

ERADICATING THE ASIAN LONGHORNED BEETLE IN WINTERTHUR, SWITZERLAND

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Abstract In 2012, an infestation of Asian Longhorned Beetle (ALB) was detected in Winterthur (Canton ZH, Switzerland). With more than 140 adult beetles and several hundred eggs and larvae, the infestation was by far the most extensive in Switzerland. Based on experiences in Austria where the first ALB infestation in Europe occurred, the beetle was fought with extensive actions: removal of all infested trees, preventive removal of potential host trees and installation of a focus- and a buffer zone. Transport of plant material out of these zones was banned and a close monitoring regime including specialised dogs put in place. There were no adult beetles and only a few living larvae detected 2013. 700'000 Swiss francs were spent in 2012, not including hundreds of working hours spent by employees of the Canton Zurich. The programme is estimated to cost another 2.8 million Swiss francs, if no more living beetles are detected. The experiences from Winterthur show that elimination of a small ALB infestation is possible. The costs demonstrate the need for strong border controls or alternative packaging materials for imports from infested regions.

Key words Infestation zone, monitoring, pest elimination.

INTRODUCTION

Asian Longhorned Beetle (ALB) is one of the most dangerous plant pests worldwide, causing millions of dollars of damage and the reason for thousands of trees cut in urban space. ALB was introduced into the United States in the early or mid nineties, and has since then become a major economical and ecological problem in the US, Canada and Europe, where it was introduced first in Braunau (A) in 2001. Its broad host spectrum, its ability to attack completely vital trees and its larvae's capability of final development even in dead timber enhance ALBs spread and the damage it causes after infestation.

In summer 2012, an infestation of ALB was discovered in Winterthur, a city of some 100'000 inhabitants near Zurich, Switzerland. Compared to earlier infestations in the US, Canada or Europe, the infestation was discovered at an early stage (likely in its third generation), and was therefore smaller in extent. Nevertheless, it was by far the most extensive infestation in Switzerland: more than 140 living beetles and several hundred eggs were discovered. The infestation occurred in an industrial area, where a new street had been constructed. It was surrounded by industrial property and waste land, with no private housing in the immediate proximity of the infestation. From the beginning, authorities in Switzerland were cooperating closely with partners from Braunau, and decisions were taken based upon experiences in the Austrian town, where ALB could be declared extinct in

2013. Consequently, ALB was fought with rigorous actions immediately after discovery, and this active phase was followed by an intense monitoring programme, that also included organisational measures with respect to transport of plant material. At the moment, this monitoring programme is in its second year, and as there were new larvae found in 2013, will go on at least until 2017.

MATERIALS AND METHODS

A number of different short-term and long-term measures were taken in order to erase ALB in Winterthur, based on three different zones defined:

Infested area (living beetles or trees with larvae, eggs or exit holes detected),

Focus zone, 200-500 m around infested area, depending on density of broadleaf trees,

Buffer zone, up to 2 km around infested area.

Measures in infested area: Immediate removal of all infested trees. Trees were shredded on-site and all material was disposed of at a waste incineration plant; Removal of potential host trees in a radius of 100m around infested trees.

Measures in focus zone: Mapping of all potential host trees; Intense control of broadleaf trees with specialised sniffer dogs and tree climbers; Trees indicated suspicious by sniffer dogs have to be controlled with tree climbers, as well as trees that are not easily controllable from the ground; Preventive removal of many potential host trees ; Information of the public by personal contact.

Measures in buffer zone: Sampling of potential host trees with dogs and from the ground, including controls in forest stands; Information of public by flyers; Control and information of companies at risk (importers of stone-material).

Zones were marked with signs. Transport of any plant material out of these zones was banned, a central collecting point was installed inside the infested area. Stem wood as well as firewood could only be moved out of the zones with cantonal permission or had to be shredded at place. From the beginning on, there was a close cooperation between municipal, cantonal and federal authorities, as well as with research groups and partners abroad. Monitoring as well as control measures have to be continued for four years without any living beetle, larvae, egg or any new exit hole to be found for the infestation to be declared as erased. In Winterthur, this will be in 2017 at the earliest.

Legal Background

Combating ALB was based legally on the enactment of plant protection, where ALB is listed as one of the most dangerous plant pests that has to be reported and fought. The Federal Department of the Environment ordered the Canton of Zurich to implement the measures described above. Generally, based on the enactment of plant protection, the canton has to pay for the monitoring, while the community with an infestation on its territory has to pay for eradication measures.

Import Control

As a direct reaction on the large ALB infestation in Winterthur, the federal office for plant protection strongly increased border controls. All wooden packing material imported from different asian countrys has to be declared in advance and is controlled visually or with sniffer dogs upon arrival. Suspicious batches have to be aerated. In parallel, political efforts have been made to increase heat treatment in the exporting countrys. The stone industry, the main importer of suspicious wooden packing materials, took measures in order to decrease the risk for ALB introduction: new packaging methods, inspections on production sites as well as efforts to increase heat treatment frequency and quality by the stone suppliers from Asia.

RESULTS AND DISCUSSION

So far, the measures taken have proved effective. After removal of all infested trees and the intense search for ALB, no more beetles have been found. In 2013, only some living larvae were found, but ALB was not expected to fly in that year. Thus, a very close monitoring has to take place in the warm season of 2014. During 2013, detection dogs kept on finding larvae and a few infested trees, and there were a number of trees under suspicion. Most of them were removed precautionarily. In addition, border controls found only a few shipments contaminated with ALB, which shows an increased awareness within the stone industry. However, it will only be after the 2014 flying season that a more consolidated statement about the eradication measures in Winterthur can be made.

Financing

Switzerland's first big ALB infestation occurred in Winterthur, a city with sufficient personal, machinery and financial capability to deal with the infestation. The direct costs for 2012 had to be borne by the city, and they rocketed to 700'000 Swiss francs (770'000\$) within a few months. Not included in these numbers are hundreds of working hours spent by employees of the Canton Zurich, by members of the Swiss Federal Institute of Forest, Snow and Landscape Research WSL and by employees of the Federal Office for the Environment (BAFU). The 4-year monitoring programme is estimated to cost another 2.8 million Swiss francs (3.08 million \$), which will, based on a special enactment of the local government, be paid for by the canton.

It is clear, however, that Winterthur itself was lucky in two respects: the infestation was in its third generation and thus shortly before becoming very hard to control, as several forest stands are nearby. And secondly, because Winterthur was able to deal with the infestation initially. Another big plus was the fact, that a mainly industrial area was in the focus, not private property with gardens full of beloved trees and bushes. This certainly made rigorous actions easier and it prevented the question of compensation from being raised. In fact, the legal basis for such a compensation is not really clear, as ALB is considered a forest pest, but the infestation took place on city grounds. Legally, there are big differences between forests, agriculture and public or private green, with different administrative units in charge.

One consequence of this ALB infestation is the need for a clearer legal basis with respect to compensations that might be or might have to be provided after eradication measures have taken place. Secondly, there must be a concept for smaller communities that a) do not have enough personnel and machinery to deal with an infestation, and b) do not have the financial resources to have this work done by external services. At the moment, there are discussions about a cantonal action force equipped with enough capacities to intervene whenever necessary. However, as there are not that many ALB infestations, this action force should be integrated into other cantonal duties. Last but not least, clarity about the costs of such an infestation is needed. Specifically, it has to be determined within a legal frame, which costs are to be borne by the community, the cantonal or the federal administrations, respectively. On the practical side, knowledge transfer has to be guaranteed. This refers to both eradication measures and monitoring (detection dogs, tree climbers).

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