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SHORT COMMUNICATION

New records of the oak lace bug *Corythucha arcuata* (Say, 1832), brown marmorated stink bug *Halyomorpha halys* (Stål, 1855), and western conifer seed bug *Leptoglossus occidentalis* Heidemann, 1910 in Ukraine

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Abstract

The paper reports the finding of three invasive species of bugs: *Corythucha arcuata* (Say, 1832), *Halyomorpha halys* (Stål, 1855), and *Leptoglossus occidentalis* Heidemann, 1910 in the plantations of the dendrological park "Olexandria" and the adjacent territory. For the first time, a hotspot of *C. arcuata* mass reproduction in oak plantations in the Kyiv region was reported. The significance of these findings for park ecosystems is briefly discussed.

Keywords: *Corythucha arcuata, Halyomorpha halys, Leptoglossus occidentalis,* invasion species, quarantine pests

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In 2023–2024, in the plantations of the dendrological park "Olexandria" of the NAS of Ukraine (Bila Tserkva, Kyiv region) and adjacent area, we registered 19 new invasive species of dendrophagous insects. Among the latest findings in September–October 2024, there are three species of bugs: oak lace bug *Corythucha arcuata* (Say, 1832), brown marmorated stink bug *Haliomorpha halys* (Stål, 1855) and western conifer seed bug *Leptoglossus occidentalis* Heidemann, 1910.

Corythucha arcuata originates from North America (Drake & Ruhoff, 1965). This species was invaded to Europe in 2000 in Italy (Bernardinelli & Zandigiacomo, 2000). From there, it rapidly colonized the oak forests of many European countries, including Switzerland (Forster et al., 2005), Bulgaria (Dobreva et al., 2013), Croatia (Hrašovec et al., 2013), Hungary (Csóka et al., 2019), Slovenia (Jurc & Jurc, 2017), Portugal (Gil & Grosso-Silva, 2021), Spain (Riba-Flinch, 2022) and others. By 2019, it had been detected in 20 European countries, and there was a further trend of extending its range (Paulin et al., 2020). *Corythucha arcuata* is considered to potentially pose a very high risk to the health of European oak plantations.

In Ukraine, until 2024, the distribution of *C. arcuata* has been almost entirely limited to the southern and western parts of the country. According to iNaturalist reports, it mainly covers Crimea, Mykolayiv, Odesa, and Uzhgorod regions (iNaturalist, 2025a).

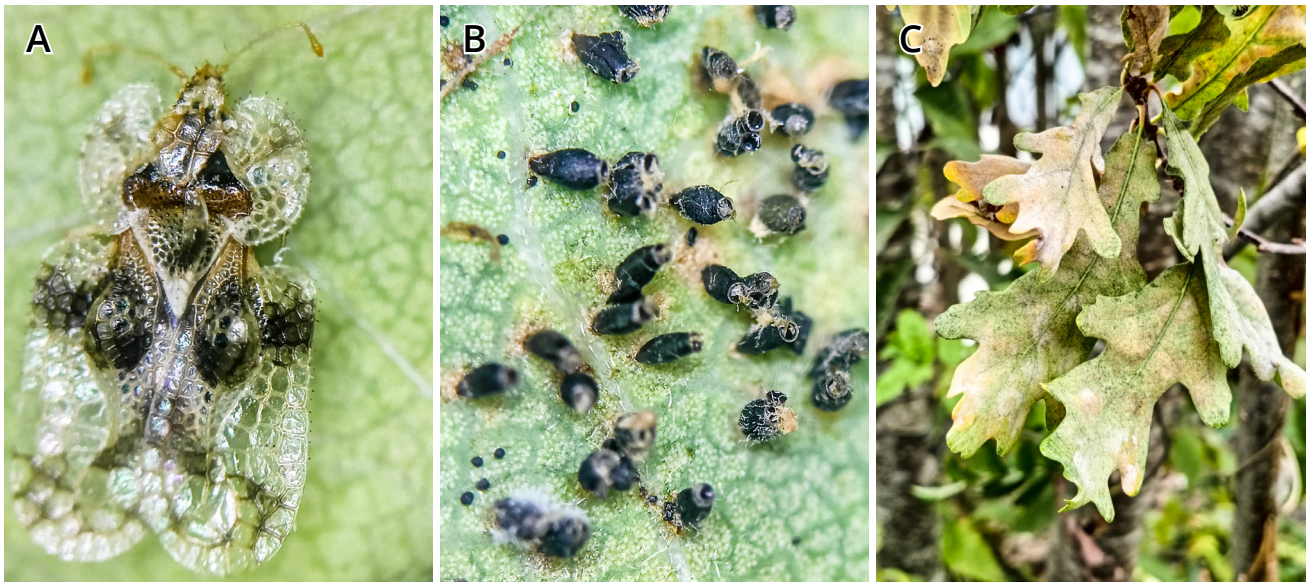

Figure 1. *Corythucha arcuata*: **A** – adult bug; **B** – bug eggs; **C** – leaves of common oak damaged by the bug.

In iNaturalist (2025a), several occurrences of *C. arcuata* have also been registered in the central part of Ukraine (i.e., the Cherkasy region). Before this, *C. arcuata* has been reported from the Kherson region by Meshkova et al. (2020). There is also a finding report of this species near Bila Tserkva by an amateur entomologist on the territory of a furniture factory (Oksenenko, 2023). The number of reported findings of *C. arcuata* in Ukraine is rapidly increasing, which indicates an active expansion of this species in the country.

Corythucha arcuata was first discovered in a 200-year-old oak forest on old-growth and certain individual oak trees occurring in mass quantities (Fig. 1). During further surveys, the pest was also found on trees of other age categories, excluding young juveniles. Besides *Quercus robur* L., the invader *C. arcuata* was also found in a smaller amount on other oak species: *Q. castaneifolia* C.A.Mey, *Q. macranthera* Fish & C.A.Mey ex Hohen, *Q. serrata* Murray, and *Q. dentata* Thunb.

The invasion of *C. arcuata* into the plantations of the dendrological park "Olexandria" most likely occurred last year. Considering the rapidity of this process and the damage it has already caused to oak plantations, it can be assumed that shortly, this invader species will pose a serious problem not only for the unique oak woodland but also for the whole park ecosystem.

The only occurence of *Halyomorpha halys* (one female specimen) was observed in the area adjacent to the new park ("Holendernia" tract – Fig. 2). Apparently, this is the first such finding in Kyiv and the Kyiv region. In Ukraine, this invasive species was first registered in Odesa in 2016 and then reported for the Kherson and Dnepropetrovsk regions (Meshkova, 2022).

Currently, *H. halys* is registered in many Ukrainian cities, including Sevastopol, Simferopol, Kharkiv, Lviv, Uzhhorod, and Kyiv. It was reported from Mykolaiv, Kherson, Zaporizhzhia, Vinnytsia, Dnipro, Ternopil, and other regions of Ukraine (iNaturalist, 2025b). A quarantine regime was approved after detecting *H. halys* in the Zaporizhzhia and Mykolayiv regions (SSUFSCP, 2024).

The importance of this finding lies in the fact that *H. halys*, which invaded Europe from the Far East (Korea, Japan, China, and Taiwan) in 2007 (Wermelinger et al., 2008), is narrowly polyphagous and, for example, in the USA it damages over 170 species and varieties of woody plants (Bergmann et al., 2024). These include species of such genera as *Acer*, *Platanus*, *Catalpa*, *Cercis*, *Magnolia*, *Malus*, *Syringa*, and others. *Halyomorpha halys* also damaged many woody plants in Asia (Hoebeke & Carter, 2003). After this bug feeds, punctures remain on the tree bark, oozing sweet sap and attracting ants and wasps. This can result in infecting damaged plants with fungal and bacterial diseases (Martinson et al., 2013). Such circumstances make this invader

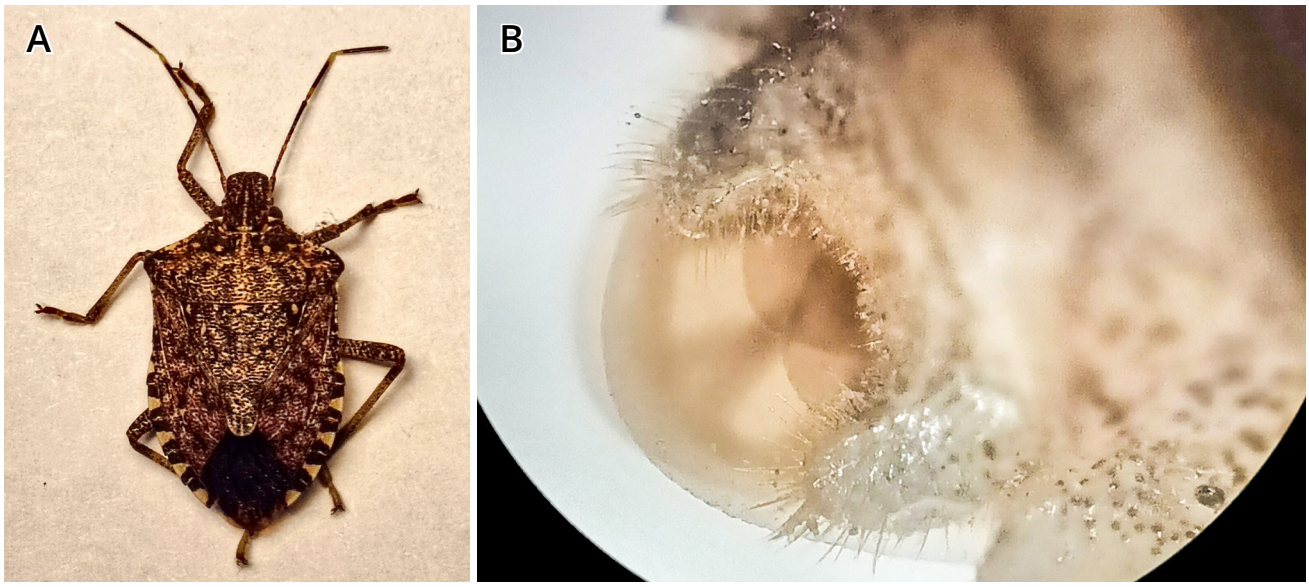

Figure 2. *Halyomorpha halys*: **A** – adult bug; **B** – the last segment of the abdomen of the female bug.

potentially dangerous for park collections of woody plants.

Single individuals of *Leptoglossus occidentalis* were found in the dendrological park "Olexandria" plantations on *Pseudotsuga menziesii* (Mirb.) Franco, *Pinus strobus* L., and *P. sylvestris* L. (Fig. 3). This North American species invaded Europe (Italy) in 1999 (Bernardinelli & Zandigiacomo, 2001). Within 10–15 years, it spread across almost the entire territory of the European continent (Lesieur et al., 2018).

In Ukraine, *L. occidentalis* was initially discovered in 2005 in Kharkiv and Kherson regions. Later, in 2011–2012, it was found in Zaporizhzhia, Dnipropetrovsk, Donetsk, and Luhansk regions, and then, in 2018, – in the Zhytomyr region. There are also confirmed reports regarding its presence in Transcarpathia, Odesa, Cherkasy, Kyiv, and Crimea (Gapon, 2013; Meshkova, 2022). Apparently, it is possible to speak about the ubiquitous distribution of this species in Ukraine.

When assessing the significance of the discovery of *L. occidentalis* in terms of its impact on park plantings, it is necessary to consider its following biological properties. It has foraging relationships with about 40 conifer species from the Pinaceae and Cupressaceae families (Fent & Kment, 2011). Feeding on the seeds content, *L. occidentalis* causes the seeds' death and, hence, damage to forestry and breeding work. Another important feature of *L. occidentalis* is its ability to carry spores of the fungus *Sphaeropsis sapinea* (Fr.) Dyko & B.Sutton (= *Diplodia pinea* (Desm.) J.Kickx f.). This fungus causes a severe disease of the pine forests (Luchi et al., 2012). Further research will reveal the role of this invader as a pest of coniferous plants in the dendrological park "Olexandria".

Figure 3. *Leptoglossus occidentalis* adult bug.

Conclusions

1. All three identified invasive species of bugs are known to be dangerous pests worldwide. While *Halyomorpha halys* and *Leptoglossus occidentalis* represent only potential threat to the park plantings, *Corythucha arcuata* has already caused significant damage to old-growth stands of common oak.
2. The invasion *Corythucha arcuata* into the dendrological park "Olexandria" plantations most likely occurred in 2023. Assessing the damage that the pest caused to individual old-growth trees of common oak this year, it can be expected that with its further spread and multiplication, the annual loss of old-growth trees will increase. It should be expected that the invasion *C. arcuata* can significantly accelerate the processes of oak grove degradation.
3. The discovery of a dangerous quarantine pest *Halyomorpha halys* quite far from the place of its recent discovery (Zaporizhzhia and Mykolaiv regions), proves its rapid expansion on the territory of Ukraine. The discovery of the *H. halys* on the territory bordering the dendrological park "Olexandria" signals the high risk of this pest invasion into the park plantations. Given the data on the current distribution of this invader, the entire territory of Ukraine should be included in the quarantine zone.
4. The trophic activity of *Leptoglossus occidentalis* associated with the transfer of a dangerous fungal disease (pine diplodia) must be taken into account when assessing the entire complex of forest pathological factors affecting the health of the pine plantations of the dendrological park "Olexandria".

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Нові знахідки дубового мереживного клопа *Corythucha arcuata* (Say, 1832), жовто-бурого мармурового клопа *Halyomorpha halys* (Stål, 1855) і соснового насіннєвого клопа *Leptoglossus occidentalis* Heidemann, 1910 в Україні

Григорій Драган

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У статті повідомляється про знахідку трьох інвазійних видів клопів: *Corythucha arcuata* (Say, 1832), *Halyomorpha halys* (Stål, 1855) та *Leptoglossus occidentalis* Heidemann, 1910 у насадженнях дендрологічного парку “Олександрія” НАН України та на прилеглій території. Вперше виявлено вогнище масового розмноження *C. arcuata* в дубових насадженнях Київської області. У статті також коротко обговорюється значення цих знахідок для паркових екосистем.

Ключові слова: *Corythucha arcuata, Halyomorpha halys, Leptoglossus occidentalis,* інвазійні види, карантинний шкідники