ISSN 1211-8788 *Acta Musei Moraviae, Scientiae biologicae* (Brno)
98(2): 235–263, 2013

New records of Auchenorrhyncha (Hemiptera) for the Czech Republic

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MALENOVSKÝ I. 2013: New records of Auchenorrhyncha (Hemiptera) for the Czech Republic. In: KMENT P., MALENOVSKÝ I. & KOLIBÁČ J. (eds.): Studies in Hemiptera in honour of Pavel Lauterer and Jaroslav L. Stehlík. *Acta Musei Moraviae, Scientiae biologicae* (Brno) **98(2):** 235–263. – Faunistic data on 17 species of planthoppers and leafhoppers (Hemiptera: Auchenorrhyncha) from the Czech Republic are provided and discussed. Five species are recorded from the Czech Republic for the first time: *Javesella bottnica* Huldén, 1974; *Litemixia pulchripennis* Asche, 1980; *Cicadella lasiocarpae* Ossiannilsson, 1981; *Euscelis ohausi* Wagner, 1939; and *Recilia coronifer* (Marshall, 1866). Diagnostic characters of *Javesella bottnica*, a boreal species which is recorded for the first time in central Europe, are briefly discussed and the species is compared with *Javesella simillima* (Linnavuori, 1948); habitus of male and female brachypterous specimens and the male anal tube and the aedeagus are illustrated for both species. Seven species (previously known in the Czech Republic only from Moravia) are newly recorded for Bohemia: *Kelisia confusa* Linnavuori, 1957; *Kelisia guttulifera* (Kirschbaum, 1868); *Eupteryx lelievrei* (Lethierry, 1874); *Zyginidia pullula* (Boheman, 1845); *Allygidius abbreviatus* (Lethierry, 1878); *Fieberiella septentrionalis* Wagner, 1963; and *Pinumius areatus* (Stål, 1858). Four species (previously known in the Czech Republic only from Bohemia) are newly ascertained also for Moravia: *Anoscopus alpinus* (Wagner, 1955); *Chlorita dumosa* (Ribaut, 1933); *Eupteryx signatipennis* (Boheman, 1847); and *Jassargus allobrogicus* (Ribaut, 1936). Records of an additional little-known species in the Czech Republic, *Hephathus achilleae* Mityaev, 1967, are also provided.

Keywords. Fulgoromorpha, Cicadomorpha, Delphacidae, Cicadellidae, Planthoppers, leafhoppers, *Javesella*, distribution, taxonomy, central Europe, Czech Republic, Bohemia, Moravia, France

Introduction

The earliest beginnings of studies on the Czech fauna of the Auchenorrhyncha date back to the end of the 18th century. After pioneering contributions had been made by polymath naturalists and early entomologists (PREYSSLER 1792, PREYSSLER *et al.* 1793; KOLENATI 1859, 1860), three leading Auchenorrhyncha taxonomists, Franz Xaver Fieber (1807–1872), Leopold Melichar (1856–1924), and Franz Then (1841–1919), in part, were active on the territory of what is today the Czech Republic (EMMRICH 2003, BEZDĚK 2011). The first comprehensive lists of species that were known to occur in the country were provided by DUDA (1892) and SPITZNER (1892) for both large historical parts of the Czech Lands, Bohemia and Moravia, respectively. The pace of knowledge acquisition on the presence and distribution of Auchenorrhyncha species picked up sharply after the 1940s, through the activities and numerous publications of Veleslav Lang (1913–1993), Jiří Dlabola (*1922) and Pavel Lauterer (*1933) (see JEŽEK 1994, KOLEŠKA 1998, MALENOVSKÝ & BURCKHARDT 2003 and MALENOVSKÝ 2013 for biographies and bibliographies). The rapidly burgeoning quantities of data were summed up in a monograph (DLABOLA 1954) and a check-list (DLABOLA 1977) of the Czechoslovak

fauna, both of them major milestones. Continuous field work, identification and revisions of museum collections, improving knowledge of the taxonomy and biology of many central European species and the expansion of exotic species, have lead to discoveries of additional Auchenorrhyncha species in recent years as well (e.g. Malenovský 2006; Malenovský & Lauterer 2006, 2010, 2012; Malenovský & Tropek 2009).

This paper follows Malenovský & Lauterer (2010) in form and its aim of reporting data on the occurrence of some hitherto insufficiently-known Auchenorrhyncha species in the Czech Republic, including some first records, as one step in the preparation of a new, up-to-date Hemiptera check-list for the country. To date, some 580 species of Auchenorrhyncha (including those in the present paper) have been reported for the Czech Republic, partly scattered in the literature; revisions of some critical taxa and old doubtful records are, however, still required, and records of some additional species, especially those already known from neighbouring countries but not from the Czech Republic, may still be anticipated.

Material and methods

The material examined or cited in the paper is deposited in the following institutions, abbreviated as:

BMNH . . . . . Natural History Museum, London, United Kingdom
MMBC . . . . . Moravian Museum, Brno, Czech Republic
MNHN . . . . . Muséum national d'Histoire naturelle, Paris, France
NMPC . . . . . National Museum, Prague, Czech Republic
SWHG . . . . . private collection of Sabine Walter, Kurort Hartha, Germany.

For the purposes of faunistic research, the territory of the Czech Republic is traditionally divided into two parts: Bohemia in the west and Moravia (including former Austrian, later Czech, Silesia) in the east (e.g. Dlabola 1977, Bogusch *et al.* 2007, Kment 2009). These parts largely correspond to the politico-historical arrangement of the Czech Lands in the Middle Ages through to the times of the Habsburg monarchy, as well as of Czechoslovakia before 1949. They are not, however, reflected in the current administrative status of the Czech Republic. The boundary between Bohemia and Moravia is thus interpreted here in the historical sense, precisely in the form established in 1924 (see Kment 2009 for details).

The localities cited in the "Material examined" sections are ordered according to their field code numbers (given in parentheses after the names of conurbations) in the faunistic and floristic grid mapping system of central Europe (Ehrendorfer & Hamann 1965, Pruner & Míka 1996). The same mapping system is also used in Figs 9–20.

The following abbreviations are also used to refer to localities and material examined:

NM – Nature Monument, NNM – National Nature Monument, NNR – National Nature Reserve, NR – Nature Reserve (all of these are the various categories contained within the Czech system of legislatively protected small-scale natural areas); det. – determined by, leg. – collected by.

All material was identified by I. Malenovský unless stated otherwise. The nomenclature and classification follow HOCH (2013) and TISHECHKIN (1999). Photographs of specimens were taken using a Leica DFC 295 digital camera on a Leica Z16 APO macroscope and the Leica Application Suite software or an Olympus 5060WZ camera on an Olympus BX41 microscope and the QuickPhoto Camera software. Eyepiece graticule on a MBS 10 stereomicroscope was applied for measurements of dry-mounted specimens.

Results

FULGOROMORPHA

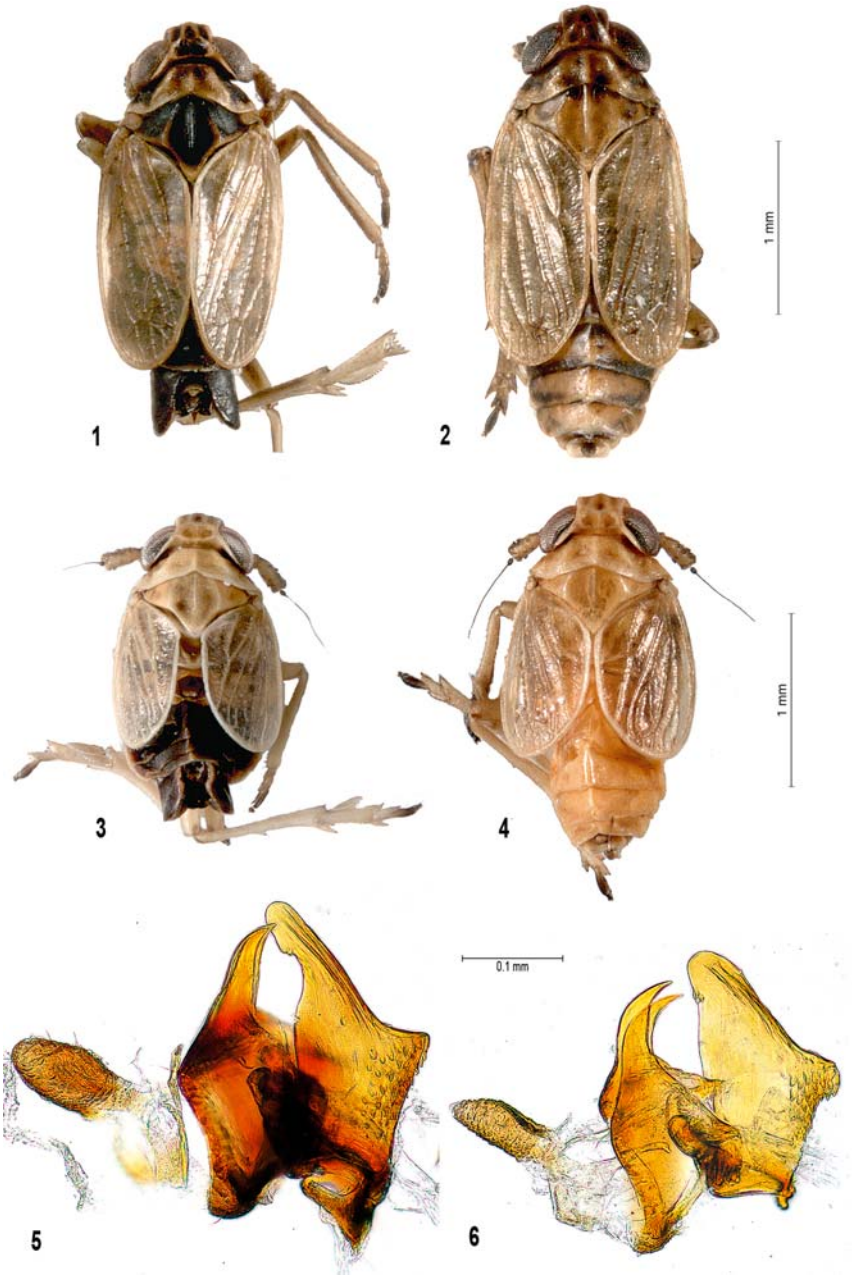
Delphacidae

***Javesella bottnica* Huldén, 1974** (Figs 1, 2, 5, 7, 9)

Material examined. Bohemia: Přebuz, 2.8 km NW, Rolavská vrchoviště NNR, Lieche (=Rolavský rybník Pond) (5641), 50°23′32″N, 12°37′41″E, 910 m a.s.l., 21.vi.2011, peatbog, 3 ♂♂ 7 ♀♀ (all brachypterous), I. Malenovský leg. (MMBC).

Remarks. A boreal species so far known only from Finland and northern Russia (Karelia) (HULDÉN 1974, OSSIANNILSSON 1978, SÖDERMAN 2007) where it was swept from sedge (*Carex acuta*) bordering an oligotrophic lake, and from lakeshore (SÖDERMAN 2007). The morphology of the male genitalia is similar to *Javesella simillima* (Linnavuori, 1948) and *J. discolor* (Boheman, 1847). HOLZINGER *et al.* (2003) considered *J. bottnica* and *J. simillima* as possibly conspecific. Besides differences in the shape of the male genitalia (not specified explicitly), HULDÉN (1974) distinguished *J. bottnica* from *J. simillima* and *J. discolor* also based on more elongated wings in brachypterous specimens (ratio wing length/width in males 1.79–2.32 in *J. bottnica*, 1.57–1.68 in *J. simillima*, and 1.43–1.82 in *J. discolor*). It also comes out from the original description that *J. bottnica* is larger than *J. simillima* (body length of brachypterous specimens: *J. bottnica* – 2.00–2.46 mm (males), 2.66 mm (female); *J. simillima* (cited after LINNAVUORI 1969) – 1.5–1.6 mm (males), 2.0–2.1 mm (females)).

A series of brachypterous specimens collected recently in north-western Bohemia, on the Czech side of the Krušné hory Mts. [Erzgebirge], at the Lieche Pond near the town of Přebuz (Fig. 9), in a complex of peat- and intermediary bogs and littoral vegetation (dominated by *Eriophorum angustifolium*, *E. vaginatum*, *Carex limosa*, *C. rostrata* and *Molinia caerulea*; Fig. 7) perfectly fits to the original description by HULDÉN (1974) and illustrations of *J. bottnica* by OSSIANNILSSON (1978; reprinted also in HOLZINGER *et al.* 2003). A comparison with a series of *J. simillima* collected in adjacent part of Germany (Saxony: Bad Brambach, Gründel, 3.vii.2004, 4 ♂♂ 4 ♀♀; Bad Brambach, Raunerbachtal/Gründel, 16. and 18.vi.2005, 2 ♂♂ 3 ♀♀, Pern, Hammerlug, 9.vi.2011; 5 ♂♂ 6 ♀♀; all brachypterous specimens, S. Walter leg. et det., SWHG) confirmed this identification and the differences between both species outlined by previous authors (see also SÖDERMAN 2007). The specimens of *J. bottnica* from Přebuz: Lieche (n = 3 ♂♂,



Figs 1–6. *Javesella* spp.: 1, 2, 5 – *J. bottnica* Huldén, 1974 (specimens from the Czech Republic: Krušné hory Mts., Přebuz, Lieche Pond); 3, 4, 6 – *J. simillima* (Linnavuori, 1948) (specimens from Germany: Saxony, Bad Brambach, Gründel). 1, 3 – brachypterous males, habitus, dorsal view; 2, 4 – brachypterous females, habitus, dorsal view; 5, 6 – male anal tube and aedeagus, left lateral view.

Figs 7–8. Habitats of some planthopper species recorded in the Czech Republic for the first time. 7 – complex of intermediary and peat-bogs at the Lieche Pond, Rolavská vrchoviště National Nature Reserve near Přebuz in the Krušné hory Mts., north-western Bohemia: the locality of *Javesella bottnica* Huldén, 1974 (photograph by J. Sychra); 8 – calcareous spring fen at the Olšový rybník Pond near Loučeň in central Bohemia: one of the Czech localities of *Litemixia pulchripennis* Asche, 1980 and *Kelisia confusa* Linnavuori, 1957 (photograph taken on a field course in entomology by L. Hubáčková).

7 ♀♀) are generally larger (body length: males: 2.48–2.58 mm; females: 2.55–2.85 mm) and have relatively longer wings (ratio wing length/width: males: 1.81–1.97; females: 1.91–2.09) than specimens of *J. simillima* from Saxony (n = 8 ♂♂, 11 ♀♀; body length: males 1.65–1.85 mm; females: 2.00–2.25 mm; ratio wing length/width: males: 1.46–1.64; females: 1.37–1.77); the body, particularly the head and thorax, of both sexes of *J. bottnica* are also slightly darker than the examined material of *J. simillima* (Figs 1–4). Both species also differ in the shape of the appendages of the male anal tube in lateral view (nearly straight in *J. bottnica*, curved in *J. simillima*) and the shape of the aedeagus in lateral view (with a narrow apex, sinuate posterior margin subapically and sharp tooth on anterior margin in *J. bottnica*, and a broad apex, nearly straight posterior margin subapically and an obtuse tooth on anterior margin in *J. simillima*) as illustrated here in Figs 5–6. As these differences appear constant across a large geographical distance (Fennoscandia and central Europe), *J. bottnica* is considered here as a valid species distinct from *J. simillima* and also *J. discolor* which, besides the shorter wings of brachypterous specimens, differs from *J. bottnica* by strongly curved appendages of the male anal tube and a broader apex of the aedeagus in lateral view (illustrated in Ossiannilsson 1978: p. 195 and Holzinger *et al.* 2003: p. 310). Several specimens of *J. discolor* matching the description by Ossiannilsson (1978) were recorded in the Krušné hory Mts. on the same site as the specimens of *J. bottnica* but in a different habitat (a *Nardus stricta-Avenella flexuosa* grassland at a spruce forest margin).

More field work is needed to elucidate the biology of *J. bottnica*. Based on the data in literature and the present finding, the species is probably associated with *Carex* and/or *Eriophorum* spp. in cold and wet, bog habitats.

Javesella bottnica is recorded here for the first time for the Czech Republic and central Europe. Its occurrence in this region is probably relict, perhaps from glacial times, as in many other tyrphobiont or tyrphophilous insects (e.g. Spitzer & Danks 2006).

***Kelisia confusa* Linnavuori, 1957** (Figs 8, 9, 21)

Published records. Malenovský & Lauterer (2010): Bedřichov, towards Černovice (6564); Brno-Jehnice, Ponávka Brook valley (6765); Brno-Chrlice, Splavisko (6865); Rašovice, Rašovický zlom-Chobot NR (6867), Dolní Dunajovice, River Dyje floodplain (7165); Kněždub, Čertoryje NNR (7170); Radějov, Kútky NR (7170); Hlohovec, Allahovy rybníky Ponds (7266); Sedlec, Slanisko u Nesytu NNR (7266).

Material examined. Bohemia: Loučeň, 1 km NW, shore and alder carr at Knížecí rybník Pond (5756), 50°17′30″N, 15°00′29″E, 253 m a.s.l., 21.viii.2012, 3 ♀♀. Chudíř, 1 km SE, spring fen and shore of Olšový rybník Pond (5756), 50°18′06″N, 15°01′04″E, 235 m a.s.l., 21.viii.2012, 1 ♂ 1 ♀. All specimens I. Malenovský leg. (MMBC).

Remarks. In tall-sedge swamps near the shores of ponds or the floodplains of streams, in fens and along bog margins at moderately eutrophic sites, probably associated with *Carex elata* and/or *C. acutiformis* (Holzinger *et al.* 2003, Nickel 2003, Malenovský & Lauterer 2010). Known from central Europe, Lithuania, Finland, Italy, and the Balkan peninsula (Holzinger *et al.* 2003, Söderman 2007, Hoch 2013). In the Czech Republic, documented previously only from southern Moravia (Malenovský & Lauterer 2010). Recorded here for the first time for Bohemia: the River Elbe lowlands in central Bohemia (Fig. 9).

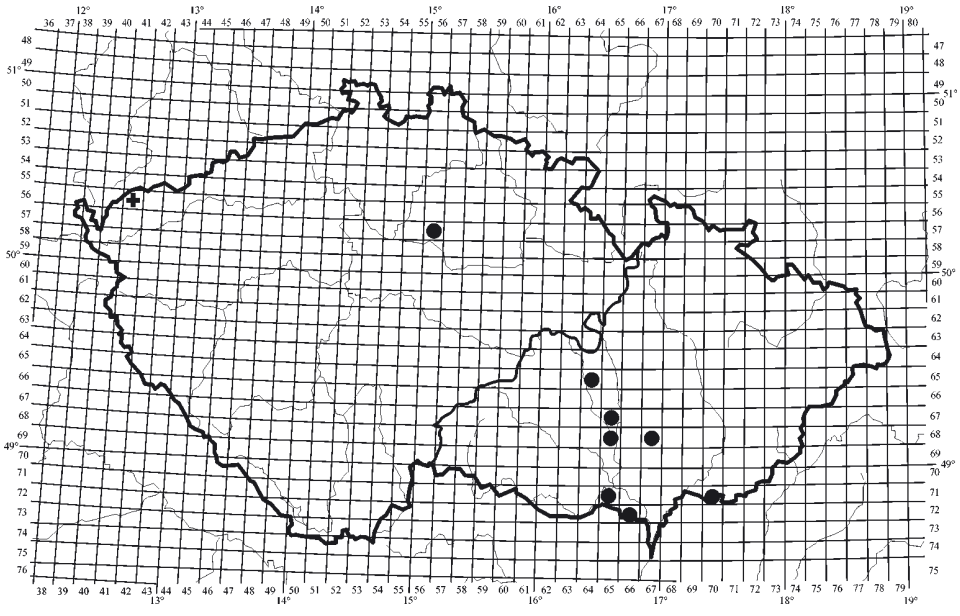


Fig. 9. Distribution of *Javesella bottnica* Huldén, 1974 (cross) and *Kelisia confusa* Linnavuori, 1957 (circles) in the Czech Republic.

Kelisia guttulifera (Kirschbaum, 1868) (Fig. 10)

Published records. Dlabola (1956): Hostýn (6672). Malenovský & Lauterer (2012): Nedašov, Pod Cigánem NM (6974); Starý Hrozenkov, Hrozenkovské terasy (7073).
Material examined. Bohemia: Loučeň, 1 km NW, alder carr wood on shore of Knížecí rybník Pond (5756), 50°17′30″N, 15°00′29″E, 253 m a.s.l., 21.viii.2012, on *Carex remota*, 1 ♂, I. Malenovský leg. (MMBC). **Moravia:** Hostýn (6672), vii.1954, 1 ♂, Starý leg., J. Dlabola det., I. Malenovský revid. (MNHN). Babice nad Svitavou, Myší díra and Svitava River valley (6765), 240–300 m a.s.l., 2.x.1999, 1 ♀, P. Lauterer leg. (MMBC).

Remarks. In moist places in oak and beech forests (often on or along abandoned tracks) and in alder fen woodland on *Carex sylvatica*, *C. remota* and *C. elongata* as well as in open wetlands such as spring mires, wet meadows and sandpits on *C. vulpina*, *C. distans* and *C. paniculata* (Holzinger *et al.* 2003, Nickel 2003). Widespread in western, central and southern Europe from Great Britain to Lithuania in the north and from Corsica and Sardinia to the Balkan peninsula in the south (Holzinger *et al.* 2003, Hoch 2013). Poorly documented in the Czech Republic: overlooked or occurring only locally. Previously known from only three records from springs fens in the Hostýnské vrchy Hills and the Bílé Karpaty Mts. in eastern Moravia (Dlabola 1956, Malenovský & Lauterer 2012). New species for Bohemia (Fig. 10).

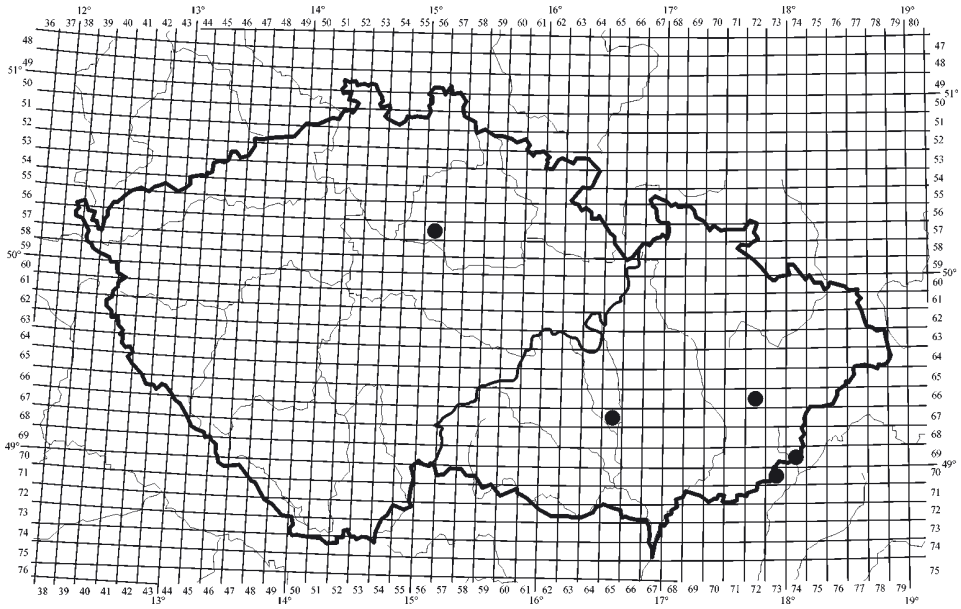


Fig. 10. Distribution of *Kelisia guttulifera* (Kirschbaum, 1868) in the Czech Republic.

Litemixia pulchripennis Asche, 1980 (Figs 8, 11, 22)

Material examined. Bohemia: Lysá nad Labem, 2 km N, Hrabanovská černava NNM (5755), 50°13′02″N; 14°50′09″E, 185 m a.s.l., 23.viii.2012, a large open lowland fen, 5 ♂♂ 4 ♀♀. Loučeň, 1 km NW, calcareous spring fen upstream Knížecí rybník Pond (5756), 50°17′26″N, 15°00′19″E, 254 m a.s.l., 21.viii.2012, 7 ♂♂ 17 ♀♀. Chudíř, 1 km SE, calcareous spring fen at Olšový rybník Pond (5756), 50°18′06″N, 15°01′04″E, 235 m a.s.l., 21.viii.2012, 6 ♂♂ 4 ♀♀. All specimens I. Malenovský leg. (MMBC).

Remarks. A rarely-documented species with just a handful of records from south-western, central and north-eastern France (Asche 1980, Remane & della Giustina 1991, della Giustina & Remane 1992); there is one more unpublished record from the northern foothills of the Vosges Mts., Moselle (57): Philippsbourg, Etang de Hanau, 49°00′37″N, 7°32′16″E, 234 m a.s.l., 16.viii.1995, peat-bog on shore of a pond, several ♂♂ ♀♀, I. Malenovský leg., MMBC), southern Germany (northern upper Rhine plain and Bavaria, mostly in open pine forests on temporarily moist, acidic and sandy substrates in lowlands: Remane & Fröhlich 1994, Nickel 2003, Kunz *et al.* 2011), and a single record in Austria in an intermittently wet meadow in the environs of Vienna (Holzinger 2009a, b). All three Czech records were made in relict open (treeless) calcareous fen habitats in the River Elbe lowlands in central Bohemia (Figs 8, 11), where the species was invariably collected from *Molinia caerulea* (*sensu stricto*, Dančák *et al.* 2012). *Molinia caerulea* is the single confirmed host plant (Remane & della Giustina

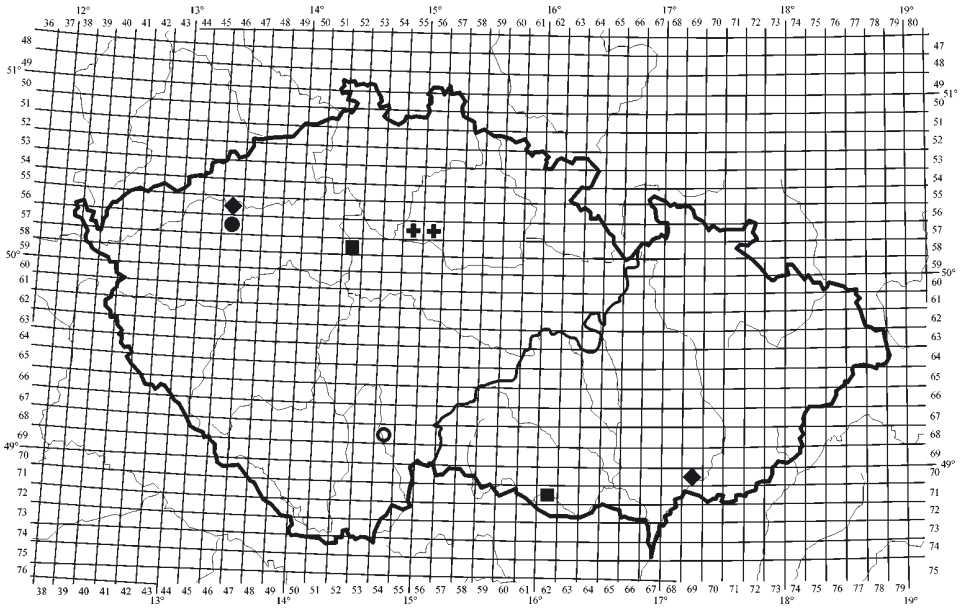


Fig. 11. Distribution of *Litemixia pulchripennis* Asche, 1980 (crosses), *Cicadella lasiocarpae* Ossiannilsson, 1981 (empty circle), *Chlorita dumosa* (Ribaut, 1933) (squares), *Euscelis ohausi* Wagner, 1939 (full circle), and *Pinumius areatus* (Stål, 1858) (diamonds) in the Czech Republic.

1991, NICKEL 2003); even if some published records associate other taxa of this taxonomically difficult aggregate of grasses, the upper Rhine plain populations in Germany, at the least, were collected from *M. caerulea* (H. Nickel pers. comm.). As adults of *L. pulchripennis* usually remain deep in the tussocks of the host plant, only very few specimens can be taken with a sweep-net; most of the material cited above was collected using a petrol-driven suction sampler (G-Vac; STEWART 2002) which is probably the most efficient method for monitoring *L. pulchripennis*. Most specimens collected are brachypterous, which suggests permanent populations at the sites. New species for the Czech Republic.

CICADOMORPHA

Cicadellidae: Macropsinae

***Hephathus achilleae* Mityaev, 1967** (Figs 12, 23)

Published data. TISHECHKIN (1999): Southern Moravia.
Material examined. Moravia: Mohelno (6863), 25.vii.1942, 2 ♂♂ and 20.vii.1943, 1 ♂, both J. Šnoflák leg. Brno-Slatina, Stránská skála hill (6866), 22.vii.1954, dry grassland on limestone, 7 ♂♂ 2 ♀♀, P. Lauterer leg.

Křižanovice (6867), 10.vii.1963, 4 ♂♂ 1 ♀, L. Pospíšilová leg. Miroslav (7063), 14.vii.1963, 2 ♀♀, L. Pospíšilová leg. Trstěnice near Znojmo, grassland above the village (7063), 6.viii.1965, 2 ♀♀, L. Pospíšilová leg. Popice (7065), 16.vi.1977, 2 ♂♂, M. Kocourek leg. Pouzdřany (7065), 2.vii.1977, 1 ♂, M. Kocourek leg. Čejč (7067), vi.1940, 22 ♂♂ 2 ♀♀ (MNHN), vii.–viii.1940, 4 ♂♂ (NMPC), all A. Hoffer leg. Kobylí (7067), vii.1975, 3 ♂♂, M. Kocourek leg.; 183–274 m a.s.l., 19.vii.1977, 1 ♂, dry grassland, L. Pospíšilová leg. Sedlec, Kamenný vrch Hill [= Skalky] (7266), 25.vii.1968, 2 ♂♂, P. Lauterer leg. All material in MMBC, if not indicated otherwise.

Remarks. Described from Kazakhstan and recently redescribed by Tishechkin (1999), who also recorded it from central and southern parts of European Russia, northern Caucasus, Georgia, and central Europe: Hungary and the Czech Republic (southern Moravia). Details of the Czech localities were not given in the paper; the information was based on specimens from Kobylí (7067), deposited in BMNH (D. Tishechkin, pers. comm.). Later, the species was also confirmed for eastern Finland (Söderman 2007). *H. achilleae* is reported as living on steppes, dry meadows and dry river banks, mainly upon various Asteraceae: *Artemisia campestris*, *A. absinthum*, *A. albicerata*, *A. santolinifolia*, *Erigeron acris*, *Achillea millefolium*, *Tanacetum* sp. and, perhaps accidentally, on *Spiraea hypericifolia* (Rosaceae) (Tishechkin 1999, Söderman 2007). All known Moravian localities are well-preserved dry grassland sites on the northern outskirts of the Pannonian lowlands, or close to them (Fig. 12). *Hephathus achilleae* is probably more widespread in central and eastern Europe (there are additional unpublished data in the collections of MMBC, MNHN and NMPC from Slovakia, at the least) but may have been partly confused with the similar and closely related *H. nanus* (Herrich-Schäffer, 1835); the two species can be differentiated mainly by the colour pattern of the face (as especially darker forms may be difficult to identify, it is helpful to have a series of specimens from a given locality) and acoustic signals (Tishechkin 1999). However, all specimens of *H. achilleae* cited here from southern Moravia were collected more than 35 years ago and *H. achilleae* has not been rediscovered despite relatively extensive faunistic surveys of dry grassland sites in southern Moravia in recent years. The species may thus have declined or become extinct in the Czech Republic, in contrast to *H, nanus* which has recently been confirmed from a number of localities (Malenovský *et al.* 2011, Malenovský & Lauterer 2012).

Cicadellidae: Aphrodinae

Anoscopus alpinus (Wagner, 1955) (Figs 13, 24)

Published data. Lauterer & Novotný (1991): Krkonoše Mts., Mt Sněžka (5260).
Material examined. Bohemia: Přebuz, Přebuzské vřesoviště NM (5641), 50°22′38″N, 12°36′43″E, 880 m a.s.l., 22.vi.2011, secondary montane heath on former peat diggings, 2 ♂♂. **Moravia:** Staré Město, 9 km NW, summit of Mt Králický Sněžník (5767), 50°12′27″N, 16°50′51″E, 1400–1420 m a.s.l., 7.vii.2006, alpine grassland, under tussocks of *Festuca supina*, 2 ♂♂ 4 ♀♀. Karlova Studánka, 6 km SW, Praděd NNR, Mt Vysoká hole (5969), 50°03′41″N, 17°14′15″E, 1450 m a.s.l., 17.viii.2011, alpine grassland, under tussocks of *Festuca supina*, *Nardus stricta* and *Avenella flexuosa*, 4 ♀♀ 2 nymphs. All material I. Malenovský leg. (MMBC).

Remarks. Known from the mountains of Austria, Germany, Switzerland, Poland, and the Czech Republic but perhaps conspecific with the western Mediterranean *A. assimilis*

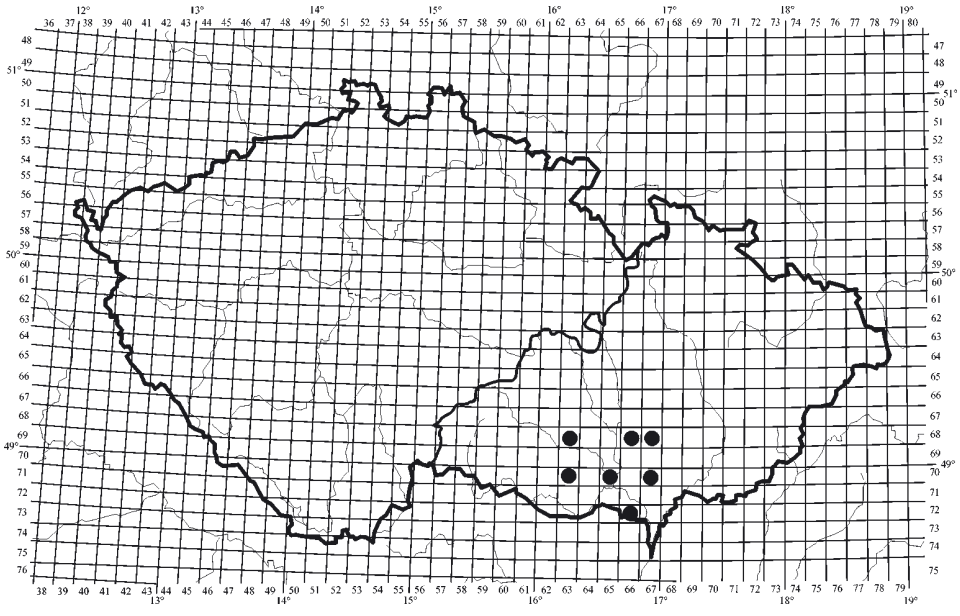


Fig. 12. Distribution of *Hephathus achilleae* Mityaev, 1967 in the Czech Republic.

(Signoret, 1879) and *A. duffieldi* Le Quesne, 1964 described from Great Britain (see e.g. Remane & Fröhlich 1994 for a discussion of taxonomy). Probably lives on grasses in heaths and bogs from the submontane to the alpine belt (Nickel 2003). The series from the Králický Sněžník Mts. was collected by hand from under the tussocks of an almost monodominant growth of *Festuca supina*, while adults in Přebuz were swept from *Avenella flexuosa* and/or *Nardus stricta*. Only one specimen from the Czech Republic was known previously, collected in the Krkonoše Mts. (Lauterer & Novotný 1991). Based on recent collections, it is also reported here for the Krušné hory [Erzgebirge] Mts. in Bohemia (it also occurs on the German side of the Erzgebirge; e,g. Nickel 2003, Kunz *et al.* 2011) and, for the first time, for Moravia as well: the Jeseníky and Králický Sněžník Mts. (Fig. 13). The species is also known from the adjacent Polish side of the Sudetes Mts. (Świerczewski & Walczak 2011b).

Cicadellidae: Cicadellinae

Cicadella lasiocarpae Ossiannilsson, 1981 (Figs 11, 25)

Material examined. Bohemia: Horusice, 2 km SE, Ruda NNR (6854), 49°09′03″N, 14°41′27″E, 415 m a.s.l., 13.ix.2010, 20 ♀♀, I. Malenovský leg. (MMBC), 2 ♀♀, P. Kment leg. (NMPC).

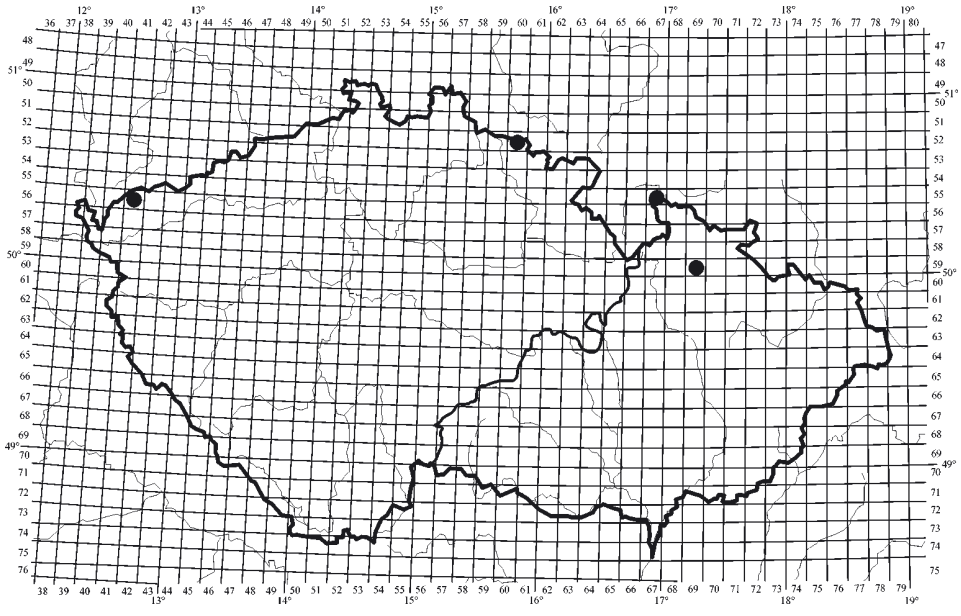


Fig. 13. Distribution of *Anoscopus alpinus* (Wagner, 1955) in the Czech Republic.

Remarks. Known from northern, western, and central Europe (Scandinavia, Russia, Great Britain, Ireland, Poland, Luxemburg and Germany), and the eastern Palaearctic: Siberia and Korea (Nickel 2003, Niedringhaus *et al.* 2010, Hoch 2013). Feeding on *Carex* spp. and locally, although often abundantly, occurring in intermediate bogs, peat-bogs, peaty meadows and pastures, fens, and paludic lakeshores; *Carex lasiocarpa*, *C. nigra* and *C. vesicaria* have been explicitly mentioned as host plants (Ossiannilsson 1981, Szwedo & Gębicki 1998, Tishechkin 2000, Nickel 2003, Söderman 2007, Kunz *et al.* 2011). The species is similar to the much more common, eurytopic and polyphagous *Cicadella viridis* (Linnaeus, 1758) from which it may be distinguished particularly by the colour pattern of the head and body, the size of the male apodemes and the serration of the female ovipositor (Ossiannilsson 1981, Szwedo & Gębicki 1998, Tishechkin 2000, Biederman & Niedringhaus 2004). Despite the revision of a large number of *Cicadella* specimens from throughout the Czech Republic, only a series from a well-preserved intermediary bog in southern Bohemia, the Třeboňsko Protected Landscape Area (Fig. 11), collected from *Carex lasiocarpa* and *C. chordorrhiza*, has proved to belong to *C. lasiocarpae*. New species for the Czech Republic.

Cicadellidae: Typhlocybinae

Chlorita dumosa (Ribaut, 1933) (Fig. 11)

Published data. Dlabola (1946): Podhoř near Praha (5852). Dlabola (1954): Praha environs, Troja (5852).
Material examined. Bohemia: Praha-Bohnice, Podhoří (5852), 14.vii.1946, 6 ♂♂ 1 ♀ and v.1948, 1 ♂, all A. Hoffer leg., J. Dlabola det., I. Malenovský revid. (MNHN). **Moravia:** Znojmo-Bohumilice, 1 km SE, Načeratický kopec Hill (7162), 48°50′12″N, 16°05′39″E, 250 m a.s.l., 26.vii.2009, dry and ruderal grassland in abandoned military training ground, 1 ♂ 2 ♀♀, I. Malenovský leg. (MMBC).

Remarks. Living in cushions of *Thymus* spp. (*Th. praecox*, *Th. serpyllum*, and probably also *Th. pulegioides*) in sunny, dry to moderately dry, low-vegetated, usually grazed sites on sand, limestone and other well-drained substrates (Nickel 2003). Quite widespread in Europe except the Iberian peninsula and the British Isles, reaching southern Scandinavia and the Baltic countries in the north and Kazakhstan in the east (Nast 1972, Söderman 2007, Hoch 2013). In Germany, the species is widespread although only local in the southern and central parts (Nickel 2003). In Austria, it is known only from the eastern part (Holzinger 2009a). There is only one old record from the Czech Republic, from xerothermic slopes in the Vltava [Moldau] river valley in Prague (Dlabola 1946) and the species was entered as "regionally extinct" in the Red List of Czech invertebrates (Malenovský & Lauterer 2005a). Its presence in the country is confirmed here by a first record from Moravia close to the Austrian border (Fig. 11); *Ch. dumosa* was recently collected in a patch of xerothermic grassland disturbed by vehicles in a former military training area.

Eupteryx lelievrei (Lethierry, 1874) (Fig. 14)

Published data. Lauterer (1983): Bylnice, Bylničky (6974); Kněždub, Čertoryje NNR (7170); Javorník, SW slopes of Háj hill (7171). Malenovský & Lauterer (2012): Valašské Klobouky, Javorůvky NR, Dobšená NM, Brumovka Brook valley, Na Nivách, and Bílé potoky NR (all 6874); Poteč, Ploštiny NR (6874); Nedašov, Kaňoury NM (6874); Bylnice, Lazy NR (6974); Hluk, Babí hora NM (7071); Vyškovec, Vyškovecké Bošačky and Pod Hribovňou NM (7073); Kněždub, Kněždubský háj Forest and Čertoryje NNR (7170); Velká nad Veličkou, Zahrady pod Hájem NNR (7171); Javorník, Jazevčí NNR, Petruchovy Mlýny and Machová NR (7171); Nová Lhota, Vápenky, Porážky NNR (7171); Strání, Záhumenice NM (7172).
Material examined. Bohemia: Malečov, 3.5 km S, Babínské louky NM (5450), 50°35′57″N, 14°07′40″E, 530 m a.s.l., 28.viii.2013, species-rich meadows, 3 ♂♂. Lužnice, 1.2 km W, Velký a Malý Tisý NNR, intermittently wet *Molinia* meadow on edge of Šatlavy wetland (6954), 49°03′32″N, 14°44′21″E, 425 m a.s.l., 14.ix.2010, 1 ♀. All specimens I. Malenovský leg. (MMBC).

Remarks. Monophagous on *Betonica officinalis* (Lamiaceae) in temporarily wet sites, e.g. along forest and shrub margins and in low-input meadows, preferentially on clayey soils (Nickel 2003). Distributed mainly in central Europe, Belgium, the Pyrenees in France, Bulgaria and middle Russia, but generally rare and local (Remane & Fröhlich 1994, Nickel 2003). Recently found in southern Poland (Świerczewski & Walczak 2011a). In the Czech Republic previously known only from species-rich, traditionally non-intensively managed meadows in the Bílé Karpaty Mts. [White Carpathians] in south-eastern Moravia, where the species is quite common (Malenovský & Lauterer

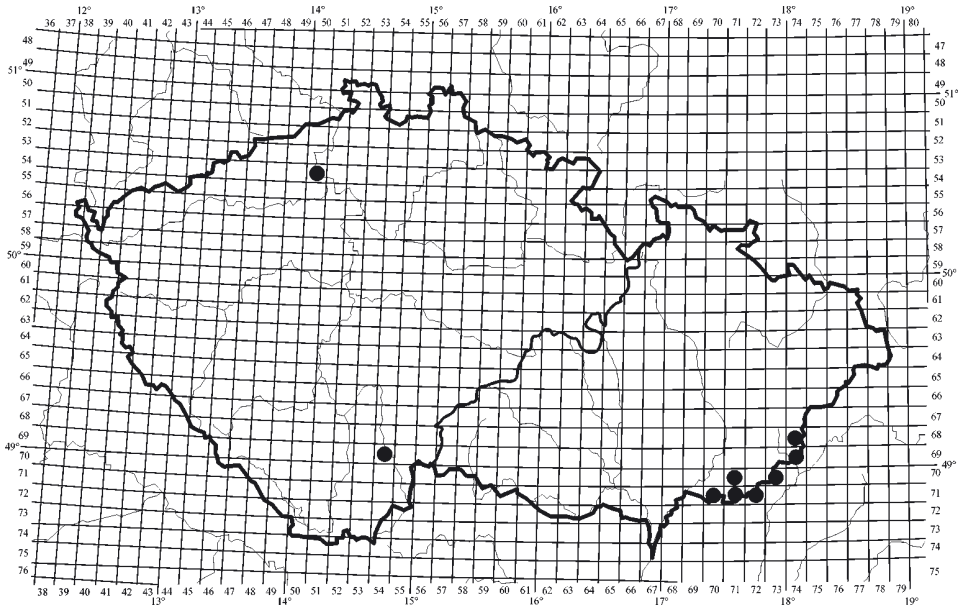


Fig. 14. Distribution of *Eupteryx lelievrei* (Lethierry, 1874) in the Czech Republic.

2012). Here it is reported for the first time for Bohemia as well, in the Třeboňsko Protected Landscape Area in southern Bohemia and the České středohoří Protected Landscape Area in north-western Bohemia (Fig. 14).

Eupteryx signatipennis (Boheman, 1847) (Figs 15, 26)

Published data. Malenovský (2006): Litice, Pod Hvězdou NM (5352).
Material examined. Bohemia: Želnava-Záhvozdí, 2 km W, wet meadows in Uhlíkovský potok Brook valley under Mt Černý les (7149), 48°49′44″N, 13°58′43″E, 820 m a.s.l., 6.viii.2001, 1 ♂ 18 ♀♀. Černá v Pošumaví, 2 km E, Slavkovické louky NM (7250), 48°44′01″N, 14°08′12″E, 760 m a.s.l., 21.viii.1998, wet *Filipendula ulmaria* grassland, 1 ♀. Horní Planá-Přední Zvonková, 5.5 km S Horní Planá, Račínská prameniště NM (7250), 48°43′16″N, 14°01′50″E, 750–770 m a.s.l., 27.viii.2001, 2 ♀♀. **Moravia:** Karlova Studánka, 5.5 km SW, Praděd NNR, Velká kotlina Cirque (5969), 50°03′50″N, 17°14′10″E, 1200 m a.s.l., 17.viii.2011, subalpine tall-forb vegetation, on *Filipendula ulmaria*, 3 ♂♂ 21 ♀♀. All specimens I. Malenovský leg. (MMBC).

Remarks. Monophagous on *Filipendula ulmaria* (Rosaceae) in wet, cool sites such as fens, along shores and ditches, and in disused meadows (Nickel 2003). Quite widespread in northern, central and western Europe, absent from southern Europe with the exception of the Alps and the Pyrenees (Remane & Fröhlich 1994, Hoch 2013). There is only one previous published record from the Czech Republic, from the Kokořínsko Protected Landscape Area in northern Bohemia (Malenovský 2006). The above-cited material

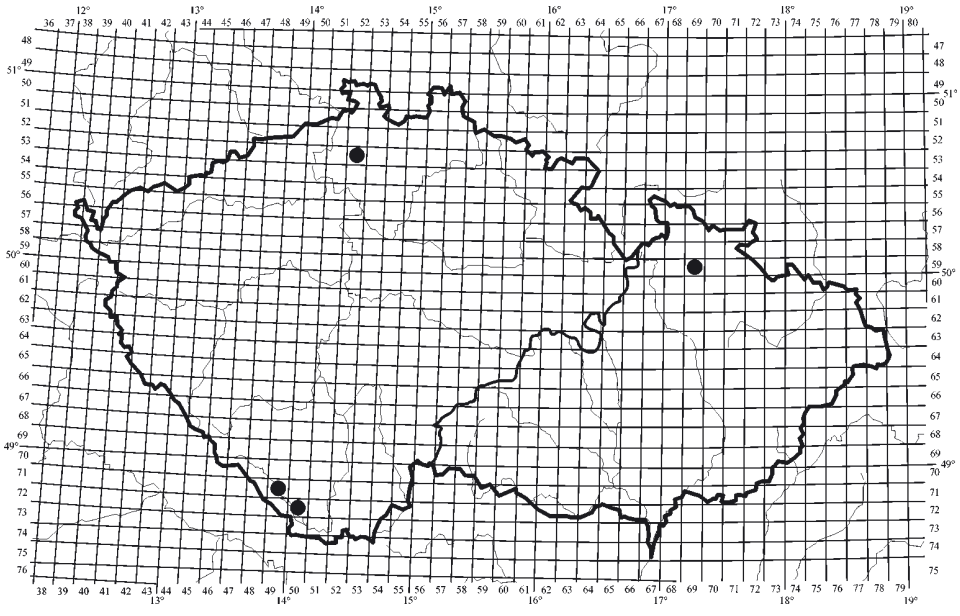


Fig. 15. Distribution of *Eupteryx signatipennis* (Boheman, 1847) in the Czech Republic.

also documents its occurrence in the Šumava Mts. (Bohemian/Bavarian Forest) in southern Bohemia and, for the first time, from Moravia: the Jeseníky Mts. as well (Fig. 15). There are additional unpublished records from the Jizerské hory Mts. in northern Bohemia (P. Lauterer, pers. comm.). The species may be more widespread in the country but it is apparently absent from warm lowlands and has not yet been found in the Carpathians (*cf*. Malenovský & Lauterer 2012).

Zyginidia pullula (Boheman, 1845) (Fig. 16)

Published data. Lauterer (1958): Brno-Holásky (6865). Lauterer (1995): Lednice, Horní les (7166). Malenovský & Lauterer (2005b): Brno-Slatina (6866). Malenovský *et al.* (2011): dry grassland sites in southern Moravia (many records in grids 6866, 6867, 6963, 6964, 6965, 7066, 7067, and 7266). Malenovský & Lauterer (2012): Bílé Karpaty Mts. (many records in grids 6874, 6974, 7071, 7072, 7073, 7170, 7171, and 7172). Malenovský *et al.* (2013): Mikulov, Svatý kopeček NR (7165); Sedlec, Slanisko u Nesytu NNR (7266). **Material examined. Bohemia:** Žehuň, 2 km NE, Žehuňský rybník NNM, intermittently to permanently wet meadows on N shore of Žehuňský rybník Pond (5857), 50°09′08″N, 15°18′20″E, 198 m a.s.l., 22.viii.2012, 1 ♂, I. Malenovský leg. **Moravia:** Prosetín (6464), field of *Trifolium pratense* and *Lolium multiflorum*, 600 m a.s.l., 15.x.1999, 1 ♀, I. Malenovský leg. Tišnov, Květnice NR, SE slopes (6664), 360–400 m a.s.l., 17.ix.1997, dry grassland on limestone, 1 ♂ 1 ♀, P. Lauterer leg. et det. Ráječko, 1 km W (6665), field of *Trifolium pratense* and *Lolium multiflorum*, 400 m a.s.l., 10.vi.1998, 1 ♀, 6.vii.1998, 1 ♂, 29.vii.1998, 3 ♂♂ 2 ♀♀, 2.ix.1998, 3 ♂♂, 22.ix.1998, 2 ♂♂ 2 ♀♀, 10.x.1998, 2 ♂♂ 4 ♀♀, all I. Malenovský leg. Blansko-Klepačov (6665), field

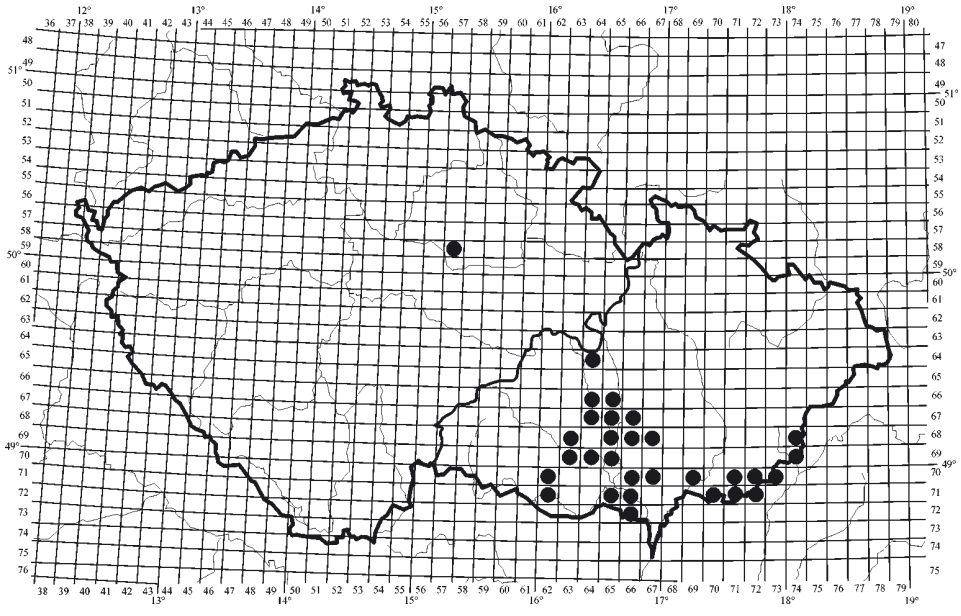


Fig. 16. Distribution of *Zyginidia pullula* (Boheman, 1845) in the Czech Republic.

of *Trifolium pratense* and *Lolium multiflorum*, 340 m a.s.l., 25.ix.1998, 2 ♂♂ 1 ♀, 10.x.1998, 1 ♂ 3 ♀♀, 25.vi.1999, 9 ♂♂ 3 ♀♀, 25.vii.1999, 4 ♂♂ 3 ♀♀ 1 nymph, 25.ix.1999, 21 ♂♂ 21 ♀♀, 12.x.1999, 30 ♂♂ 17 ♀♀, all I. Malenovský leg. Vranov u Brna towards Brno-Útěchov (6665), 450 m a.s.l., 3.xi.1996, forest undergrowth, 4 ♀♀, P. Lauterer leg. et det. Domašov (6764), 460 m a.s.l., red clover field, 21.ix.1998, 1 ♂ 1 ♀, and 21.x.1998, 3 ♀♀, I. Malenovský leg. Brno-Kníničky, shores of the Brněnská přehrada Dam near Osada (6765), 230 m a.s.l., 9.viii.2009, 1 ♂, I. Malenovský leg. Brno-Komín, Sítí (6765), 8.viii.2009, 250 m, abandoned orchard, 1 ♂, I. Malenovský leg. Brno-Obřany, Maloměřický lom Quarry (6765), 220 m a.s.l., viii.2008, 1 ♂, P. Baňař leg. Brno-Maloměřice, Hády Hill, Městský lom and Růženin lom Quarries (6766), 370–400 m a.s.l., 8.ix.2008, 4 ♂♂ 3 ♀♀, and 22.ix.2009, several ♂♂ ♀♀, I. Malenovský leg. Senorady, Údolí Oslavy a Chvojnice NR, slopes under Levnov (= Ketkovický hrad) castle ruins (6863), 300–400 m a.s.l., 11.v.2008, 3 ♂♂ 1 ♀, I. Malenovský leg. Mohelno, Mohelenská hadcová step NNR (6863), 310–340 m, 31.v.1996, many ♂♂ ♀♀, P. Lauterer leg. et det. Brno-Chrlice, along Dvorský potok Brook (6865), 205 m a.s.l., 20.viii.2008, 1 ♀, P. Baňař leg. Brno-Chrlice, Mokřina u dálnice wetland (6865), 200 m a.s.l., 9.ix.2008, 1 ♂, I. Malenovský leg. Brno-Chrlice, environs of Splavisko Ponds (6865), 9.ix.2008, 1 ♂, I. Malenovský leg. Brno-Holásky, Holásecká pískovna Sandpit (6865), 220 m a.s.l., 9.ix.2008, 1 ♀, I. Malenovský leg. Brno-Starý Lískovec, abandoned field at Leskava Brook (6865), 230 m a.s.l., viii.2008, 1 ♀, P. Baňař leg. Brno-Líšeň, Pod Oříšky, orchards (6866), viii.2008, 280 m a.s.l., 1 ♂, P. Baňař leg. Jamolice, 2 km N (6963), 49°05′09″N, 16°15′29″E, 370 m a.s.l., 2.viii.2010, grassland and open woods in abandoned military training ground, 1 ♂, I. Malenovský leg. Výrovice, 0.5 km S, Výrovické kopce Hills (7062), 270 m a.s.l., 7.viii.2009, 1 ♂, P. Baňař & I. Malenovský leg. Bzenec, 1 km SE, sands (7069), 190-195 m, 17.viii.1995, 1 ♂ 1 ♀, P. Lauterer leg. Znojmo-Bohumilice, 1 km SE, Načeratický kopec Hill (7162), 48°50′12″N, 16°05′39″E, 250 m a.s.l., 26.vii.2009, dry and ruderal grassland in abandoned military training ground, 1 ♀, I. Malenovský leg. All material in MMBC.

Remarks. Feeding on various grasses (Poaceae), e.g. *Bromus*, *Cynodon*, *Digitaria*,

Echinochloa, *Elymus*, *Molinia*, *Setaria*, and cultivated cereals and maize, to which occasional damage has been reported from Italy (Vidano & Arzone 1985). A complete life-cycle was observed in the Czech Republic on *Lolium multiflorum*, but the species definitely has at least some additional grass species as local hosts. Widely distributed from Mongolia, Kazakhstan and Turkey to south-eastern and central Europe, southern Sweden and Denmark, and north-eastern Spain (Remane & Fröhlich 1994), but apparently absent from some areas, e.g. from faunistically well-explored Germany, there is only one record of a single specimen from Bavaria (Remane & Fröhlich 1994, Nickel 2003). Recently, *Z. pullula* has been recorded from southern Poland (Świerczewski & Walczak 2011a). In the Czech Republic, *Z. pullula* is widespread and common in southern Moravia, where it lives in various kinds of dry to moderately wet grassland: meadows, pastures, xerothermic grassland, forest glades, ruderal sites, and fields from the lowlands up to at least 700 m (Malenovský & Lauterer 2005b, 2012; Malenovský *et al.* 2011), while it appears to be much rarer or absent in large parts of Bohemia: the first record for the latter part of the country is presented here (Fig. 16). The distribution of *Z. pullula* in the River Elbe lowlands in central Bohemia overlaps with that of the closely-related *Z. scutellaris* (Herrich-Schäffer, 1838), a species with much the same ecology, expanding its range in the Czech Republic in recent years and, in contrast to *Z. pullula*, not yet recorded from Moravia (Malenovský & Tropek 2009, Tropek *et al.* 2012, and additional recent unpublished data in MMBC). *Zyginidia pullula* has two generations per year in the Czech Republic and overwinters in the egg stage, which has been confirmed by dissecting the ovaries of females from samples throughout the season. Adults of the first generation occur from the second decade of May to the end of July, with the second generation from the beginning of August to the end of October; ripe eggs have been found in the ovaries of females of the first generation from the last decade of June to July and for the second generation in the second half of October. In Italy, three generations with adults overwintering are known (Vidano & Arzone 1985) while in Finland there is only one generation per year and the species overwinters in the egg stage (Söderman 2007).

Cicadellidae: Deltocephalinae

Allygidius abbreviatus (Lethierry, 1878) (Fig. 17)

Published data. Dlabola (1956): Pavlovské vrchy Hills (7165). Malenovský *et al.* (2011): Újezd u Brna, Špice NR (6866); Křižanovice near Bučovice, Člupy NR (6867); Rašovice, Rašovický zlom-Chobot NR (6867); Dolní Dubňany, Ve Žlebě (6963); Syrovice, Bezourek (6965); Blučina, Nové hory NR (6965); Kurdějov, Kamenný vrch u Kurdějova NR (7066); Hustopeče, Přední kopaniny (7066); Němčičky, Strací (7066); Úvaly near Valtice, Kameníky (7266). Malenovský & Lauterer (2012): Poteč, Poštiny NR (6874); Valašské Klobouky, Bílé potoky NR (6874); Nedašov, Jalovcová stráň NR (6874); Brumov, Kloboucká street (6974); Blatnička, Milejovské louky (7071); Horní Němčí, Drahy NR (7071); Radějov, Žerotín NM (7169); Kněždub, Čertoryje NNR (7170); Radějov, Veselka hill (7170); Velká nad Veličkou, Zahrady pod Hájem NNR (7171); Suchov, Trnovský Mlýn (7171); Javorník, Jazevčí NNR, Petruchovy Mlýny and Machová NR (7171); Nová Lhota, Fojtické Mlýny, Vápenky, and Porážky NNR (7171).

Material examined. Bohemia: Blšany u Loun, 0.7 km W, Blšanský chlum Hill (5649), 50°20′44″N, 13°50′20″E, 260 m a.s.l., 1.viii.2009, thermophilous fringe and open pine wood, 1 ♀, I. Malenovský leg.;

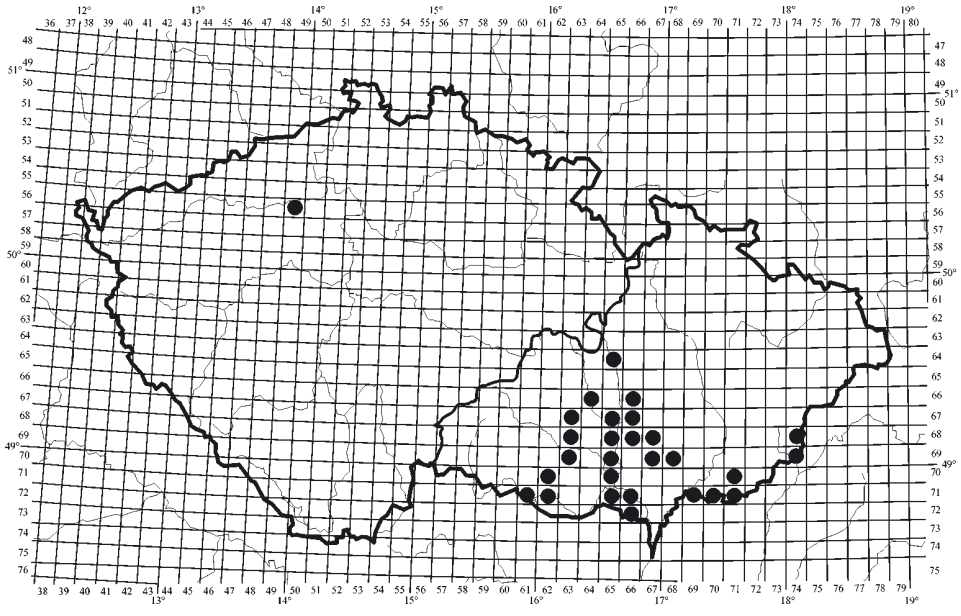


Fig. 17. Distribution of *Allygidius abbreviatus* (Lethierry, 1878) in the Czech Republic.

29.viii.2009, 1 ♀, O. Čížek & P. Marhoul leg. **Moravia:** Rozhraní, southern part of village, towards Dolní Smržov (6465), 380–430 m, 7.vii.1987, 1 ♂, P. Lauterer leg. Malhostovice, Malhostovická pecka NM (6664), 350 m, 19.vii.1998, 1 ♂ 1 ♀, P. Lauterer leg. et det. Křtiny, arboretum (6666), 440–450 m a.s.l., 16.viii.1978, 1 ♀, L. Pospíšilová leg. Přibyslavice-Devět křížů (6763), 500 m a.s.l., 10.vii.1997, forest undergrowth, 1 ♂, P. Lauterer leg. et det. Brno-Komín, Komínský vršek Hill (6765), 28.vi.2009, 275 m, 1 ♂, I. Malenovský leg. Brno-Komín, Sítí (6765), 28.vi.2009, 250 m, abandoned orchard, 1 ♂, I. Malenovský leg. Brno-Komín, Netopýrky NM (6765), 280 m, 30.vi.2012, 1 ♀, I. Malenovský leg. Brno-Medlánky, Medlánecká skalka NM (6765), 280 m, 30.vi.2012, 1 ♀, I. Malenovský leg. Brno-Maloměřice, Hádecká planinka NNR (6766), 400–420 m, 9.vii.1997, 4 ♂♂ 5 ♀♀, P. Lauterer leg. et det. Mohelno, Mohelenská hadcová step NNR (6863), 310–340 m, 10.vii.1997, 1 ♂, P. Lauterer leg. et det. Rebešovice, 1 km NE, Velké Družďavy NM (6865), 220 m a.s.l., 24.vii.1978, 1 ♂ 1 ♀, J. L. Stehlík leg. Ostopovice (6865), railway embankment, 230 m, 7.ix.2004, 1 ♀, I. Malenovský leg. Žarošice (6967). ca. 250 m a.s.l., 8.viii.1962, 1 ♀, J. L. Stehlík leg. Archlebov, Dubový vrch hill (6968), 250–300 m, 24.vi.2000, 1 ♀, P. Lauterer leg. Výrovice, 0.5 km S, Výrovické kopce Hills (7062), 270 m a.s.l., 7.viii.2009, 1 ♀, P. Baňař & I. Malenovský leg. Podmolí-Šobes (7161), 320 m, 12.vii.1997, vineyard and oak wood, 1 ♀, P. Lauterer leg. et det. Znojmo-Načeratice, 1.5 km NW, Načeratický kopec Hill (7162), 270 m a.s.l., 26.vii.2009, grassland and open woods in abandoned military training ground, 4 ♀♀, I. Malenovský leg. Klentnice (7165), 0.3 km W of village, 400 m, 31.viii.2004, 1 ♀, I. Malenovský leg. Klentnice, Tabulová NNR (7165), 400–450 m a.s.l., 9.vii.1968, 3 ♂♂ 1 ♀, P. Lauterer leg. et det. Mikulov, 0.5 km E (7165), 250–260 m, 26.vi.2001, vineyard, 1 ♂, P. Lauterer leg. et det. Sedlec, Kienberg NM (7166), 210–230 m, 19.vi.2010, 2 ♂♂, I. Malenovský leg. Sedlec, Liščí vrch NR (7266), 280–300 m, 19.vi.2010, 1 ♂, I. Malenovský leg. All material in MMBC.

Remarks. In the Czech Republic, usually collected among tall grass in non-intensively used meadows and pastures on relatively dry, warm and sunny sites, in fragments of

xerothermic grassland, and along forest margins (Malenovský & Lauterer 2012). Nymphs develop in the herbal layer while adults may also be found on trees, e.g. cherry (Hegab *et al.* 1980). Definite host plant records are lacking; the species has been collected on places with dominant *Arrhenatherum elatius*, *Bromus erectus*, *Brachypodium pinnatum*, *Calamagrostis epigejos*, and *Molinia arundinacea*, at least some of which may prove to be larval hosts. It is also distributed in southern parts of central Europe, northern France, Belgium, Italy, Bulgaria, and Tunisia (Nickel 2003, Hoch 2013). The record from Tunisia was published by Melichar (1899); the corresponding voucher specimens could be located in the Melichar collection in MMBC (2 ♀♀ with the label "Tunis") but their true origin may be doubtful, as in the case for several other Auchenorrhyncha species allegedly collected in Tunisia by German 19th-century entomologist O. Schmiedenknecht (R. Remane and H. Nickel, pers.comm.). In the Czech Republic, *A. abbreviatus* is quite common in southern Moravia but was not previously known from Bohemia – first recorded here for this part of the country from a dry and warm region in north-western Bohemia (Fig. 17).

Euscelis ohausi Wagner, 1939 (Figs 11, 27)

Material examined. Bohemia: Podbořany-Valov, 0.5 km W (5746), 50°12′08″N, 13°24′29″E, 350 m a.s.l., 2.viii.2009, heathland in abandoned military training ground, on *Cytisus scoparius*, 2 ♂♂ 3 ♀♀, I. Malenovský leg. (MMBC).

Remarks. A western European species known from Portugal, France, Switzerland, Germany, Belgium, the Netherlands, Britain, Denmark and north-western Poland (Nickel 2003, Hoch 2013) and recently introduced into North America (Hoebeke & Wheeler 2010). It lives mostly in sunny, damp to moderately dry sites on acidic substrates (Nickel 2003). There are two forms in central Europe which differ in host plant, colouration, body size and distribution: f. *typica* lives on *Genista anglica* e.g. near the coast of the North Sea and the Baltic Sea in Germany while f. *singeri* Wagner, 1951 dwells on *Cytisus scoparius* and is known e.g. from central and southern Germany and Luxemburg (Nickel 2003, Niedringhaus *et al.* 2010, Kunz *et al.* 2011). The Czech specimens found in north-western Bohemia (Fig. 11), to judge by morphology and host plant, belong to f. *singeri*. Both forms are treated as synonyms at species level by some authors (e.g. Ossiannilsson 1983) as they can interbreed and produce fertile offspring (Strübing 1978) or as distinct subspecies (e.g. Nickel 2003). New species for the Czech Republic.

Fieberiella septentrionalis Wagner, 1963 (Fig. 18)

Published data. Dlabola (1965): Moravia (historical specimens without more definite locality data). Malenovský *et al.* (2011): Ivančice-Budkovice, Krumlovsko-Rokytenské slepence NNR (Budkovické skály) (6964).

Material examined. Bohemia: Kadaň-Prunéřov, 1 km E, "Starý lom" (fly ash deposits of Prunéřov power-plant; 5545), 50°24′59.687″N, 13°16′29.125″E, ca. 350 m a.s.l., yellow pan traps, 30.–31.vii.2010, 1 ♀, 20.–22.viii.2010, 1 ♂, R. Tropek leg., I. Malenovský det. Plzeň-city (6246), grounds of school of agriculture,

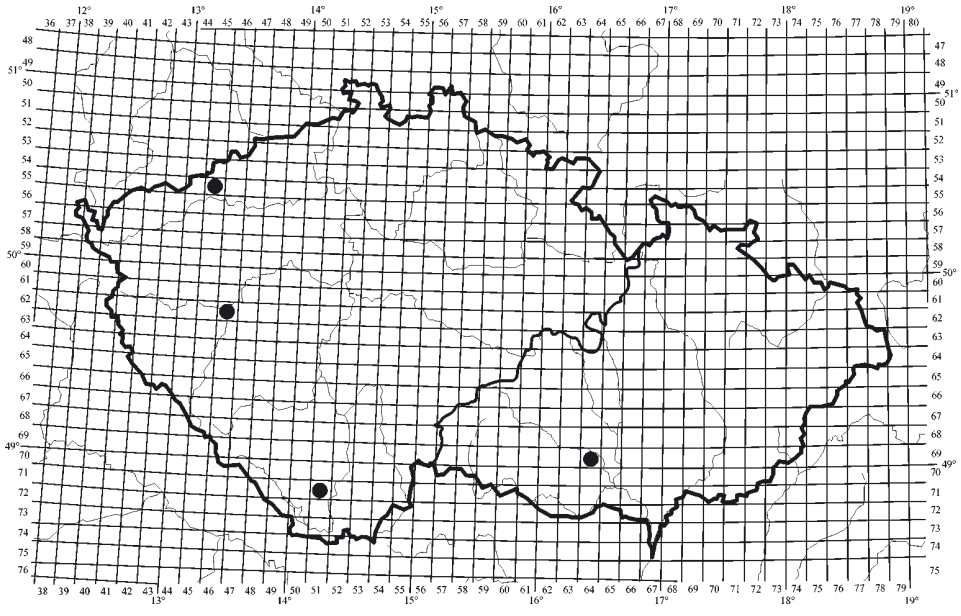


Fig. 18. Distribution of *Fieberiella septentrionalis* Wagner, 1963 in the Czech Republic.

9.viii.1999, *Galinsoga parviflora*, 1 ♂, L. Sitařová leg., P. Lauterer det. Český Krumlov-Nové Dobrkovice and Vyšný, Vyšenské kopce NNR (7151), 48°49′18″N, 14°17′41″E, 530 m a.s.l., 2.viii.1998, 2 ♂♂, I. Malenovský leg.et det. (all material MMBC).

Remarks. Polyphagous on various shrubs, trees and tall herbs, frequently associated with *Prunus spinosa*, *Rosa* spp., *Ligustrum* spp. and other species in dry grassland, ruderal sites, along forest margins and hedges but also synanthropic in gardens and parks in Germany (Meyer-Arndt & Remane 1992, Nickel 2003). Widely distributed from central Europe through the eastern part of the Balkan peninsula, North Anatolia and central Asia to north-east China (Meyer-Arndt & Remane 1992). In the Czech Republic probably widely distributed but only poorly documented: known to date only from Moravia (Dlabola 1965, Malenovský *et al.* 2011). Reported here for the first time for Bohemia (Fig. 18).

Jassargus allobrogicus (Ribaut, 1936) (Fig. 19)

Published data. Dlabola (1944, 1954): Peřimov near Jilemnice (5358), Kozákov Hill near Semily (5457), Praha-Modřany (5952), Praha-Radotín (6052). Kula (2002): Jílové-Sněžník – Kristin Hrádek, Letadlo, Ostrov, Vlčák (5150), Sněžník (5250); Tisá (5250).
Material examined. Bohemia: Přebuz, 1 km NE, Přebuzské vřesoviště NM (5641), 880 m a.s.l., 28.ix.2012, secondary montane heath on former peat diggings, 1 ♂ 3 ♀♀, I. Malenovský leg. Přebuz, 2.8 km NW, Rolavská

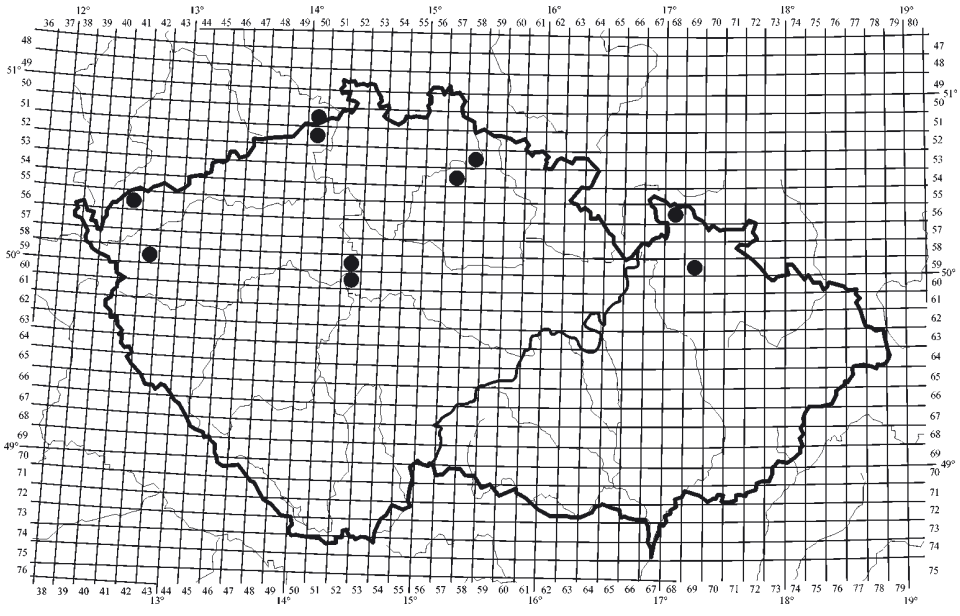


Fig. 19. Distribution of *Jassargus allobrogicus* (Ribaut, 1936) in the Czech Republic.

vrchoviště NNR, Lieche (= Rolavský rybník Pond) (5641), 910 m a.s.l., 21.vi.2011, spruce forest edge, 1 ♂ 1 ♀, I. Malenovský leg.; 12.viii.2011, 1 ♂ 2 ♀♀, P. Kment leg.; 29.ix.2012, 1 ♂, I. Malenovský leg. Přebuz, 3.6 km NW, Rolavská vrchoviště NNR, Velký cínový důl (= former mine Rolava or Sauersack) (5641), 930 m a.s.l., 21.vi.2011, heath, 1 ♂, I. Malenovský leg.; 11.viii.2011, 2 ♂♂ 4 ♀♀, P. Kment leg.; 28.ix.2012, 2 ♂♂ 2 ♀♀, I. Malenovský leg. Přebuz, 3 km W, former village of Chaloupky (5641), 20.–22.vi.2011, 830 m, submontane grassland, 2 ♂♂, I. Malenovský leg. Prameny, 2 km NE, Křížky NNM (5942), 50°03′57″N, 12°44′59″E, 800 m a.s.l., 31.vii.2007, dry to mesic grassland on serpentinite rocks, 2 ♂♂ 1 ♀, I. Malenovský leg. **Moravia:** Kobylá nad Vidnavkou, 2 km E, NE slope of Smolný vrch Hill near Venušiny misky NNM (5668), 50°20′11″N, 17°09′07″E, 350 m a.s.l., 18.viii.2011, forest clearing, on *Avenella flexuosa*, 12 ♂♂ 3 ♀♀, I. Malenovský leg. Karlova Studánka, 6 km SW, Praděd NNR, N slope of Mt Petrovy kameny (5969), 50°04′20″N, 17°13′52″E, 1350–1400 m a.s.l., 17.viii.2011, open montane spruce forest and subalpine grassland, 1 ♂, I. Malenovský leg. (MMBC).

Remarks. In open deciduous and coniferous forests, and dry pastures and heaths, especially common on acidic substrates on *Avenella flexuosa* under beech, spruce and pine but probably also feeding on fine-leaved *Festuca* spp. (Nickel 2003, Söderman 2007). Widespread in western, central and northern Europe, eastward to central Russia (Hoch 2013). In the Czech Republic previously known only from northern and central Bohemia: several records are added here from the Krušné hory [= Erzgebirge] and the Slavkovský les Mts. in western Bohemia and the Hrubý Jeseník Mts. and the Vidnavsko region in Silesia (northern Moravia). The species thus appears to be widespread at least in the northern half of the country, from hills to subalpine elevations, but has not been

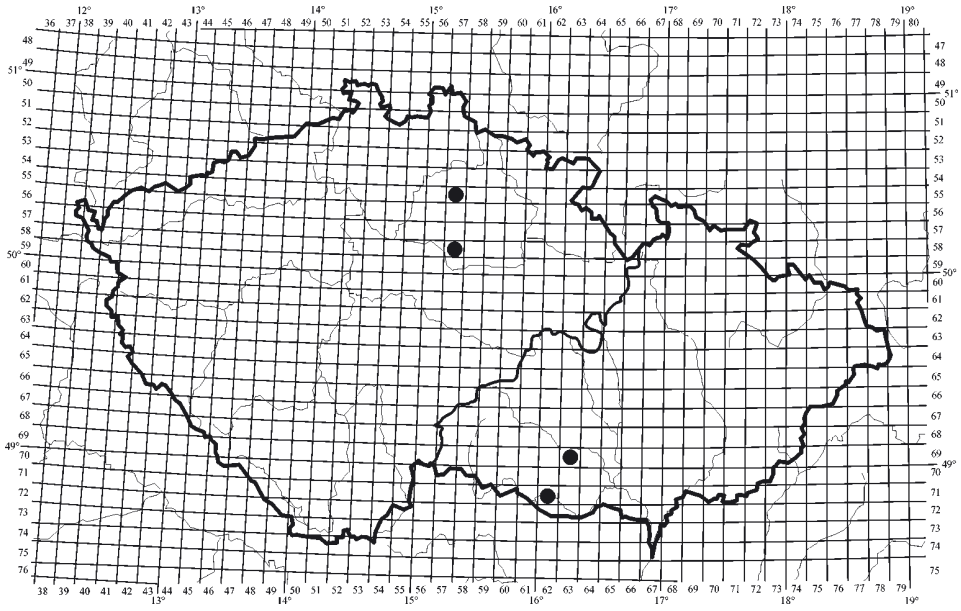


Fig. 20. Distribution of *Recilia coronifer* (Marshall, 1866) in the Czech Republic.

found in large areas with relatively warm climate and basic substrates, such as southern Moravia (Fig. 19).

Pinumius areatus (Stål, 1858) (Figs 11, 28)

Published data. Lauterer (1983): Vacenovice, S margin of village (7069).
Material examined. Bohemia: Kadaň-Tušimice, "Téčko" (fly ash deposits of Tušimice power-plant; 5646), 50°22′25″N, 13°20′59″E, ca. 310 m a.s.l., yellow pan traps, 5.–6.vi.2010, 22 ♂♂ 7 nymphs, 30.–31.vii.2010, 5 nymphs, 20.–22. viii.2010, 35 ♂♂ 6 ♀♀ 3 nymphs, all R. Tropek leg., voucher specimens in MMBC.

Remarks. Widely distributed in central and eastern Europe, Kazakhstan, Kirghizia, Siberia, Mongolia and North America (Nast 1972, Ossiannilsson 1983, Hoch 2013). Reported to live in sunny, sparsely vegetated dry grassland, usually on aeolian or moraine sands on grasses (Ossiannilsson 1983, Nickel 2003). The host plant in central Europe is *Festuca ovina* (Kunz *et al.* 2011). In central Europe, *P. areatus* is an extremely rare and local species. The last records from Austria date back to 1940 and the species has not been found since (Holzinger 2009b). In Germany, there are a few recent sites in coal-mining and sand-quarrying areas in eastern Germany (Nickel 2003, H. Nickel pers. comm.). From the Czech Republic, there is only one finding of two specimens in an area of loose sands in south-eastern Moravia, dating back to 1963 (Lauterer 1983). As this

Moravian locality, near Vacenovice, was later destroyed, *P. areatus* has been considered an extinct species in the Czech Republic (Lauterer 1983, Malenovský & Lauterer 2005a). Its presence in the country is confirmed here based on recent first records from Bohemia: a strong population of *P. areatus* was discovered during a sampling of the fauna of the fly-ash deposits of a large coal-fired power station in north-western Bohemia (Fig. 11). This extreme, post-industrial habitat has recently been shown to provide refuge for several critically endangered insects, particularly those originally confined to inland sand dunes (Tropek *et al.* 2013). The morphology of the Czech specimens, particularly the shapes of the male pygophore appendage and aedeagus, closely matches illustrations of *P. areatus* given by Emeljanov (1972) and Ossiannilsson (1983) and differs from the diagnosis of the central-Asian/Siberian species *Pinumius occultus* Emeljanov, 1966 and *P. nebulicola* Emeljanov, 1972 (see Hamilton 1983, Remane 1987 and Nickel 2003 for a discussion on the taxonomic identity of European *Pinumius* populations).

***Recilia coronifer* (Marshall, 1866)** (Figs 20, 29)

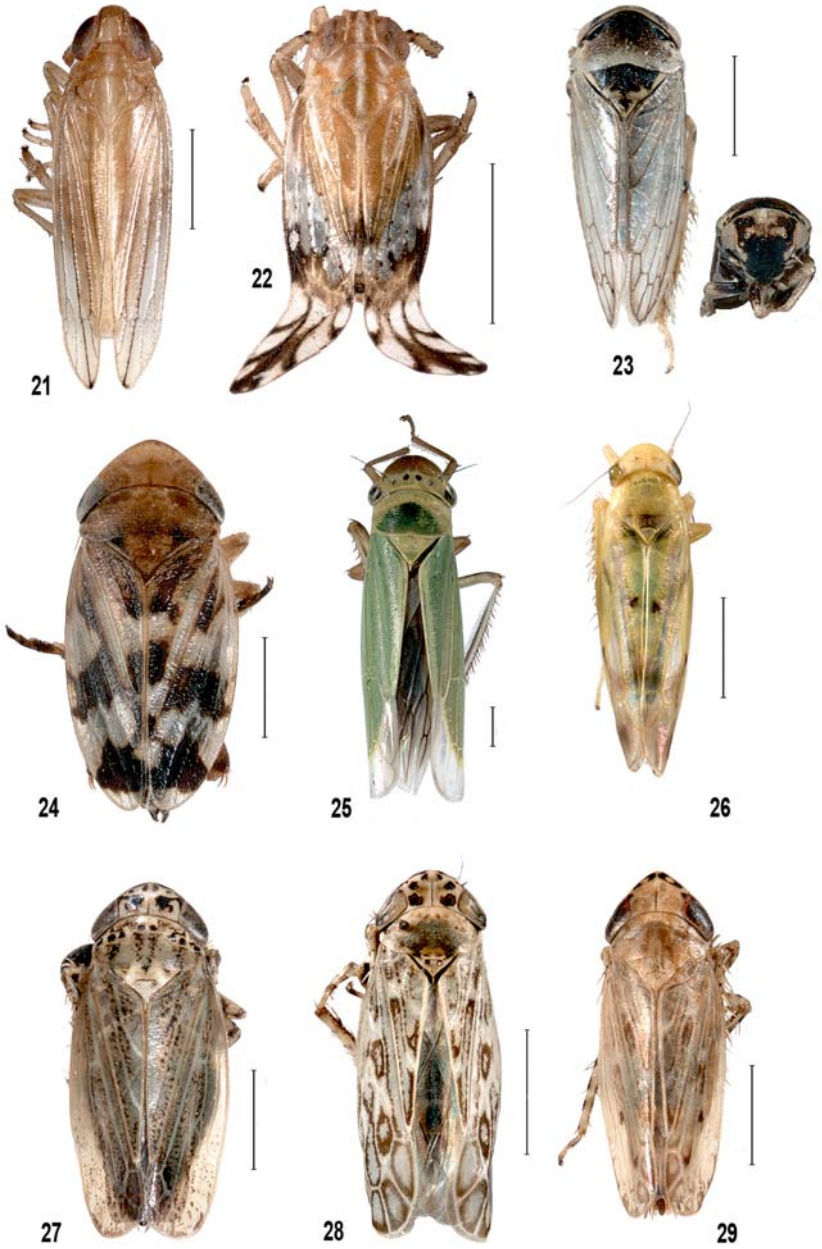
Material examined. Bohemia: Sobotka (5557), 20.vii.1941, forest clearing, 1 ♂, J. Dlabola leg. et det., I. Malenovský revid. (MNHN). Dlouhopolsko/Kněžičky, meadows and woods in the environs of the Dlouhopolský rybník and Kopičácky rybník Ponds (5857), 50°09′40″N, 15°19′60″E, 240 m a.s.l., 22.viii.2012, 1 ♀, I. Malenovský leg. (MMBC). **Moravia:** Jamolice, 2 km N (6963), 49°05′09″N, 16°15′29″E, 370 m a.s.l., 2.viii.2010, grassland and open woods in abandoned military training ground, 2 ♂♂ 2 ♀♀, I. Malenovský leg. (MMBC). Znojmo-Načeratice, 1.5 km NW, Načeratický kopec Hill (7162), 48°49′40″N, 16°05′42″E, 270 m a.s.l., 26.vii.2009, grassland and open woods in abandoned military training ground, 1 ♂, I. Malenovský leg. (MMBC).

Remarks. Mainly in open oak and pine forests, clearings, along forest margins and roads, bog margins and in meadows on *Holcus mollis* and *Molinia caerulea* agg. (Nickel 2003). Widespread from the Iberian peninsula and Great Britain in the west through central Europe, the Balkan peninsula and the Near East to the eastern Palaearctic (Hoch 2013) but so far insufficiently documented in the Czech Republic. Dlabola (1943) probably recorded the above-cited specimen from Sobotka as "*Thamnotettix coroniceps* Kbm. 1868" but later listed it in his monograph on the Czechoslovak fauna under "*Deltocephalus schmidtgeni* (Wagner, 1939)" together with data from Moravia (Čejč and Hodonín) and Slovakia (Chotín and Štúrovo), apparently treating the two species names as synonyms (Dlabola 1954). In the check-list of the Auchenorrhyncha of Czechoslovakia, Dlabola (1977) included only two *Recilia* species (*R. horvathi* (Then, 1896) from Moravia and Slovakia, and *R. schmidtgeni* from Bohemia, Moravia and Slovakia). Corresponding specimens of *Recilia* Edwards, 1922 and *Maiestas* Distant, 1917 (see Webb & Viraktamath 2009 for currently valid nomenclature) in the Dlabola collection in MNHN have been revised recently: as well as a single specimen of *R. coronifer* from Bohemia (Sobotka), there were two males of *Maiestas schmidtgeni* (Wagner, 1939) from Moravia (Čejč, viii.1940, 1 ♂ and 30.viii.1942, 1 ♂, both A. Hoffer leg.) and two males of *M. schmidtgeni* from Slovakia (Bratislava, 1945, 1 ♂, Görtler leg.; Parkán (= Štúrovo), vii.1947, 1 ♂, A. Hoffer leg.). *Maiestas horvathi* is represented in the

Dlabola collection only by specimens from Moravia (Brno-Kníničky, Brněnská přehrada Reservoir, 18.vi.1954, 1 ♂; Brno, at light, 1.ix.1955, 1 ♂; both P. Lauterer leg.). Based on this and the additional, recently-collected material cited above, *R. coronifer* is confirmed/recorded here for the Czech Republic for the first time. As far as is known, the species is present but uncommon in central/north-eastern Bohemia and south-western Moravia (Fig. 20). Currently, there is no confirmed record of *M. schmidtgeni* from Bohemia, in contrast to confirmed historical data from south-eastern Moravia. *Maiestas horvathi* is also known to occur in the Czech Republic only in southern Moravia (Malenovský & Lauterer 2005b, Malenovský *et al.* 2011).

Acknowledgements

I dedicate this paper to my teacher, Pavel Lauterer, who introduced me to entomology and, for many years, has generously shared with me his amazingly deep and universal knowledge and enthusiasm for the study of leafhoppers, planthoppers and psyllids, for which I am most grateful. I also thank Michal Horsák, Jan Roleček and Jan Sychra (all from the Institute of Botany and Zoology, Masaryk University, Brno) for the organization of wonderful collecting excursions to various interesting regions of the Czech Republic, through which several taxa addressed in this paper could be recorded. Petr Kment is to be thanked for valuable assistance in the field on certain excursion trips and gifts of material, as well as for the hospitality and access to the collection of the National Museum, Prague. Pavel Marhoul (Daphne ČR, Praha) and Oldřich Čížek (Biology Centre of the Czech Academy of Sciences and University of South Bohemia, České Budějovice) are acknowledged for their help in organization of the collecting trips to disused military training grounds that were supported by project VaV MŽP SP2/d3/153/08. Robert Tropek (Biology Centre of the Czech Academy of Sciences and University of South Bohemia, České Budějovice) kindly provided Auchenorrhyncha material from fly-ash deposits from power stations in north-western Bohemia collected during a project supported by the Czech Science Foundation (P504/12/2525). A revision of specimens in the Jiří Dlabola collection in the Muséum national d'Histoire naturelle in Paris was possible thanks to the hospitality of Adéline Soulier-Perkins and Thierry Bourgoin and a grant for invited scientists provided by MNHN in 2011. Dmitry Tishechkin (Moscow, Russia) is thanked for the information on the Czech specimens of *Hephathus achilleae* that he examined. Last but not least, I am obliged to Sabine Walter (Kurort Hartha, Germany) for a loan of specimens of *Javesella simillima* from her collection, Herbert Nickel (Göttingen, Germany) for critical reading of the manuscript and useful comments, Lenka Hubáčková and Jan Sychra (both Brno) for photographs of collecting sites and Tony Long (Svinošice) for helping to work up the English. This paper appears through financial support provided to the Moravian Museum, Brno by the Ministry of Culture of the Czech Republic as part of its long-term conceptual development programme for research institutions (ref. MK000094862).



Figs 21–29. Habitus of some Auchenorrhyncha species recorded from the Czech Republic. 21 – *Kelisia confusa* Linnavuori, 1957; 22 – *Litemixia pulchripennis* Asche, 1980; 23 – *Hephathus achilleae* Mityaev, 1967, in dorsal and frontal views; 24 – *Anoscopus alpinus* (Wagner, 1955); 25 – *Cicadella lasiocarpae* Ossiannilsson, 1981; 26 – *Eupteryx signatipennis* (Boheman, 1847); 27 – *Euscelis ohausi* Wagner, 1939; 28 – *Pinumius areatus* (Stål, 1858); 29 – *Recilia coronifer* (Marshall, 1866). Scale bars: 1 mm.

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