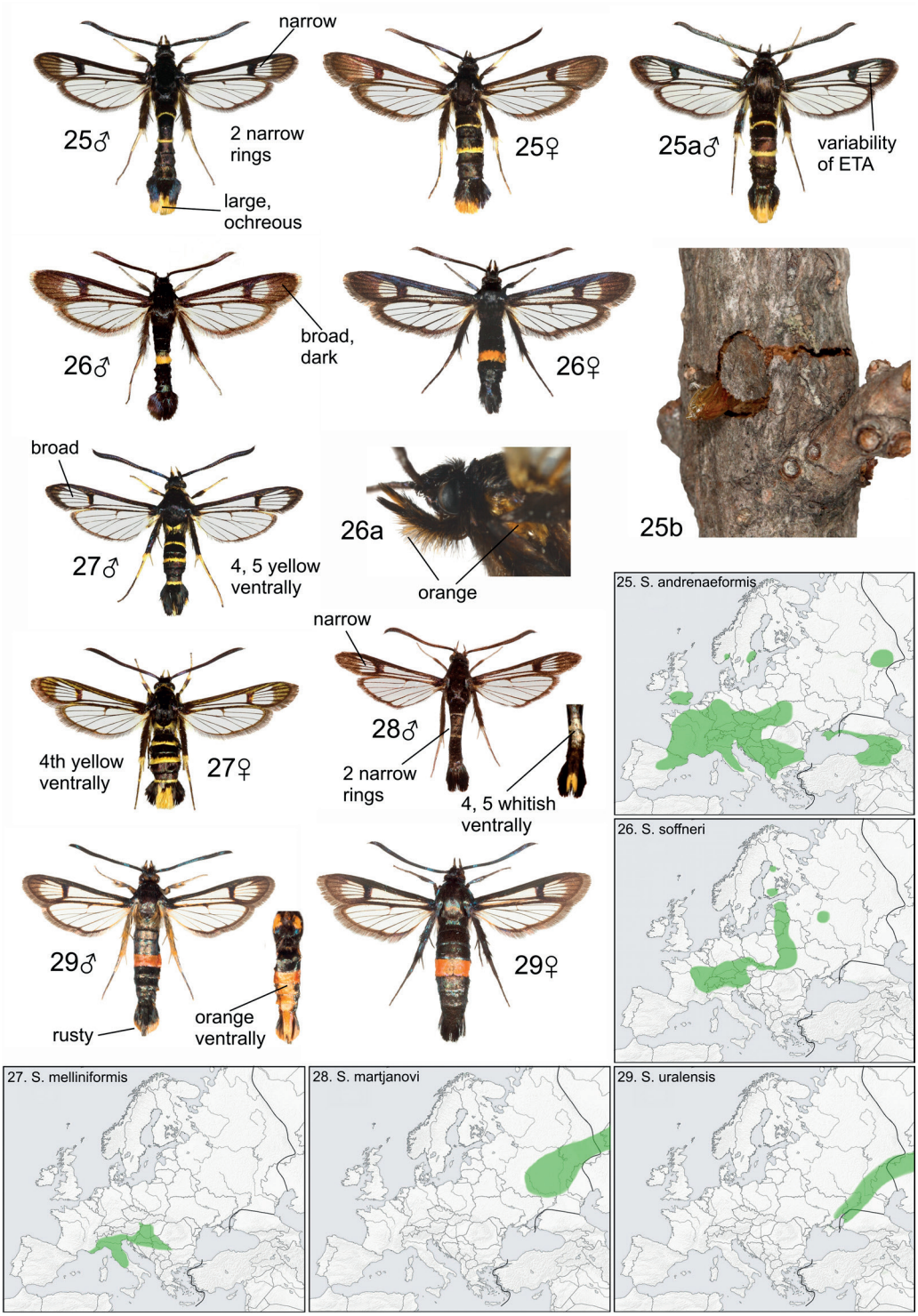

Plate VII. 25 – *Synanthedon andrenaeformis*, a – variability, b – exit hole with exuvia on the twig of *Viburnum lantana*, 26 – *S. soffneri*, a – head and thorax, 27 – *S. melliniformis*, 28 – *S. martjanovi*, 29 – *S. uralensis*

30. *S. myopaeformis* (Borkhausen, 1789)

⁑ 14–25 mm; thorax with orange spot laterally; nominotypical ssp. (30a): labial palps white ventrally in male and dark brown to black in female; red ring on the 4th segment; segments 4–6 in male whitish ventrally; ssp. *typhiaeformis* (Borkhausen, 1789) (30b): apex of antennae white; labial palps orange to rusty; narrow red ring also on the 4th segment; ssp. *cruentata* (Mann, 1859) (30c): segments 2–4 entirely red, otherwise as in ssp. *typhiaeformis*; ssp. *graeca* (Staudinger, 1870) (not shown): labial palps and antennae as in 30a, abdomen as in 30b.

B: *Maloideae*: *Crataegus*, *Cydonia*, *Eriobotrya*, *Malus*, *Mespilus*, *Pyrus*, *Sorbus* s. l., (? *Hippophae rhamnoides*), 1 (2); beneath bark; V–IX.

D: W Palaearctic.

31. *S. vespiformis* (Linnaeus, 1761)

⁑ 16–27; tegulae with yellow border; DS of fw almost entirely red; yellow spot on fw base; AT black in male, almost entirely yellow in female.

B: *Quercus* (usually), occasionally: *Aesculus*, *Alnus*, *Betula*, *Castanea*, *Fagus*, *Juniperus*, *Loranthus*, *Malus*, *Populus*, *Prunus*, *Salix*, *Ulmus*, *Viscum*, 1–2; beneath bark (often in stumps); V–X.

D: W Palaearctic.

•C: Bąkowski & Miłkovski (2008), Rämisch (2009), Aarvik et al. (2017).

32. *S. codeti* (Oberthür, 1881)

⁑ 16–23 mm; tegula bordered yellow at the front; DS of fw only partially red; yellow rings on the 2nd and 6th segments do not cover the entire segments; AT black in male, black in the middle and laterally in female.

B: *Quercus*, *Carya*, *Castanea*, *Corylus*, *Juglans*, *Malus*, *Platanus*, *Prunus*, *Viscum*, 1; in sickly parts of trunk; V–VII.

D: W Mediterranean.

•C: Bąkowski (2021), GBIF.org (2025).

33. *S. theryi* Le Cerf, 1916

⁑ 16–21 mm; tegula yellow in front half; DS of fw (almost) entirely red; yellow rings on 2nd and 6th segments broad; AT yellow in the middle in male, almost entirely yellow in female.

B: *Tamarix*, 1; in trunk and in branches; V–IX.

D: Mediterranean, Black Sea coast, spreading.

•C: Predovnik (2017), Bąkowski (2021), Meert (2023), Lepiforum e.V. (2025), iNaturalist.org (2025), Sicily: D. Lehner leg. (F. Pühringer, pers. comm.).

34. *S. conopiformis* (Esper, 1782)

⁑ 16–24 mm; metathorax with distinct yellow spot; AA with distinct orange spots; AT black.

B: *Quercus*, 2; in sickly parts of trunks and branches; V–VII.

D: W Palaearctic.

•C: Post et al. (2023).

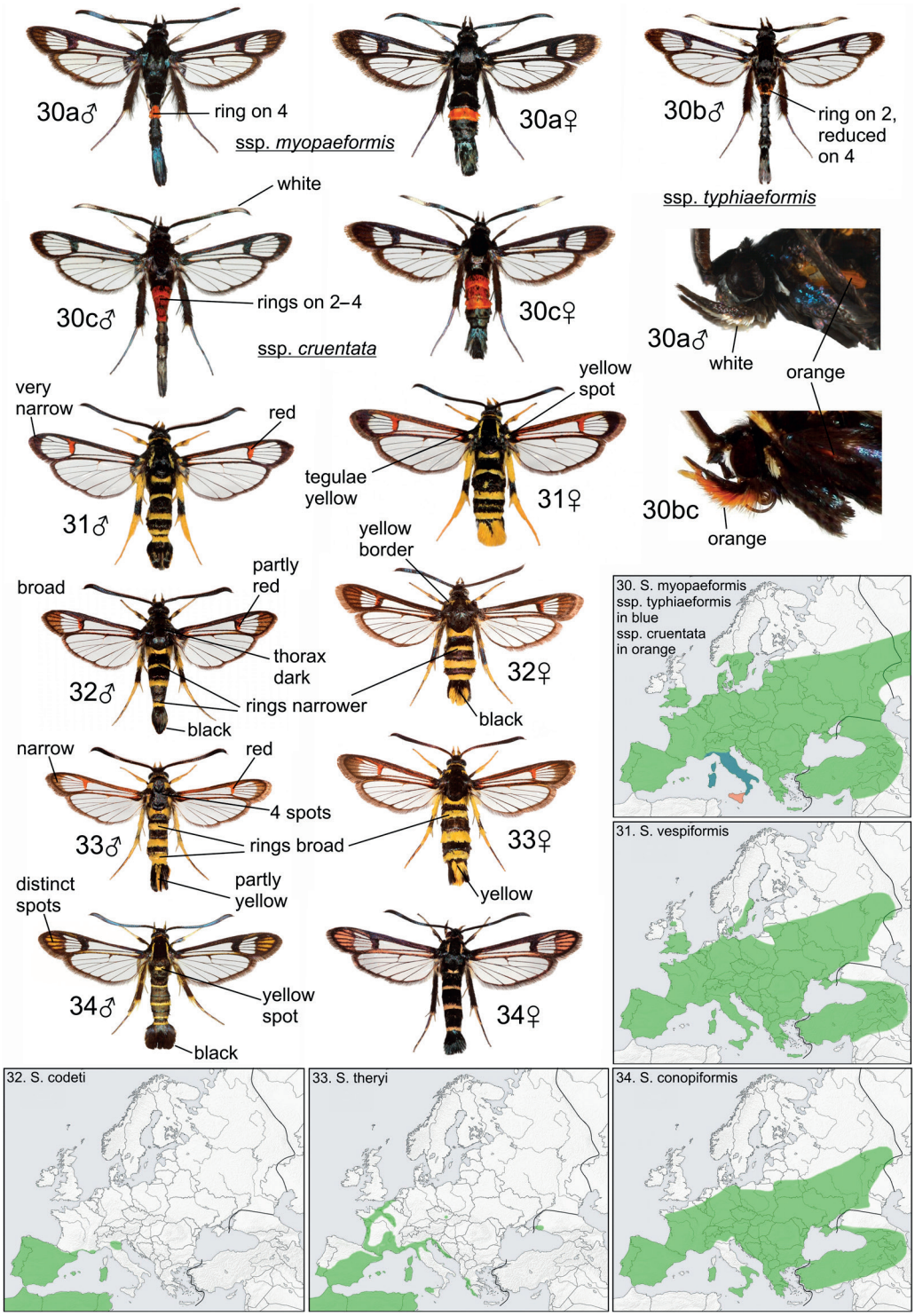

Plate VIII. 30 – *Synanthedon myopaeformis*, a – ssp. *myopaeformis*, b – ssp. *typhiaeformis*, c – ssp. *cruentata*, 31 – *S. vespiformis*, 32 – *S. codeti*, 33 – *S. theryi*, 34 – *S. conopiformis*

A group of 5 closely related species for which the subgenus *Tipulia* Králíček & Povolný, 1977 was established. / Skupina 5 blízkých druhů, pro kterou byl stanoven podrod *Tipulia*.

35. *S. geranii* Kallies, 1997

‡ 17–22 mm; metathorax with yellow spot; AA broad, with orange spots; ETA higher than broad; DS of fw broad; DS of hw large; AT with yellow to orange hairs.

B: *Geranium macrorrhizum*, 1; in aboveground rhizomes; V–VII.

D: Greece: Mt. Parnass and Mt. Timfi, eastern Turkey.

•C: Kallies (1997a), Bartsch (2003), T. Garrevoet (pers. comm.).

36. *S. loranthi* (Králíček, 1966)

‡ 14–22 mm; fore coxa yellow-edged to 2/3 (36a); AA dark; ETA wider than high; DS of hw small; yellow ring on 6th segment often missing; AT with yellow hairs.

B: *Viscum album* agg., *V. cruciatum*, *Loranthus europaeus*, 1 (2); beneath bark and in wood; V–VIII.

D: European.

•C: Bettag & Bläsius (2002), Predovnik (2014), Wiesmair & Eckelt (2016), Morawietz et al. (2019), Bator (2020), Garrevoet (2020), Meert & Goosens (2024), Hirschi (2025). *Synanthedon cruciati* Bettag & Bläsius, 2002, described from Andalusia, has been established younger subjective synonym of *S. loranthi* here (syn. n.). / *Synanthedon cruciati* popsaný z Andalusie je zde stanoven mladším subjektivním synonymem *S. loranthi* (syn. n.).

37. *S. cephiformis* (Ochsenheimer, 1808)

‡ 16–24 mm; fore coxa yellow-edged along its entire length (37a); ETA square or narrower; DS of hw large; AT with yellow hairs.

B: *Abies alba*, *A. borisii-regis*, *A. cephalonica*, 1 (2); tumours caused by *Melampsorella caryophyllacearum* (37b); VI–VIII.

D: European, partly disjunct.

•C: Predovnik (2014). The Greek specimens from *Abies cephalonica* and *A. borisii-regis* with large ETA could be confused with *S. loranthi* (and vice versa). / Řecké exempláře z *Abies cephalonica* a *A. borisii-regis* s velkým ETA jsou snadno zaměnitelné s *S. loranthi* (a obráceně).

38. *S. spuleri* (Fuchs, 1908)

‡ 14–24 mm; metathorax without yellow spot; ETA approximately square, outer margin convex; AA dark, without distinct yellow spots; AT black (yellow hairs exceptionally).

B: *Abies*, *Acer*, *Betula*, *Carpinus*, *Corylus*, *Diospyros*, *Fagus*, *Juniperus communis* (in tumours by *Gymnosporangium clavariiforme*), *Picea*, *Populus*, *Prunus*, *Quercus*, *Salix*, *Ulmus*, 1(2); sickly parts of trunks and branches; V–VIII.

D: W Palaearctic.

•C: Predovnik (2014), Goossens & Garrevoet (2019), Meert et al. (2019), Morawietz et al. (2019).

39. *S. tipuliformis* (Clerck, 1759)

‡ 11–21 mm; metathorax without yellow spot; ETA higher than wide, outer margin straight; AA with distinct spots; AT black.

B: *Ribes*, *Euonymus*, (*Corylus ?*, *Asimina*), 1; in the pith of twigs (39a); V–VIII.

D: W Palaearctic (autochthonous), introduced into more parts of the world.

•C: Kollár & Bakay (2015).

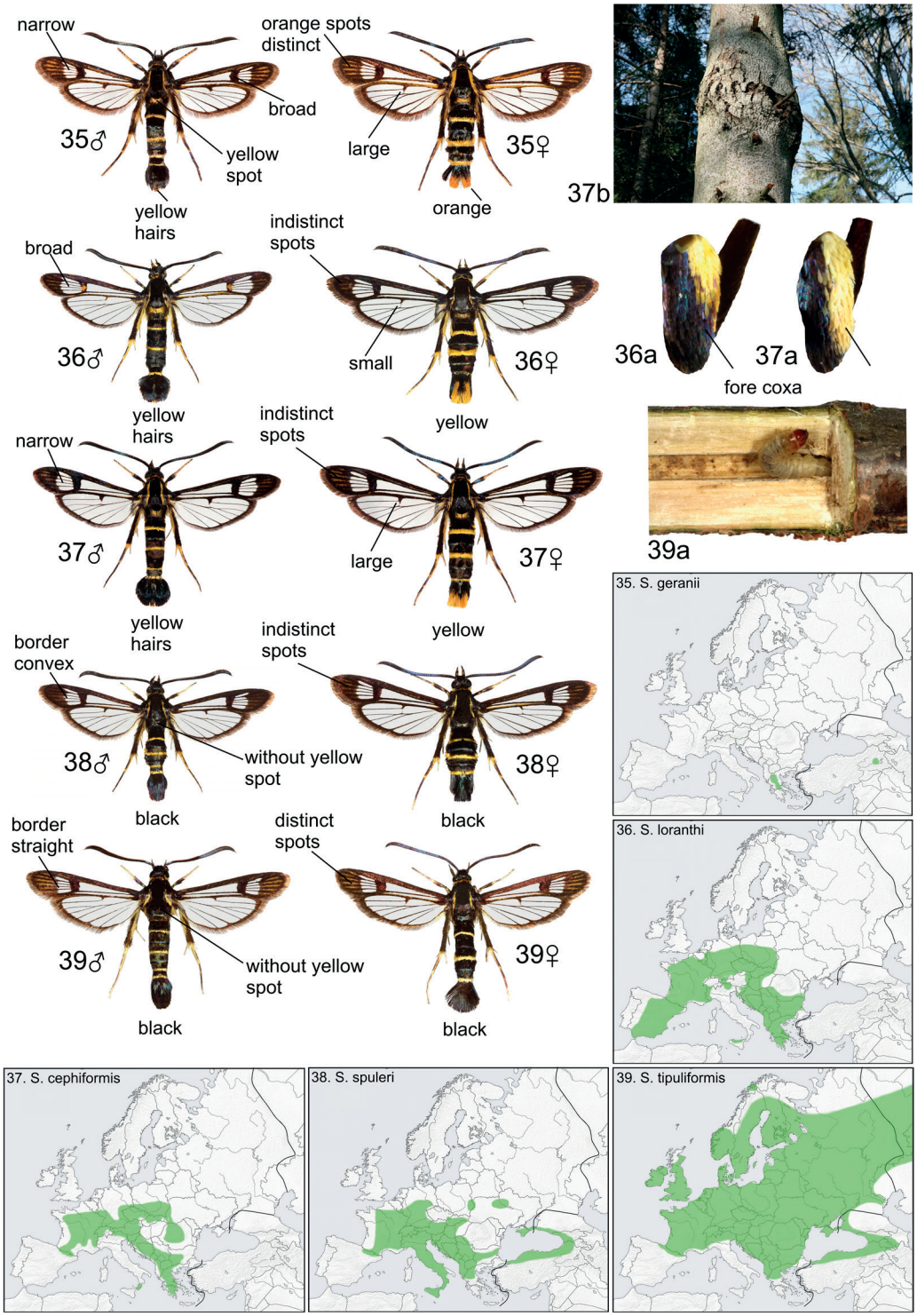

Plate IX. 35 – *Synanthedon geranii*, 36 – *S. loranthi*, a – fore coxa, 37 – *S. cephiformis*, a – fore coxa, b – tumour by *Melampsorella caryophyllacearum* on *Abies alba*, 38 – *S. spuleri*, 39 – *S. tipuliformis*, a – larva in the twig of *Ribes*

Bembecia Hübner, [1819]

Proboscis reduced; DS of fw partly orange or yellow; often yellow scapular spot at fw base; larva in the roots of *Fabaceae*; 27 species in Europe, divided into 4 species groups according to the structure of genitalia. / Sosák redukovaný; DS přkř částečně oranžová nebo žlutá; často skapulární skvrna na bázi přkř; housenky v kořenech *Fabaceae*; v Evropě 27 druhů, rozdělených do 4 druhových skupin podle stavby genitálií.

uroceriformis* group** / **skupina *uroceriformis – crista sacculi straight; gnathos double (41a) / crista sacculi rovná, gnathos dvojitý (41a).

40. *B. flavida* (Oberthür, 1890)

⁑ 11–20 mm; antennae ochreous with black apex in female; AA narrow, yellow, without dark veins; ETA round, broad.

B: *Medicago suffruticosa*, *Ononis natrix*, *O. spinosa*, 1; VI, VII.

D: N African-Sicilian.

41. *B. uroceriformis* (Treitschke, 1834)

⁑ 16–26 mm; antennae with white section before apex in female; ETA small, round, sharply separated from AA; AA broad, with dark veins in male, distinctly yellow in female.

B: *Calicotome*, *Chamaecytisus*, *Corothamnus*, *Cytisus*, *Genista*, *Hippocrepis emerus*, *Spartium*, *Ulex*, 2; VI–VIII.

D: Holomediterranean.

42. *B. himmighoffeni* (Staudinger, 1866)

⁑ 10–23 mm; antennae often with white scales before apex in female; ETA small, narrow, indistinctly separated from AA; female often with broad rings on all segments.

B: *Coronilla minima*, *Lotus corniculatus*, *Ononis natrix*, *O. spinosa*, 1; VI–VIII.

D: W Mediterranean.

•C: Predovnik (2005).

43. *B. hymenopteriformis* (Bellier, 1860)

⁑ 15–22 mm; overall coloration gray-brown in male, black in female; transparent areas very small, may be completely absent in female; rings narrow, white.

B: *Anthyllis vulneraria*, *Lotus*, 1; V–IX(X) or (V)VI, VII (larval aestivation) VIII–X.

D: W Mediterranean.

ichneumoniformis* group** / **skupina *ichneumoniformis – crista sacculi straight; gnathos simple with upper wings (51a, 52a) / crista sacculi rovná; gnathos jednoduchý s horními křídly (51a, 52a).

44. *B. lomatiaeformis* (Lederer, 1853)

⁑ 28–35 mm; a conspicuously large and robust species, unmistakable in Europe.

B: *Astragalus angustifolius*, *Astragalus* sp., 2; in root, pupation in a tube outside the root (44a); VI–VIII.

D: E Mediterranean, in Europe only Greece – Timfi, Timfristos, Chelmos and Taygetos Mts.

•C: D. Bartsch, F. Pühringer (pers. comm.).

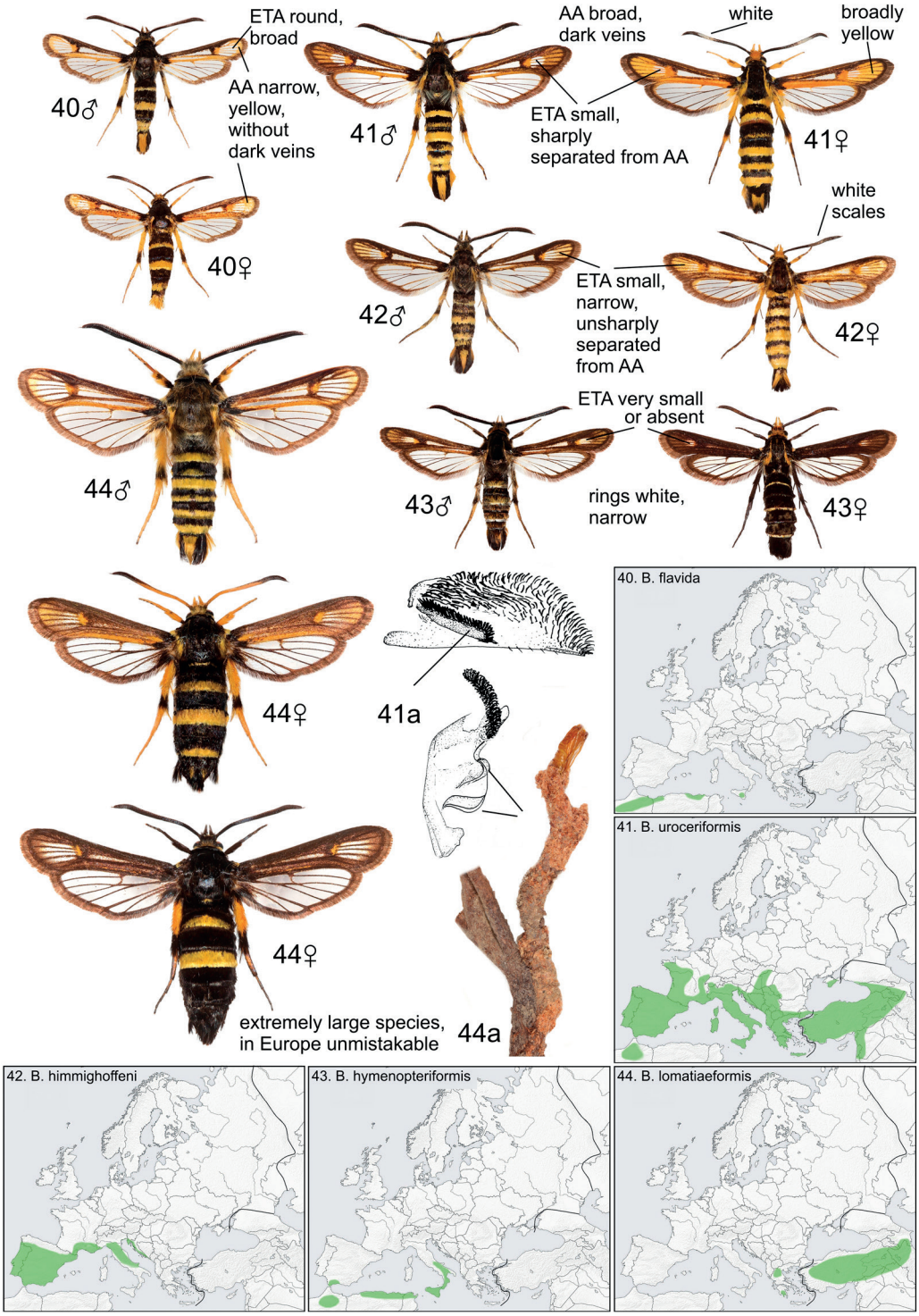

Plate X. 40 – *Bembecia flavida*, 41 – *B. uroceriformis*, a – valva and tegumen-uncus complex, 42 – *B. himmighoffeni*, 43 – *B. hymenopteriformis*, 44 – *B. lomatiaeformis*, a – exit tube on *Astragalus angustifolius*

Five, not always closely related species known from SE edges of Europe, their ranges may extend further east. They are unmistakable among European species. / Pět, nikoli vždy blízce příbuzných druhů, známých z JV okrajů Evropy, jejich areály mohou zasahovat dál na východ. Mezi evropskými druhy jsou nezaměnitelné.

45. ***B. sareptana*** (Bartel, 1912)

⁑ 16–25 mm; antennae black; red parts on wings; narrow yellow rings; AT black, with individual orange hairs in female.

B: *Oxytropis floribunda*, 1; V–VII.

D: SE European Russia, W Kazakhstan, W Siberia (Chelyabinsk region).

•C: Kallies & Zolotukhin (2000), Gorbunov (2020).

46. ***B. pallasi*** Gorbunov, 2020

⁑ 18–21 mm; similar to *B. sareptana*; antennae black; red parts on wings; male abdomen without rings, female with narrow white rings on the 2nd and 4th segments; AT black, orange laterally.

B: *Astragalus longipetalus*, (*A. wolgensis*), 1; V, VI.

D: SE European Russia, NW Kazakhstan.

•C: Gorbunov (2020).

47. ***B. volgensis*** Gorbunov, 1995

⁑ 13–18 mm; antennae black with yellowish scales; overall coloration light yellowish gray; AA light yellow, indistinctly separated from ETA.

B: ?; VI–VIII.

D: SE European Russia, Ulyanovsk and Rostov districts.

•C: Kallies & Zolotukhin (2000).

48. ***B. crimeana*** Gorbunov & Efetov, 2018

⁑ 19–21 mm; very similar to *B. volgensis*, overall more black and white compared to the yellowish-gray *B. volgensis*; antennae black.

B: ?; VII.

D: Crimea.

•C: Gorbunov & Efetov (2018); the relationship to *B. volgensis* is unclear. / Vztah k *B. volgensis* není jasný.

49. ***B. rossica*** Gorbunov, 2019

⁑ 23–28 mm; antennae partially orange; rings on abdomen occupy almost entire or entire segments, yellow in male, orange in female.

B: *Astragalus vulpinus*, 1; VIII, IX.

D: SE European Russia, Astrakhan.

•C: Gorbunov (2019b).

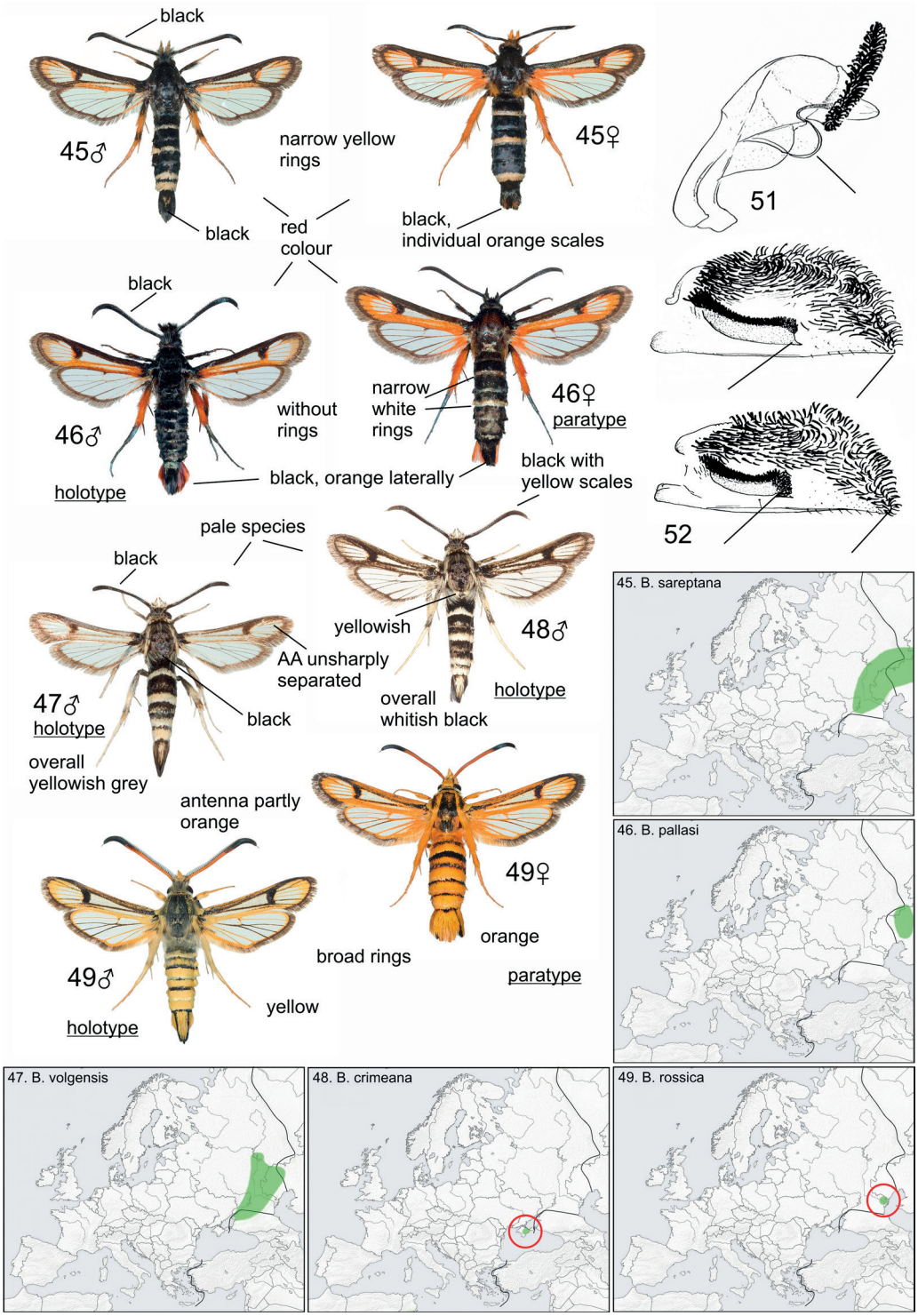

Plate XI. 45 – *Bembecia sareptana*, 46 – *B. pallasi*, 47 – *B. volgensis*, 48 – *B. crimeana*, 49 – *B. rossica*, 51 – *B. ichneumoniformis*, valva and tegumen-uncus complex, 52 – *B. albanensis*, valva

50. ***B. abromeiti*** Kallies & Riefenstahl, 2000

⁑ 15–28 mm; tegulae bordered with orange; ETA very broad; AA absent; PTA extending to Cu2 (typical for the genus *Synanthedon*); DS of fw black, with only a few orange scales; rings on abdomen orange.

B: *Astragalus balearicus*, *Lotus cytisoides*, 1; V–VII.

D: Mallorca.

•C: Kallies & Riefenstahl (2000).

51. ***B. ichneumoniformis*** ([Denis & Schiffermüller], 1775)

⁑ 12–29 mm; ETA usually large, distinctly wider than AA; all rings equally wide, or the ring on the 5th segment narrower or absent; AT usually yellow in female, with short black hairs in the middle and on the sides; valva and tegumen-uncus complex 51a, Plate XI.

B: *Anthyllis vulneraria*, *Dorycnium*, *Hippocrepis*, *Lotus*, (*Bituminaria bituminosa*, *Lupinus polyphyllus*), 1–2; VI–IX(X).

D: W Palaearctic.

•C: Gorbunov & Efetov (2025 c). Genetically very heterogeneous species requiring further investigations (F. Pühringer, pers. comm.). / Geneticky velmi heterogenní druh vyžadující další studium (F. Pühringer, pers. comm.).

The following 3 taxa (together with *B. handiensis* Rämisch, 1997 from Canary Islands and southern Morocco, and another, not yet described species from Sardinia and Corsica) are very close, indistinguishable by external characters and with minor differences in the genitalia; they are only marginally sympatric. / Následující 3 taxony (společně s *B. handiensis* z Kanárských ostrovů a jižního Maroka a dalším, dosud nepopsaným druhem ze Sardinie a Korziky) jsou velmi blízké, nerozlišitelné podle vnějších znaků, s drobnými rozdíly na genitáliích; jen okrajově se vyskytují sympatricky.

52. ***B. albanensis*** (Rebel, 1918)

⁑ 14–23 mm; antennae black or partially orange in female; ETA small, usually narrower than AA; all abdominal segments with yellow rings, or ring on 5th segment narrower; ring width variable; AT yellow, with long black hairs on sides in female; ssp. *garganica* Bertaccini & Fiumi, 2002 (52b): smaller and overall darker; cf. valva 51 and 52, Plate XI.

B: *Ononis spinosa*, *O. repens*, *Bituminaria bituminosa*, 1 (2); VI–IX.

D: W Palaearctic (Pontomediterranean), ssp. *garganica*: S Italy, Sicily, Dalmatia and North Macedonia (F. Pühringer, pers. comm.).

53. ***B. sirphiformis*** (Lucas, 1849)

⁑ 14–23 mm; → *B. albanensis*.

B: *Hedysarum coronarium*, (*Bituminaria bituminosa*, *Lotus*, *Ononis spinosa*), 1 (2); VI–IX.

D: Sicily, Malta, Algeria, Tunesia.

•C: Bettag & Bläsius (1999). Concerning specimens from Corsica, Sardinia, and Morocco, see Bartsch (2012). / Pokud jde o jedince z Korziky, Sardínie a Maroka, viz Bartsch (2012).

54. ***B. psoraleae*** Bartsch & Bettag, 1997

⁑ 14–23 mm; → *B. albanensis*.

B: *Bituminaria bituminosa*, 1 (2); VI–IX.

D: Iberian Peninsula, S France, NW Italy.

•C: Bartsch & Bettag (1997), Bettag & Bläsius (1999), Bartsch (2012).

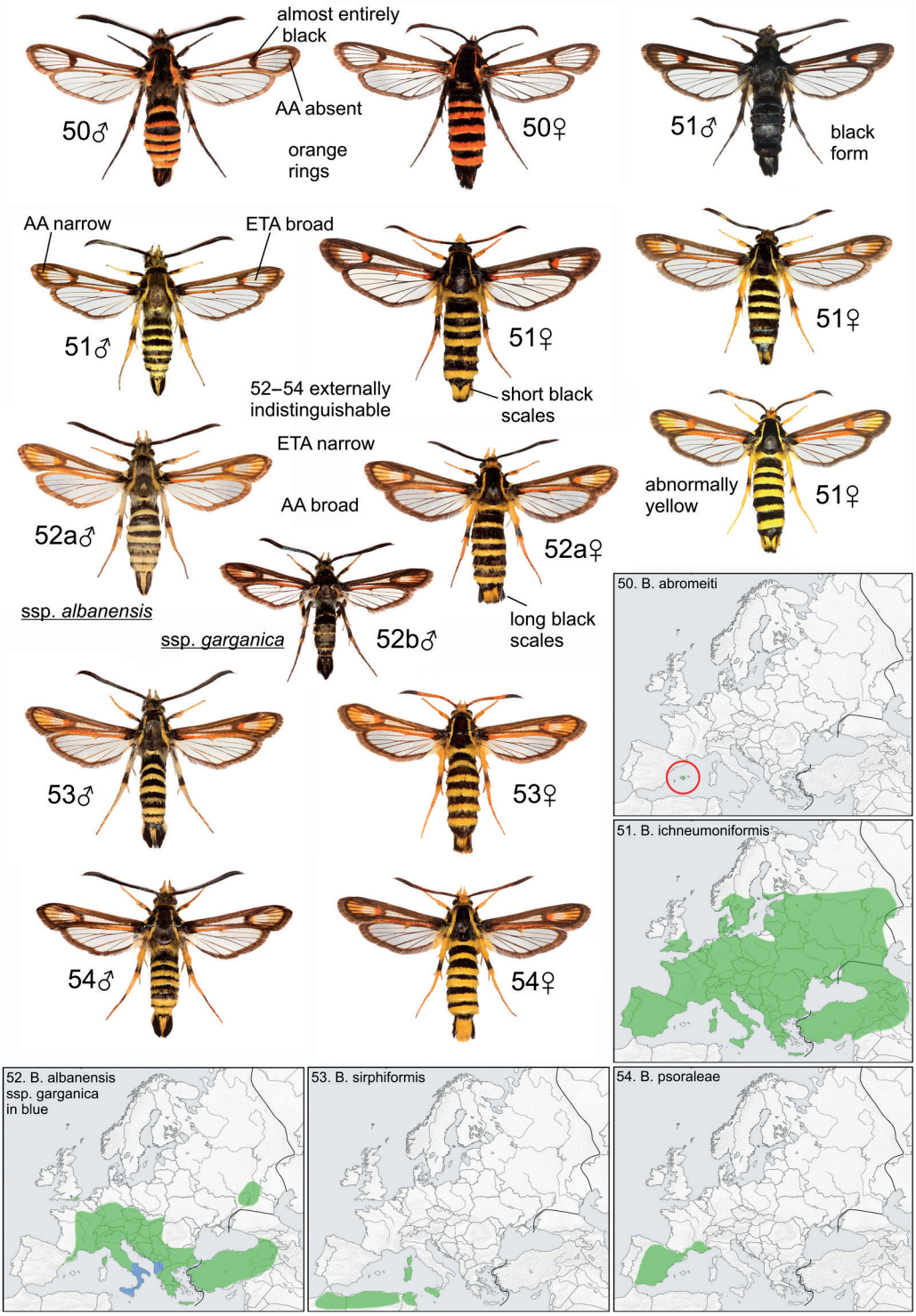

Plate XII. 50 – *Bembecia abromeiti*, 51 – *B. ichneumoniformis*, 52 – *B. albanensis*, a – ssp. *albanensis*, b – ssp. *garganica*, 53 – *B. sirphiformis*, 54 – *B. psoraleae*

scopigera* group** / **skupina *scopigera – crista sacculi on valva divided; gnathos with lower wings (57a) / crista sacculi na valvě rozdvojená, gnathos se spodními křídly (57a).

55. *B. pavicevici* Toševski, 1989

⁑ 19–27 mm; antennae with ochreous or whitish part, more extensive in female; ETA small, rounded; AA broad; hind tibia black in distal part; ssp. *dobrovskyi* Špatenka, 1997 more robust, with reduced transparent areas (55b).

B: *Hippocrepis emerus*, 2; VI–VIII.

D: Balkan Peninsula, ssp. *dobrovskyi* in Peloponnes.

•C: Toševski (1992), Predovnik (2008b).

56. *B. fibigeri* Laštůvka & Laštůvka, 1994

⁑ 19–26 mm; antennae black in male, with a white spot before apex in female; ETA small, round, comparable in width to AA; DS of fw extensively orange; wide yellow rings.

B: *Ononis rotundifolia*, *O. fruticosa*, (*Melilotus* sp.), 1 (2); VII, VIII.

D: S France, NW, N and E Spain.

•C: Bąkowski & Fajfer (2019).

57. *B. scopigera* (Scopoli, 1763)

⁑ 17–27 mm; antennae black or partially ochreous before apex, more extensively in female; ETA large; AA narrow; legs distinctly orange; ring on the 3rd segment narrowed, often interrupted laterally; tegumen-uncus complex and valva 57a (cf. 51a, Plate XI).

B: *Onobrychis*, *Hedysarum candidum*, *H. grandiflorum*, 1 (2); VI–IX.

D: W Palaearctic.

•C: Gorbunov & Efetov (2018).

58. *B. priesneri* Kallies, Petersen & Riefenstahl, 1998

⁑ 18–23 mm; antennae black to largely orange, especially in female; ETA small, round or wider than high; AA wide; DS of fw almost entirely red in female; yellow ring on 3rd segment narrower in male, only yellow spot in female.

B: *Ononis* sp., 1; VIII, IX.

D: Anatolia, in Europe only Rhodes.

•C: Kallies et al. (1998).

59. *B. iberica* Špatenka, 1992

⁑ 12–24 mm; antennae black or largely orange, especially in female; ETA small, wider than high, narrower than AA; yellow rings alternately wide and narrow.

B: *Anthyllis vulneraria*, *Hippocrepis*, *Lotus*, 1; VI–VIII.

D: W Mediterranean.

•C: Bąkowski & Fajfer (2019). Szabóky (2023) presents this species as new to Hungary, which is highly improbable; the attached drawing somewhat resembles *B. uroceriformis*. / Szabóky (2023) uvádí tento druh jako nový pro Maďarsko, což je vysoce nepravděpodobné; připojená kresba poněkud připomíná *B. uroceriformis*.

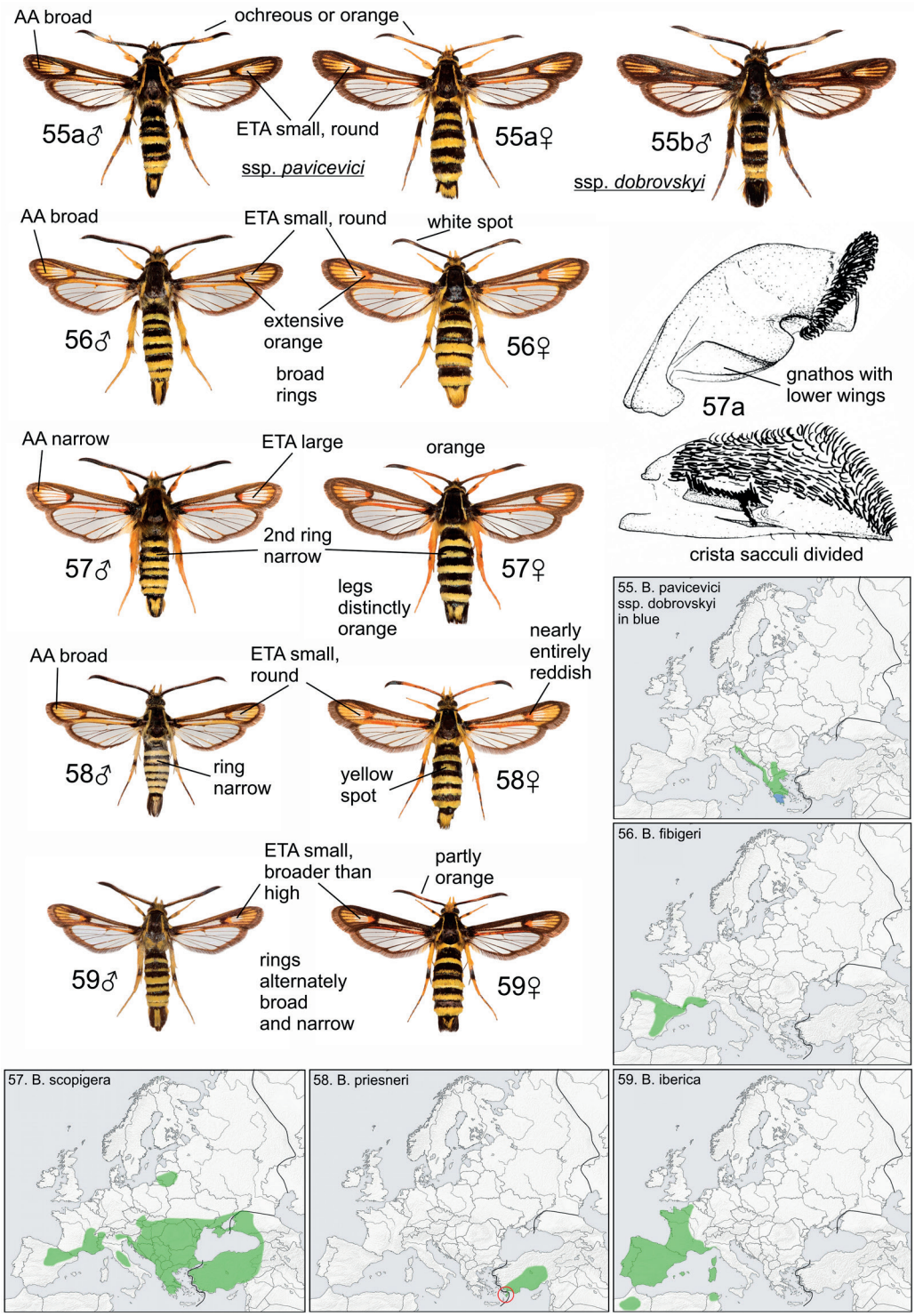

Plate XIII. 55 – *Bembecia pavicevici*, a – ssp. *pavicevici*, b – ssp. *dobrovskyi*, 56 – *B. fibigeri*, 57 – *B. scopigera*, a – valva and tegumen-uncus complex, 58 – *B. priesneri*, 59 – *B. iberica*

megillaeformis* group / skupina *megillaeformis – crista sacculi and gnathos complicated (62a) / crista sacculi a gnathos složité (62a).

60. *B. fokidensis* Toševski, 1991

⁑ 15–20 mm; small species; ETA round, small; AA broad, orange; hind tibia dark.

B: *Trifolium fragiferum*, 1; V–VII.

D: Greece, Bulgaria.

•C: Bulgaria: N. Ryrholm (pers. comm.).

61. *B. blanka* Špatenka, 2001

⁑ 12–19 mm; distinguishable from *B. fokidensis* only by barcoding.

B: *Trifolium uniflorum*, 1; V–VII.

D: Crete.

62. *B. megillaeformis* (Hübner, [1813])

⁑ 16–27 mm; ETA large, round; AA narrow but distinct; segments 4–6 with rings on the underside in female (62u); AT black with rusty hairs; valva 62a.

B: *Genista tinctoria*, *Colutea arborescens*, (*Astragalus glycyphyllos*, *Chamaecytisus*, *Corothamnus*), 1 (2); VI–VIII.

D: W Palaearctic, scattered; disappearing.

63. *B. puella* Laštůvka, 1989

⁑ 15–24 mm; ETA considerably extensive; AA very narrow or absent; hind legs distinctly red in female; 4th segment with ring on underside and AT entirely black in female (63u).

B: *Astragalus*: *A. glycyphyllos*, *A. odoratus*, *A. sieversianus*, *A. sigmoideus*, *A. utriger*, 1 (2); VI–VIII.

D: Pontomediterranean.

•C: Gorbunov & Efetov (2016).

64. *B. eversmanni* Gorbunov, 2024

⁑ 13–23 mm; very similar to *B. puella*, but distinctly lighter.

B: *Astragalus*: *A. albicaulis*, *A. rupifragus*, *A. varius*, *A. vulpinus*, *A. zingeri*, 1; VI–VIII.

D: SE European Russia, Crimea.

•C: Gorbunov et al. (2025).

65. *B. astragali* (Joannis, 1909)

⁑ 10–28 mm; antennae orange with black apex in female; ETA round; AA broad, orange; hind tibia distinctly hairy; ring on 5th segment narrow or almost absent.

B: *Astragalus*: *A. armatus*, *A. granatensis*, *A. incanus*, *A. monspessulanus*, *Colutea*, *Erophaca baetica*, 1 (2); VI–VIII.

D: W Mediterranean.

•C: Bartsch (2012).

66. *B. sanguinolenta* (Lederer, 1853)

⁑ 21–33 mm; fw without transparent areas, reddish brown; abdomen without rings.

B: *Astragalus*: *A. dipsaceus*, *A. monspessulanus*, *A. pinetorum*, *A. ponticus*, *Colutea arborescens*, 2; VI–VIII.

D: E Mediterranean.

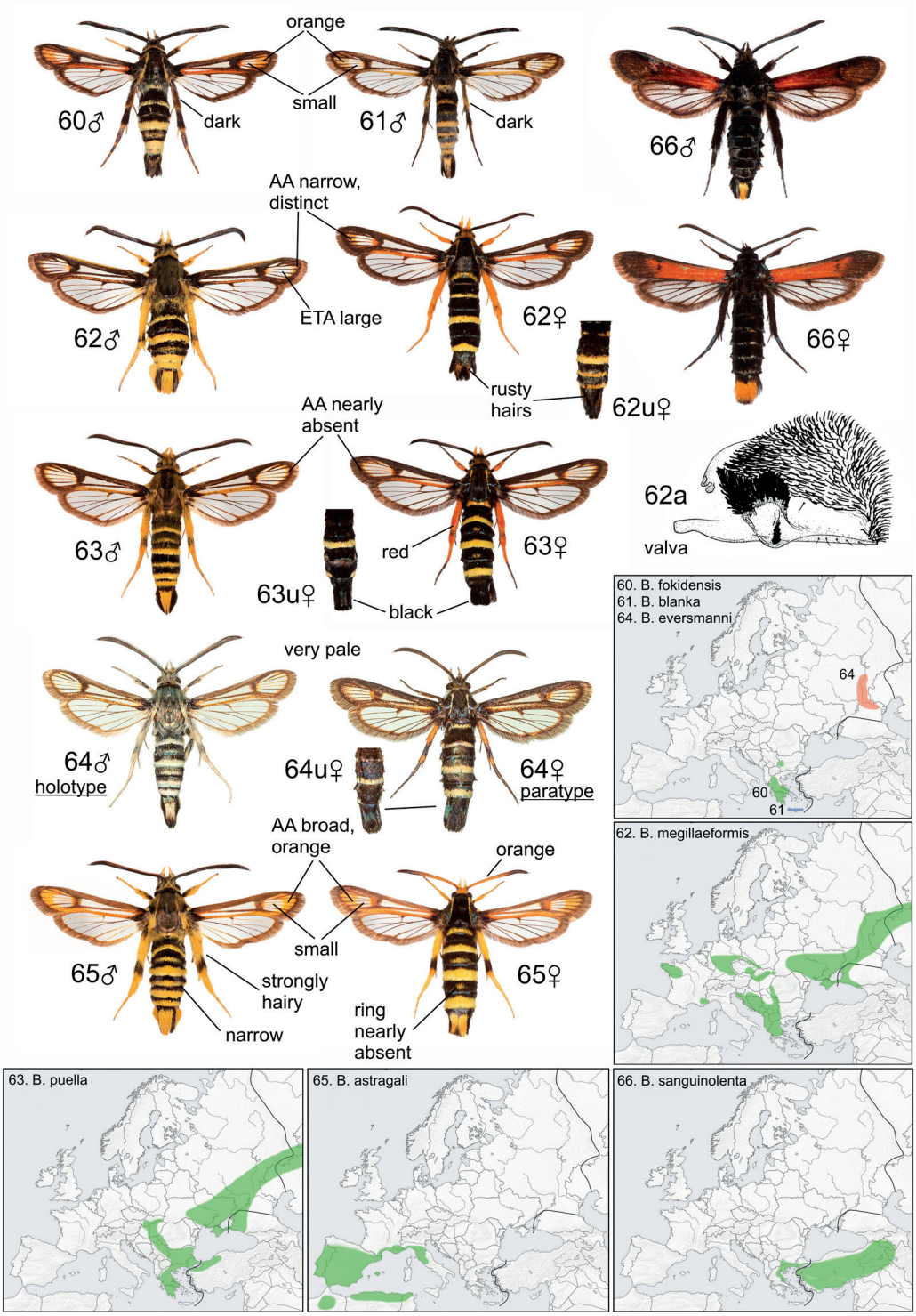

Plate XIV. 60 – *Bembecia fokidensis*, 61 – *B. blanka*, 62 – *B. megillaeformis*, a – valva, 63 – *B. puella*, 64 – *B. eversmanni*, 65 – *B. astragali*, u – abdomen underside, female

Pyropteron Newman, 1832

Antennae ventrally dark; proboscis present; crista sacculi usually bent distally; aedeagus with small sclerites in apical part; caterpillar in the root of herbs; 18 species in Europe, which can be classified into two subgenera, *Pyropteron* s. str. (species 67–71) and *Synansphecia* Capuşe, 1973 (other species), with a larger number of differently delimited species groups; for more details see Bartsch et al. (2021). / Tykadla ventrálně tmavá; sosák přítomen; crista sacculi distálně obvykle prohnutá; aedeagus v apikální části s drobnými sklerity; housenka v kořeni bylin; v Evropě 18 druhů, které je možné řadit do dvou podrodů, *Pyropteron* s. str. (druhy 67–71) a *Synansphecia* (ostatní druhy) s větším počtem různě vyhraněných skupin; blíže Bartsch et al. (2021).

67. *P. chrysidiformis* (Esper, 1782)

⁑ 17–26 mm; highly variable; scapular spot usually present in the nominotypical ssp. (67a) and 2nd segment without ring; in ssp. *sicula* (67b), scapular spot reduced or absent, DS of fw entirely or almost entirely red from below and ring also on 2nd segment.

B: *Rumex*: *R. conglomeratus*, *R. crispus*, *R. obtusifolius*, *R. pulcher*, etc., 1; V–VIII.

D: Atlantomediterranean.

•C: North of Rome, individuals with characters of the typical subspecies predominate, but according to barcoding, they belong to ssp. *sicula* Le Cerf, 1922 up to Istria. / Severně od Říma převládají jedinci se znaky typického poddruhu, ale až po Istrii patří podle barcodingu k ssp. *sicula*.

68. *P. minianiformis* (Freyer, 1843)

⁑ 15–24 mm; labial palps orange in female; tegulae and abdomen with orange hairs; rings on abdomen yellow.

B: *Rumex*: *R. conglomeratus*, *R. crispus*, *R. maritimus*, *R. pulcher*, etc., 1; V–VIII.

D: E Mediterranean.

•C: In Europe in nominotypical ssp. / v Evropě nominotypická ssp. (Bartsch et al. 2021).

69. *P. nigrobarbata* (Rebel, 1916)

⁑ 12–17 mm; smaller than previous species; labial palps with black hairs in female; thorax almost black, with no or minimal orange hairs.

B: *Rumex*: *R. acetosella*, *R. pulcher*, 1; V–VIII.

D: Crete.

•C: Bartsch et al. (2021).

70. *P. doryliformis* (Ochsenheimer, 1808)

⁑ 15–26 mm; antennae brown, mostly with ochreous part; AA without distinct spots; hind tarsus reddish in female; wings and abdomen covered to varying degrees with ochreous (male) or red (female) scales.

B: *Rumex*: *R. conglomeratus*, *R. maritimus*, *R. pulcher*, *R. stenophyllus*, etc., 1; V–VII.

D: W Mediterranean.

•C: Bartsch et al. (2006).

71. *P. icteropus* (Zeller, 1847)

⁑ 15–26 mm; AA without distinct spots; hind tarsus black in female; somewhat smaller and slimmer than the previous species, overall more colorful with a greater proportion of orange and red scales.

B: *Rumex*: *R. conglomeratus*, *R. crispus*, *R. maritimus*, *R. pulcher*, etc., 1; V–VII.

D: Sicily.

•C: Bartsch et al. (2006, 2021).

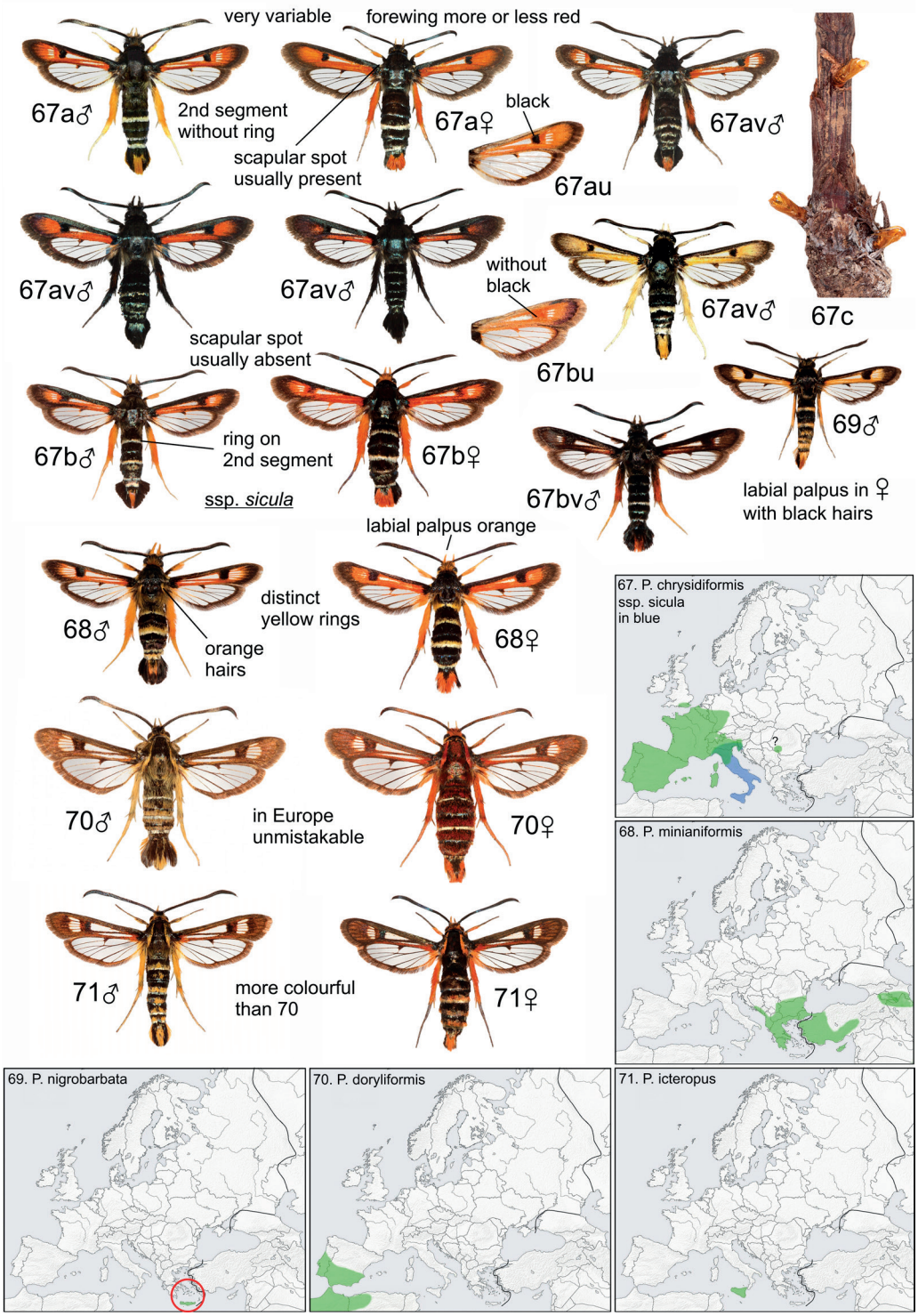

Plate XV. 67 – *Pyropteron chrysidiformis*, a – ssp. *chrysidiformis*, b – ssp. *sicula*, u – underside, v – variability, c – exuviae in *Rumex crispus*, 68 – *P. minianiformis*, 69 – *P. nigrobarbata*, 70 – *P. doryliformis*, 71 – *P. icteropus*

Group of 5 (72–76) difficult to distinguish species. / Skupina 5 (72–76) obtížně rozlišitelných druhů; pupae: Bąkowski & Piątek (2020).

72. ***P. meriaeformis*** (Boisduval, 1840)

⁑ 11–18 mm; very small species; ground coloration dark brown, with varying amounts of ochreous scales; ETA very small (3 cells), round; PTA very short in male, absent in female; ring on the 2nd segment often indistinct.

B: *Rumex*: *R. acetosella*, 1; V–VII.

D: Atlantomediterranean.

73. ***P. hispanica*** (Kallies, 1999)

⁑ 16–21 mm; ground coloration white-grayish black; ETA large (5 cells); PTA at least indicated in female.

B: *Rumex*: *R. scutatus*, *R. tingitanus*, 1; V–VII.

D: W Mediterranean.

•C: Kallies (1999).

74. ***P. koschwitzi*** (Špatenka, 1992)

⁑ 15–21 mm; ground coloration grayish brown; ETA high; PTA short or absent in female; ssp. *lusohispanica* Laštůvka & Laštůvka, 2007 (74b) more contrasting, black and white to black and yellow.

B: *Limonium catalaunicum*, *L. toletanum*, ssp. *lusohispanica*: *Armeria*, 1; IV–VII.

D: Iberian Peninsula, insular, ssp. *lusohispanica* in mountains (cf. Laštůvka & Laštůvka 2007).

•C: Taxon *lusohispanica* is evaluated here as a subspecies; its relationship to *P. koschwitzi* requires further investigations (cf. Bartsch et al. 2021). / Taxon *lusohispanica* je zde hodnocen jako ssp., jeho vztah k *P. koschwitzi* vyžaduje další studium (srv. Bartsch et al. 2021).

75. ***P. muscaeformis*** (Esper, 1783)

⁑ 13–19; ground coloration brown or yellowish brown; ETA large, round; PTA absent in female; DS of hw triangular, tapering towards M2.

B: *Armeria*: *A. maritima*, 1; V–VIII(IX).

D: European, insular.

•C: Kallies & Sobczyk (2001).

76. ***P. hellenicum*** Bartsch, Pühringer, Lingenhöle & Kallies, 2021

⁑ 15–20; AA without light scales between veins; no distinct dorsal spot line on abdomen.

B: *Armeria canescens*, 1; VI, VII.

D: Greece, Albania.

•C: Bartsch et al. (2021).

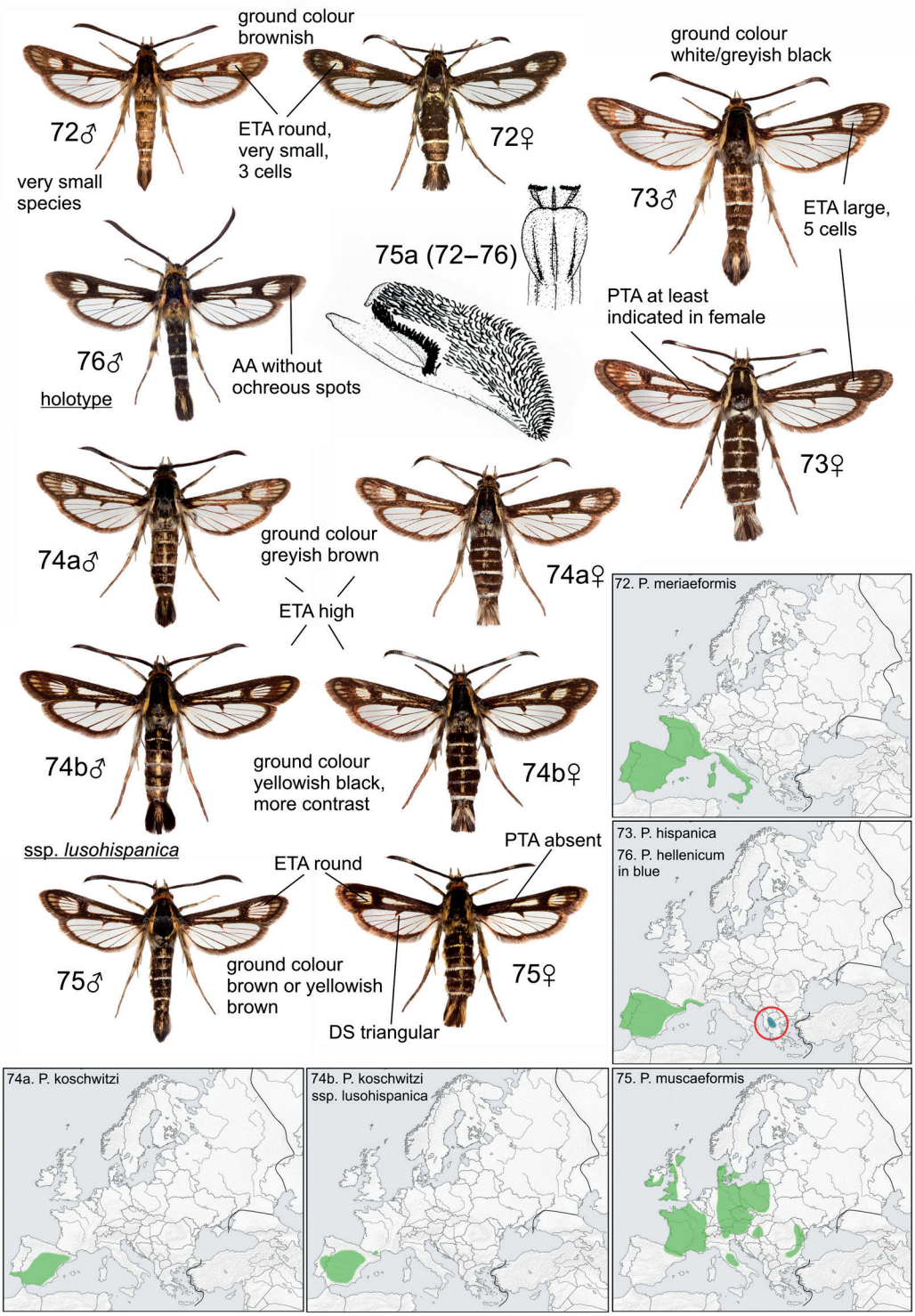

Plate XVI. 72 – *Pyropteron meriaeformis*, 73 – *P. hispanica*, 74 – *P. koschwitzi*, a – ssp. *koschwitzi*, b – ssp. *lusohispanica*, 75 – *P. muscaeformis*, a – valva and gnathos, 76 – *P. hellenicum*

77. *P. kautzi* (Reisser, 1930)

⁑ 16–22 mm; antennae black; eyes with orange-white border; tegulae, spots in AA and rings orange-white; abdomen black ventrally; overall "impression" anthracite shiny, black-yellow; valva and gnathos 77a, b.

B: *Erodium cheilanthifolium*, 3; VII, VIII.

D: Andalusia: Sierra Nevada.

•C: Pühringer & Pöll (2001a, 2004b, 2019), Bartsch et al. (2021).

78. *P. aistleitneri* (Špatenka, 1992)

⁑ 16–23 mm; antennae black in male, with white spot in female; eyes with white border; tegulae and spots in AA yellowish, abdominal rings white; abdomen black ventrally; overall "impression" anthracite shiny, black and white; very similar to *P. kautzi*.

B: *Erodium cheilanthifolium*, *E. glandulosum*, *E. saxatile*, 2; VI, VII.

D: mountains of the Iberian Peninsula, insular.

•C: Pühringer & Pöll (2001b, 2004a), González-Estébanez & Manceñido-González (2012), Bartsch et al. (2021), unpublished own record: prov. Lleida, St. Llorenc de Morunys, 2016.

79. *P. leucomelaena* (Zeller, 1847)

⁑ 9–18 mm; overall coloration dark brown-yellow; antennae black in male, with white spot in female; frons white; thorax with yellow spot laterally; ETA large, high in male; AA narrow; ETA small, narrow in female; usually white rings on the 4th and 6th segments; valva and gnathos 79a, b.

B: *Sanguisorba minor*, (*Geranium sanguineum*), 1; V–VIII.

D: Holomediterranean.

•C: From North Africa and southern Spain, the subspecies *blaesii* Bartsch, Pühringer, Lingenhöle & Kallies, 2021 was described (Bartsch et al. 2021). / Ze severní Afriky a jižního Španělska je popsána ssp. *blaesii*.

80. *P. affinis* (Staudinger, 1856)

⁑ 11–20 mm; overall coloration silvery gray-white; antennae black, without white spot in female; eyes with white border; ETA small, wider than high; white rings on the 4th and 6th segments; gnathos 80b.

B: *Helianthemum*, *Fumana*, 1; V–VII.

D: W Palaearctic.

81. *P. triannuliformis* (Freyer, 1843)

⁑ 11–26 mm; overall coloration brownish-yellow; antennae black, with a white spot in female; eyes with white border; ETA oval or slightly higher; PTA at least indicated in female; DS of hw rectangular (cf. 75); white rings on segments 2, 4, 6; dorsal spot line; AT divided into 3 parts in male; gnathos 81b (cf. 75a).

B: *Rumex*: *R. acetosella*, *R. acetosa*, *R. conglomeratus*, *R. crispus*, *R. pulcher*, etc., *Geranium sanguineum*, 1; V–VIII.

D: W Palaearctic.

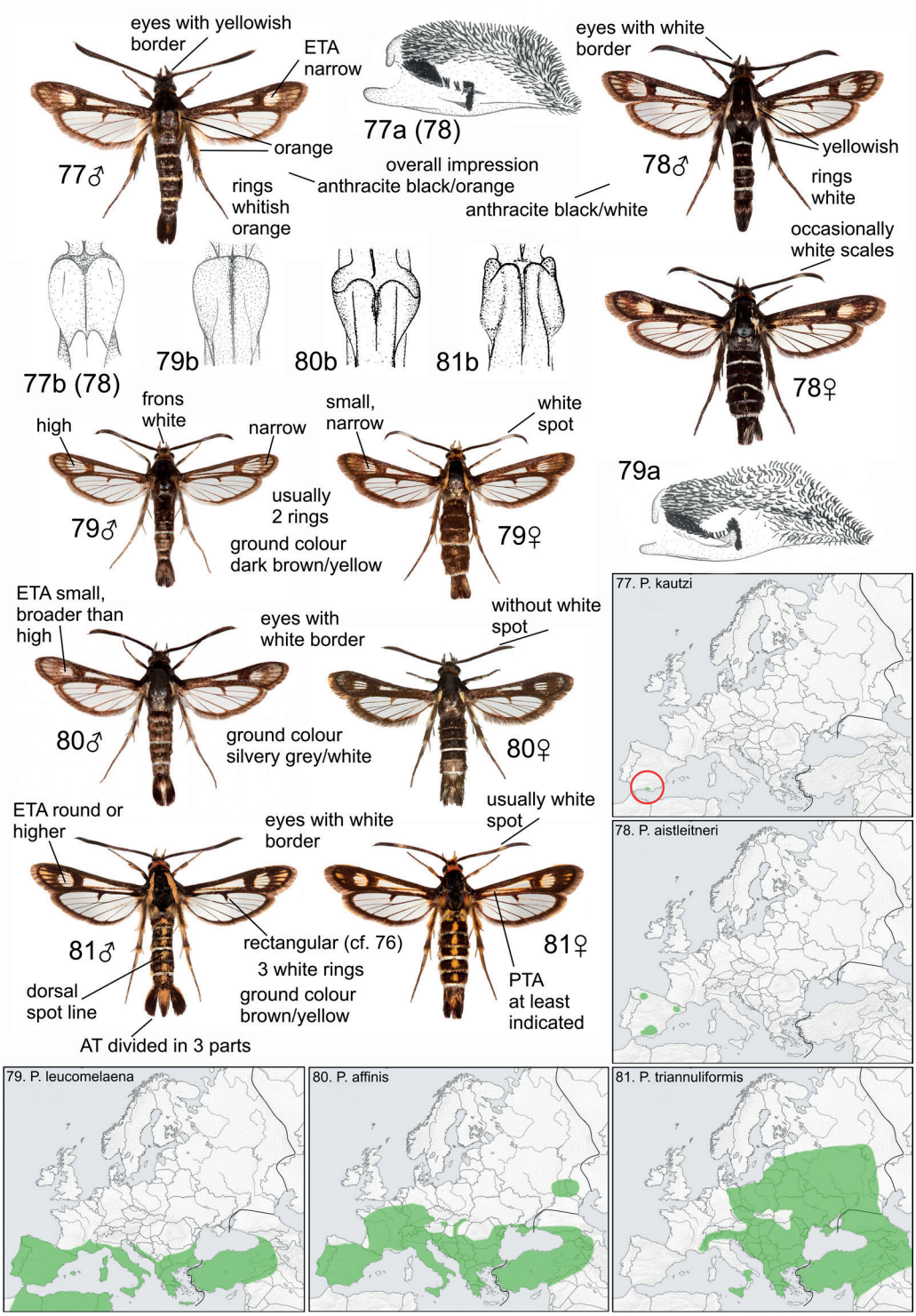

Plate XVII. 77 – *Pyropteron kautzi*, 78 – *P. aistleitneri*, 79 – *P. leucomelaena*, 80 – *P. affinis*, 81 – *P. triannuliformis*, a – valva, b – gnathos

82. ***P. cirgisa*** (Bartel, 1912)

⁑ 19–28 mm; robust species; eyes with white border or entire frons white; ETA very narrow; white rings on 2nd and 4th segments; dorsal spot line of varying prominence.

B: *Limonium*: *L. gmelini*, *L. iconicum*, *L. lilacinum*, 1; VI, VII.

D: Pontomediterranean-Caspian.

•C: Bartsch et al. (2021).

83. ***P. umbrifera*** (Staudinger, 1870)

⁑ 20–27 mm; overall brown, unmistakable species; frons brown; transparent areas very small; hw partially covered by scales; white ring on the 4th segment; dorsal spot line of varying prominence.

B: *Limonium brevipetiolatum*, 1; V–VII.

D: Greece: Corfu, western coast, western and eastern Peloponnes, Albania.

•C: Petersen & Bartsch (1998), Bartsch et al. (2021), Albania: T. Garrevoet (in prep.).

84. ***P. mannii*** (Lederer, 1853)

⁑ 11–18 mm; antennae black; frons yellow; ETA very narrow; hind tibia ochreous in male, orange in female; white rings on segments 2, 4, 6.

B: *Geranium rotundifolium*, 1; VI, VII.

D: E Mediterranean, known range very small.

Dipchasphecia Căpuşe, 1973

Antennae whitish or white-yellow outside; proboscis present; transparent areas covered with white scales; crista sacculi reduced to a short projection in middle of valva; aedeagus with one small cornutus; gnathos elongate, flat, without crista medialis (85a); larvae in roots of *Plumbaginaceae*; 1 species in Europe. / Tykadla vně bělavá nebo žlutavá; sosák přítomen; skelná pole překrytá průsvitnými šupinkami; crista sacculi v podobě výběžku uprostřed valvy; aedeagus s 1 skleritem; gnathos plochý, protáhlý, bez crista medialis (85a); housenky v kořenech rostlin čeledi *Plumbaginaceae*; v Evropě 1 druh.

85. ***D. lanipes*** (Lederer, 1863)

⁑ 12–23 mm; antennae whitish externally; eyes white bordered or frons white; transparent areas small, covered with whitish scales; PTA short or absent; white rings on segments 2, 4, 6.

B: *Goniolimon incanum*, 1; VI, VII.

D: E Mediterranean: SE Bulgaria.

•C: Pühringer in GBIF.org (2025), Pühringer (2025).

Chamaesphecia Spuler, 1910

Antennae usually yellow outside; valva 87a, 108b; aedeagus with 2 small cornuti; larvae in roots of herbaceous plants; 32 species in Europe. / Tykadla často vně žlutá; valva 87a, 108b; aedeagus na konci se 2 sklerity; housenka v kořeni bylin; v Evropě 32 druhů.

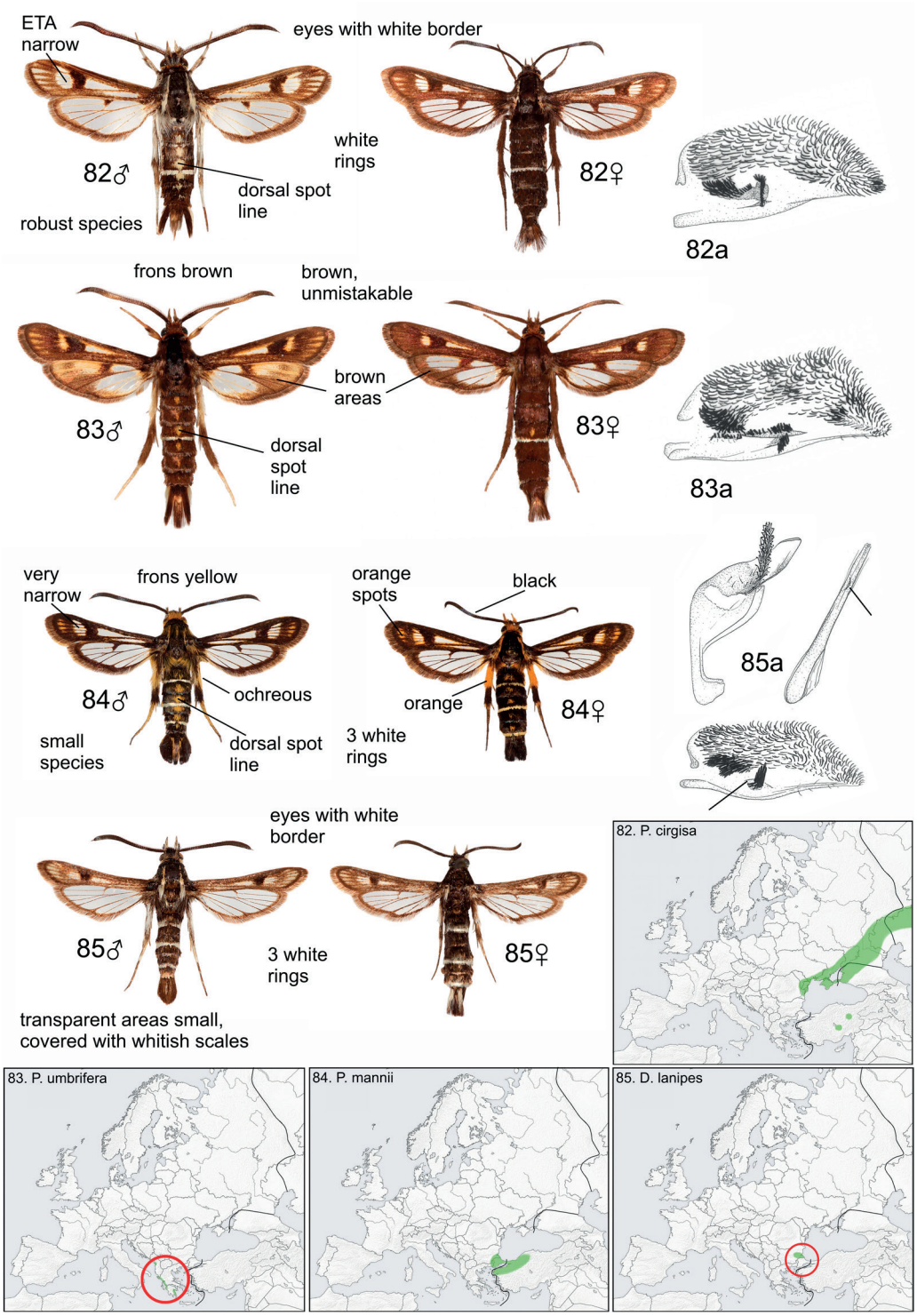

Plate XVIII. 82 – *Pyropteron cirgisa*, a – valva, 83 – *P. umbrifera*, a – valva, 84 – *P. mannii*, 85 – *Dipchasphecia lanipes*, a – valva, tegumen-uncus complex, aedeagus

Subgenus *Scopulosphecia* Laštůvka, 1990 – crista sacculi not pointed, scopula androconialis present (87a); larvae in *Lamiaceae*, one species in *Scrophulariaceae* / crista sacculi není špičatá, scopula androconialis přítomná (87a); housenky v kořenech hluchavkovitých (*Lamiaceae*), jeden druh krtičníkovité (*Scrophulariaceae*).

86. *C. mysiniformis* (Boisduval, 1840)

⁑ 11–24 mm; eyes with white border; ETA small, broad; dorsal spot line.

B: *Ballota hirsuta*, *Marrubium*, *Sideritis*, *Stachys*, 2; V–VIII.

D: W Mediterranean.

87. *C. anatolica* Schwingenschuss, 1938

⁑ 17–21 mm; antennae yellow outside; frons yellow; ETA round or oval; body and wings densely covered with ochreous-yellow scales; tegumen-uncus complex and valva 87a.

B: *Nepeta*: *N. nuda*, *N. parnassica*, *N. spruneri*, 2; VI, VII.

D: E Mediterranean.

•C: Petersen & Bartsch (1998).

88. *C. chalciformis* (Esper, [1804])

⁑ 12–22 mm; antennae and frons black; abdomen without rings.

B: *Origanum vulgare*, *Origanum* sp., *Thymus* sp., 1; V–VII.

D: Pontomediterranean – C Asiatic.

89. *C. schmidtiiformis* (Freyer, 1836)

⁑ 17–26 mm; antennae and frons black; narrow white ring on the 4th segment.

B: *Salvia*: *S. nutans*, *S. pratensis*, *S. sclarea*, *S. syriaca*, *S. verticillata*, 1; V, VI.

D: Pontomediterranean.

•C: Predovnik (2002), Gorbunov & Efetov (2025b).

90. *C. maurusia* Püngeler, 1912

⁑ 14–20 mm; antennae and frons black; ETA higher than wide; AA wide; rings on segments (2), 4, 6.

B: *Nepeta*: *N. apuleii*, *N. latifolia*, *N. nepetella*, *N. tuberosa*, 2; VI, VII.

D: W Mediterranean.

91. *C. aerifrons* (Zeller, 1847)

⁑ 12–19 mm; antennae black, yellow outside in ssp. *sardoa* (Staudinger, 1856); frons dark; thorax yellow below wings; ETA small, somewhat wider than high; in ssp. *sardoa* also a ring on the 2nd segment; variously pronounced dorsal spot line.

B: *Clinopodium nepeta*, *Hyssopus officinalis*, *Lavandula*, *Mentha*, *Nepeta*, *Origanum*, *Salvia*, *Satureja*, *Thymus*, 2; V–VII.

D: Atlantomediterranean; ssp. *sardoa* in Sardinia and Corsica.

•C: Predovnik (2002), Bartsch & Kallies (2008), Bartsch (2021), North Macedonia: F. Pühringer (pers. comm.).

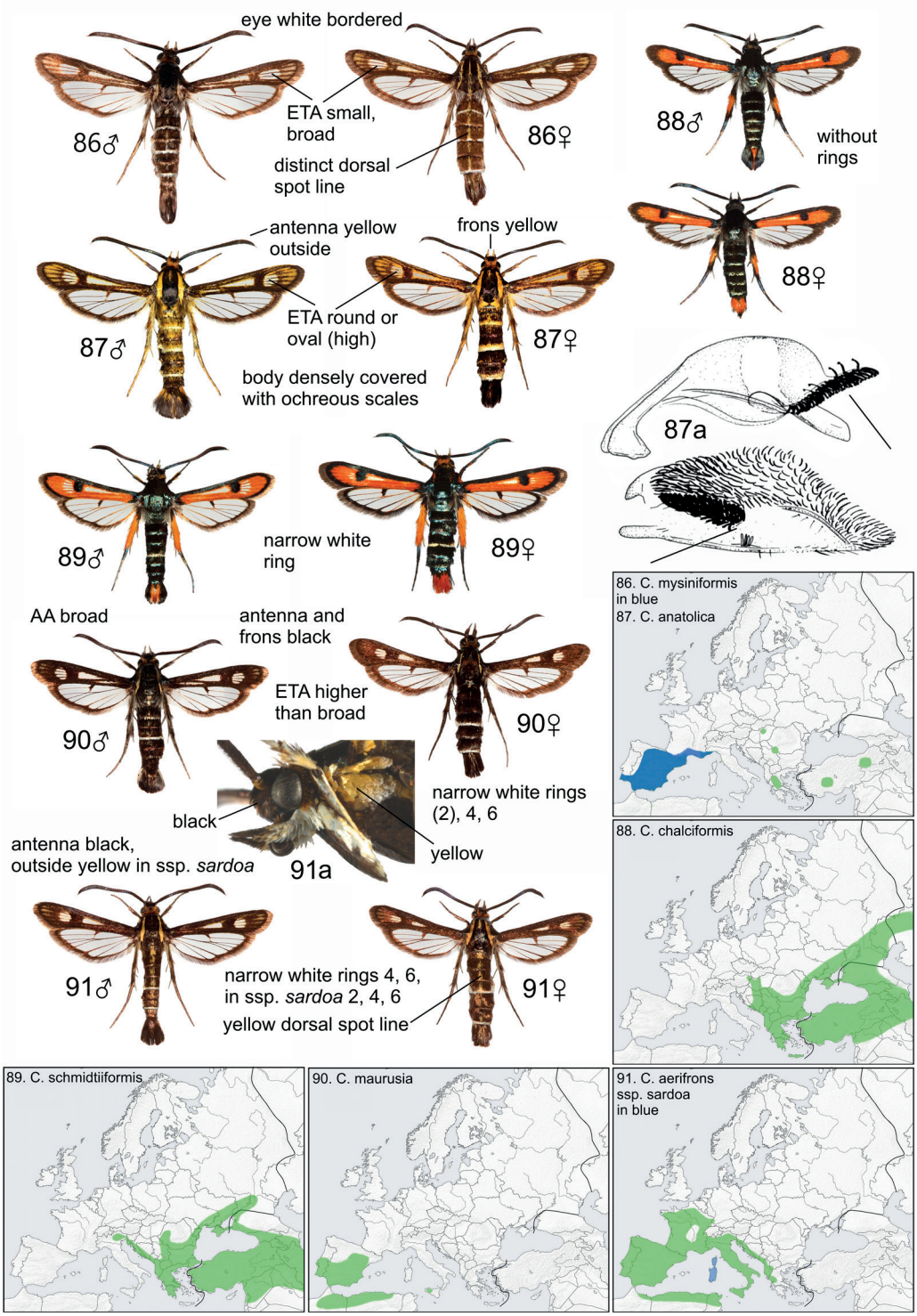

Plate XIX. 86 – *Chamaesphecia mysiniformis*, 87 – *C. anatolica*, a – valva and tegumen-uncus complex, 88 – *C. chalciformis*, 89 – *C. schmidtiiformis*, 90 – *C. maurusia*, 91 – *C. aerifrons*, a – head

92. ***C. alysoniformis*** (Herrich-Schäffer, 1846)

‡ 10–16 mm; metathorax with a large yellow spot; transparent areas very small, covered with yellowish scales; rings yellow.

B: *Mentha*, *Melissa officinalis*, *Micromeria myrtifolia*, 1; V–VII.

D: E Mediterranean.

•C: Petersen & Bartsch (1998), Bartsch (2004).

93. ***C. minoica*** Bartsch & Pühringer, 2005

‡ 10–16 mm; large yellow spot on the dorsal side of the front segments; rings whitish.

B: ?, 1; V–VII.

D: Crete.

•C: Bartsch & Pühringer (2005).

94. ***C. gorbunovi*** Špatenka, 1992

‡ 13–18 mm; ETA large and round in male, and small and slightly elongate in female; rings white or yellowish; male abdomen completely whitish ventrally.

B: *Scutellaria*: *S. karjaginii*, *S. orientalis*, *S. pinnatifida*, *S. rubicunda*, 1; VI, VII.

D: E Mediterranean.

•C: Bartsch et al. (2005). Previously reported from Europe as *C. albiventris* (Lederer, 1853) (cf. Laštůvka & Laštůvka 2001). / Dříve z Evropy uváděna jako *Ch. albiventris* (cf. Laštůvka & Laštůvka 2001).

95. ***C. osmiaeformis*** (Herrich-Schäffer, 1848)

‡ 14–22 mm; ground coloration brown; ETA narrow; narrow white ring on the 4th segment.

B: *Salvia*: *S. jaminiana*, *S. phlomoides*, *S. verbenaca*, 1; V–VII.

D: Corsica, Sardinia, Sicily, N Africa.

•C: Bella et al. (2019).

96. ***C. ramburi*** (Staudinger, 1866)

‡ 15–25 mm; ground coloration gray to grayish brown; ETA narrow (higher than wide); hind tibia whitish.

B: *Phlomis lychnitis*, *P. herba-venti*; 1; VI–VIII.

D: Spain, SE France.

97. ***C. doleriformis*** (Herrich-Schäffer, 1846)

‡ 12–22 mm; nominotypical ssp. (97a): ochreous brown; ETA oval; hind tibia strongly hairy, ochreous; ssp. *colpiformis* (Staudinger, 1856) (97b): brown, ETA rounded.

B: *Salvia*: *S. nemorosa*, *S. pratensis*, *S. sclarea*, *S. verbenaca*, 1–2; VI–VIII.

D: Adriatic-Pontomediterranean.

•C: Predovnik (2005).

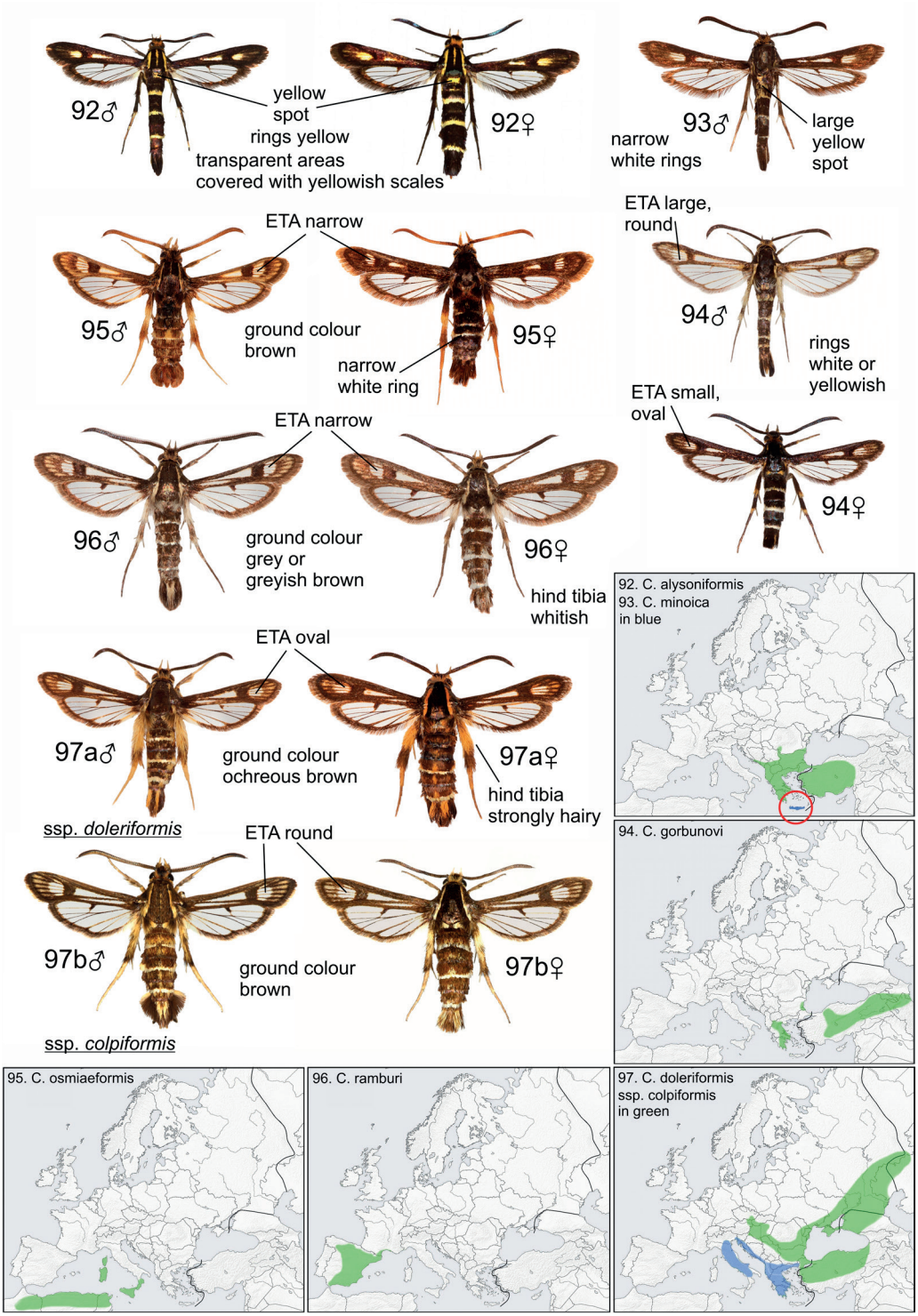

Plate XX. 92 – *Chamaesphecia alysoniformis*, 93 – *C. minoica*, 94 – *C. gorbunovi*, 95 – *C. osmiaeformis*, 96 – *C. ramburi*, 97 – *C. doleriformis*, a – ssp. *doleriformis*, b – ssp. *colpiformis*

A group of 5 (98–102) very difficult to distinguish species, reliable differentiation is possible by hostplant or barcoding; group characters (102a): antennae golden-yellow outside; eyes with white border; labial palpus white basally, yellow distally; scapular spot on forewing base; AA without distinct spots; abdomen with narrow white rings on 2nd, 4th and 6th (7th in male) segments and with some orange rings before them. / Skupina 5 (98–102) velmi obtížně odlišitelných druhů, spolehlivé rozlišení je možné podle hostitelské rostliny nebo barcodingu; skupinové znaky (102a): tykadla vně zlatožlutá; oči vpředu bíle lemované; labiální palpy bazálně bílé, distálně žluté; skapulární skvrna na bázi předního křídla; AA bez výraznějších světlých skvrnek; zadeček s úzkými bílými kroužky na článcích 2, 4, 6 (7) a různě širokými oranžovými kroužky před nimi.

98. ***C. annellata*** (Zeller, 1847)

⁑ 12–19 mm; fw narrower distally; ETA oval (broader than high).

B: *Ballota nigra*, 1 (2); VI–VIII.

D: Pontomediterranean.

•C: Morawietz (2022).

99. ***C. staudingeri*** (Failla-Tedaldi, 1890)

⁑ 12–18; ETA very small, round or slightly elongated; AA relatively narrow.

B: *Stachys germanica*, 1; V–VII.

D: Sicily, southern Italy, SW Balkans.

•C: Bella et al. (2017), Albania: T. Garrevoet (pers. comm.).

100. ***C. thracica*** Laštůvka, 1983

⁑ 15–21 mm; ETA round, very small in female; AA broad.

B: *Stachys thirkei*, *S. germanica*, 1; VI, VII.

D: Pontomediterranean.

101. ***C. efetovi*** Gorbunov, 2019

⁑ 16–21 mm; ETA round, somewhat smaller than in *C. dumonti*; almost indistinguishable from *C. thracica*.

B: *Marrubium peregrinum*, *M. vulgare*, 1; VI, VII.

D: Pontomediterranean-Caspian.

•C: Gorbunov (2019c), Efetov & Gorbunov (2021), Efetov et al. (2024, 2025), I. Toševski (pers. comm.).

102. ***C. dumonti*** Le Cerf, 1922

⁑ 13–21 mm; ETA large, round in male, and distinctly smaller in female.

B: *Stachys*: *S. recta*, *S. cretica*, *S. iberica*, *S. menthifolia*, *S. plumosa*, *S. spinulosa*, *S. thracica*, (1)2; VI–VIII.

D: Pontomediterranean-Caspian.

•C: Gorbunov (2019c), Bartsch (2021), Albania: F. Pühringer (pers. comm.).

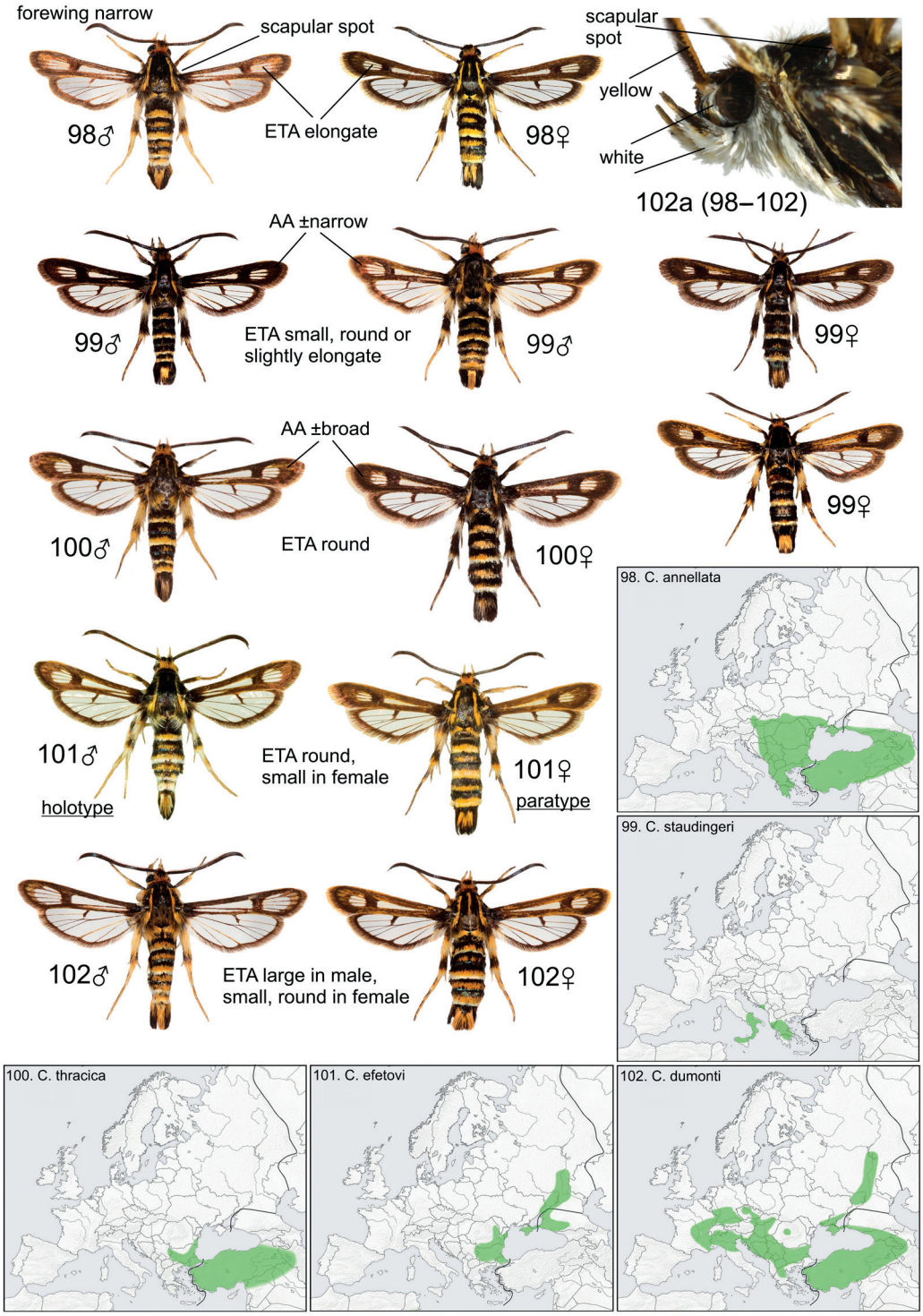

Plate XXI. 98 – *Chamaesphecia annellata*, 99 – *C. staudingeri*, 100 – *C. thracica*, 101 – *C. efetovi*, 102 – *C. dumonti*, a – head and thorax

103. ***C. oxybeliformis*** (Herrich-Schäffer, 1846)

⁑ 15–26 mm; frons brown with a wide white border before eyes in male, entirely white to orange in female; wings strongly covered with orange scales; rings distinctly orange.

B: *Phlomis herba-venti*, 1; VI, VII.

D: E European.

•C: Gorbunov (2019), Efetov & Gorbunov (2021).

104. ***C. djakonovi*** Popescu-Gorj & Căpuşe, 1966

⁑ 15–26 mm; frons dark brown with a narrow white border before eyes; fw mostly dark brown; orange colour of the rings less pronounced.

B: *Phlomis herba-venti*, 1; VI, VII.

D: Crimea, NW Caucasus.

•C: Gorbunov (2019).

105. ***C. doryceraeformis*** (Lederer, 1853)

⁑ 18–21 mm; frons white, with black scales in the middle; fw brown; AA yellow; rings on the abdomen bright yellow.

B: *Phlomis capitata*, *P. kurdica*, 1; VI, VII.

D: E Mediterranean, in Europe only Turkey.

•C: Kemal & Koçak (2012), Can et al. (2024).

106. ***C. proximata*** (Staudinger, 1891)

⁑ 15–26 mm; antennae orange with dark apex; frons yellow; ETA large in male, small in female, slightly elongate; hind tibia strongly hairy; abdomen with alternating narrow and wide bright yellow rings.

B: *Salvia*: *S. sclarea*, *S. fruticosa*, *S. verbenaca*, 1; VI, VII.

D: E Mediterranean.

107. ***C. masariformis*** (Ochsenheimer, 1808)

⁑ 17–27 mm; frons black; ETA round, large in male; rings on abdomen broad, orange, regionally yellow – f. *odyneriformis* (Herrich-Schäffer, 1846) (107a, Sicily, Crete); hind tibia strongly hairy.

B: *Verbascum*, *Scrophularia canina*, 2; V–VII.

D: Pontomediterranean – C Asiatic.

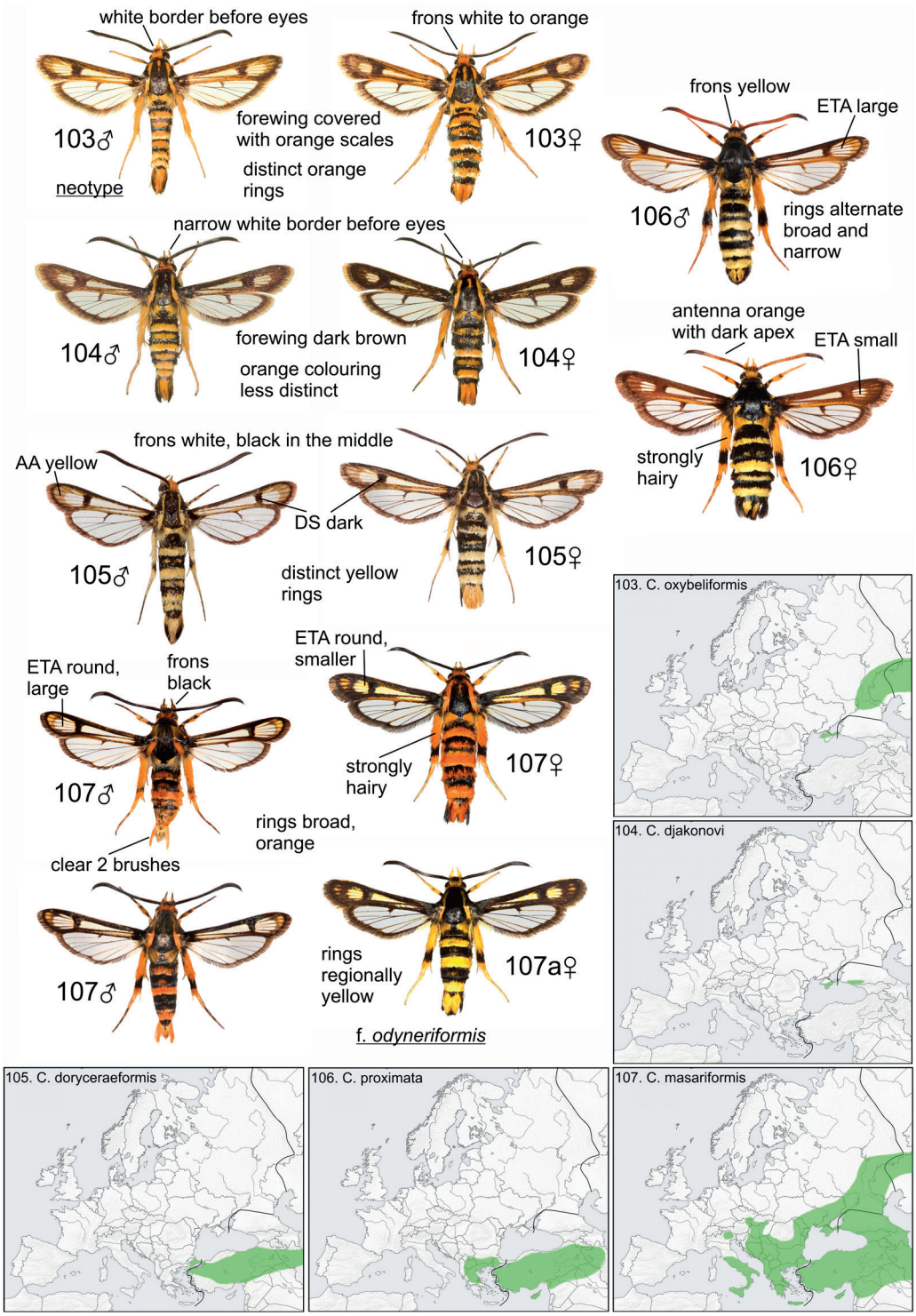

Plate XXII. 103 – *Chamaesphecia oxybeliformis*, 104 – *C. djakonovi*, 105 – *C. doryceraeformis*, 106 – *C. proximata*, 107 – *C. masariformis*, a – f. *odyneriformis*

Subgenus *Chamaesphecia* – crista sacculi on the valva usually pointed, scopula androconialis absent (108b); larvae in the roots of *Euphorbia*, one species in *Hypericum* / crista sacculi na valvě obvykle vytažená ve špičku, scopula androconialis schází (108b); housenky v kořenech pryšců (*Euphorbia*), jeden druh v kořeni třezalky (*Hypericum*).

108. *C. nigrifrons* (Le Cerf, 1911)

⁑ 9–18 mm; very small species; antennae and frons black; labial palps white ventrally (108a); DS of fw broad; ETA small, rounded; AA without distinct light spots; hind tibia black with prominent white tip; narrow white or yellowish rings on 4th, 6th (7th) segment.

B: *Hypericum*: *H. perforatum*, *H. hirsutum*, *H. tetrapterum*, 1, a distinct pile of reddish brown "sawdust" at stem bases in autumn; pupa in the short remaining stem base; V–VII.

D: European, insular.

•C: Bartsch (2001), Predovnik (2005), GBIF.org (2025), Stalling (2025).

109. *C. bibioniformis* (Esper, 1800)

⁑ 13–25 mm; eyes with white border; labial palps short-haired, white or yellowish basally; fw with yellow scapular spot; ETA large, round; AA with distinct ochreous spots; variable in range of yellow to orange coloration on wings, abdomen, and legs.

B: *Euphorbia*: regionally *E. seguieriana*, *E. myrsinites*, *E. serrata*, *E. nicaeensis*, *E. characias*, *E. macroclada*, *E. pannonica*, *E. rigida*, etc., (1) 2; VI–VIII.

D: W Palaearctic.

•C: Genetically highly heterogeneous morphospecies, which probably includes several cryptic biological species. Populations from southern France and Spain are considered ssp. *tengyraeformis* (Boisduval, 1840) (109b) and from the southern Balkans ssp. *myrsinites* Pinker, 1954 (109c) (F. Pühringer, pers. comm.) / Geneticky velmi heterogenní morfologický druh, který patrně zahrnuje více kryptických biologických druhů. Populace z jižní Francie a Španělska jsou považovány za ssp. *tengyraeformis* (109b) a z jižního Balkánu za ssp. *myrsinites* (109c) (F. Pühringer, pers. comm.).

110. *C. anthraciformis* (Rambur, 1832)

⁑ 15–28 mm; antennae, frons and labial palps black; highly variable species in the range of red coloration.

B: *Euphorbia*: *E. ceratocarpa*, *E. characias*, *E. clementei*, *E. myrsinites*, *E. nicaeensis*, 1; V–VII.

D: N Africa, Corsica, Sardinia, Sicily, S and central Italy.

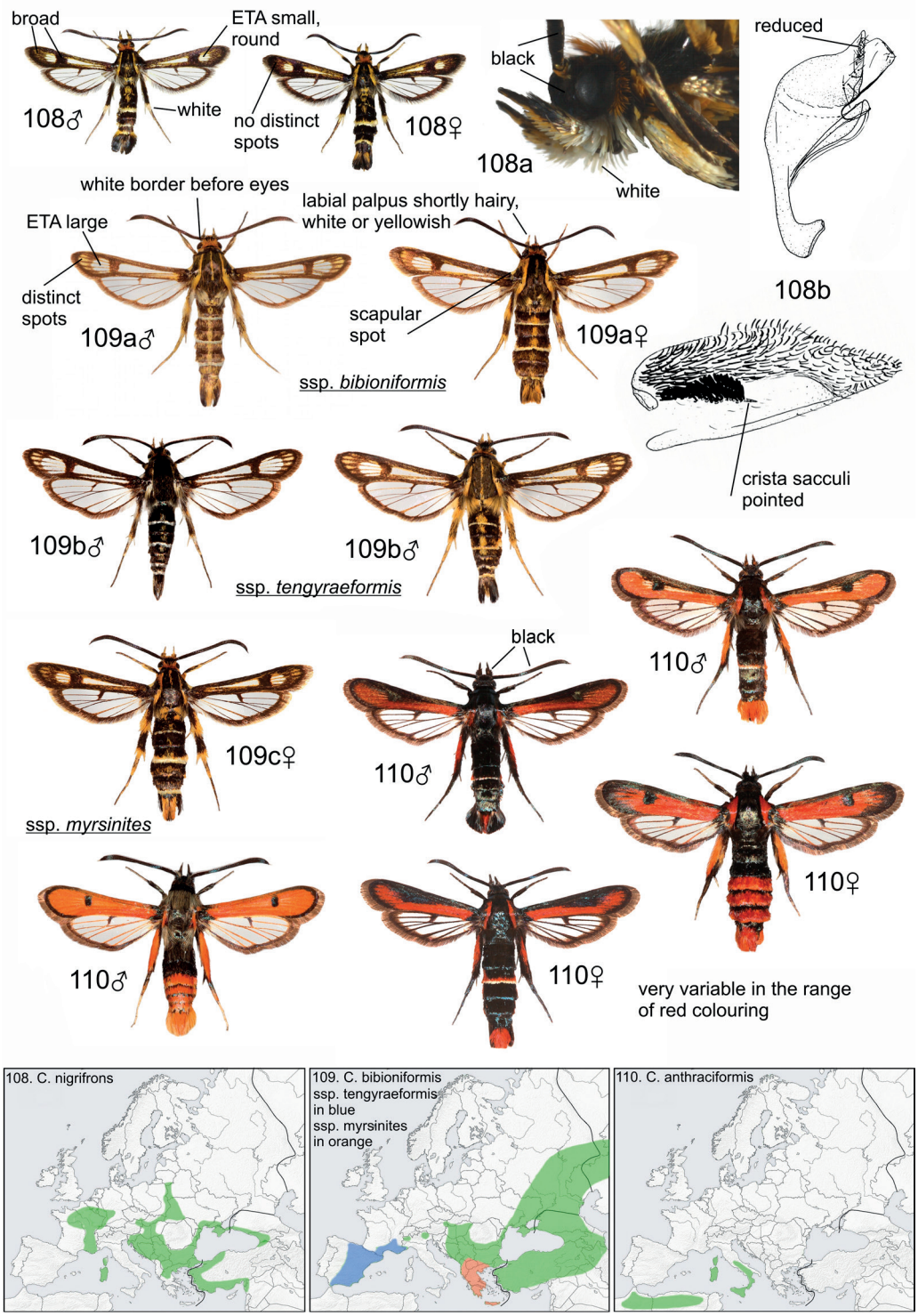

Plate XXIII. 108 – *Chamaesphecia nigrifrons*, a – head and thorax, b – valva and tegumen-uncus complex, 109 – *C. bibioniformis*, 110 – *C. anthraciformis*

111. ***C. palustris*** Kautz, 1927

⁑ 22–31 mm; easily recognizable, robust, brown-colored species with a single narrow ring; ETA almost square.

B: *Euphorbia palustris*, 2, pupa in a long tunnel (20–50 cm) in the old stem, affording escape from flood water (111a); VI, VII.

D: W Palaearctic, insular.

•C: Pühringer & Wieser (2000), Dutreix & Perrein (2002).

112. ***C. euceraeformis*** (Ochsenheimer, 1816)

⁑ 17–26 mm; ground coloration variable; ETA rounded or higher than wide; narrow ring on the 4th (2nd) segment; occasionally variously pronounced dorsal spot line.

B: *Euphorbia*: *E. epithymoides*, *E. austriaca*, *E. illirica*, 1–2; V–VIII.

D: W Palaearctic, partly insular.

•C: Hamborg (1994b), Cervelló (2001). *Chamaesphecia amygdaloidis* Schleppnik, 1933, a mountain form from limestone Alps, has been established younger subjective synonym of *C. euceraeformis* here (syn. n.). / *Chamaesphecia amygdaloidis*, horská forma z vápencových Alp, je zde stanovena mladším subjektivním synonymem *C. euceraeformis* (syn. n.).

113. ***C. crassicornis*** Bartel, 1912

⁑ 15–23 mm; ETA wider than high; AA with ochreous spots between veins; 3 narrow white rings and a distinct dorsal spot line.

B: *Euphorbia virgata*, 2, the stem of the infested plant often dries out in summer or autumn of the previous year; VI–VIII.

D: Caspian – C Asiatic.

•C: Kallies & Zolotukhin (2000), Knyazev & Ivonin (2025).

114. ***C. leucopsiformis*** (Esper, 1800)

⁑ 14–22 mm; ETA clearly wider than high; AA with ochreous spots between R5 and M3; a narrow white ring on the segment 4 and a distinct dorsal spot line.

B: *Euphorbia cyparissias*, 1, the stem of the infested plant usually dries out at the time of pupation during the summer and is clearly visible; VII (in SW Europe) VIII, IX (X).

D: European, insular.

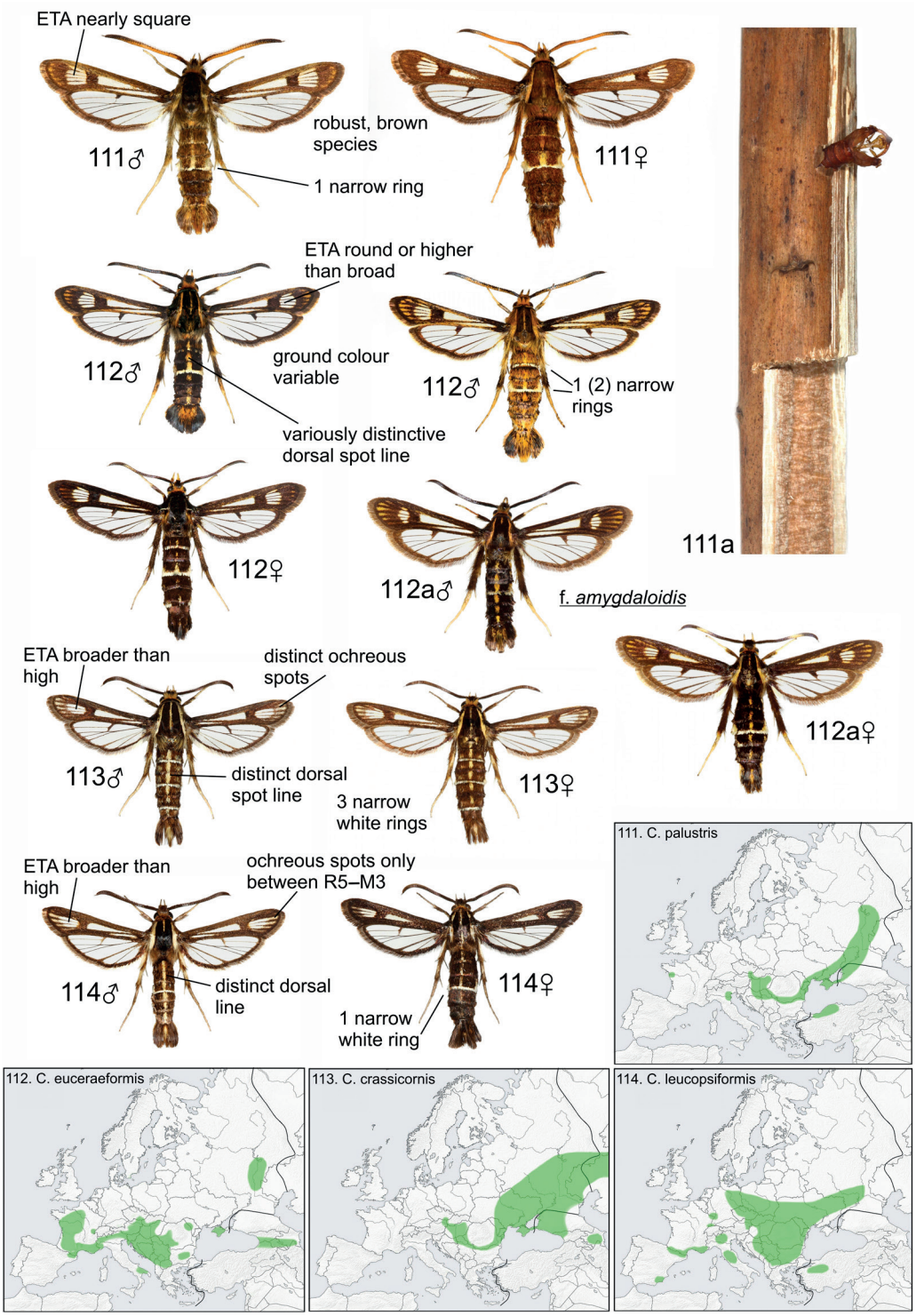

Plate XXIV. 111 – *Chamaesphecia palustris*, a – exuvia in the stem of *Euphorbia palustris*, 112 – *C. euceraeformis*, a – f. *amygdaloidis*, 113 – *C. crassicornis*, 114 – *C. leucopsiformis*

Group of 3 (115–117) very similar species, determination reliable by hostplant. Group characters: antennae yellow outside; frons dark; labial palpus long tufted in male; AA with distinct yellow spots and 1st (costal) cell of ETA almost entirely covered by yellow scales (applies also to *C. astatiformis*); hind tibia with distinct black ring distally. / Skupina 3 (115–117) velmi podobných druhů, spolehlivé určení podle hostitelské rostliny. Společné znaky: tykadla vně žlutá; čelo tmavé; labiální palpy samce dlouze chlupaté; AA se zřetelnými žlutými skvrnkami a 1. (kostální) buňka ETA většinou celá pokrytá žlutými šupinkami (platí také pro *Ch. astatiformis*); zadní holeň na konci se zřetelným černým kroužkem.

115. *C. hungarica* (Tomala, 1901)

⁑ 16–23 mm; ground coloration greenish yellow; PTA in female present.

B: *Euphorbia lucida*, 1 (2), pupa in basal part of old stem; V, VI (VII).

D: C and E European, insular.

•C: Bąkowski & Hołowiński (1996), Predovnik (2002), Rämisch & Schmidt (2018).

116. *C. empiformis* (Esper, 1783)

⁑ 11–22 mm; ETA round or wider than high; yellow spot between R3 and R4 (above ETA) not very distinct.

B: *Euphorbia cyparissias*, 1 (2); V–IX.

D: European.

117. *C. tenthrediniformis* ([Denis & Schiffermüller], 1775)

⁑ 12–21 mm; fw broad; ETA usually higher than broad; distinct yellow spot between veins R3 and R4 (above ETA); PTA of female strongly reduced or absent.

B: *Euphorbia esula*, *E. salicifolia*, 1; IV–VI (VIII).

D: W Palaearctic.

•C: Kallies & Zolotukhin (2000).

118. *C. astatiformis* (Herrich-Schäffer, 1846)

⁑ 13–24 mm; eyes with white border; labial palps almost smooth; AA of male broad, yellow, in female without distinctive yellow spots; PTA of male reduced, absent in female; hind tibia orange, in female with a black ring at the end; male abdomen densely covered with yellow scales.

B: *Euphorbia esula*, *E. salicifolia*, 1; IV–VI (VII).

D: Pontomediterranean – Caspian – C Asiatic.

Weismanniola Naumann, 1971

Proboscis reduced; male genitalia as in *Chamaesphecia*; monotypic. / Sosák redukovaný; samčí genitálie jako *Chamaesphecia*; monotypický rod.

119. *W. agdistiformis* (Staudinger, 1866)

⁑ 15–24 mm; antennae thin; wings broad; abdomen very slender; transparent areas covered with whitish scales; female unknown.

B: ?; V, VI., attracted by light.

D: E European – W Asiatic.

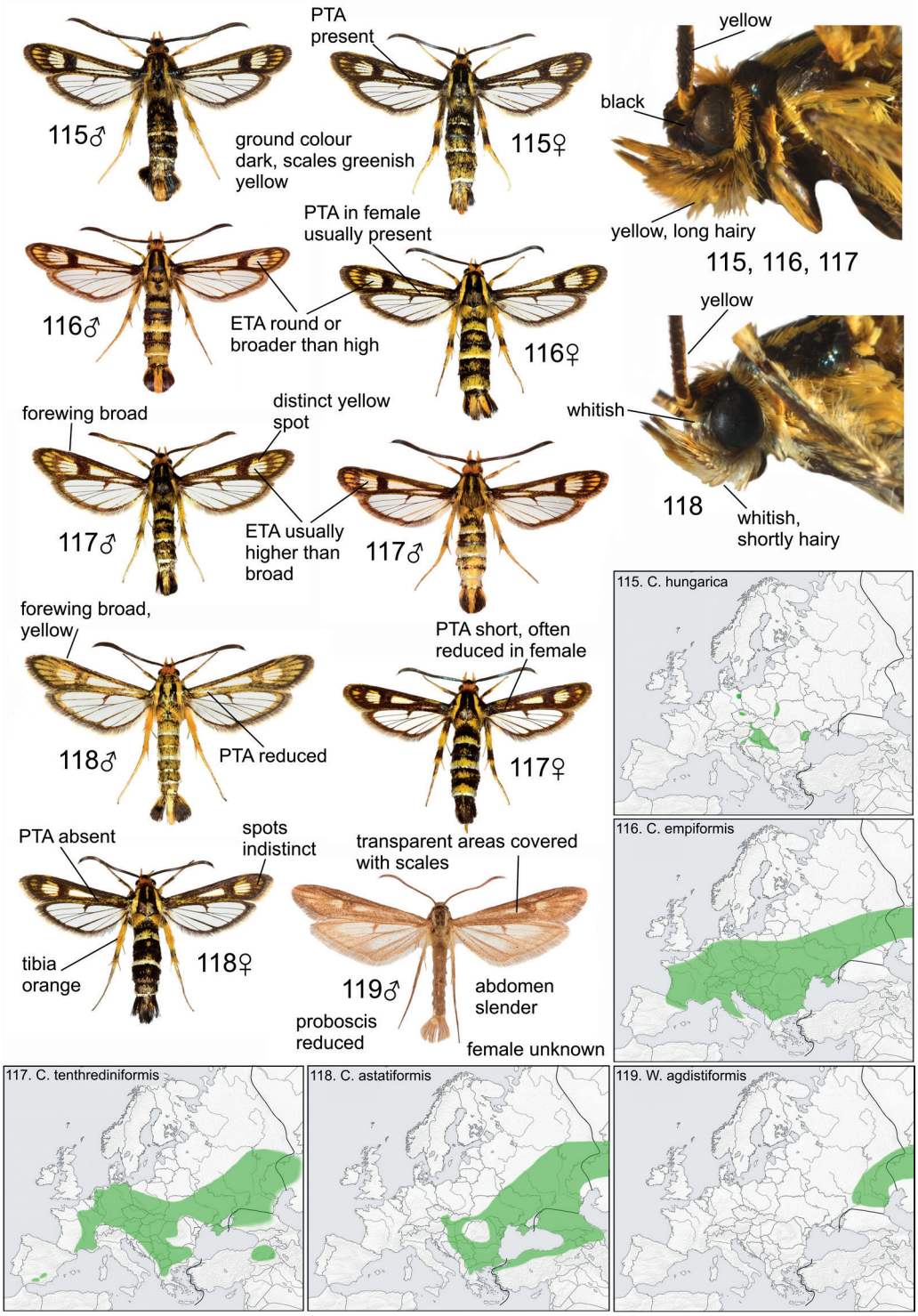

Plate XXV. 115 – *Chamaesphecia hungarica*, 116 – *C. empiformis*, 117 – *C. tenthrediniformis*, 118 – *C. astatiformis*, 119 – *Weismanniola agdistiformis*

7 DISTRIBUTION / ROZŠÍŘENÍ

1. brosiformis																				AT		
2. tineiformis						PT	ES	FR	Co	IT	Sa	Si	MT									
3. myrmosaeformis																						
4. hoplisiformis																						
5. hylaeiformis		GB	NO	SE	FI		ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
6. bohemica																	DE			AT		CZ
7. apiformis	IE	GB	NO	SE	FI	PT	ES	FR	Co	IT	Sa	Si		BE	LU	NL	DE	DK	CH	AT	PL	CZ
8. bembeciformis	IE	GB	NO	SE	FI	PT	ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
9. pimplaeformis																						
10. melanocephala			NO	SE	FI		ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
11. fenusaeformis																						
12. tabaniformis		GB	NO	SE	FI	PT	ES	FR	Co	IT	Sa	Si	MT	BE	LU	NL	DE	DK	CH	AT	PL	CZ
13. insolitus						PT	ES	FR		IT		Si		BE	LU		DE		CH	AT	PL	CZ
14. diaphana												Si										
15. scoliaeformis	IE	GB	NO	SE	FI	PT	ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
16. mesiaeformis							ES	FR									DE			AT	PL	CZ
17. losmanovi																						
18. spheciformis		GB	NO	SE	FI	PT	ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
19. stomoxiformis						PT	ES	FR		IT					LU		DE		CH	AT	PL	CZ
20. culiciformis		GB	NO	SE	FI	PT	ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
21. formicaeformis	IE	GB	NO	SE	FI	PT	ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
22. flaviventris		GB		SE	FI		ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
23. aurivillii			NO	SE	FI					IT									CH			
24. polaris			NO	SE	FI																	
25. andrenaeformis		GB	NO	SE			ES	FR		IT				BE	LU	NL	DE		CH	AT	PL	CZ
26. soffneri					FI			FR		IT							DE		CH	AT	PL	CZ
27. melliniformis								FR		IT										AT		
28. martjanovi																						
29. uralensis																						
30. myopaeformis		GB	NO	SE		PT	ES	FR	Co	IT	Sa	Si	MT	BE	LU	NL	DE	DK	CH	AT	PL	CZ
31. vespiformis		GB		SE		PT	ES	FR	Co	IT	Sa	Si		BE	LU	NL	DE	DK	CH	AT	PL	CZ
32. codeti						PT	ES	FR		IT	Sa											
33. theryi						PT	ES	FR		IT		Si		BE								?
34. conopiformis						PT	ES	FR		IT	Sa	Si		BE	LU	NL	DE		CH	AT	PL	CZ
35. geranii																						
36. loranthi							ES	FR		IT				BE	LU	NL	DE		CH	AT	PL	CZ
37. cephiformis							ES	FR		IT					LU		DE		CH	AT	PL	CZ
38. spuleri							ES	FR		IT		Si		BE	LU	NL	DE		CH	AT	PL	CZ
39. tipuliformis	IE	GB	NO	SE	FI		ES	FR		IT				BE	LU	NL	DE	DK	CH	AT	PL	CZ
40. flavida												Si										
41. uroceriformis						PT	ES	FR	Co	IT	Sa	Si							CH			
42. himmighoffeni						PT	ES	FR		IT												
43. hymenopteriformis							ES			IT		Si										
44. lomatiaeformis																						
45. sareptana																						
46. pallasi																						
47. volgensis																						
48. crimeana																						
49. rossica																						
50. abromeiti							ES*															
51. ichneumoniformis		GB	NO	SE	FI	PT	ES	FR	Co	IT	Sa	Si		BE	LU	NL	DE	DK	CH	AT	PL	CZ
52. albanensis		?					ES	FR	Co	IT		Si			LU		DE		CH	AT		CZ
53. sirphiformis									Co		Sa	Si	MT									
54. psoraleae							ES	FR		IT												
55. pavicevici										IT												
56. fibigeri							ES	FR														

IE	Ireland	PT	Portugal	Sa	Italy: Sardinia	NL	The Netherlands	PL	Poland
GB	Great Britain	ES	Spain (* – Mallorca)	Si	Italy: Sicily	DE	Germany	CZ	Czechia
NO	Norway	FR	France	MT	Malta	DK	Denmark	SK	Slovakia
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FI	Finland	IT	Italy	LU	Luxembourg	AT	Austria	RO	Romania

SK	HU	RO		HR	RS	ME	BA	MK	AL	BG	GR		TR	UA		RU					brosiformis 1.
				HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR								tineiformis 2.
		RO			RS			MK	AL	BG	GR		TR	UA		RU					myrmosaeformis 3.
											GR										hoplisiformis 4.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU	BY	LT	LV	EE	hylaeiformis 5.
			SI	HR							GR					RU					bohemica 6.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR	UA	MD	RU	BY	LT	LV	EE	apiformis 7.
SK			SI											UA		RU	BY	LT	LV	EE	bembeciformis 8.
								MK		BG	GR					RU					pimplaeformis 9.
SK	HU	RO	SI	HR							GR		TR	UA		RU	BY	LT	LV	EE	melanocephala 10.
											GR*	?	TR								fenusaeformis 11.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR	UA	MD	RU	BY	LT	LV	EE	tabaniformis 12.
SK	HU		SI	HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA		RU		LT			insolitus 13.
		RO		HR	RS		BA	MK		BG	GR										diaphana 14.
SK	HU	RO	SI	HR			BA			BG				UA		RU	BY	LT	LV	EE	scoliaeformis 15.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU	BY	LT	LV	EE	mesiaeformis 16.
																RU					losmanovi 17.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG				UA		RU	BY	LT	LV	EE	spheciformis 18.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR		TR	UA		RU	BY	LT			stomoxiformis 19.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU	BY	LT	LV	EE	culiciformis 20.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR			UA		RU	BY	LT	LV	EE	formicaeformis 21.
SK	HU	RO	SI	HR						BG						RU	BY	LT	LV	EE	flaviventris 22.
																					aurivillii 23.
																RU					polaris 24.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR			UA		RU					andrenaeformis 25.
SK			SI													RU	BY	LT	LV	EE	soffneri 26.
SK	HU		SI	HR	RS		BA			BG											melliniformis 27.
																RU					martjanovi 28.
														UA		RU					uralensis 29.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA	MD	RU	BY	LT	LV	EE	myopaeformis 30.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR	UA	MD	RU	BY	LT	LV		vespiformis 31.
																					codeti 32.
			SI	HR							GR					RU					theryi 33.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU	BY	LT			conopiformis 34.
											GR										geranii 35.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR										loranthi 36.
SK		RO	SI	HR	RS		BA	MK	AL	BG	GR			UA							cephiformis 37.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU					spuleri 38.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA	MD	RU	BY	LT	LV	EE	tipuliformis 39.
																					flavida 40.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA		RU					uroceriformis 41.
			SI	HR																	himmighoffeni 42.
																					hymenopteriformis 43.
											GR										lomatiaeformis 44.
																RU					sareptana 45.
																RU					pallasi 46.
																RU					volgensis 47.
														UA							crimeana 48.
																RU					rossica 49.
																					abromeiti 50.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR	UA	MD	RU	BY	LT	LV	EE	ichneumoniformis 51.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR	Cr	TR			RU					albanensis 52.
																					sirphiformis 53.
																					psoraleae 54.
			SI	HR	RS	ME	BA	MK	AL	BG	GR										pavicevici 55.
																					fibigeri 56.

SI Slovenia
HR Croatia
RS Serbia
ME Montenegro
BA Bosnia-Herzegovina

MK North Macedonia
AL Albania
BG Bulgaria
GR Greece (* – Samos, ‡ – Rhodes)
Cr Greece: Crete

TR European Turkey
MD Moldova
UA Ukraine
RU European Russia
(+ Eur. Kazakhstan)

BY Belarus
LT Lithuania
LV Latvia
EE Estonia
† extinct

57. scopigera							ES	FR		IT									CH	AT		CZ
58. priesneri																						
59. iberica						PT	ES	FR	Co	IT												
60. fokidensis																						
61. blanka																						
62. megillaeformis								†									†			†	†	†
63. puella																						
64. eversmanni																						
65. astragali						PT	ES	FR		IT												
66. sanguinolenta																						
67. chrysidiformis		GB				PT	ES	FR	Co	IT	Sa	Si		BE	LU		DE		CH	AT		
68. minianiformis																						
69. nigrobarbata																						
70. doryliformis						PT	ES															
71. icteropus												Si										
72. meriaeformis						PT	ES	FR	Co	IT	Sa	Si										
73. hispanica						PT	ES	FR														
74. koschwitzi						PT	ES	FR														
75. muscaeformis	IE	GB		SE			ES	FR		IT							DE	DK	CH	AT	PL	CZ
76. hellenicum																						
77. kautzi							ES															
78. aistleitneri							ES															
79. leucomelaena						PT	ES	FR	Co	IT	Sa	Si										
80. affinis						PT	ES	FR		IT		Si		BE	LU		DE		CH	AT		CZ
81. triannuliformis								FR		IT		Si					DE		CH	AT	PL	CZ
82. cirgisa																						
83. umbrifera																						
84. mannii																						
85. lanipes																						
86. mysiniformis						PT	ES	FR		IT												
87. anatolica																						
88. chalciformis																				AT		
89. schmidtiiformis										IT												
90. maurusia						PT	ES					Si										
91. aerifrons						PT	ES	FR	Co	IT	Sa	Si	MT				DE		CH			
92. alysoniformis																						
93. minoica																						
94. gorbunovi																						
95. osmiaeformis									Co	IT	Sa	Si										
96. ramburi							ES	FR														
97. doleriformis										IT										AT		CZ
98. annellata																				AT		CZ
99. staudingeri										IT		Si										
100. thracica																						
101. efetovi																						
102. dumonti								FR		IT							DE		CH	AT		CZ
103. oxybeliformis																						
104. djakonovi																						
105. doryceraeformis																						
106. proximata																						
107. masariformis										IT		Si								AT		†
108. nigrifrons								FR	Co					BE	LU		DE		CH	AT	PL	CZ
109. bibioniformis							ES	FR		IT										AT		
110. anthraciformis									Co	IT	Sa	Si	MT									
111. palustris								†		IT										AT		CZ
112. euceraeformis							ES	FR		IT										AT		CZ
113. crassicornis																				AT		CZ
114. leucopsiformis							ES	FR		IT							DE		CH	AT	PL	CZ
115. hungarica																	DE			AT	PL	CZ
116. empiformis							ES	FR		IT				BE	LU	NL	DE		CH	AT	PL	CZ
117. tenthrediniformis							ES	FR						BE	LU	NL	DE			AT	PL	CZ
118. astatiformis																				AT		CZ
119. agdistiformis																						
Total per country	6	16	15	18	15	30	54	55	17	56	16	28	6	25	27	20	37	15	35	48	31	43

SK	HU	RO	SI	HR	RS		BA	MK		BG	GR			UA		RU					scopigera 57.
											GR‡										priesneri 58.
																					iberica 59.
										BG	GR										fokidensis 60.
												Cr									blanka 61.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR			UA		RU					megillaeformis 62.
SK	HU	RO			RS					BG	GR			UA		RU					puella 63.
																RU					eversmanni 64.
																					astragali 65.
										BG	GR		TR								sanguinolenta 66.
		?	SI	HR																	chrysidiformis 67.
		RO			RS			MK	AL	BG	GR		TR	UA							minianiformis 68.
												Cr									nigrobarbata 69.
																					doryliformis 70.
																					icteropus 71.
																					meriaeformis 72.
																					hispanica 73.
																					koschwitzi 74.
SK	HU	RO						MK		BG											muscaeformis 75.
									AL		GR										hellenicum 76.
																					kautzi 77.
																					aistleitneri 78.
		RO		HR	RS		BA	MK	AL	BG	GR	Cr	TR								leucomelaena 79.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU					affinis 80.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG	GR		TR	UA		RU		LT	LV	EE	triannuliformis 81.
		RO												UA		RU					cirgisa 82.
									AL		GR										umbrifera 83.
										BG			TR								mannii 84.
										BG											lanipes 85.
																					mysiniformis 86.
	HU	RO			RS						GR										anatolica 87.
SK	HU	RO		HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA		RU					chalciformis 88.
		RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU					schmidtiiformis 89.
																					maurusia 90.
			SI	HR			BA	MK	AL		GR										aerifrons 91.
		RO		HR	RS			MK	AL	BG	GR		TR								alysoniformis 92.
												Cr									minoica 93.
										BG	GR										gorbunovi 94.
																					osmiaeformis 95.
																					ramburi 96.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR		TR	UA		RU					doleriformis 97.
SK	HU	RO		HR	RS		BA	MK	AL	BG	GR		TR	UA		RU					annellata 98.
				HR					AL		GR										staudingeri 99.
		RO			RS			MK		BG	GR		TR								thracica 100.
		RO			RS					BG			TR	UA		RU					efetovi 101.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR			UA		RU					dumonti 102.
														UA		RU					oxybeliformis 103.
														UA		RU					djakonovi 104.
													TR								doryceraeformis 105.
					RS			MK	AL	BG	GR		TR								proximata 106.
SK	HU	RO		HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA		RU					masariformis 107.
SK	HU	RO	SI	HR	RS		BA	MK		BG	GR		TR	UA		RU		LT			nigrifrons 108.
SK	HU	RO		HR	RS		BA	MK	AL	BG	GR	Cr	TR	UA		RU					bibioniformis 109.
																					anthraciformis 110.
SK	HU	RO		HR	RS									UA	MD	RU					palustris 111.
SK	HU	RO	SI	HR	RS	ME	BA	MK	AL	BG				UA		RU					euceraeformis 112.
SK	HU	RO			RS					BG				UA		RU					crassicornis 113.
SK	HU	RO		HR	RS		BA	MK		BG				UA		RU					leucopsiformis 114.
SK	HU	RO	SI	HR	RS																hungarica 115.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR			UA		RU	BY				empiformis 116.
SK	HU	RO	SI	HR	RS		BA	MK	AL	BG	GR			UA		RU					tenthrediniformis 117.
SK	HU	RO		HR	RS		BA	MK		BG	GR		TR	UA		RU					astatiformis 118.
																RU					agdistiformis 119.
48	46	54	44	55	54	13	45	50	45	60	62	16	39	50	7	62	19	21	17	16	Total per country

8 FAUNISTIC DATA / NÁLEZOVÁ DATA

Below we present the faunistic data for the individuals shown, widespread and common species are not included. Unless otherwise stated, A. & Z. Laštůvka leg., coll. Z. Laštůvka. / Následně uvádíme nálezová data vyobrazených jedinců, široce rozšířené a běžné druhy nejsou zahrnuty. Pokud není uvedeno jinak, platí leg. A. & Z. Laštůvka, coll. Z. Laštůvka.

abromeiti, B. – ES, Mallorca, ♂ Callas de Mallorca, 2000 ex l.; ♀ Cala Torta, 2000 ex l., both H. Riefenstahl leg.

aerifrons, C. – ♂ Si, Castelbuono, 11.vi.1995; ♀ FR, Pertuis, Mirabeau, 19.vi.1994

affinis, P. – ♂ FR, Montpellier, 21.vi.1992; ♀ SK, Slovenský kras, Jablonov nad Turňou, 1988 ex l.

aistleitneri, P. – ♂ ES, Granada, Sierra Guillimona, 23.vi.2012; ♀ ES, Leon, Torrestio, 2017 ex p.

albanensis, B. – ♂ CZ, Sedlec u Mikulova, 2018 ex l.; ♀ SK, Turňa-Háj, 1987 ex l.

alysoniformis, C. – ♂ GR, Leptokaria, 24.vi.1997; ♀ BG, Michurin, 10.vi.1979

anatolica, C. – ♂♀ GR, Timfi, Dilofo, 1998 ex l.

andrenaeformis, S. – ♂♀ SK, Trenčianske Teplice, 1993 ex l.; ♂ AT, Graz, 1992 ex l., D. Hamborg leg.

annellata, C. – ♂ CZ, Popice, 1.vii.2008; ♀ CZ, Dolní Dunajovice, 1998 ex l.

anthraciformis, C. – ♂ Si, Mandanici, 14.vi.2000; ♂ Si, Etna, Mt. Arso, 24.vi.2000; ♂ Marokko, Mittl. Atlas, Ifrane, 8.vi.1988, A. Hofmann leg.; ♀ Si, Mandanici, 2000 ex l.; ♀ Marokko, Mittl. Atlas, Ifrane, 2006 ex l., T. & W. Garrevoet leg.

astatiformis, C. – ♂♀ CZ, Čejkovice, 10.v.2012

astragali, B. – ♂♀ FR, Pertuis, La Bonde, 1991 ex l.

aurivillii, S. – ♂♀ CH, Pontresina, Heutal, 2012 ex l.

bibioniformis, C. – ♂♀ SK, Dolný Ohaj, 1954 ex l., J. Obermajer leg.

bibioniformis ssp. *myrsinites, C.* – ♀ GR, Timfi, Dilofo, 7.vi.1999

bibioniformis ssp. *tengyraeformis, C.* – ♂ ES, Teruel, Albarracín, 14.vi.2011; ♂ ES, Cuenca, Canete, 17.vi.2002

blanka, B. – ♂ Cr, Dikti Mts., Afendis Hristos, 4.vii.1997, K. Špatenka leg.

bohemica, P. – CZ, Praha, ♂ 14.viii.1987; ♀ 1987 ex l.

brosiformis, M. – SK, Štúrovo, ♂ 17.vii.2013; ♀ 1987 ex l.

cephiformis, S. – ♂♀ CZ, Moravia, Maršov, 2013 ex l.

cirgisa, P. – ♂ TR, Cappadocia, Develi Ovasi, Cöl Gölü, 17.vi.1998; ♀ dtto, 1998 ex p., both D. Bartsch & M. Salmen leg.

codeti, S. – ♂ ES, Toledo, Robledo del Mazo, 19.vi.2003; ♀ ES, Teruel, Albarracín, 15.vii.1929, K. Predota leg.

crassicornis, C. – ♂ SK, Štúrovo, 21.vii.1987; ♀ CZ, Bulhary, 19.vii.1994

diaphana, P. – ♂ MK, Skopje, 1918 ex l., H. Rangnow leg.; ♀ Si, Palermo, Ficuzza, 17.vi.2000

djakonovi, C. – ♂♀ Crimea, Sudak, 1990 ex l., O. Gorbunov leg., coll. et photo

doleriformis ssp. *colpiformis, C.* – ♂ CZ, Moravia, Novosedly, 13.vii.2010; ♀ CZ, Moravia, Horní Bojanovice, 21.viii.1997

doleriformis ssp. *doleriformis, C.* – ♂ IT, Metaponto, 1.vi.1961; ♀ HR, Dalmacia, Trogir, 22.vi.1989, I. Toševski leg.

doryceraeformis, C. – ♂ TR, Van, Gevaş, 12.vii.2005; ♀ 16.vii.2004, T. & W. Garrevoet leg.

doryliformis, P. – ♂♀ ES, Albacete, Riopar, 26.vi.1994

dumonti, C. – ♂♀ CZ, Pouzdřany, 16.vii.2013

efetovi, C. – ♂ holotype, Crimea, Kurskoye, Bor-Kaya, 7.vii.2016, O. Gorbunov & K. Efetov leg.; ♀ paratype, RU, Volgograd reg., Mikhailovka, 2002 ex l., O. Gorbunov leg. et coll., both photos O. Gorbunov

euceraeformis, C. – ♂ SK, Štúrovo, 2010 ex l.; ♂ AT, Hohe Wand, 1994 ex l., D. Hamborg leg.; ♀ SK, Štúrovo, 2010 ex l.

euceraeformis f. *amygdaloidis, C.* – ♂♀ AT, Lassing – Hochkar, 1991 ex l.

eversmanni, B. – ♂ holotype, RU, Volgograd reg., Filonovskaya, 1999 ex l.; ♀ paratype, RU, Ulyanovsk reg., Ryabina, 1998 ex l., both O. Gorbunov leg., coll. et photo

fenusaeformis, O. – ♂ TR, Taurus cilic., Bürücek, 6.vii.1983, O. Brodský leg.; ♀ TR, Hatay, prov. Kuzuculu, 25.vi.1993, M. Bąkowski leg.

fibigeri, B. – ♂♀ ES, Aragon, Vivel del Río, 1994 ex l.

flavida, B. – ♂♀ Si, Sortino, 18.vi.1995

flaviventris, S. – ♂♀ CZ, Lysice, 2011 ex l.

fokidensis, B. – ♂ GR, Peloponnes, Gerolimenas, 17.vi.1998

geranii, S. – ♂♀ GR, Parnassos, 1998 ex l.

gorbunovi, C. – ♂ TR, Van, Gevaş, 19.vii.2002, T. & W. Garrevoet leg.; ♀ GR, Leptokaria, 27.vi.1996

hellenicum, P. – ♂ holotype, GR, Pindos Mts., Timfristos, 14.vii.1999, A. Lingenhöle leg. et coll.; photo D. Bartsch

himmighoffeni, B. – ♂ ES, Teruel, Vivel del Río, 5.vii.1994; ♀ ES, Teruel, Albarracín, 14.vii.1922, K. Predota leg.

hispanica, P. – ♂♀ ES, Toledo, Robledo del Mazo, 19.vi.2003

hoplisiformis, N. – ♂♀ Azerbaijan, Ashagi, Buzgov, 26.vi.1988, K. Špatenka leg.

hungarica, C. – ♂♀ CZ, Lednice, 2010 ex l.

hymenopteriformis, B. – ♂♀ Si, Francavilla, 2000 ex l.

chalciformis, C. – ♂ GR, Leptokaria, 27.vi.1996; ♀ GR, Peloponnes, Taygetos, Exohori, 21.vi.1996

chrysidiformis ssp. *sicula, P.* – ♂ Si, Francavilla, 9.vi.1995; ♀ IT, Aténa di Lucania, 23.vi.1995; ♂ Si, Francavilla, 15.vi.2000

iberica, B. – ♂♀ ES, Teruel, Alcala de la Selva, 2001 ex l.

icteropus, P. – ♂♀ Si, Ficuzza, 19.vi.2000

ichneumoniformis, B., black form – ♂ PT, Faro, Palmeirinha, 2003 ex l.

kautzi, P. – ♂ ES, Granada, Sierra Nevada, Pico del Veleta, 12.vii.2000, F. Pühringer & N. Pöll leg.

koschwitzi, P. – ♂♀ ES, Toledo, Aranjuez, 15.vi.2006

koschwitzi ssp. *lusohispanica, P.* – ♂♀ holotype, paratype, PT, Serra da Estrela, 2002 ex l.

lanipes, D. – ♂ BG, Arkutino, 13.vii.1982, J. Liška leg.

leucomelaena, P. – ♂ ES, Zaragoza, Tosos, 13.vi.2004; ♀ ES, Valencia, Requena, 30.vi.1991

leucopsiformis, C. – ♂♀ CZ, Hodonín, 2010 ex l.

lomatiaeformis, B. – ♂♀ GR, Peloponnes, Taygetos, 1999 ex l.

loranthi, S. – ♂♀ SK, Malacky, 1985 ex l.

mannii, P. – ♂ BG, Lozenec, 27.vi.1982; ♀ BG, Michurin, 1980 ex l.

martjanovi, S. – ♂ RU, Zabaykalsk, 28.vi.1971, leg. ?

masariformis, C. – ♂♂ SK, Pezinok, 2000 ex l.; ♀ SK, Vinosady, 2010 ex l.

masariformis f. *odyneriformis, C.* – ♂♀ Si, Mandanici, 14.vi.2000

maurusia, C. – ♂♀ ES, Teruel, Albarracín, 25.vi.1992

megillaeformis, B. – ♂ HR, Istria, Koromačno, 22.vii.1998; ♀ SK, Zádiel, 1990 ex l.

melliniformis, S. – ♂♀ AT, Burgenland, Illmitz, 1992 ex l., D. Hamborg leg.

meriaeformis, P. – ♂ ES, Ourense, Sandiás, 18.vi.2013; ♀ ES, Ávila, Las Vueltas, 15.vi.2006

mesiaeformis, S. – ♂♀ CZ, Břeclav, Pohansko, 2008 ex l.

minianiformis, P. – ♂ GR, Leptokaria, 27.vi.1996; ♀ GR, Peloponnes, Kalavryta, 20.vi.1997

minoica, C. – ♂ Cr, Prines, 28.v.1981, H. et J. Hüttinger leg.

muscaeformis, P. – ♂♀ SK, Sekule, 2001 ex l.

myopaeformis ssp. *cruentata, S.* – ♂ Si, Etna, Mt. Arso, 24.vi.2000; ♀ 1995 ex l.

myopaeformis ssp. *typhiaeformis, S.* – ♂ IT, Basilicata, Rionero, 11.vi.2000

myrmosaeformis, N. – ♂♀ BG, Primorsko, 10.vi.1979

myrmosaeformis ssp. *cingulata, N.* – ♂ MK, Štip, Dolani, 7.vi.1998

myrmosaeformis ssp. *efetovi, N.* – ♂ holotype, Crimea, Belogorsk, 2018 ex l., O. Gorbunov leg.; ♀ paratype, 15.vi.2015, K. Efetov & O. Gorbunov leg.; O. Gorbunov coll. et photo

mysiniformis, C. – ♂♀ ES, Valencia, Requena, 30.vi.1991

nigrifrons, C. – ♂♀ SK, Slovenský kras, Soroška, 2014 ex l.

osmiaeformis, C. – ♂ Si, Gangi, 10.vi.1995; ♀ Si, Caltanisetta, 10.vi.1950, Parvis leg.

oxybeliformis, C. – ♂ neotype, RU, Volgograd reg., Mikhailovka, 2002 ex l.; ♀ RU, Volgograd reg., Evlampiyevskiy, 1999 ex l., both O. Gorbunov leg., coll. et photo

pallasi, B. – ♂♀ holotype, paratype, Kazakhstan, Atyrau reg., Imankara, 1997 ex l., O. Gorbunov leg., coll. et photo

palustris, C. – ♂♀ SK, Brodské, 2013 ex l.

pavicevici ssp. *dobrovskyi, B.* – ♂ GR, Peloponnes, Kardamili, 19.vi.1997

pavicevici ssp. *pavicevici, B.* – ♂ HR, Istria, Rabac, 27.vii.2018; ♀ HR, Istria, Koromačno, 30.vii.1996

pimplaeformis, E. – ♂ Armenia, Nakhichevan, Buzgov, 20.vii.1986; ♀ 1982 ex l., O. Gorbunov leg.

polaris, S. – ♂ SE, Mitta, 2.vii.1974, H. Elmquist leg.

priesneri, B. – ♂ TR, Cappadocia, 1996 ex l., K. Špatenka leg.; ♀ TR, prov. Nevşehir, Göreme, 2003 ex l., W. & T. Garrevoet leg.

proximata, C. – ♂♀ GR, Grevena, Agii Theodori, 1997 ex l.

psoraleae, B. – ♂♀ ES, Malaga, Jimera de Líbar, 2010 ex l.

puella, B. – ♂♀ SK, Cerová vrchovina, Gemerský Jablonec, 2022 ex l.

ramburi, C. – ♂♀ ES, Granada, Diezma, 3.vii.1992

rossica, B. – ♂♀ holotype and paratype, RU, Astrakhan reg., Dosang, 2013 ex p.; O. Gorbunov leg., coll. et photo

sanguinolenta, B. – ♂ GR, Leptokaria, 9.vi.1999; ♀ TR, prov. Nevşehir, Göreme, 1992 ex p., M. Petersen leg.

sareptana, B. – ♂♀ RU, Orenburg reg., Olkhovka, 1998 ex p., O. Gorbunov leg., coll. et photo

scopigera, B. – ♂♀ CZ, Brno, 1989 ex l.

schmidtiiformis, C. – ♂ SI, Kraški rob, Zanigrad, 15.vi.2004; ♀ 18.vi.2008, both Ž. Predovnik leg.

sirphiformis, B. – ♂♀ Si, Petralia Sottana, 2000 ex l.

soffneri, S. – ♂ CZ, Vrbno pod Pradědem, 4.vi.2016; ♀ CZ, Šumava Mts., Dobrá, 1981 ex l.

spuleri, S. – ♂ SK, Gombasek, 1989 ex l.; ♀ SK, Plešivec, 1987 ex l.

staudingeri, C. – ♂ Si, Le Madonie, Castelbuono, Liccia, Cozzo Luminario, 2007 ex l., D. Bartsch leg.; ♂ GR, Larissa, 25.v.1999; ♀ Si, Le Madonie, Polizzi Generosa, Monte del Cervi, 2007 ex l., D. Bartsch leg.; ♀ IT, Potenza, 22.vi.1995

stomoxiformis ssp. *amasina, S.* – ♂ GR, Leptokaria, 24.vi.1998

stomoxiformis ssp. *riefenstahli, S.* – ♂ ES, Teruel, Albarracín, 15.vi.2011

stomoxiformis ssp. *stomoxiformis, S.* – ♂♀ CZ, Otnice, 1996 ex l.

tabaniformis f. *rhingiaeformis, P.* – ♀ HR, Zadar, 6.vi.1985, I. Toševski leg.

theryi, S. – ♂ ES, Huesca, Candasnos, 11.vi.2013; ♀ HS, Madrid, Aranjuez, 10.vi.2009

thracica, C. – ♂♀ BG, Michurin, 1980 ex l.

tineiformis, M. – ♂ ES, Albacete, Reolid, 23.vi.2013; ♀ PT, Candeeiros, Valverde, 14.vi.2009

triannuliformis, P. – ♂ GR, Peloponnes, Asteri, 2011 ex l., A. Lingenhöle leg.; ♀ BG, Michurin, 1980 ex l.

umbrifera, P. – ♂ GR, Árta, Salaora, 15.vi.1996; ♀ GR, Árta, Strongyli, 14.vi.1996

uralensis, S. – ♂ RU, Volgograd reg., Mikhailovka, 2002 ex p.; ♀ RU, Orenburg reg., Giriyal reg., 1998 ex p., O. Gorbunov leg., coll. et photo

uroceriformis, B. – ♂ ES, Almeria, Uleila del Campo, 28.vi.1992; ♀ SK, Plešivec, 1988 ex l.

volgensis, B. – ♂ holotype, RU, Ulyanovsk area, Ryabina, 13.vii.1993, V. Zolotukhin leg., O. Gorbunov coll. et photo

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