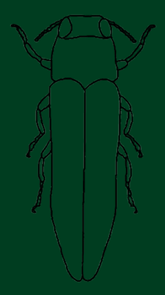
Keeping the emerald ash borer out: risk-based surveillance, preparedness and public engagement in Estonia



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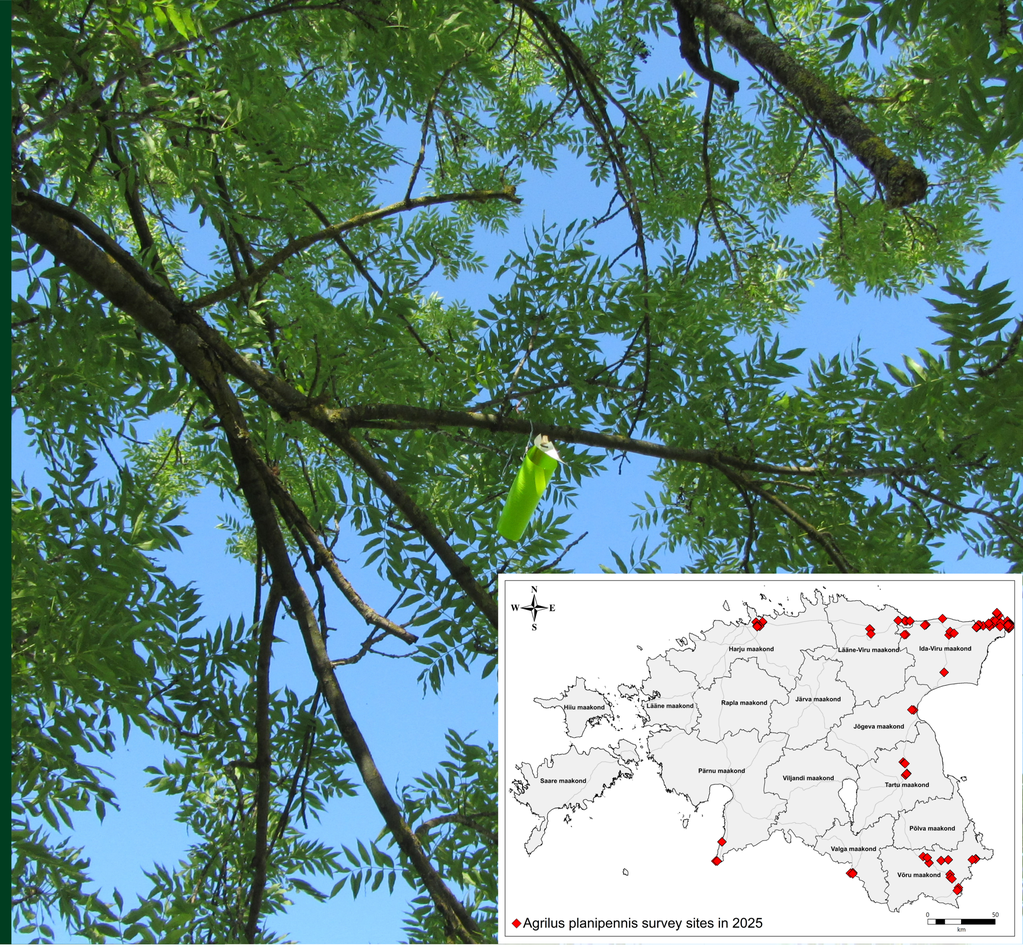
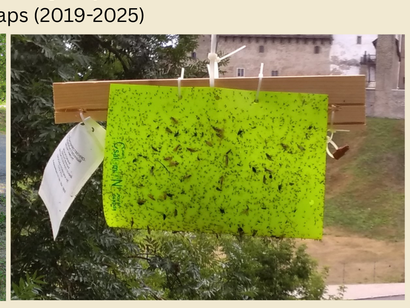


***Agrilus planipennis* is one of the devastating forest pests in the world and priority quarantine pest in the European Union. The probability of natural spread of the emerald ash borer to Estonia is significant, as the closest outbreak is around 130 km from the Estonian border in St. Petersburg area in The Russian Federation. The native ash species in Estonia is *Fraxinus excelsior,* in addition, *Fraxinus pennsylvanica* has been used in urban landscaping.**

Survey of *Agrilus planipennis* is carried out by Estonian Agriculture and Food Board and Environment Agency with a sufficiently high level of confidence according to EFSA statistical guidelines. Survey sites in high-risk areas were initially identified by mapping the ash trees, with their locations recorded on-site using GPS.
In Estonia, *A. planipennis* survey began in 2015 and was initially a visual survey. In 2019, the survey method was improved to ensure effective early detection - pheromone traps were installed from June to August, taking into account the distribution of ash trees and previously identified risk areas.
In the years 2019-2025, different types of traps have been used.
Most effective in catching local *Agrilus* species have been the baited sticky traps.

Attractants used in the survey:
- **3Z-Hexenol and 3Z-Lactone (2019-2021, Andermatt Biocontrol AG)**
- **cis-3-Hexen-1-ol and 60:40 E:Z-dodecenolide mix (2022-2025, Synergy Semiochemical)**

Sticky traps
- Csalomontraps (2019-2025)



Multifunnel traps
- Csalomontraps (MULTz, 2020-2022)
- Synergy Semiochemical (2024-2025)

Prism traps
- Andermatt Group AG aPhinity EAB green Prism trap (2025)

The following *Agrilus* species, which are native to the Estonian environment, have been identified in traps - *A. angustulus, A. auricollis, A. betuleti, A. convexicollis, A. integerrimus, A. sulcicollis, A. suvorovi, A. viridis.*

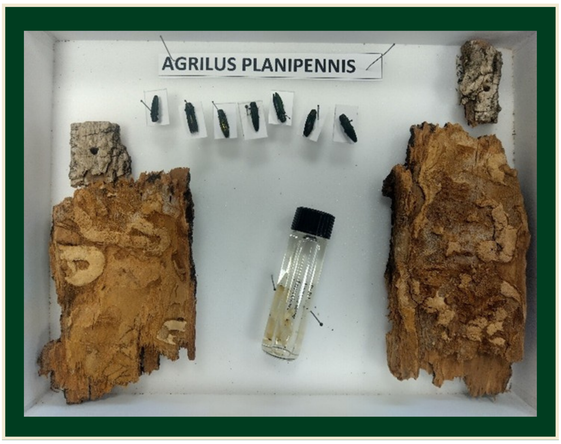
***Agrilus planipennis* has never been found in Estonia.**

Year	2019	2020	2021		2022		2023	2024		2025		
No of survey/trap sites	110	99	43	45	87	9	89	89	3	83	3	6
Trap type	Sticky	Funnel	Sticky	Funnel	Sticky	Funnel	Sticky	Sticky	Funnel	Sticky	Funnel	Prism
A. angustulus	10		19	1	50		7	2		3		
A. auricollis			1									
A. betuleti			1	9	11		14	1		6		
A. convexicollis	131	8	206	18	367	1	517	447		245		6
A. integerrimus		1										
A. sulcicollis		2	5	1	5		2	2		5		
A. suvorovi	1				2							
A. viridis	1		2	1	1		7			5		
TOTAL	143	11	234	30	436	1	547	452	0	264	0	6

Number of local *Agrilus* species caught in traps of *Agrilus planipennis* survey from 2019 to 2025 in Estonia. The number and type of traps are indicated in top rows of the table.

Among the local *Agrilus* species captured in the survey traps over the year, *Agrilus convexicollis* has by far been the most abundant, likely because this is the only local *Agrilus* with ash as its host. *Agrilus convexicollis* migh also be quite widely distributed due to ash dieback caused by *Chalara fraxinea*, which weakens the trees and attracts the insects.

It is extremely important to involve different target groups in the early detection of pests and preparation for outbreaks. In 2025, the Estonian NPPO started to involve the public in mapping ash trees and conducting visual observations of trees. An Estonian biodiversity and nature observations mobiile application PlutoF GO was used to record the results. A leaflet was prepared and distributed using various channels (fairs, radio, newspapers, websites etc.).

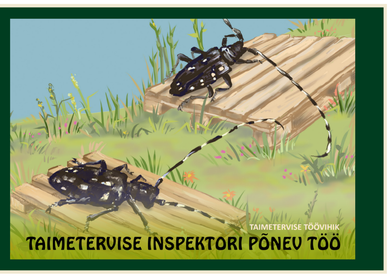


In order to strengthen the survey activities, another early detection technique was also practiced for the first time in 2025 - tree-girdling and subsequent destructive sampling of trunks.

Ash trees girdled in spring of 2025 will be felled and sampled in autumn of 2026, taking into account the two year lifecycle of *Agrilus planipennis* in the Estonian climate.

For preparedness of an outbreak, contingency plan for this priority pest has been published and is available for all involved parties.

An educational plant health related workbook for school children titled “The fascinating job of a plant health inspector” was published in 2023. The workbook includes puzzles of varying difficulty levels, indicated by the number of emerald ash borers on top of the pages. A drawing competition was organized for children and the winning entries were featured in the workbook.



The NPPO of Estonia has organized events over the years targeted to the public. It is important to involve especially people who spend time in nature due to their professional work, sports or hobbies.

A plant health related orienteering game in 2025 in Saku, where the Estonian NPPO is located. The event was organized in collaboration with the municipal government and was focused on *Agrilus planipennis*.

A well established weekly orienteering event in Tartu included some plant health related checkpoints to celebrate The International Day of Plant Health in 2024. There were traps for different pests, including *Agrilus planipennis* in the checkpoints and in order to solve the puzzle, ca 400 participants had to connect the right trap type to each pest.

A plant health related orienteering game for children in 2023 at an environmental education centre (Tartu Nature House) along with a competition for best pest costume (note the two emerald ash borers). The orienteering game is now a permanent part of the Tartu Nature House program located at their territory.

A pop-up presentation in 2023 during a cycling event that is focused on environment and nature protection (Green Bicycle Tour) and has a long history (since 1988). The tour took place in the eastern part of Estonia, which is closest to the *Agrilus planipennis* outbreak in St. Petersburg, making it a relevant location to share information about the pest. Around 2000 people participated in the cycling tour.