ORGANISATION EUROPEENNE ET MEDITERRANEENNE POUR LA PROTECTION DES PLANTES

EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION

Newsletter

of the EPPO Network of experts working on surveillance, monitoring, and control of the Emerald ash borer, *Agrilus planipennis*

NO. 2

PARIS, 2023-09

Content of the Newsletter

The webpage of the Network:
https://www.eppo.int/RESOURCES/special_projects/agrilus_planipennis_network

Photo of *Agrilus planipennis* above: Courtesy of Dr. Eduard Jendek.

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1. Introduction

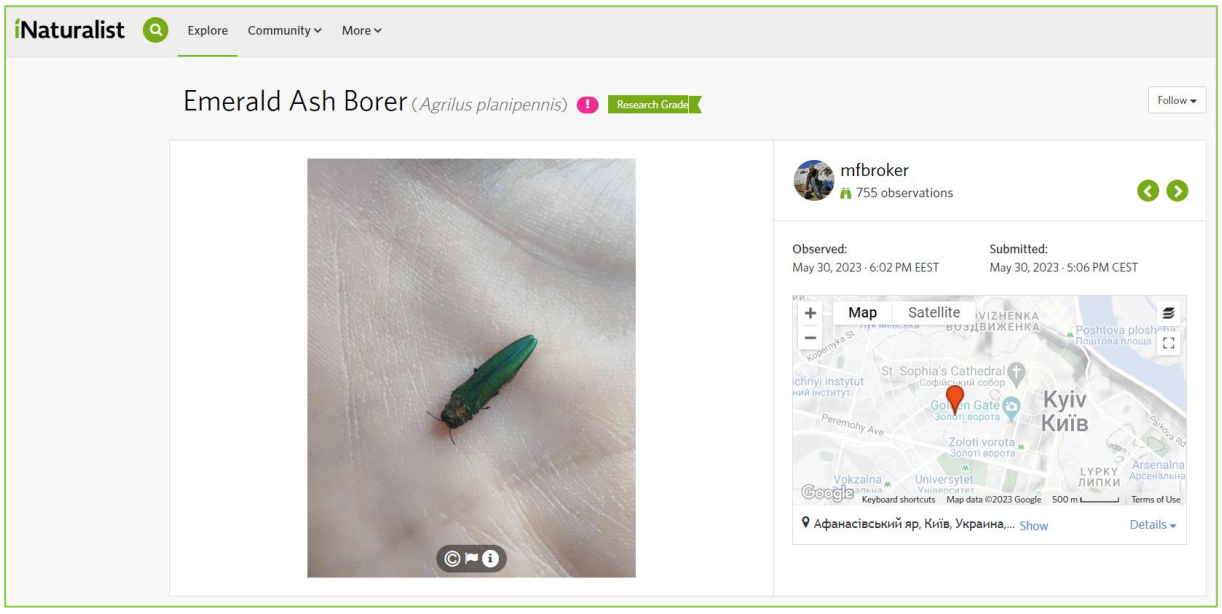
Welcome to the 2nd issue of the Newsletter of the EPPO Network of experts working on surveillance, monitoring, and control of the Emerald ash borer, *Agrilus planipennis*. This Network was established by the European and Mediterranean Plant Protection Organization (EPPO) following the decision made in October 2022 by its Panel on Quarantine Pests for Forestry. The Network was established in association with an EPPO-EU project.

Following the release of the 1st issue of the Newsletter the Network coordinator received several responses related to the call to develop a map of *A. planipennis* distribution in Europe, recent publications, etc. This information made it possible to prepare the 2nd issue. Once again, the EPPO Secretariat would like to encourage participants to send all relevant information to the Network coordinator (Dmitrii Musolin, dm@eppo.int).

2. The Network is growing

By mid-September 2023, the Network has more than **200 members (subscribers)** from **40 countries** (the EPPO Secretariat welcome you all, including our latest member from the USA). These numbers indicate a strong interest in the subject. Please encourage your colleagues to join the Network via the link https://forms.office.com/e/7GxvJkS0YT (registered email addresses will not be disclosed).

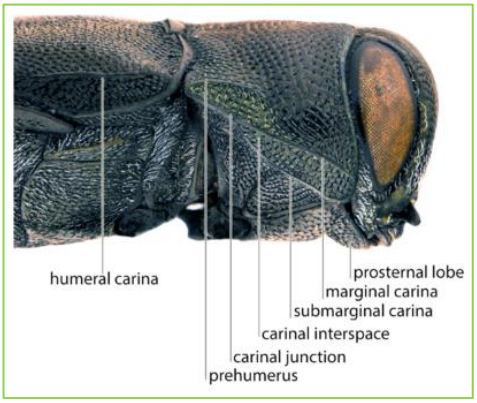
3. *Agrilus planipennis* is photographed in Kyiv, Ukraine – not confirmed by NPPO



'The Network coordinator was informed by a member of the EPPO Panel on Quarantine Pests for Forestry that on 30 May 2023, a new record of distribution of *A. planipennis* was added to the pest's profile in iNaturalist, a social network of naturalists, citizen scientists, and biologists (https://www.inaturalist.org/observations/164638313). This record shows that an adult of *A. planipennis* was noticed and photographed in Kyiv, Ukraine on 30 May 2023. Taking into consideration that this location is approximately 200 km away from the nearest

documented record of this pest (Kharkiv Region), the EPPO Secretariat contacted the NPPO of Ukraine with a request to clarify the situation of *A. planipennis* in Kyiv. The response signed by the Acting Head of the NPPO – the Chief Phytosanitary Inspector of Ukraine Mr. Vadym Chaikovskyi was received by EPPO Secretariat on 17 August 2023. In the official letter, the NPPO of Ukraine explained that the state phytosanitary inspectors conducted a survey using pheromone traps in Kyiv, in the Bohdan Stupka Park in accordance with the geolocation indicated in the iNaturalist record. According to the results of the survey, ***A. planipennis* was not present in that location**. The official monitoring of green spaces in Kyiv will continue.

4. New EPPO Diagnostic Standard PM 7/154 (1) for *Agrilus planipennis*



In August 2023, EPPO published a new **Diagnostic Standard PM 7/154 (1) for *Agrilus planipennis***. This Standard covers identity, symptoms, detection methods (both morphological and molecular), remarks on possible confusion with adults of other native Buprestidae species, keys and diagnostic tables for larvae and adults. The protocol contains 40 figures and figure plates. This new Standard was originally drafted by: Dr. M. de Groot (Department of Forest Protection, Slovenian Forestry Institute), Dr. E.O. Campbell (Canadian Food Inspection Agency, Government of Canada), Dr. T. Bukovinszky (Netherlands Food and Consumer Product Safety Authority, Ministry of Agriculture, Nature and Food Quality of The Netherlands), and Dr. M.G. Volkovitsh (Zoological Institute, Russian Academy of Sciences). It was reviewed by the EPPO Panel on Diagnostics in Entomology and adopted via the fast track procedure for EPPO Diagnostic Standards in April 2023.

Reference:

EPPO (2023) EPPO Diagnostic Standard PM 7/154(1) *Agrilus planipennis*. *EPPO Bulletin* 53, 285–308. Available from: https://doi.org/10.1111/epp.12926 and at the web page of the Network.

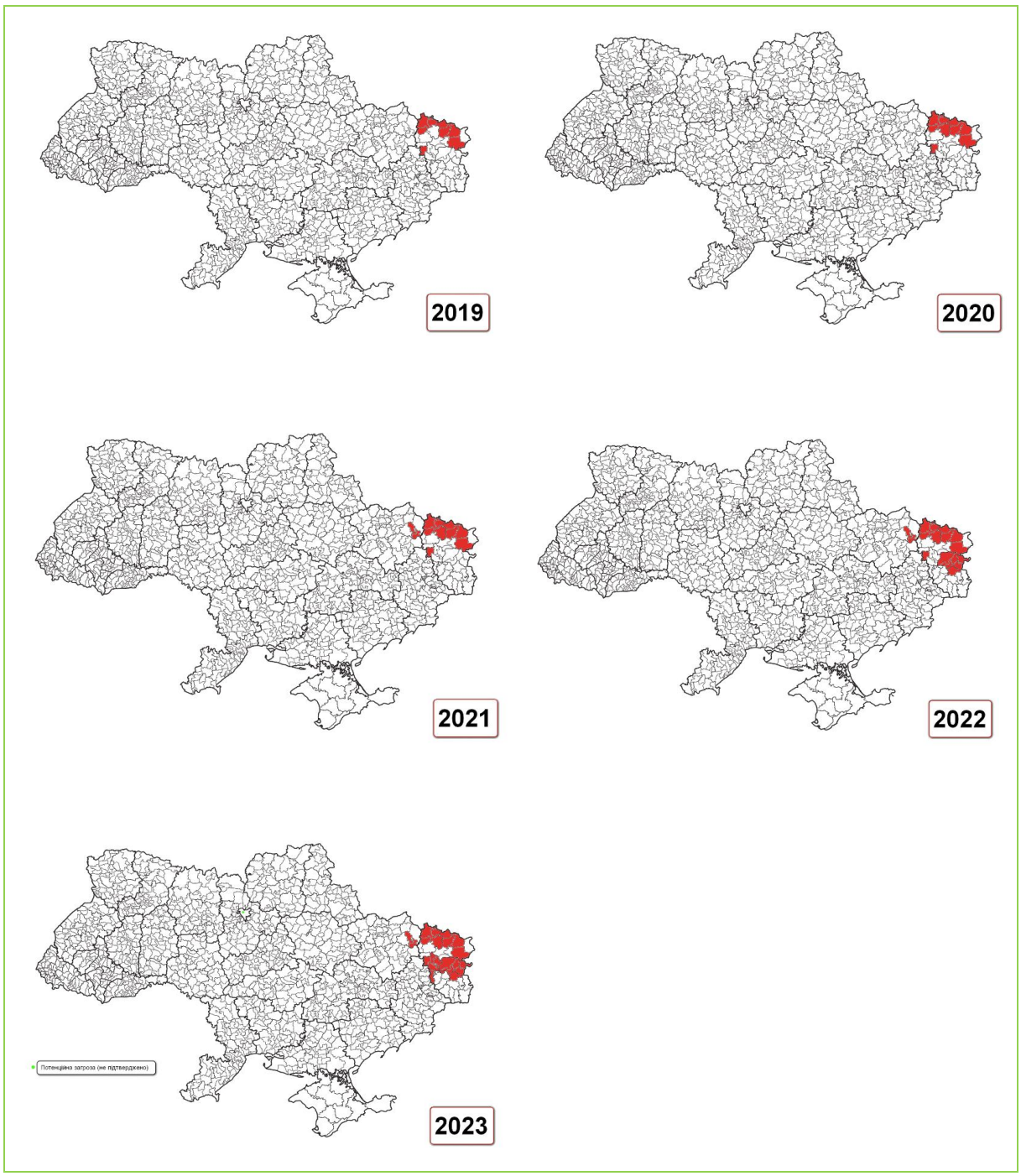
Photo: an image of adult *A. planipennis* from the Diagnostic protocol (Courtesy: Dr. E. Jendek)

5. Development of a detailed distribution map for *Agrilus planipennis* in Europe

In the 1st issue of Newsletter, it was discussed that it would be very helpful if the Network could create and maintain a detailed distribution map which would accumulate all new published and verified records of *A. planipennis* in Europe below the country level, and volunteer(s) who could lead this work were invited. So far, two groups of specialists (from Ukraine and Finland) expressed their interest. The call is still open. All responses will be discussed within the EPPO Secretariat.

6. A dynamic map of distribution of *Agrilus planipennis* in Ukraine

The Ukrainian State Specialized Forest Protection Enterprise DSLP "Kharkivlisozakhist" recently developed and published on its webpage a dynamic map showing the change of the range of *A. planipennis* in Ukraine in 2019-2023 (https://lisozahyst.at.ua/index/agrilus-planipennis/0-17).



The dynamics of the invasive range of *A. planipennis* in Ukraine in 2019-2023 (Courtesy: The Ukrainian State Specialized Forest Protection Enterprise DSLP "Kharkivlisozakhist"; units: administrative districts; https://lisozahyst.at.ua/index/agrilus-planipennis/0-17; accessed on 15 September 2023; a green symbol in the map for 2023 indicates a record in Kyiv, which is not confirmed by the NPPO of Ukraine, see p. 2 of this Newsletter).

7. A call for reference specimens of *Agrilus planipennis*

Agrilus planipennis is still expanding its invasive range in Europe and NPPOs are trying to prepare in order to be ready to respond rapidly to findings. Recently, the EPPO Secretariat received a question from a member of the Network asking whether it would be possible to organize within the Network an **exchange of reference collection specimens of *A. planipennis* for NPPOs and/or national reference collections**. It is important to have a few confirmed specimens of this pest in national reference collections when the identity of an intercepted or trapped specimen needs to be rapidly confirmed. In our Network, there are specialists working in countries, where this pest is present (e.g. Russia, Ukraine, USA, Canada). It would be highly useful if these specialists could **provide reference specimens to their colleagues** in countries lacking *A. planipennis* in their reference collections.

The EPPO Secretariat is willing to find a way to facilitate this process. To do so, please write to the Network coordinator if you or your colleagues have spare reference specimens which you would be able **to send** to colleagues in other countries.

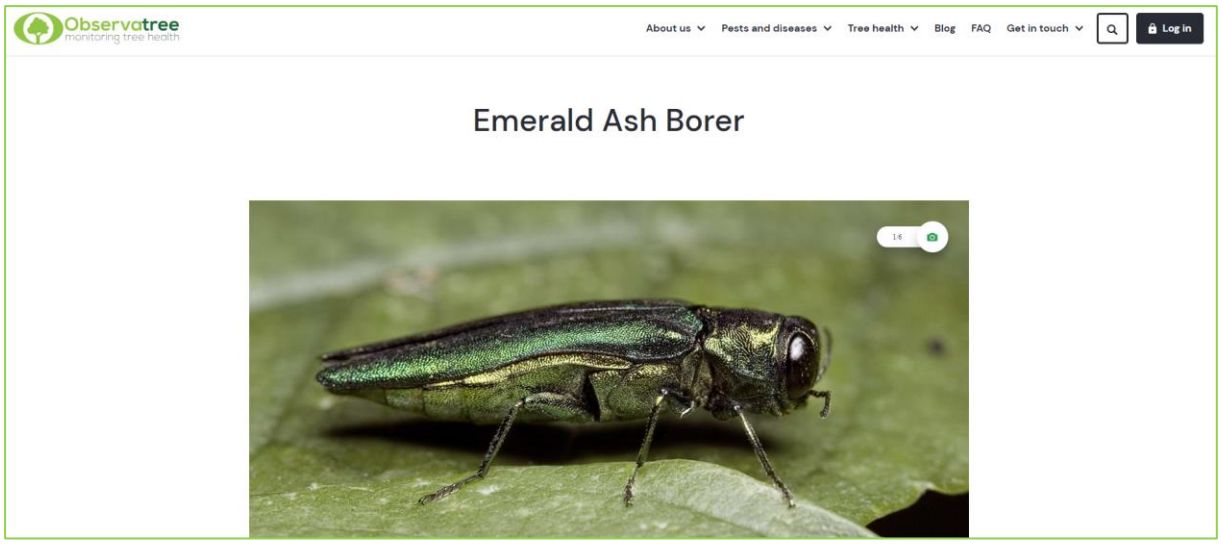
Contact email: Dmitrii Musolin (dm@eppo.int)

8. Materials on *Agrilus planipennis* on the webpage of the Observatree project

Different countries use different strategies to protect their native woody plants. In the United Kingdom, citizen science has been used for several years to monitor tree health. **Observatree** (https://www.observatree.org.uk/about-us/about-observatree/) is a citizen science project based in the United Kingdom and led by Forest Research, in collaboration with a few other key organizations.

The aim of the project is to protect the United Kingdom's trees, woods and forests from newly introduced pests, and those which are spreading across the country. The earlier these pests are spotted, the higher the chances that outbreaks can be eliminated or controlled. Volunteers of the project form a United Kingdom network of over 200 citizen scientists. They undertake a range of surveys to assist with spotting new tree pests or diseases and monitoring the spread of existing ones.

The project focuses on 22 priority pests which are of the highest concern to the United Kingdom. The project trains volunteers to identify and report these pests. It also encourages tree health professionals, and people actively involved with trees, to report any findings. A wide range of resources and training materials are available to help improving tree health knowledge. *A. planipennis* is included in the list of 22 priority pests (https://www.observatree.org.uk/pests-and-diseases/priority-pests-and-diseases/emerald-ash-borer/):



A screenshot from the webpage of the Observatree project with a photo of *Agrilus planipennis* (Courtesy: D. Cappaert, Bugwood.org).

The webpage provides a set of very useful materials which can be freely downloaded and used by other countries:

- **Emerald ash borer field identification guide** (pdf, 4.65 MB): https://www.observatree.org.uk/media/1229/16_0049_one-off-literature-observatree-guide-emerald-ash-borer_wip14.pdf
- **Emerald ash borer poster** (pdf, 3.00 MB): https://www.observatree.org.uk/media/1337/have-you-seen-this-posters-x13-x-561wmm-proof-9_artwork-4-1.pdf
- **Emerald ash borer training video** (12 min): https://www.observatree.org.uk/videos/emerald-ash-borer/
- **Little things big problems - Emerald ash borer video** (6 min): https://www.observatree.org.uk/videos/little-things-big-problems-emerald-ash-borer/
- **Emerald ash borer detailed information (Forest Research)** (an external link): https://www.forestresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/emerald-ash-borer-beetle-agrilus-planipennis/
- Signs and symptoms of the emerald ash borer (pdf, 5.2 MB): http://www.emeraldashborer.info/documents/E-2938.pdf
- **Emerald ash borer - Pest alert** (pdf, 4.0 MB): https://cdn.forestresearch.gov.uk/2022/02/epa_emerald_ash_borer-1.pdf

Feel free to inform the members of the Network about initiatives emerging in your country to protect ash trees from *A. planipennis*.

9. New publications on *Agrilus planipennis*

After the release of the previous Newsletter, information on **15 new papers** on *A. planipennis* (an EPPO Diagnostic Standard, 13 journal papers and 1 conference abstract) has been received. The range of topics is very wide and includes the following:

- an EPPO Diagnostic Standard for *A. planipennis* (EPPO, 2023),
- a biogeographical analysis of the world *Agrilus* fauna (Jendek & Grebennikov, 2023; Ruzzier *et al.*, 2023),
- phenology models and climatic suitability (Barker *et al.*, 2023),
- dynamics of spread of *A. planipennis* in Ukraine (Burdulanyuk *et al.*, 2023),
- monitoring of the ash stands in southern Russia (Shchurov & Zamotajlov, 2023),
- trunk injections as a measure to protect ash trees (Duan *et al.*, 2023a),
- biological control agents of *A. planipennis* (Duan *et al.*, 2023a,b; Morris *et al.*, 2023; Rutledge & Clark, 2023),
- resistance of different ash and elm species to *A. planipennis* (Miller & McMahan, 2022),
- a search for ash genotypes with increased resistance to *A. planipennis* and *Hymenoscyphus fraxineus* (Gossner *et al.*, 2023),
- economic and social consequences of pest invasions in Saint Petersburg, Russia (Selikhovkin et al., 2023),
- wood decay fungi associated with galleries of *A. planipennis* (Simeto *et* al., 2023),
- synthesis of the contact sex pheromone of *A. planipennis* (Yu *et al.*, 2023).

A reference list and a short summary of each of these publications are given at the end of this Newsletter and also on the Network's homepage on the webpage of EPPO (www.eppo.int/RESOURCES/special_projects/agrilus_planipennis_network). Most of the papers are available as full text via the provided links; others may be made available on request to the authors.

10. A closing remark

That is about all for the 2nd issue of the Newsletter. The EPPO Secretariat looks forward to receiving your news and publications, links to recently published papers and conference abstracts of your colleagues, any other relevant pieces of information and announcements on Emerald ash borer so the Network can distribute them via these Newsletters. Feel free to inform your colleagues in your country and around the world about the Newsletter. The email for correspondence is dm@eppo.int (Dmitrii Musolin).

11. References received (September 2023)

Barker BS, Coop L, Duan JJ and Petrice TR (2023) An integrative phenology and climatic suitability model for emerald ash borer. *Frontiers in Insect Science* 3: 1239173. doi: 10.3389/finsc.2023.1239173.

This paper presents a spatialized model of phenology and climatic suitability for *A. planipennis* for use in the Degree-Days, Risk, and Phenological event mapping (DDRP) platform, which is an open-source decision support tool to help detect, monitor, and manage invasive threats. Near real-time model forecasts for the conterminous United States are available at two websites to

provide end-users with decision-support for surveillance and management of this invasive pest. Forecasts of adult emergence and egg hatch are particularly relevant for surveillance and for managing existing populations with pesticide treatments and parasitoid introductions.

Burdulanyuk AO, Tatarynova VI, Bakumenko OM, Yemets OM, Demenko VM (2023) Risks of spreading quarantine pests in Ukraine and controlling their population. *Bulletin of the Sumy National Agrarian University. Series "Agronomy and Biology"* 2 (52), 9-19. https://www.snaubulletin.com.ua/index.php/ab/article/view/901, https://doi.org/10.32782/agrobio.2023.2.2

This paper reports that *A. planipennis* was first recorded in Ukraine in 2019 on the area of 13.3 ha. As of 31.12.2022, it is present in Luhansk and Kharkiv regions on the area of 1000.10 and 177.80 ha, respectively.

Duan JJ, Crandall RS, Grosman DM, Schmude JM, Quinn N, Chandler JL, Elkinton JS (2023a) Effects of emamectin benzoate trunk injections on protection of neighboring ash trees against emerald ash borer (Coleoptera: Buprestidae) and on established biological control agents. *Journal of Economic Entomology* 116 (3), 848–854. https://doi.org/10.1093/jee/toad074

In this paper, the authors determined whether ash trees injected with emamectin benzoate (EB) could protect untreated neighboring ash trees and also whether the selective treatment of ash trees with EB injections had adverse effects on the establishment of introduced larval parasitoids *Tetrastichus planipennis* Yang and *Spathius galinae* Belokobylskij & Strazenac. It is demonstrated that although distance from the EB-treated trees appeared to have a significant positive relationship with woodpecker feeding signs on neighboring trees, such relationships did not result in significant differences in the proportion of neighboring ash trees retaining healthy crowns between EB treatment and control plots. The introduced parasitoids of *A. planipennis* appeared to have established equally well between treatment and control plots.

Duan JJ, Schmude JM, Petrice TR, Bauer LS, Poland TM, Chandler JL, Crandall R, Elkinton JS, Van Driesche R (2023b) Successful establishment, spread, and impact of the introduced parasitoid *Spathius galinae* (Hymenoptera: Braconidae) on emerald ash borer (Coleoptera: Buprestidae) populations in postinvasion forests in Michigan. *Journal of Economic Entomology*, toad149. https://doi.org/10.1093/jee/toad149

Spathius galinae is a larval parasitoid native to the Russian Far East that was approved for release in the USA in 2015 for biological control of *A. planipennis*. This paper reviews the data accumulated in 2015-2020. Life table analysis showed that *S. galinae* alone reduced *A. planipennis* net population growth rate by 35–55% across sites from 2018 to 2020. These results demonstrate that *S. galinae* has established an increasing population in Michigan (USA) and now plays a significant role in reducing populations of *A. planipennis* in the area.

EPPO (2023) EPPO Diagnostic Standard PM 7/154(1) *Agrilus planipennis*. *EPPO Bulletin* 53, 285–308. Available from: https://doi.org/10.1111/epp.12926

This Standard covers identity, symptoms, detection methods (both morphological and molecular), remarks on possible confusion with adults of other native Buprestidae species, keys and diagnostic tables for larvae and adults. The protocol contains 40 figures and figure plates.

Gossner MM, Perret-Gentil A, Britt E, Queloz V, Glauser G, Ladd T, Roe AD, Cleary M, Liziniewicz M, Nielsen LR, Ghosh SK, Bonello P, Eisenring M (2023) A glimmer of hope – ash genotypes with increased resistance to ash dieback pathogen show cross-resistance to emerald ash borer. *New Phytol*ogist https://doi.org/10.1111/nph.19068

European ash (*Fraxinus excelsior*) is substantially threatened by the *A. planipennis* and the ash dieback pathogen, *Hymenoscyphus fraxineus*. Plant cross-resistance traits against novel enemies are poorly explored and it is unknown whether naïve ash trees can defend against novel enemy complexes via cross-resistance mechanisms. In this paper, the authors quantified *A. planipennis* performance on grafted replicates of ash genotypes varying in ash dieback resistance and characterized ash phloem chemistry with targeted and untargeted metabolomics. It is demonstrated that *A. planipennis* performed better on ash-dieback-susceptible than on ash-dieback-resistant genotypes. Moreover, changes in performance of *A. planipennis* aligned with differences in phloem chemical profiles between ash-dieback-susceptible and ash-dieback-resistant genotypes. It is also shown that intraspecific variation in phloem chemistry in European ash can confer increased cross-resistance to invasive antagonists from different taxonomic kingdoms. The study suggests that promotion of ash-dieback-resistant ash genotypes may simultaneously help to control the ash dieback disease and reduce *A. planipennis*-caused losses, which may be critical for the long-term stability of this keystone tree species.

Jendek E, Grebennikov V (2023) Summary of native geographic distribution of all 3,341 species of the most speciose animal genus *Agrilus* (Coleoptera: Buprestidae). *Journal of Insect Biodiversity* 39(2), 32–78. https://www.mapress.com/jib/article/view/2023.39.2.1

This paper presents a summary of the geographic distribution data of all 3,341 species of the jewel-beetle genus *Agrilus* taxonomically valid at the end of 2022. The genus *Agrilus* is the most speciose in the Americas (1,292 species) and Asia (1,187 species). Among 3,341 *Agrilus* species, 2,924 (87.5%) are unique to one biogeographic realm or transitional zone, and 417 species (12.5%) are shared by two or more biogeographical realms or transitional zones. The estimates suggest that the true number of *Agrilus* species in subtropical and tropical zones is at least twice higher than is currently known.

Miller F, McMahan E (2022) Examining resistance of Asian, European, and North American ash and elm species to the Emerald ash borer (*Agrilus planipennis*) (Coleoptera: Buprestidae). *The Great Lakes Entomologist* 55 (1). https://scholar.valpo.edu/tgle/vol55/iss1/6

To test for possible resistance in a range of ash species, the authors performed no-choice feeding assays with 19 different Asian, European, and North American ash between 2009 and 2018. Elm (*Ulmus*) taxa were also tested for potential suitability for feeding of *A. planipennis*. Studies included no-choice laboratory leaf feeding assays with adult beetles and laboratory and field phloem feeding studies with larvae. While leaf-feeding was variable, many of the Asian species, including *F. chinensis*, *F. chinensis* ssp. *rhynchophylla*, and *F. mandshurica* were among the least suitable for adult feeding. Larvae fared significantly worse in bolts of *F. chinensis* and *F. chinensis* ssp. *rhynchophylla* than in *F. mandshurica*, *F. angustifolia*, and *F. pennsylvanica*, a highly susceptible control. *Ulmus* taxa were not suitable for feeding. This study has revealed potential *Fraxinus* species to be used in breeding programs and plantings.

Morris TD, Gould JR, Fierke MK (2023) Establishment and impacts of emerald ash borer (Coleoptera: Buprestidae) parasitoids released at early- and post-invasion sites. *Journal of Economic Entomology* 116 (4), 1155–1164 https://doi.org/10.1093/jee/toad111

To understand if biocontrol establishment and control of *A. planipennis* is feasible in post-invasion sites, the authors of this paper assessed the establishment of parasitoids in 6 post-invasion forest stands in 2 regions of New York State (USA) and compared mortality of *A. planipennis* in these stands to 2 regions where releases were conducted during the early-invasion phase. Results of parasitoid trapping indicates *Tetrastichus planipennisi* established under both release strategies. *Spathius galinae* was only released in post-invasion stands, where it was established successfully. Artificial cohorts of *A. planipennis* were established and life tables were constructed at 3 sites per region. Mortality of *A. planipennis* due to *T. planipennisi* parasitism was similar under both release strategies 2 years after release in post-invasion stands versus 8 years after release in early-invasion stands. Combined mortality from *T. planipennisi* and woodpecker predation resulted in consistently low reproductive rates of *A. planipennis*.

Rutledge CE and Clark RE (2023) Temporal and spatial dynamics of the emerald ash borer invasion in Connecticut as shown by the native digging wasp *Cerceris fumipennis* (Hymenoptera: Crabronidae). *Frontiers in Insect Science* 3: 1179368. https://doi.org/10.3389/finsc.2023.1179368

Surveillance of *A. planipennis* takes advantage of the foraging effort of a predatory wasp *Cerceris fumipennis* (Hymenoptera: Crabronidae). This native, solitary, ground-nesting hunting wasp hunts adult buprestid beetles to provision its brood cells. By intercepting the hunting wasps, we can learn which species of buprestids are in the surrounding forest. The resulting data provides information on the presence and relative abundance of invasive buprestids like *A. planipennis* which can supplement other monitoring efforts. In this paper the authors shared results of 10 years of biosurveillance surveys of *A. planipennis* in Connecticut (USA). Among 112 sites, the authors observed *A. planipennis* populations; from first detection, through the population peak and then through to the population crash, matching patterns observed in other regions of the United States. They also observed the spread of *A. planipennis* relative abundance as it moved through the state following an invasion front starting in New Haven, Co. The average time from first detection to population crash was 9 years. On average, populations peaked 3 years after first detection, and remained at peak levels for 3 to 4 years. Population decline was gradual and took another 3 to 4 years. Notably, no evidence of a second introduction to Connecticut was seen with proportional abundance increasing over time after expanding outward from the introduction point.

Ruzzier E, Haack RA, Curletti G, Roques A, Volkovitsh MG, Battisti A (2023) Jewels on the go: exotic buprestids around the world (Coleoptera, Buprestidae). In: Jactel H, Orazio C, Robinet C, Douma JC, Santini A, Battisti A, Branco M, Seehausen L, Kenis M (Eds) Conceptual and Technical Innovations to Better Manage Invasions of Alien Pests and Pathogens in Forests. *Neobiota* 84: 107-135. https://doi.org/10.3897/neobiota.84.90829

Buprestidae is one of the 3 wood-borer beetle groups of major phytosanitary interest worldwide, together with Cerambycidae and Scolytinae (Curculionidae). In this paper the authors summarized much of the existing knowledge on this subject. Their analysis resulted in a list of 115 exotic buprestids worldwide, representing introductions both within and between biogeographic realms and corresponding to less than 1% of the known buprestid species worldwide. Invasiveness does not seem to be linked to their larval host plant preferences, as

introduced species utilize 158 plant genera in 70 plant families and are equally represented in all feeding guilds (monophagous, oligophagous, and polyphagous). As trade of plants or plant parts can serve as a pathway for future introductions, the information reported in this review can help in pest risk assessment.

Shchurov VI, Zamotajlov AS (2023) Monitoring of the ash stands (Oleaceae: Fraxinus) in modern foci of *Agrilus planipennis* Fairmaire, 1888 (Coleoptera: Buprestidae) in the West Caucasus (2007–2023). In: Protection of Plants From Pests. Materials of the XI International Scientific-Practical Conference. Krasnodar, June 19–23, 2023. Kuban State Agrarian University named after I.T. Trubilina (Krasnodar, Russia), 453-456. https://elibrary.ru/item.asp?id=54137848

The authors estimated the sanitary and forest pathological condition of stands with the participation of *Fraxinus* sp. in the West Caucasus in 2007–2019 was. In 2022, foci of mass reproduction of the emerald ash borer were registered for the first time in the Krasnodar Territory (Russia). In 2020–2022, this aggressive invader, alien to the Caucasus, radically changed the state of ash tree stands in the steppe zone of this region.

Selikhovkin AV, Nekhaeva MYu, Melnichuk IA (2023) Economic and social consequences of invasions of tree pests and pathogens in St. Petersburg. *Russian Journal of Biological Invasions* 14 (3), 398–404. doi: 10.1134/S2075111723030165 [originally published in Russian in: *Rossiiskii Zhurnal Biologicheskikh Invazii*, 2023, No. 2, pp. 163–171].

This paper presents an economic assessment of the damage recently caused to the plantings in St. Petersburg (Russia) by 3 invasive pests. Monetary losses from the introduction and spread of the A. planipennis for 2 years (2020–2022) reached 50 million rubles. Detection of infested trees and their timely felling was effective. However, not all infested trees were spotted and removed, thus the reproduction of the pest continued.

Simeto S, Held BW, Blanchette RA (2023) Wood decay fungi associated with galleries of the Emerald ash borer. *Forests* 14 (3), 576. https://doi.org/10.3390/f14030576

The aim of this paper was to investigate the wood degrading potential of Basidiomycota fungi previously found associated with galleries of *A. planipennis*. Laboratory soil and agar microcosm experiments showed that many of the white-rot fungi isolated were aggressive wood degraders. *Trametes versicolor*, *Phlebia radiata* and *Phlebia acerina* were among the top decomposers from the 13 tested fungi, resulting in as much as 70%, 72% and 64% weight loss, respectively, after 6 months of incubation. Micromorphological observations documented the significant wood cell wall degradation that had taken place. The decay capacity of these fungi confirms their contributing role to the loss of wood integrity in ash trees after attack of *A. planipennis*.

Yu S, Wu J, Bian Q, Wang M, Zhong J (2023) Asymmetric synthesis of the contact sex pheromone of the Emerald ash borer, *Agrilus planipennis* Fairmaire. *ChemistrySelect* 8, e202302084. https://doi.org/10.1002/slct.202302084

The contact sex pheromone of *A. planipennis* was synthesized from chiral propylene oxide. This asymmetric synthesis was efficient and mainly involved the ring-opening reaction of chiral propylene oxide, the stereospecific inversion of secondary tosylate and Wittig coupling of chiral aldehyde.