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NEW RECORDS AND SUPPLEMENTARY INFORMATION ON THE GEOGRAPHIC DISTRIBUTION OF AUCHENORRHYNCHA (Hemiptera) IN SLOVENIA

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Abstract: Sixteen leaf- and plantleafhopper species are recorded for the first time for the fauna of Slovenia: *Anoscopus alpinus, Batracomorphus irroratus, Calligypona reyi, Chloriona glaucescens, Cixidia lapponica, Dictyophara multireticulata, Doratura butzele, Eupteryx immaculatifrons, Eurhadina saageri, Kybos calyculus, Nesoclutha erythrocephala, Oncopsis tristis, Praganus krkinus*, *Tamaricella ribauti, Tettigometra atra* and *Ziczacella heptapotamica*. Biological associations and distributional ranges of a total of thirty-two species including new records for Slovenia are briefly discussed. The female of the species *Praganus krkinus* is described for the first time here. First occurrence of *Ziczacella heptapotamica* in Slovenia, as well as in Europe outside Russia and Ukraine is recorded. With these additions, the number of plant- and leafhoppers recorded for Slovenia has risen to 574 species. A study is under way to clarify the identity of the taxa *Arboridia adanae, A. dalmatina*, and *A. vitisuga*, which are recorded as occasional pests of grapevines in the eastern Mediterranean area.
KEY WORDS: Hemiptera, Auchenorrhyncha, fauna, new records, Slovenia

Izvleček: Nove najdbe in dopolnila h geografski razširjenosti škržatkov (Hemiptera, Auchenorrhyncha) v Sloveniji

Obravnavanih je šestnajst vrst škržatkov, ki so novi za favno Slovenije. *Anoscopus alpinus, Batracomorphus irroratus, Calligypona reyi, Chloriona glaucescens, Cixidia lapponica, Dictyophara multireticulata, Doratura butzele, Eupteryx immaculatifrons, Eurhadina saageri, Kybos calyculus, Nesoclutha erythrocephala, Oncopsis tristis, Praganus krkinus, Tamaricella ribauti, Tettigometra atra* in *Ziczacella heptapotamica*. Na kratko so obravnavane biološke značilnosti in razširjenost dvaintrideset novih, manj znanih ali redkih vrst škržatkov v favni Slovenije. Prvič je opisana samica vrste *Praganus krkinus*, ki do sedaj ni bila poznana. Prvič je zabeleženo pojavljanje vrste *Ziczacella heptapotamica* v Sloveniji, kot tudi v Evropi izven Rusije in Ukrajine. S tem prispevkom se je število škržatkov v favni Slovenije povzpelo na 574 vrst. V

teku je raziskava preverjanja identitete taksonov *Arboridia adanae, A. dalmatina* in *A. vitisuga*, ki se pojavljajo kot občasni škodljivci vinske trte na območju vzhodnega Sredozemlja.
KLJUČNE BESEDE: Hemiptera, Auchenorrhyncha, favna, nove najdbe, Slovenija

Introduction

The discovery of an animal species new to a well-explored area is a remarkable enough event. This statement also holds true to a large extent for the plant- and leafhoppers of Slovenia, especially for its western part (HOLZINGER & SELJAK, 2001, SELJAK, 2004, 2016, 2017, 2018). Nevertheless, the amazing geographical, orographic, geological, climatic, and vegetation diversity of this area continues to surprise with unpredictable discoveries. Species new to the fauna of Slovenia, as well as some rare and little-recorded ones, are presented and briefly discussed below.

Material and methods

Three main collecting methods were used to provide specimens for subsequent laboratory examination: sweep-netting, suction sampling with a leaf blower (McCulloc MAC GBV 345) and light-trapping. Exceptionally, specimens were also obtained from yellow sticky traps (YST) set up for monitoring different phytoplasma vectors. Voucher specimens were card-mounted and are included in the author's private collection [GSPC]. Concerning taxonomy and nomenclature, MÜHLETHALER & al. (2018) are followed. For each sampling site, the topographic name, the UTM-grid (MGRS) code, and the collecting date are given. Where specimens have been provided by collectors other than the author, their name is indicated. Species new to the fauna of Slovenia are indicated with an asterisk (*).

Results

FULGOROMORPHA Evans, 1946

Achilidae

***Cixidia lapponica* (Zetterstedt, 1828)** *[Figures 1 and 2]*

Material examined: Bač, 650 m (VL45), 24.8.2023 [GSPC, 3 ♂♂; B. Zadravec leg., light-trapped]; Trnovski gozd (Krnica), 970 m (VL08), 12.8.2020 [1 ♂, light-trapped; photo J. Kamin in TRILAR & al., 2023; <http://www1.pms-lj.si/animalia/load.php?species=3392>].

An Eurosibirian species, widely but scattered distributed in Northern Europe and northeastern Asia. Rarely it has been recorded in Central European countries. Isolated occurrences have been recorded in Slovakia, Germany, Austria, Romania, and Moldova (DLABOLA, 1976; NICKEL, 2010; HOLZINGER & FRIESS, 2014; ASCHE, 2015). It is considered a boreoalpine (DLABOLA, 1987b) or boreomontane species (HOLZINGER, 2009). Therefore, the occurrence of this species in Slovenia seemed less plausible. However, the often very cold winters and the extensive coniferous forests throughout the Dinaric Mountains, provide suitable climatic and environmental conditions for its survival. The relatively low altitude (650 m and 970 m) of the two known localities is also sig-

nificant, as it confirms the boreomontane distribution of *C. lapponica* in Central Europe. The second locality in Trnovski gozd is not documented with a voucher specimen, but only with two photographs (TRILAR & al., 2023). The habitat in which the photos were taken (montane coniferous forest; J. Kamin, pers. comm.) clearly indicates *C. lapponica*. The preimaginal stages live under the bark of decaying conifers in association with wood decaying fungi. They develop one generation per year. The adults appear from July to September with a peak in August (ASCHE, 2015).

In Slovenia, there is currently much more faunistic data on *Cixidia pilatoi* D'Urso & Guglielmino, 1995 (SELJAK, 2016). It inhabits warm habitats, mostly lowland white oak forests (*Quercus pubescens* L.) and their edges. The currently known distribution of the two species is shown in *Figure* 3.

UV light traps have proven to be a very efficient tool for detecting and monitoring *Cixidia* species. To date, 44% of our faunistic data for this genus have been obtained using this method. Males were captured more frequently than females. This could be an indicator of the greater mobility of males.

Delphacidae Leach, 1865

***Calligypona reyi* (Fieber, 1866)**

Material examined: Dragonja, 25 m (UL93), 31.8.2017 [GSPC, 1 ♀].

A trans-Palaearctic species with its distribution centre in Europe. In Slovenia, this species is only known from a single macropterous female captured with a light trap about two kilometres from the Adriatic Sea shore. Its host plants are *Schoenoplectus tabernaemontani* (Gmel.) Palla and *S. lacustris* (L.) Palla (NICKEL, 2003). *S. lacustris* is widely spread in permanently flooded sites near slow-running fresh water throughout the country, while *S. tabernaemontani* commonly occurs only in the Adriatic coastal area (JOGAN & al., 2001). Further findings of this leafhopper species are expected since its habitats have been little explored so far.

***Chloriona glaucescens* Fieber, 1866**

Material examined: Koper (VL04), 15.5.2008 [GSPC, 1 ♂, 1 ♀]; Lazaret (VL04), 3.7.2017 [GSPC, 1 ♂]; Škocjanski zatok (VL04), 27.4.2008 [GSPC, 4 ♂♂, 5 ♀♀].

Monophagous on *Phragmites australis* (Cav.) Trin. ex Steud.. In Slovenia, this species is confined to salt marshes along the Adriatic coast, but even there, it is rather rare. In these habitats, it occurs sympatric with the much more common *C. sicula* Matsumura, 1910. The latter is not strictly bound to saline habitats and occurs inland in freshwater marshes as well.

Dictyopharidae Spinola, 1839

***Dictyophara (Dictyophara) multireticulata* Mulsant & Rey, 1855** [*Figure 13*]

Material examined: Rakitovec, 480 m (VL13), 13.9.2022 [GSPC, 1 ♂];

This is a Mediterranean species distributed from Portugal to South Russia, radiating into the Pannonian plain. On the territory of Slovenia, this species was confirmed only very recently, although expected. Specifically, THEN (1886) and GRÄFFE (1903) reported it from the nearest vicinity around Trieste in Italy, and I collected it in some

localities on the Croatian side of Istria. Adults were mainly swept from canopies of *Quercus pubescens* Willd. on hot sunny slopes. Apparently, this species is much rarer than *D. europaea.*

Issidae Spinola, 1839

***Issus muscaeformis* (Schrank, 1781)**

Material examined: Blatnik pri Črmošnjicah, 500 m (WL15), 1.6.2007 [GSPC, 1 ♀]; Kalce (VL38), 15.5.2012 [GSPC, 1 ♂]; Lekmarje, 390 m (WM31), 26.6.2023 [YST, 1 ♂]; Litmerk, 310 m (WM84), 27.6.2023 [YST, 1 ♂]; Pared (Kačiče), 450 m (VL25), 19.5.2018 [GSPC, 1 ♀]; Vetrnik, 700 m (WM40), 17.6.2006 [GSPC, 1 ♀]; Žejna dolina, 580 m (VL39), 23.6.2018 [GSPC, 1 ♂].

Other records: Kasaze (WM11), 16.5.2020 and Mrzlica (WM01), 26.5.2018; Photo D. Janević http://www1.pms-lj.si/animalia/load.php?species=5950

A rather rare species in Slovenia was collected mainly in the continental part. In the western part, it has been only found in one locality, despite the area being well explored. Adults appear from May to the end of July.

Tettigometridae Germar, 1821

****Tettigometra (Tettigometra) atra* Hagenbach, 1825**

Material examined: Koritnice, 760 m (VL45), 13.9.2023 [GSPC, 1 ♀]

The specimen was swept from the grass layer of an extensively grazed xerothermic pasture on limestone.

***Tettigometra (Tettigometra) fusca* Fieber, 1865**

New record: Unec (VL47), 31.8.2008 [GSPC, 1 ♂].

Previously, this species was recorded from the surrounding of Tolmin and Škofja Loka (Gräffe, 1903; Kiauta, 1962). However, no respective voucher material for these records is available. Therefore, the specimen mentioned above is the only documented material for Slovenia.

Tettigometra species are becoming very rare throughout Europe, and many populations have vanished in recent decades, which is partly due to their complex life history associated with ants but especially due to the vanishing of suitable habitats (Nickel, 2003). Many of them are therefore threatened with extinction. The two species, *T. atra* and *T. fusca* prefer dry low productive grassland on neutral to basic substrates.

Cicadomorpha Evans, 1946

Aphrophoridae Amyot & Serville, 1843

****Neophilaenus infumatus* (Haupt, 1917)**

Material examined: Sebeborci (WM97), 22.7.2003 [GSPC, 2 ♂♂ and 1 ♀].

In Slovenia, this species is reliably confirmed only from the above locality. Specimens from the *N. exclamationis* s.l. complex collected and studied thus far in the area of the Dinaric Mountains and the Julian Alps belong to either *N. exclamationis* (Thunberg, 1782) or *N. limpidus* Wagner, 1935. There has been very little material

collected and studied thus far, so any conclusions concerning the distribution of these species in Slovenia are highly speculative. The occurrence of *N. limpidus*, an endemic species of the southern Alps and the Dinarides, additionally complicates discrimination between these species. The existing descriptions of *N. limpidus* in the literature are all based on the type series of W. Wagner from Mt. Nanos (WAGNER, 1935; WAGNER, 1955; HOLZINGER & al., 2003). The intraspecific variability (body size, surface colouration, aedeagus shape) of *N. limpidus* has not been sufficiently studied and remains somewhat enigmatic. Specimens collected by me on Mt. Snežnik in July 2017 show a considerable range of variability in colour patterns, which in some darker male specimens may come quite close to those of *N. exclamationis*. Further collections and comparative examination of specimens from the wider Dinaric area and the south-eastern Alps will be needed for a better understanding of the species delimitation of the *N. exclamationis* complex in the territory of Slovenia.

Cicadellidae Latreille, 1825

Aphrodinae Haupt, 1927

***Anoscopus alpinus* (Wagner, 1955)** *[Figures 17 and 18]*

New records: Mangart, 2050 m (UM94), 3.7.2018 [GSPC, 39 ♂♂, 14 ♀♀, 1 nymph]; Rogla, 1490 m (WM24), 20.7.2021 [GSPC, 1 ♂].

Previously, this species has only been recorded from Peca (VM85) (SELJAK, 2016). In early July 2018, an unusually large population was observed on an alpine meadow on Mangartsko sedlo at 2050 m. With suction sampling, several dozens of specimens were collected from the grass turfs.

The taxonomic validity and position of *A. alpinus* in relation to *A. assimilis* (Signoret, 1879 and *A duffieldi* (Le Quesne, 1964) remain a matter of discussion. GUGLIELMINO and BÜCKLE (2015) consider *A. alpinus* to be a separate species after reviewing material from various parts of Europe. This species mainly populates mountain grasslands in the upper montane and subalpine belt. It has been recorded from several parts of the Alps and Central European mountains (MÜHLETHALER et al., 2016; MÜHLETHALER et al., 2018, GĘBICKI et al., 2013). Here, I follow the argumentation by Guglielmino and Bückle (2015), taking into consideration the morphological traits of the specimens being examined, the geographical position of Slovenia, and the fact that all existing material was gathered in the upper montane and subalpine belt above 1500 m.

Deltocephalinae Fieber, 1869

***Colladonus torneellus* (Zetterstedt, 1828)** [*Figure 16*]

Material examined: Labinje, 700 m (VM21), 13.4.2019 [GSPC, 1 ♂].

Previously, this species had only been recorded from the Trenta Valley (SCHÜRRER & LÖCKER, 2003: 78); this new locality is only the second in Slovenia. The studied specimen was swept from the undergrowth vegetation in a coniferous forest on limestone. The distribution range of this species extends throughout the Palaearctic and Alaska (DMITRIEV & al., 2023). In Central and South Europe, it is rare everywhere. More commonly, it occurs in Scandinavia and northern Russia (OSSIANNILSSON,

1983). It lives in shrubby undergrowth of mixed and coniferous forests, but its life history is still poorly understood (NICKEL, 2003).

***Doratura butzele* Guglielmino & Bückle, 2021** [*Figures 4 - 6*]

Material examined: Miren (UL98), 30.6.2017 [GSPC, 1 ♂, 1 ♀], 11.7.2017 [GSPC, 2 ♂♂, 1 ♀] and 21.8.2017 [GSPC, 4 ♂♂, 3 ♀♀]; Loke (UL99), 24.8.2017 [GSPC, 3 ♂♂, 1 ♀]; Bilje (UL98), 6.9.2017 [GSPC, 20 ♂♂, 15 ♀♀]; Vipava (Mlake), 120 m (VL17), 1.6.2018 [GSPC, 2 ♀♀].

This is a very recently described species with the circum-Adriatic distribution range. It has been recorded in Italy (Veneto, Piedmont, Abruzzo, Molise, Apulia, Campania, Basilicata, Calabria and Sicily), Croatia (Istria), Bosnia and Herzegovina, Montenegro, and conceivably Slovenia (GUGLIELMINO & BÜCKLE, 2021; BÜCKLE & GUGLIELMINO, 2022). This ambiguous record for Slovenia refers to GRÄFFE (1903, sub *D. paludosa*), who recorded it in the area around Tolmin. As the type locality for *D. paludosa* (Monfalcone, Italy) is not far from this one, it is possible that this citation refers to either *D. plaudosa* or *D. butzele*. Gräffe's citation of *D. paludosa* certainly merits verification since this species has not been confirmed in Slovenia thus far.

The first specimens of *D. butzele* in Slovenia were collected in an abandoned gravel pit between Vrtojba and Miren in early summer 2017. The number of specimens was rather modest in this locality. Later in September of the same year, a larger number (35 specimens) was obtained by suction sampling in an abandoned vineyard in Bilje about a kilometre further east. The species was identified as *D. veneta* Dlabola, 1959 at that time, with which collected specimens shared most characteristics. The most recent monographic study of the genus *Doratura* of the Palaearctic region showed, however, that the type material of *D. veneta* matches that of *D. paludosa* Melichar, 1897; thus, the name became a younger synonym for it (BÜCKLE & GUGLIELMINO, 2022). *D. butzele* is closely related to *D. paludosa*, and they differ only in aedeagus structure, this being 'stouter (in lateral view), with rather evenly curved ventral margin and proximally curved dorsal margin in *D butzele*. Spinules are present only in the central portion, with the apical sector remaining smooth and shiny. In *D. paludosa* the aedeagus is slender in lateral view, widened only in its central portion, the ventral margin is strongly curved in the middle, the dorsal margin proximally straight, curved in its distal portion. Spinules are present on the entire surface including the apical part, a short proximal sector only remains free of them' (BÜCKLE & GUGLIELMINO, 2022: 34). In our cases, *D. butzele* populates ruderal habitats with short grasses, mainly *Cynodon dactylon* (L.) Pers. Adults were collected from early June to mid-July and from mid-August to mid-September. It appears to develop two generations per year, but reliable confirmation for that is lacking.

Metalimnus formosus* (Boheman, 1845) [Figures 19 and 20*]

Material examined: Dolenje Jezero, 550 m (VL56), 17.7.2017; Ig, 290 m (VL69), 16.8.2018; Laze pri Gorenjem Jezeru, 550 m (VL56), 17.7.2017 [GSPC, 15 ♂♂ and 5 ♀♀]; Muriša (XM24), 26.7.2004 [GSPC, 1 ♂ and 1 ♀]; Puščava, 240 m (WL18), 17.6.2006 [GSPC, 1 ♂]; Rakitna, 800 m (VL58), 12.9.2008 [GSPC, 1 ♂ and 1 ♀];

Škofljica, 290 m (VL69), 11.7.2018; Trebnje (WL08), 10.7.2004; Ulaka, 750 m (VL57), 17.7.2017; Velika Polana (XM05), 26.7.2004 [GSPC, 1 ♀]; Velike Bloke, 740 m (VL67), 17.7.2017; Volčje, 750 m (VL67), 16.8.2018 [GSPC, 1 ♂].

***Metalimnus steini* (Fieber, 1869)** [sensu Anufriev & Emeljanov, 1988]

Material examined: Ajševica (UL98), 8.9.2001 [GSPC, 1 ♀]; Bilje (UL98), 6.9.2017; Dombrava, 50 m (UL98), 8.8.2007 [GSPC, numerous]; Gradišče pri Vipavi, 115 m (VL17), 3.10.2018 [GSPC, 1 ♂]; Horjul (VL49), 19.9.2007; Hotedršica, 550 m (VL38), 26.8.2016; Landol, 530 m (VL37), 18.7.2016; Loke (UL98), 19.8.2004 [GSPC, 1 ♂ and 1 ♀]; Lopata, 260 m (WM12), 28.9.2010; Maribor - Tezno (WM55), 16.9.2004 [GSPC, 1 ♂]; Nova Gorica (UL98), 17.7.1999 [GSPC, 2 ♂♂] and 18.6.2005 [GSPC, 7 ♂♂ and 5 ♀♀]; Prvačina (UL98), 10.6.2006 [GSPC, 2 ♂♂]; Spodnje Bukovo (VM11), 4.6.2017; Staro Selo, 240 m (UM82), 24.8.2016 [GSPC, numerous]; Stojnci (WM73), 31.7.2008; Vogrsko (UL98), 21.9.2014 [GSPC, 1 ♂ and 1 ♀]; Žejna dolina, 580 m (VL39), 26.8.2016.

The taxonomic identity of *M. steini* remains unclear as the type specimens have not been re-examined and compared with other related taxa (Nickel, 2003). In Europe, it is currently interpreted according to Anufriev & Emeljanov (1988). Accordingly, the older material in my collection also needed revision. It turned out that all earlier published records of *M. formosus* for Slovenia (Holzinger & Seljak, 2001) refer to *M. steini*. The record of *M. formosus* by Gräffe (1903) for Tolmin also remains questionable as it cannot be verified. The current known distribution of both species in Slovenia is shown in *Figure 20.*

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****Nesoclutha erythrocephala* (Ferrari, 1882)** [*Figure 14*]

Material examined: Korada, 500 m (UL89), 14.9.2022, captured on light [GSPC, 1 ♂; B. Zadravec leg.]; Lazaret (VL04), 22.6.2023 [GSPC, 1 ♀; B. Zadravec leg.].

This species has a wide circum-Mediterranean distribution. It is also recorded in the Caucasian region, Iran, China, Japan, and South Africa (Zhang & Lu, 2011). From the closer vicinity of Slovenia, it was previously recorded from Croatian Istria, specifically in Volosko (Gräffe, 1903) and Antenal near Novi Grad (Seljak, 2016). Thus far, I have always swept this species from the grass *Bothriochloa ischaemum* (L.) Keng, mostly together with large numbers of *Balclutha frontalis* (Fieber, 1872). It is not certain whether it lives monophagously on this grass or not, but the known distribution pattern of *N. erythrocephala* matches the old-world distribution range of this grass well (POWO, 2022).

****Praganus krkinus* Dlabola, 1987** [*Figures 8 – 12*]

Material examined: Rakitovec, 500 m (VL13), 31.5.2022 [GSPC: 9 ♂♂, 24 ♀♀]; 24.6.2022 [GSPC: 8 ♂♂, 16 ♀♀] and 13.9.2022 [3 ♂♂, 19 ♀♀].

Praganus Dlabola 1949 is a Palaearctic genus represented by only three species: *P. hofferi* (Dlabola 1947), *P. admirabilis* Mitjaev, 1975 and *P. krkinus* Dlabola 1987 (Dmitriev & al., 2023). *P. hofferi* has a wider distribution area in Central and Eastern

Europe, known to occur in Germany, the Czech Republic, Hungary, Moldova, Ukraine, and Kazakhstan, while *P. admirabilis* and *P. krkinus* are endemic with a limited distribution range, the first only recorded from Kazakhstan (Mitjaev, 1975) and the second from Croatia (Dlabola, 1987a). The speciation of them may have happened by the area fragmentation of their common ancestor during the last glaciations. *P. krkinus* is the result of a long-lasting population isolation kept by the mountains of the Dinaric ridge.

To date, *P. krkinus* has only been recorded from the type locality in Baška on the island Krk in Croatia (Dlabola, 1987a). This new finding in southwestern Slovenia is the second one and considerably expands the distribution range of this species. This locality in Slovenia probably represents only the northernmost limit of the range. Further findings can be expected in the restricted area around the Kvarner Gulf and on its islands.

Dlabola (1987) classified *P. krkinus* as to be a stepp-associated and perhaps even an insular species. The habitat in which the species occurs in Slovenia fully confirms its steppe-like habitats. Thus far, all specimens have been obtained with suction sampling in an extremely dry and rocky sub-Mediterranean meadow. Among the vegetation in place, *Stipa eriocaulis* Borbás and *Sesleria juncifolia* Suffren have been the leading plant species and are therefore considered the most plausible host plant candidates. Since grasses from the genus *Stipa* are also recorded as host plants of the other two species (Emeljanov, 1964; Mitjaev, 1975, Nickel, 2003), *Stipa eriocaulis* can be considered the most likely one. Other, more abundantly represented plant species were *Festuca rupicola* Heuff.*, Carex pumila* Thunb.*, Satureja subspicata* subsp. *liburnica* Šilić*, Teucrium montanum* L.*, Euphorbia nicaeensis* All.*, Ruta divaricata* Ten.*, Galium corrudifolium* Vill.*, Genista sericea* Wulfen*, Allium lusitanicum* Lam.

From the original description of *P. krkinus*, it can be concluded that Dlabola's type series only consists of the holotype and a paratype male. Dlabola apparently did not find female specimens, as he did not describe them. Therefore, a brief description of the female is provided here.

Description of the female [*Figures 10 and 11*]: Body length 2.9-3.5 mm (avg. 3.25 mm; 15 specimens measured); same colour as males, yellowish-white, uniform, without marked pattern; postclypeus bright yellowish brown with thin whitish transversal lines on both sides of the whitish median line. Forewings are mostly uniform yellowish-white without or, in some specimens, with scattered brownish patches or streaks along the white veins, notably in apical region; wings may reach the end of the abdomen, but mostly leaving the pygofer and anal tube and often also a part of the tergite VIII, uncovered; pygofer bears numerous robust pale-yellow setae. Abdominal tergites pale yellow, 1.–5. medially often brawn with a bright marginal area; sternites ± uniformly pale yellow to bright brown. The pregenital sternite is about twice as wide as long, with ± straight posterior margin or only slightly protruding posterolateral angles and a strongly protruding median process; its basic colour is pale yellow, medially bright brownish, the spine-like process in its apical half always dark brown to almost black [*Figures 11 - 12]*. The anal tube is very small, almost

completely covered by caudal parts of the pygofer. Ovipositor pale yellow to light brownish and extends to the end of pygofer. Females are easily recognisable by the typical pregenital sternite, which is of the same shape as in *P. hofferi* (see BIEDERMANN & NIEDRINGHAUS, 2004).

P. krkinus, P. admirabilis and *P. hofferi* are very closely related species. *P. krkinus* and *P. hofferi* clearly differ in the structure of the aedeagus, while other morphological characters mostly overlap in both sexes. In *P. krkinus,* the aedeagus shaft arises from the lower part of the phallobase and then bends sharply upwards, building a very sharp angle with the phallobase, in profile ± straight or only slightly sigmoid; apical appendages (when aedeagus observed from behind) are adpressed to the shaft in their basal third and bent arch-shaped lateroventrally then [*Figure 12*]. In *P. hofferi*, the aedeagus shaft arises ± perpendicularly from the middle of the phallobase and is then ± evenly arched upwards in profile; apical appendages are T-shaped, set perpendicular to the shaft axis and then sigmoidal curved downwards (DLABOLA, 1954; BIEDERMANN & NIEDRINGHAUS, 2004).

Much less defined are the differences between P. *admirabilis* and *P. krkinus*, as both show ± the same structure of male terminalia according to the original descriptions and drawings by MITJAEV (1975). Other characteristics, such as degree of body colouration and colour patterns, are difficult to assess without having authentic specimens of *A. admirabilis* for comparison. Descriptive characters may easily be a matter of personal interpretation and, therefore, of a rather vague value for reliable species discrimination. According to Mitjaev's original description, *P. admirabilis* should be stronger coloured with more pronounced brown patterns on the vertex and pronotum (MITJAEV, 1975). In contrast, *P. krkinus* is light-coloured in all body parts. Nevertheless, very isolated populations of both species and a huge geographical distance between them suggest keeping the two taxa as separate species for now.

In Europe and specifically in Slovenia, steppe habitats have become very rare and fragmented. The still-preserved valuable habitats of this type on the edge of the Slovenian Karst and below it, are threatened mainly by the abandonment of extensive grazing and gradual overgrowth with bushes. Endemic species like *Praganus krkinus* and the newly described *Dudanus karra*, which are specialised strictly to such environmental conditions and have a very restricted distribution range, are highly vulnerable and endangered of extinction (GUGLIELMINO & al., 2023). Therefore, these habitats also should merit the highest conservation concern in Slovenia.

Iassinae Amyot & Serville, 1843

Batracomorphus irroratus* Lewis, 1834 [Figure 15*]

Material examined: Rakitovec, 490 m (VL13), 24.6.2022 [GSPC, 1 ♂, 1 ♀]; Črnotiče, 440 m (VL14), 21.6.2023 [GSPC, 1 ♀].

The species has a West-Palaearctic distribution ranging from Europe to Mongolia (DMITRIEV & al., 2023). In Middle- and South-eastern Europe, it is widely but rather scattered distributed in xerothermic grassland on limestone. *Helianthemum nummularium* (L.) Mill. is recorded as its hostplant (NICKEL, 2003). In Slovenia, it is

apparently very rare. The studied specimens were collected in very dry karstic pastures on limestone.

Idiocerinae Baker, 1915

***Balcanocerus pruni* (Ribaut, 1952)** [*Figures 21 and 23*]

New records: Ajševica (UL98), 22.3.2005; Ankaran (VL04), 6.10.2001 [GSPC, 1 ♂ and 1 ♀]; Banjški Kuk (UL99), 19.3.2014; Kromberk (UL99), 10.3.2014; Landol, 530 m (VL37), 3.6.2021; Loke (UL98), 12.3.2017 [GSPC, 4 ♀]; Maribor, 270 m (WM45), 21.9.2021; Skalnica, 300 m (UL99), 18.7.2004 [GSPC, 1 ♀]; Vrtojba (UL98), 29.3.2014. Some additional records are published in Schürrer & Löcker (2003).

Balcanocerus larvatus* (Herrich-Schaeffer, 1835) [Figures 21 and 23*]

New records: Ajševica (UL98), 2.8.2003 [GSPC, 2 ♀♀] and 19.8.2004 [GSPC, 1 ♀]; Ankaran (VL04), 6.10.2001 [GSPC, 1 ♀]; Brestovica pri Komnu, 50 m (UL97), 6.8.2005; Črnotiče, 420 m (VL14), 8.8.2023; Divača (VL25), 24.9.2005; Dvori, 170 m (VL13), 5.7.2023; Loke (UL99), 15.6.2012; Petelinjsko jezero (VL46), 9.7.2006; Podnanos, 140 m, 20.6.2006 [GSPC, 1 ♂]; Potoče (VL08), 27.7.2005; Rožice, 500 m (VL24), 25.7.2006; Stepani (VL14), 7.7.2006; Šempas (VL08), 27.6.2023; Zagorje (pri Pivki) (VL35), 9.7.2006.

B. pruni and *P. larvatus* are two closely related species, both associated with *Prunus spinosa* L. as the host plant. Both develop one generation per year but with completely different life histories. The first one hibernates as an adult, and therefore adults occur from late summer to the beginning of June next year. The second one hibernates in the egg stage, and adults occur from the end of June onwards until late September. In late summer, both may occur sympatrically. *B. larvatus* has a middle- to south-European distribution range, while *B. pruni* is even more thermophilous and shows a more Mediterranean distribution (Nickel & Remane, 2002; Dmitriev & al., 2023). The faunistics of these two species have thus far been studied satisfactorily only for the western part of Slovenia.

***Metidiocerus rutilans* (Kirschbaum, 1868)** [*Figure 25*]

New records: Ajševica (UL98), 2.7.2006; Avče, 160 m (UM90), 24.5.2018; Bevke (VL59), 6.4.2022; Bukovščica, 460 m (VM41), 17.7.2010 [GSPC, 1 ♀]; Hotedršica (VL38), 15.5.2017 [GSPC, 1 ♀]; Kanal ob Soči (UM90), 5.7.2003 [GSPC]; Landol, 520 m (VL37), 25.7.2022; Loke (UL99), 21.6.2017; Mangartska planina (UM94), 25.8.2017 [GSPC, 1 ♀]; Mangartsko sedlo, 1750 m (UM94), 16.9.2019; Miren, 50 m (UL98), 6.4.2018 [GSPC, 1 ♀]; Nova Gorica (UL99), 24.3.2012 [GSPC, 1 ♂ and 2 ♀♀]; Prelože (VL35), 30.3.2012; Preval pri Podutiku, 330 m (VM50), 6.6.2012; Solkan (UL99), 21.5.2006 [GSPC]; Škocjanski zatok (VL04), 7.5.2016 [D. Vadnjal leg.]; Vipava (Mlake), 120 m (VL17), 1.6.2018; Vojsko, 1040 m (VL19), 18.8.2001 [GSPC, 1 ♀]; Volče, 480 m (UM91), 7.4.2018 [GSPC, 1 ♂]; Želin (VM10), 25.6.2003 [GSPC, 1 ♂].

A common species with the Euro-Siberian distribution range. Its host plants are various willow species (*Salix*), notably the narrow-leaved ones (Nickel, 2003). In Slovenia, it was mainly swept from bushes and trees of *Salix purpurea* L. and *S. alba* L. but also from *S. caprea* L., *S. cinerea* L. and *S. appendiculata* L. Earlier findings of this species in Slovenia were reported by Schürrer & Löcker (2003).

Macropsinae Evans, 1935

***Macropsis fuscula* (Zetterstedt, 1828)** [*Figure 24*]

New records: Grčarice (VL85), 21.7.2013; Kobariški Stol, 1300 m (UM82), 8.9.2013; Kolovrat (UM91), 16.8.2018; Kromberk (UL99), 21.7.2011; Landol, 520 m (VL37), 25.7.2022; Lepena, 700 m (UM92), 22.8.2003 [GSPC, 1 ♀]; Lijak (VL09), 20.7.2008 [GSPC, 1 ♀]; Mala Lazna (VL09), 1.8.2010; Mirtovički potok (VL84), 21.7.2013; Nova Gorica (UL98), 30.8.2011 [GSPC, 5 ♂♂ and 1 ♀]; Osilnica (VL74), 20.7.2013; Planina Kuk, 1150 m (VM01), 2.9.2006 [GSPC, 1 ♂]; Podpleče, 950 m (VM20), 30.8.2022; Spodnji Lokovec, 790 m (VL09), 12.8.2014; Strunjan (UL94), 10.8.2005 [GSPC, 1 ♀]; Voglarji (Zavrh) (VL09), 1.8.2010; Volovja reber, 1025 m (VL44), 27.7.2017 [GSPC, 1 ♀]; Vremščica, 1000 m (VL25), 16.7.2011 [GSPC, 4 ♂♂ and 4 ♀♀].

This leafhopper dwells on various *Rubus* species (*R. idaeus* L., *R. caesius* L., *R. fruticosus* L. s.l.) and is widely distributed across Europe (Nickel, 2003, Dmitriev & al., 2023). Adults occur from late Jun to early September. In the territory of Slovenia, this species was recorded more than a hundred years ago (Then, 1886; Gräffe, 1903). Although it is relatively common, recent data on its occurrence and distribution in Slovenia have not been published yet.

****Oncopsis tristis* (Zetterstedt, 1840)** [*Figure 26*]

Material examined: Črni vrh nad Cerknem, 950 m (VM21), 4.7.2009; Gorenji Novaki, 1028 m (VM21), 4.7.2009 [GSPC, 7 ♂♂, 5 ♀♀]; Kranjska gora, 850 m (VM04), 27.7.2008 [GSPC, 1 ♂]; Mala Lazna (VL09), 1.8.2010 [GSPC, 1 ♀]; Porezen, 1300 m (VM21), 7.7.2018 [GSPC, 1 ♂]; Soriška planina, 1300 m (VM22), 3.8.2008 [GSPC, 8 ♂♂, 8 ♀♀].

The smallest species (3.8-4.6 mm) of the genus *Oncopsis* associated with birch (*Betula pendula* Roth and *B. pubescens* Ehrh.). It has a Eurasian distribution range and is quite common in Europe (Dmitriev & al., 2023). Its distribution in Slovenia remains poorly studied. All the above localities belong to the upper montane belt, which indicates its preferences for cooler conditions at higher altitudes.

Megophthalminae Kirkaldy, 1906

***Megophthalmus scabripennis* Edwards, 1915** [*Figures 27 – 30*]

New records: Ajdovščina (VL18), 1.6.2002 [GSPC, 1 ♂]; Beka (VL14), 30.6.2016 [GSPC, 1 ♂ and 1 ♀]; Branik (Golec), 370 m (VL07), 25.5.2014 [GSPC, 2 ♂♂ and 1 ♀] and 21.8.2016; Golo Brdo (UM80), 20.5.2016 [GSPC, 3 ♂♂]; Kastelec (VL14), 26.5.2016; Lokvica (UL97), 29.5.2004 [GSPC, 1 ♂]; Lukovec, 380 m (VL07), 26.5.2018; Movraž, 240 m (VL13), 6.6.2014; Nanos, 900 m (VL27), 26.7.2002

[GSPC, 1 ♀]; Petrinje (VL14), 16.6.2017; Rakitovec (VL13), 6.6.2014 [GSPC, 6 ♂♂ and 3 ♀♀] and 31.5.2022 [GSPC, 10 ♂♂ and 4 ♀♀]; Socerb (VL14), 21.9.2016 [GSPC, 9 ♀♀]; Spodnji Kras (VL14), 21.9.2016; Vale pri Brestovici,140 m (UL97), 8.5.2005 [GSPC, 1 ♀] and an earlier published record: Solkan, 100 m (UL99), 23.5.1999 [GSPC, 1 ♂ and 1 ♀] (Holzinger & Seljak, 2001).

A Mediterranean species, of which distribution range also extends to some warmer parts of Central Europe and Britain (Dmitriev & al., 2023). In Slovenia as well, all known records belong to the sub-Mediterranean phytogeographical region. Here, it is rather common in some places on xerothermic dry grasslands. It is somewhat under-recorded, because it is easily confused with the closely related but much more common *M. scanicus*.

Typhlocybinae Kirschbaum, 1868

The genus ***Arboridia*** Zachvatkin, 1946 in Slovenia and taxonomic ambiguity regarding the Mediterranean ampelophageous species *A. adanae, A. dalmatina* and *A. vitisuga*.

There are about 20 leafhopper species belonging to the genus *Arboridia* in the West-Palaearctic. All are arboricolous, exploiting broad-leaved shrubs and trees as host plants. They are parenchyma-feeders causing speckled discoloured points at the place of piercing. Most are of no economic importance. A few of them tend, however, to temporary gradations, and if they infest cultivated plants, they may be considered minor pests. Lately, such extreme cases have been reported from South Russia, Crimea, and Romania caused by the alien east-Palaearctic species *A. kakogawana* (Matsumura) (Gnezdilov & al. 2008; Radionovskaya & Didenko 2015; Chireceanu & al. 2019). This species is rapidly spreading towards the winegrowing regions of Southern and Central Europe and is becoming a subject of increased phytosanitary concern (EFSA, 2022).

Three further indigenous *Arboridia* species have also been recorded to provoke similar damage on vines in different east Mediterranean regions. Serious damage on vines caused by *Arboridia adanae* (Dlabola, 1957) has repeatedly been reported from different parts of Turkey (Yiğit A. & Erkiliç, 1987; Özgen & Karsavuran, 2009; 2010). In the 1960s, several heavy infestations on vines by *A. vitisuga* (Dlabola, 1963) were recorded in Dalmatia, Montenegro, and Bulgaria (Velimirović, 1966, 1968). Again, serious injuries on the leaves of vines in southern Dalmatia (Korčula, Pelješac) were observed in late summer 2021 and *A. dalmatina* Wagner, 1962 as the cause identified (unpublished data). In the same period, heavy infestation on vines by an *Arboridia* species in Apulia in Italy has also been reported (Piccinno et al., 2023). My comparative morphological examination of specimens from Dalmatia and Apulia in 2021 showed, however, that the same species is most likely involved in both populations.

All three above-mentioned species have always been reported to occur on *Vitis* spec., notably on *Vitis vinifera*. This suggests that they are mono- or at most oligophagous on Vitaceae; therefore, they can be considered to be strictly ampelophageous or largely so. Furthermore, all these species show more or less the same structure of male terminalia (aedeagus, styles, pygofer processes). Velimirović (1966)

studied in detail the morphology and biology of *A. adanae vitisuga* populations in southern Montenegro and stated that the body size and colour variation fit the original descriptions of both taxa, *A. adanae* and *A. adane vitisuga*, respectively. Young and summer specimens are, as a rule, lighter than mature and late-season specimens, notably those in September, before moving from vines to overwintering plants. Among the large number of dissected specimens, VELIMIROVIĆ (l.c.) did not notice any remarkable variation in the shape of male terminalia. He concluded, 'The genitalia of all the males we dissected have had the same appearance. If there are two species, then both of them would be represented here (in Montenegro)' (VELIMIROVIČ, 1966: 55), suspecting that the entire population likely belong to the same species, which is *A. adanae*.

The question arises of whether the three mentioned species with the same trophism and morphology really co-occur in such a compact distribution area. Or perhaps all three taxa refer to the same species, of which the distribution range stretches from Anatolia and adjacent regions through the southern Balkans to the southern Adriatic region and extends further into southernmost regions in Italy? The recent rapid spread of the alien *A. kakogawana* in southern Russia and south-eastern Europe demonstrates that many *Arboridia* species apparently possess the flying ability to conquer significant distances. Therefore, it should not be a surprise if the indigenous *A. adanae* has similar abilities, historically occupying a vaster area suitable to its biological requirements. If their conspecifity is correct, the senior name *Arboridia (Arboridia) adanae* Dlabola, 1957 would have priority.

Analysing the chronology of the original descriptions of these three taxa is worthwhile, because it additionally suggests their possible conspecificity. First, Dlabola described *Erythroneura adanae* n. sp. after specimens caught 'by sweeping and by net on car', and there is no reference to its host plant (DLABOLA, 1957: 66). Its host association was only recorded later (LINNAVUORI, 1962). In 1962, W. Wagner described and illustrated male terminalia of *A. dalmatina* n. sp. based on specimens collected by Petar Novak in the surrounding area of Split (Kaštel Sućurac, Croatia). Both description and illustrations are virtually identical to those of Dlabola's *A. adanae.* Wagner apparently did not know about Dlabola's species, as he did not mention it, despite the undeniable similarity, nor he cited Dlabola's paper among the references (NOVAK & WAGNER, 1962). A year later, Dlabola published a paper describing a new subspecies *Erythroneura (Arboridia) adanae vitisuga* based on specimens sent to him by the same collector (Petar Novak) and from the same locality near Split. The only separating features compared to the Anatolian specimens of *A. adanae*, Dlabola highlights the larger size and more intense colouration, while the male terminalia show the same principle in both taxa (DLABOLA, 1963). Again, Dlabola did not mention the taxon *A. dalmatina*, nor did he cite Wagner's work among the references. VIDANO and ARZONE (1983) recognised the name *A. vitisuga* (Dlabola, 1963) as the junior synonym of *A. dalmatina* Wagner, 1962. However, this statement has apparently not been accepted by other specialists, as all species lists and databases still retain all three names as valid. Dworakovska arbitrarily raised the subspecies *A. adanae vitusuga* to the species rank, *A. vitisuga* (Dlabola, 1963), however without examining authentic

material (Dworakovska, 1970). After I have examined several dozens of male specimens picked from yellow sticky traps with several thousand specimens sent from Dalmatia (Korčula, Pelješac) [*Figure 36*], I share the opinion of Vidano & Arzone (1983) and Velimirović (1966). I have found no discernible variations in male copulatory structures, which would indicate the co-occurrence of another related ampelophageous species. The ongoing molecular research carried out in Italy seems to solve this question (Piccinno et al., 2023).

In Slovenia, no representatives of the genus *Arboridia* associated with vines have been found. Similar injuries on leaves of *Vitis vinifera* and *V. labrusca* provoke the indigenous *Zygina rhamni* (Ferrari, 1882) and the alien *Erasmoneura vulnerata* (Fitch, 1851) and (Seljak, 1993, Seljak, 2011). Both regularly occur in vineyards of southwestern Slovenia, notably in late summer, but no important damage has been observed thus far. Otherwise, six other *Arboridia* species occur in Slovenia (Holzinger & Seljak, 2001; Seljak, 2016). Their faunistics has been little published; therefore, a brief review of the current knowledge is given below [*Figure* 31].

***Arboridia erecta* (Ribaut, 1931)**

New records: Kromberk (UL99), 10.7.2011 [GSPC, 1 ♂] and 13.7.2013 [GSPC, 1 ♂]; Šempas (VL08), 28.9.2002 [GSPC, 1 ♂ and 1 ♀]; Temnica, 380 m (UL97), 24.7.2023 [GSPC, 1 ♂]; Vipava (Mlake), 130 m (VL17), 30.6.2022.

***Arboridia parvula* (Boheman, 1845)** [*Figure 32*]

New records: Bohinjska Bistrica (VM12), 19.8.2002; Čaven, 1240 m (VL18), 14.8.2011; Dragonja, 25 m (UL93), 31.8.2017 [GSPC, 1 ♂ and 1 ♀]; Godovič, 600 m (VL38), 29.8.2001 [GSPC, 1 ♂]; Ilovci, 300 m (WM94), 24.7.2023; Koper (VL04), 21.10.2003; Labinje, 850 m (VM21), 18.8.2012; Lijak (VL09), 9.11.2003; Lekmarje, 390 m (WM31), 7.8.2023; Livek, 850 m (UM91), 16.7.2005; Nova Gorica (UL98), 8.7.2011 [GSPC, 1 ♂]; Panovec (UL98), 9.7.2005 [GSPC, 1 ♂]; Parecag (UL93), 20.10.2005; Podnanos, 150 m (VL27), 17.7.2005; Spodnje Škofije (VL04), 22.6.2007; Strunjan (UL94), 10.8.2005; Šempas (VL08), 28.9.2002 [GSPC, 1 ♂ and 1 ♀]; Vipava (Mlake), 110 m (VL17), 30.8.2022; Vogrsko (UL98), 23.7.2021; Veliko Mraševo (WL37), 20.9.2023 [GSPC, 4 ♂♂ and 5 ♀♀, I. Imperl leg.] and 11.10.2023 (679 specimens trapped on a YST; serious damage on cultivated raspberries noted)

***Arboridia pusilla* (Ribaut, 1936)**

See Seljak, 2016.

***Arboridia ribauti* (Ossiannilsson, 1937)**

New records: Ajševica (UL99), 9.6.2019; Gorje, 580 m (VM21), 8.8.2010; Gornja Branica (VL17), 1.8.2012; Grant, 700 m (VM11), 12.6.2010; Grgar (UL99), 31.8.2002; Jablance (WL37), 23.8.2007; Kobarid, 235 m (UM92), 15.9.2001 [GSPC, 2 ♂♂ and 1 ♀]; Kobarid, 270 m (UM92), 5.8.2006; Kromberk (UL99), 31.8.2002 [GSPC, 4 ♂♂]; Landol, 520 m (VL37), 25.7.2022; Lepena, 700 m (UM92), 26.8.2001; Maribor - Piramida, 350 m (WM55), 12.10.2018; Nanos, 900 m (VL27), 26.7.2002; Panovec

(UL98), 29.8.2003 [GSPC, 1 ♂]; Predgrad - Vrhgora (WL13), 26.12.2015; Selo pri Prosenjakovcih (WM97), 24.4.2015; Stara Gora (UL98), 11.7.2004; Staro Selo (UM82), 28.7.2017; Stražnji vrh (WL14), 20.7.2011; Tolminska korita, 270 m (VM01), 30.3.2008 [GSPC, 2 ♂♂ and 1 ♀]; Vitovlje (VL08), 25.10.2001; Vodranci (WM94), 28.10.2013; Vogrsko (UL98), 23.7.2021; Zatolmin (VM01), 3.7.2008; the most common species of the genus in Slovenia.

***Arboridia spathulata* (Ribaut, 1931)** [*Figure 33*]

New records: Kromberk (UL99), 13.7.2013 [GSPC, 2 ♂♂]; Landol, 520 m (VL37), 25.7.2022 [GSPC, 1 ♂]; Lijak (VL09), 1.12.2002 [GSPC, 1 ♂ and 1 ♀] and 9.11.2003 [GSPC, 1 ♂]; Nova Gorica (UL98), 8.7.2011; Planina pri Ajdovščini (VL17), 19.7.2012; Sabotin, 600 m (UL99), 10.9.2002 [GSPC, 1 ♂ and 2 ♀♀]; Stara Gora (UL98), 29.6.2011; Šempas (VL08), 28.9.2002 [GSPC, 1 ♂ and 1 ♀].

***Arboridia velata* (Ribaut, 1952)**

New records: Maribor - Tezno (WM55), 16.9.2004 [GSPC, 1 ♂]; for further records see Schürrer & Löcker, 2003.

****Eupteryx immaculatifrons* (Kirschbaum, 1868)**

Material examined: Rakov Škocjan, 500 m (VL47), 23.9.2021 [GSPC, 4 ♂♂]; Ilovci, 300 m (WM94), 14.6.2023 [1 ♂ trapped on YST].

A European species with strongholds in Central Europe (Dmitriev & al., 2023). To date, it is only known from the above localities, although the host plant, *Lamium maculatum* L. (Nikel, 2003), is widespread and common throughout Slovenia (Jogan & al., 2001).

****Eurhadina saageri* Wagner, 1937**

Material examined: Landol, 520 m (VL37), 22.6.2022 [GSPC, 4 ♂♂ and 1 ♀, trapped on light, B. Zadravec leg.];

A rare species associated with *Quercus robur* L. in moist lowland stands (Nickel, 2003). The only known site in Slovenia thus far, in Landol near Postojna, confirms such a habitat. In June 2022, a few specimens were caught in the light near the Nanoščica stream, where the oak *Q. robur* is well represented. Living high in the canopy makes it harder to detect with the sweeping method; therefore, it may be considerably under-recorded. The centre of occurrence of this species is in Central and Eastern Europe, from France to Russia (Dmitriev *et al.*, 2023).

****Kybos calyculus* (Cerutti, 1939)**

Material examined: Osilnica, 320 m (VL74), 20.7.2013 [GSPC, 2 ♂♂ and 2 ♀♀]; swept from a tree of *Betula pendula* Roth.

****Tamaricella ribauti* (Zachvatkin, 1947)**

Material examined: Strunjan (UL94), 12.9.2003 [GSPC, 5 ♂♂, 1 ♀] on *Tamarix gallica* L.

This species was misidentified as *T. tamaricis* in a previous work (Seljak, 2004). Examination of a larger number of specimens from Dalmatia (Šibenik, Trogir and Split) and the comparison with specimens from Slovenia showed that all studied specimens belong to *T. ribauti*. Therefore, *T. tamaricis* must be removed from the list of leafhoppers of Slovenia. The locality above is the only one known for this species in Slovenia. Perhaps this is also the northernmost edge of the range in this part of Europe.

***Ziczacella heptapotamica* (Kusnezov, 1928)** [*Figures 34 and 35*]

Material examined: Ilovci, 300 m (WM94), 14.6.2023 [GSPC, 1 ♂], 27.6.2023 [GSPC, 1 ♀], 11.7.2023 [GSPC, 3 ♂♂], 24.7.2023 [GSPC, 4 ♂♂ and 10 ♀♀], 7.8.2023 [GSPC, 2 ♂♂ and 8 ♀♀; L. Lešnik leg.], 22.8.2023 [2 ♂♂ and 3 ♀♀].

An eastern Palaearctic species distributed from Japan through China, Central Asia, southern Russia to Ukraine (Dmitriev & al., 2023). To date, there are no records of its occurrence further west in Europe. The above specimens were collected mainly at yellow sticky traps set to monitor potential vectors of hazelnut phytoplasmas. The traps were placed at the border between a forest and a hazelnut plantation. Six specimens were also obtained on August 7, 2023, by sweeping a hop hedge at the edge of the forest. It can only be speculated how the species arrived there. There are two possibilities: It has gradually spread westward from the known areas in Ukraine or Russia but has not yet been detected elsewhere. Or it may have been accidentally introduced, for example, through international trade or travel. In any case, the above-mentioned locality is far from the main transit roads in Slovenia, which suggests that the species is more widespread in this area and has apparently become established. According to the information in the literature, it should live in the undergrowth of forest (Anufriev & Emeljanov, 1988). Specifically, hops (*Humulus* spp.), raspberries (*Rubus idaeus* L.) and elms (*Ulmus* spp.) are mentioned as possible food plants (Mitjaev, 1971). At the above location, specimens were only found on wild hops (*Humulus lupulus* L.).

In external appearance this species resembles the darker coloured representatives of the genus *Arboridia*. Therefore, it can be easily confused with them or overlooked. *Ziczacella heptapotamica* is distinguished by a pair of rounded dark spots on the vertex, brown pattern on pronotum and scutellum, and a zigzag brown stripe on each forewing. However, it is unmistakably recognisable by the structure of the male genitalia. Pygophore with well-sclerotized spiny processes with single apices arising from dorsal margin of lobes. Styli with long and thin inner apical process at least twice as long as outer and subapical process. Shaft of aedeagus with a pair of subapical lateral processes. At the shaft base there is a pair of robust pincers-like processes connected with the shaft by a weakly sclerotized, membranous bridge (Anufriev & Emeljanov, 1988).

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Figure 1: *Cixidia lapponica* - male (size 8.0 mm)

Figure 2: *Cixidia lapponica* – head from below

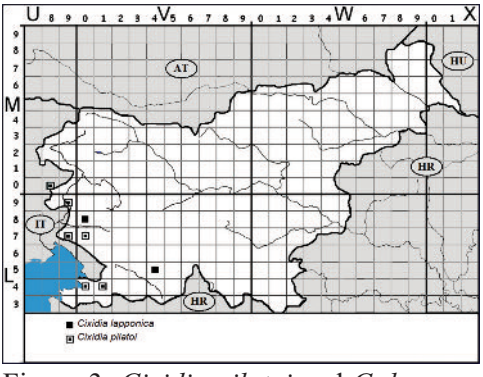

Figure 3: *Cixidia pilatoi* and *C. lapponica*, currently known distribution in Slovenia

Figure 4: *Doratura butzele,* male (size: 3.0–3.4 mm)

Figure 5: *Doratura butzele,* female (size: 3.8–4.8 mm

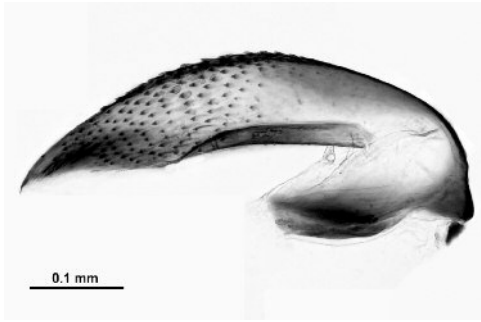

Figure 6: *Doratura butzele*, aedeagus

Figure 7: *Doratura butzele*, female 's pregenital sternit and genitalia

Figure 8: *Praganus krkinus*, male (size: 2.5–2.7 mm)

Figure 9: *Praganus krkinus*, male terminalia from below

Figure 10: *Praganus krkinus*, female (size: 2.9–3.5 mm)

Figure 11: *Praganus krkinus*, female's pregenital sternit

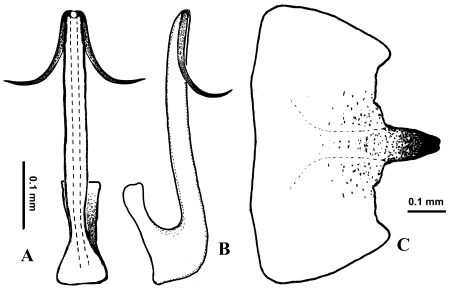

Figure 12: *Praganus krkinus*; aedeagus, ventral view (A), lateral view (B); female pregenital sternit (C).

Figure 13: *Dictyophara multireticulata* – male (size: 11–14 mm)

Figure 14: *Nesoclutha erythrocephala* (size: 2.6–3.2 mm)

Figure 15: *Batracomorphus irroratus* (size: 4.0–5.5 mm)

Figure 16: *Colladonus torneellus*, male (size: 4.4–4.9 mm)

Figure 17: *Anoscopus alpinus* – male (size: 3.6–4.3)

Figure 18: *Anoscopus alpinus* – female (size: 4.2–4.7 mm)

Figure 19: *Metalimnus formosus* – male (size: 3.0–3.6 mm)

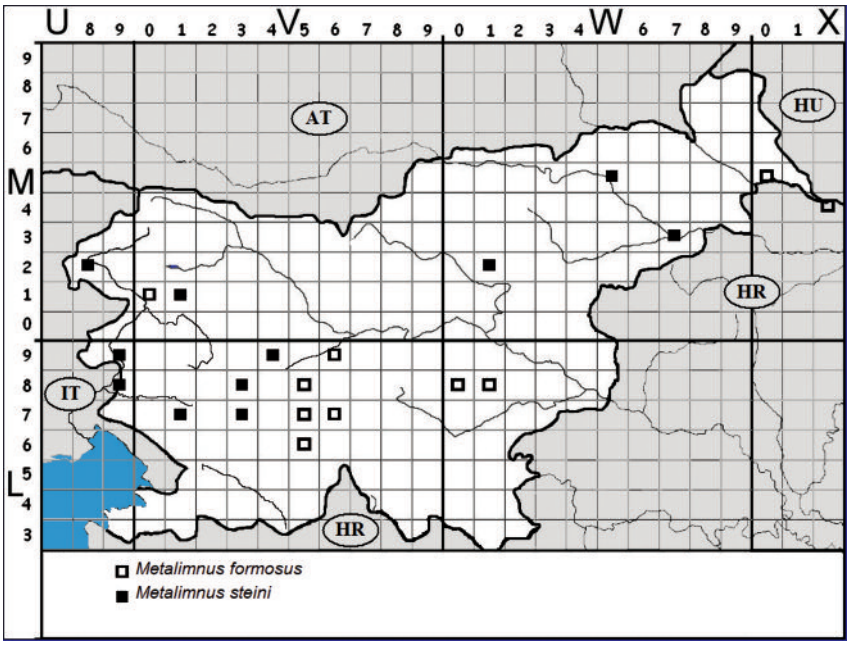

Figure 20: *Metalimnus formosus* and *M. steini*, known distribution in Slovenia

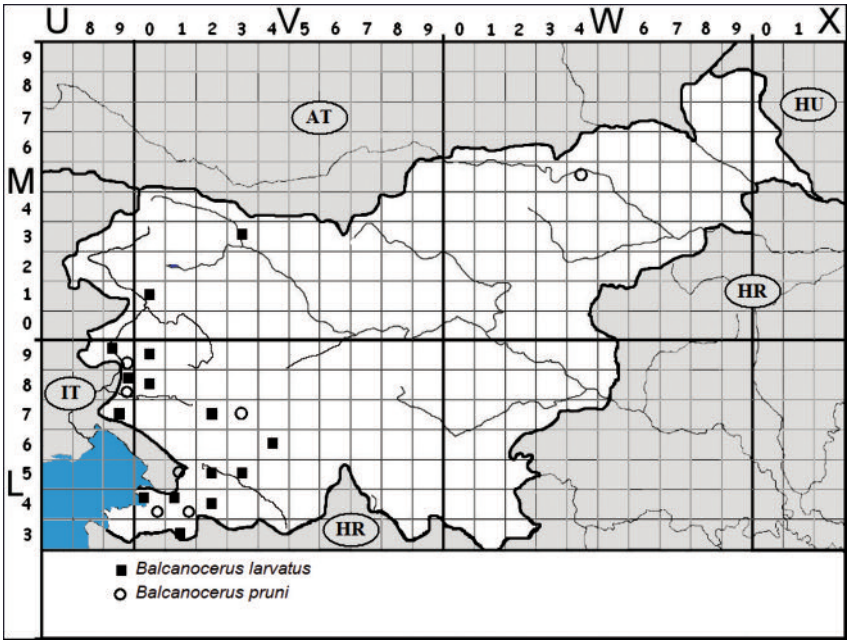

Figure 21: *Balcanocerus larvatus* and *B. pruni*, known distribution in Slovenia

Figure 22: *Balcanocerus larvatus* (size: 4.0–4.6 mm)

Figure 23: *Balcanocerus pruni* (size: 3.8–4.2 mm)

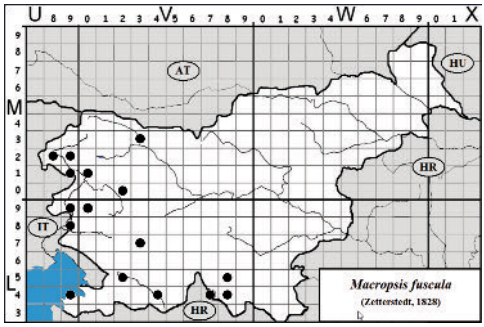

Figure 24: *Macropsis fuscula* – known distribution in Slovenia

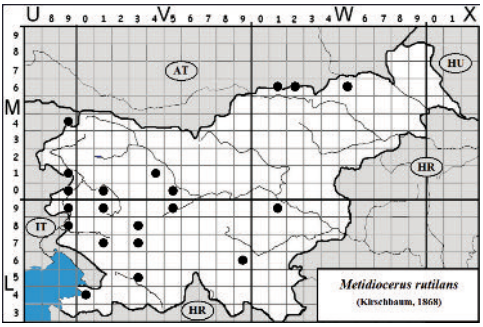

Figure 25: *Metidiocerus rutilans* - currently confirmed distribution in Slovenia

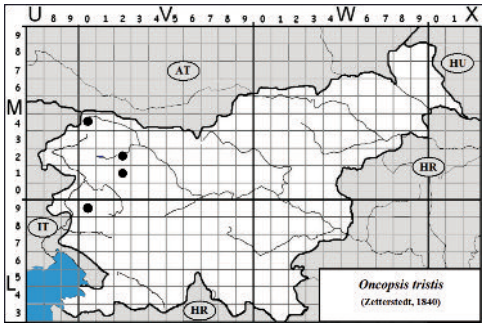

Figure 26: *Oncopsis tristis* - currently confirmed distribution in Slovenia

Figure 27: *Megophthalmus scabripennis* – female (size: 3.4–4.0 mm

Figure 28: *Megophthalmus scabripennis* – male (size: 2.6–3.5 mm)

Figure 29: *Megophthalmus scabripennis* - 5th instar nymph

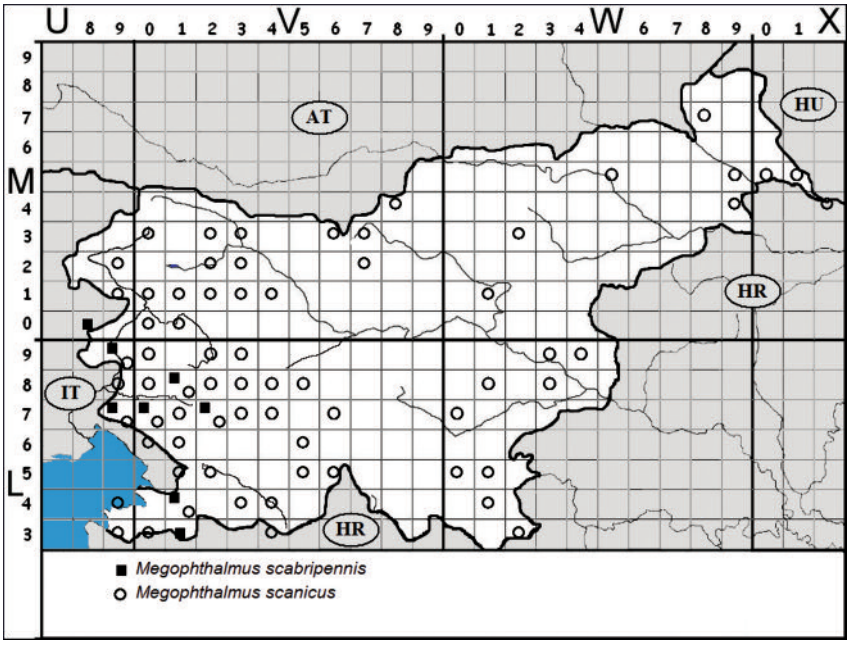

Figure 30: The genus *Megophthalmus*, known distribution in Slovenia

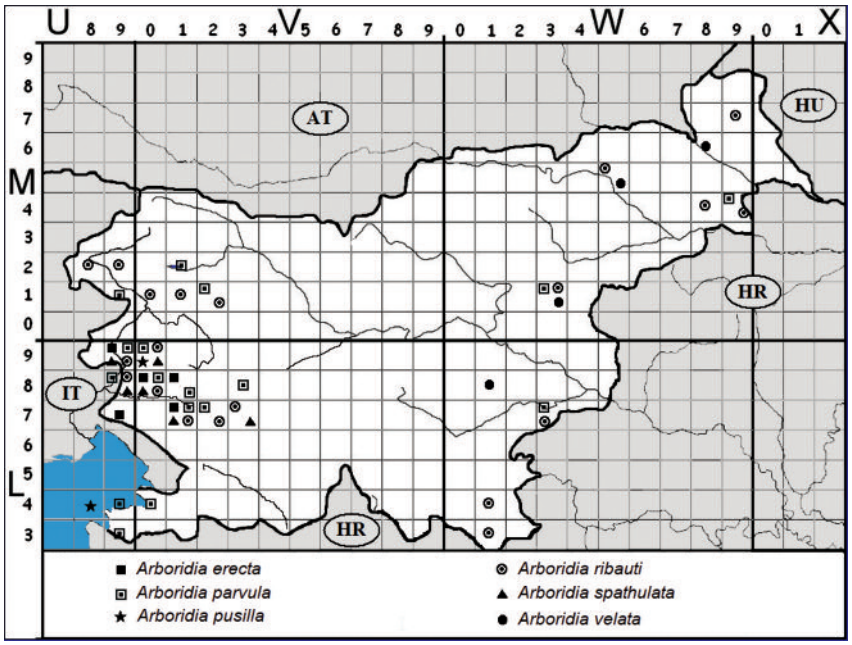

Figure 31: The genus *Arboridia* - species distribution in Slovenia

Figure 32: *Arboridia parvula* (size: 2.6–3.1 mm)

Figure 33: *Arboridia spathulata* (size: 2.9–3.4 mm

Figure 34: *Ziczacella heptapotamica* (size: 2.5–3.0 mm), an adult specimen caught on yellow sticky trap.

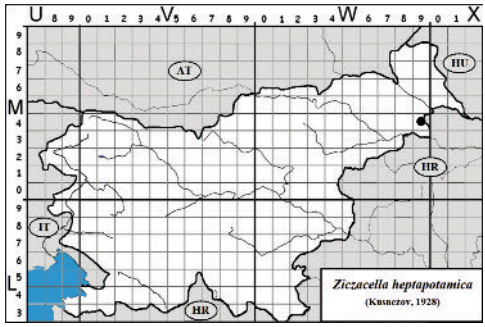

Figure 35: *Ziczacella heptapotamica*, the first finding in Slovenia

Figure 36: '*Arboridia dalmatina*' – mass traping on a yellow sticky trap in August 2021 (Croatia, Pelješac); photo D. Lemić