An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Pest Specific Contingency Plan for Outbreaks of *Agrilus anxius* (Bronze birch borer)

March 2023

Fig 1: Agrilus anxius (Bronze birch borer); adult beetle. From images available on CABI Invasive Species Compendium. Datasheet for Agrilus anxius (bronze birch borer) | CABI Compendium (cabidigitallibrary.org)

Contents

1. Introduction and scope

1.1. Introduction

This plan describes the management procedures that will be activated by the Department of Agriculture, Food and the Marine (the Department) in the case of an outbreak of *Agrilus anxius* in Ireland.

1.2 Scope

This document is restricted to activities specific to this pest and will be used in conjunction with the Department's Generic Contingency Plan for Plant Health which gives details of the teams and organizations involved in pest response in Ireland, and their responsibilities and governance.

2. Summary of the threat

2.1 *Agrilus anxius* threat

Agrilus anxius or Bronze birch borer is considered a destructive pest of forest and landscape birch trees in its native range of North America. The pest is generally considered a secondary pest, primarily attacking trees weakened by drought, old age, defoliation or injury, although it has been known to attack healthy trees. Following infestation, larvae damage trees by feeding under the bark on the phloem and the cambium layer. Affected trees may decline for a number of years before dying. Symptoms of infestation are very difficult to observe in the early stages.

The host range of *Agrilus anxius* is restricted to birch (*Betula* spp). The European species *B. pendula* and *B. pubescens* are more susceptible than North American species (e.g. *B. papyrifera, B. populifolia,* and *B. alleghaniensis*). The latter are susceptible only when they are subjected to a high level of stress.

Although *Agrilus anxius* is not known to be present in Ireland or the European Union, the negative impact of an outbreak is of concern, due to the potential ecological damage to forests and hedgerows, and economic loss for related timber industries. The pest is categorised as a Priority Pest under EU legislation.

Further details on the biology of *Agrilus anxius* are provided in Appendix 1.

2.2 Pathways of entry and spread

The main pathways for the potential introduction of *Agrilus anxius* into the EU territory are through the movement of infested birch plants for planting, or infested wood and bark of birch spp., from countries where the pest is already present.

Once populations are established, the pest can spread by flight or human-assisted movement of plant material. *Agrilus anxius* is an able flier and is therefore able to spread naturally over long distances, although adults tend not to fly far if host plants are available (EPPO, 2011).

EFSA (2019), estimated that the median of the maximum distance expected to be covered in one year by *Agrilus anxius* was about 1.3 km ranging from 90 meters (5th percentile) to 6 km (95th percentile). This means that there is less than 5% chance that the pest will fly beyond 6 km from the focus of the outbreak.

2.3 Current distribution

Agrilus anxius is native to much of the boreal and north temperate regions of North America where birch occurs (Muilenburg & Herms, 2012).

There are only a few states in Canada (Yukon Territory, Northwest Territories, Nunavut) and the USA (Alabama, Louisiana, Mississippi, Texas) where the insect is not reported to be present.

Its current range has expanded into the Southern and Western United States as a result of widespread planting of birch species as ornamental trees (Muilenburg & Herms, 2012).

Agrilus anxius has never been recorded in the wider environment in the European Union.

A map of its global distribution from the EPPO Global Database is shown in Appendix 2.

2.4 Factsheet and material for dissemination

A pest factsheet on *Agrilus anxius*, summarising the threat posed to Ireland, is given in Appendix 1 and is available on the Department's website at the following link. This publication is directed to professional operators, citizen scientists and the general public. Thus, this material should be used in information campaigns to prevent

outbreaks, in cases of the suspicion of PWN occurring and in the cases where an outbreak has been officially confirmed.

3. Legal basis and standards

3.1 Regulations

Agrilus anxius is a European Union quarantine pest listed in Annex II of Commission Implementing Regulation (EU) 2019/2072. *Agrilus anxius* is also listed as a priority pest under Commission Delegated Regulation (EU) 2019/1702.

Special import requirements are laid down in Annex VII Commission Implementing Regulation (EU) 2019/2072 for wood, bark and plants of birch species, including wood chips of birch from infested areas, which bear a high risk of introducing the pest.

Plants for planting of *Betula spp*. are also included in the list of high-risk plants under Commission Implementing Regulation (EU) 2018/20196

3.2 Standards

This plan shall be used in conjunction with:

(a) EFSA Pest survey card on *Agrilus anxius*

(b) ISPM 27 Diagnostic protocols for regulated pests

(c) ISPM 15 Regulation of wood packaging material in international trade

(d) ISPM 14 The use of integrated measures in a systems approach for pest risk management

(e) ISPM 10 Requirements for the establishment of pest free places of production

(f) ISPM 9 Guidelines for pest eradication programs

All other standards are outlined in DAFM Generic Contingency Plan for Plant Health in Ireland Chapter 2.1

3.3 Emergency measures

For some priority pests, EU Commission Implementing Regulations are in place describing emergency measures which must be followed by Member states in the event of an outbreak. There are currently no emergency measures agreed for *Agrilus*

anxius.

Should emergency measures be adopted against *Agrilus anxius.*, this contingency plan will be amended accordingly to reflect the new regulatory requirements.

3.4 Actions taken to prevent outbreaks

Measures on protecting the union against the introduction of *Agrilus anxius.* are provided in Commission Implementing Regulation (EU) 2019/2072.

The Department is required to perform risk-based annual surveys, to determine whether there is any evidence of the presence of *Agrilus anxius.* in the territory.

As detailed in Articles 22 and 24 of Regulation (EU) 2016/2031, the surveys consist of visual examinations, trapping and where appropriate, the collection of samples and performance of tests. The surveys are carried out in all appropriate locations and at appropriate times with regard to maximizing the possibility of detecting the pest. The surveys take account of scientific and technical evidence, and any other appropriate information concerning the presence of the pest.

4. Official Measures on finding *Agrilus anxius*

4.1 Suspected finding of *Agrilus anxius*

In the event of a suspected finding of *Agrilus anxius*, the Department will immediately take the necessary measures to confirm whether the pest is present in accordance with Article 10 Regulation (EU) 2016/2031. The general measures to be followed are as in the case of any suspected quarantine or priority pest finding. These general measures are laid out in Annex II of Regulation (EU) 2016/2031 and in the Department's Generic Contingency Plan for Plant Health in Ireland Chapters 3 & 4.

In accordance Article 9 Regulation (EU) 2016/2031, where the Department has concerns regarding imminent danger of the entry of the pest, the Commission and other Member States will be notified.

4.2 Confirmed finding of *Agrilus anxius*

When the finding of *Agrilus anxius* has been officially confirmed, the Department will fulfil its reporting obligations as per Article 11, (EU) 2016/2031 to the Commission and Member States. It will also inform those professional operators whose plants, plant

products or other objects may be affected by the presence of the pest as set out in Article 12 (EU) 2016/2031. Information will be provided to the public on measures that have been taken, or will be taken, as required by Article 13 (EU) 2016/2031.

Without delay, an initial demarcated area will be established in line with Article 18 (EU) 2016/2031 and as outlined in the Department's Generic Contingency Plan for Plant Heath in Ireland Chapter 5.3.

Official action will be taken to eradicate the pest as per Article 17, (EU) 2016/2031and in accordance with the international standard, IPPC Guidelines for Pest Eradication Programmes, ISPM 9, and as outlined in the Department's Generic Contingency Plan for Plant Heath in Ireland, Chapter 5.1.2.

The Department will adopt a pest specific action plan as required by Article 27 of Regulation (EU) 2016/2031. See Section 4.7 Action Plan.

4.3 Demarcated Area

The Department will establish a demarcated area consisting of an infested zone and a buffer zone. The buffer zone will have an initial width of at least 6km around the infested zone.

1. Where the presence of the *Agrilus anxius* is officially confirmed, the Department will, without delay, establish a demarcated area consisting of:

    (a) an infested zone including the infested plants and all plants which are liable to become infested within a radius of at least 100 m radius around infested plants ("infested zone");

    (b) a buffer zone with a width of at least 6 km beyond the boundary of the infested zone. This distance is based on EFSA's Pest survey card (2019) recommendation for delimiting survey area.

2. The delimitation of the demarcated area shall take into account the scientific principles, the biology of the pest, the level of infestation, the particular distribution of the host plants in the area concerned and the evidence of establishment of the specified pest.

3. The initial delimitation of the infested zone shall be followed by a delimiting survey. The survey shall be based on EFSA (2019) guidelines for statistically sound and risk-based surveys of *Agrilus anxius*.

4. Where, in accordance with paragraph 1 a demarcated area is to extend into the territory of another jurisdiction, the Department will immediately contact that

jurisdiction. The Department will co-ordinate with the authorities of that jurisdiction to establish a complete demarcated area and take all appropriate actions.

5. The Department will notify the Commission and the other Member States, by 30 April of each year, of the number and locations of the demarcated areas established, the result of surveys carried out, and the respective measures taken during the preceding calendar year.

6. Within the demarcated area, the Department will raise public awareness concerning the threat of the pest and the measures adopted to prevent its further spread outside of that area.

7. The Department will ensure that the general public and professional operators are aware of the delimitation of the demarcated area.

4.4 Derogations from the establishment of demarcated areas

The Department may choose not to establish a demarcated area if the following conditions are fulfilled:

(a) there is evidence that the pest has been introduced into the area with the plants or plant material on which it was found, and those plants were infested before their introduction into the area concerned and no multiplication of the beetle has occurred or there is evidence that it is an isolated finding, not expected to lead to establishment; or

(b) it is ascertained that there is no establishment of the pest, and the spread and successful breeding of the pest is not possible due to its biology, based on the results of a specific investigation and eradication measures taken.

4.5 Professional Operators

Professional operator will act in accordance with the direction of the Department to eradicate the pest, prevent its further spread, and provide the information necessary to conduct trace forward/back investigations.

1. Where a professional operator receives an official confirmation concerning the presence of the pest in plants, plant products or other objects which are under that operator's control, the Department will give direction on the actions to be taken.

2. The professional operator shall immediately take the necessary measures to prevent the spread of the pest. On a case-by-case basis, the Department will

provide instructions concerning those measures, the professional operator shall act in accordance with those instructions.

3. Where so instructed by the Department, the professional operator shall take the necessary measures to eradicate the pest from the plants, plant products or other objects which are under its control.

4. Unless otherwise instructed by the Department, the professional operator shall, without delay, withdraw from the market the plants, plant products and other objects which are under that operator's control and in which the pest could be present.

5. The professional operator shall provide to the Department the necessary information to conduct a trace forward/back investigation.

4.6 Eradication Measures

Where the finding of *Agrilus anxius* is officially confirmed, the Department will immediately take all necessary phytosanitary measures to eradicate the pest from the infested zone.

After the initial demarcation of areas and in parallel to the delimiting surveys, the Department will take all the following measures:

a) immediate felling of infested plants and plants suspected to be infested at the ground level, taking all necessary precautions to avoid spreading;

b) immediate felling at the ground level of all host plants within the infested zone and thorough examination of those plants for any sign of infestation, except in cases where the infested plants were found outside the flying period of the pest, when the felling and removal shall be carried out in time before the start of the next flying period;

c) removal, examination and safe disposal of plants felled in accordance with points (a) and (b), taking all necessary precautions to avoid spreading of the pest during and after felling;

d) examination and safe disposal of the wood and bark associated with the infestation, taking all necessary precautions to avoid spreading of the pest;

e) prohibition of any movement of potentially infested plants, wood and bark out of the demarcated area;

f) investigation of the origin of the infestation by the tracing back the plants, wood, bark and other objects associated with the infestation, and examination

thereof for any sign of infestation, including targeted destructive sampling, as appropriate;

g) raising public awareness of the threat of the pest and the measures adopted to prevent its introduction into and spread within the European Union, including the conditions regarding movement of plants, wood and bark from the demarcated area.

Eradication measures will be undertaken in accordance with, Annex II of (EU) 2016/203, International Standard for Phytosanitary Measure ('ISPM') No 9 and as set out in the Department's Generic Contingency Plan for Plant Health, Section 5.1.2.

4.7 Action Plan

Where the presence *Agrilus anxius* is officially confirmed, the Department will immediately adopt an action plan setting out in detail the measures for the eradication of the pest, or its containment, as well as a time schedule for the application of those measures.

The pest specific action plan will describe the actions required to deal with an outbreak of *Agrilus anxius* and will provide detail on:

a) Imposing control measures on the movement of host plant material, and eradication measures for a specified period in the infested area
b) The timetable for implementing these measures
c) The design and organisation of the surveys to be carried out
d) The number of visual examinations, sampling and tests to be carried out by laboratories
e) The methodology for sampling and testing as per ISPM 31 guidelines where appropriate,
f) Conducting an investigation to determine the source and extent of the outbreak,
g) Demarcation of the infested area,
h) Demarcation of the infested plant material,
i) The implementation of containment measures, such as buffer zones, to prevent further spread,
j) Disposal of infected plant material in accordance with best practices,
k) Appropriate biocontrol treatments of equipment, machinery and infested area,
l) Monitoring the effectiveness of the measures taken.

The action plan shall be based on this contingency plan and will be communicated to the professional operators concerned, as required.

The Department will notify the Commission and the other Member States of the action

plans it has adopted.

5. Criteria for declaring eradication and lifting demarcated areas

The Department may abolish a demarcated area and terminate the respective eradication measures where the pest-free status of that area has been verified.

This will be the case where the following two conditions are fulfilled:

a) following surveys referred to in Section 4.7, the demarcated area has been found to be free from the pest concerned; and

b) the pest concerned has not been found to be present in that demarcated area for least four consecutive years.

6. Evaluation and review of the contingency plan

6.1 Review and future versions

This contingency plan should be reviewed regularly to consider updates on legislation, control measures, susceptible host plants, pest distribution, pest biology, diagnostics and any other relevant amendments. Should any outbreak of *Agrilus anxius* occur, effectiveness of the measures applied, and lessons learned should be included in further reviews of this contingency plan. Reviews will be carried out in accordance with the Department's Generic Contingency Plan for Plant Health in Ireland Chapter 13.

7. Minimum Resources

The minimum resources to be made available and the procedures for making those additional resources available in case of a confirmed or suspected presence of *Agrilus anxius* are as outlined in DAFM Generic Contingency Plan for Plant Health in Ireland Chapters 5.2.

8. Command Structure

The roles, responsibilities, and chain of command of the bodies involved are as laid

down in DAFM Generic Contingency Plan for Plant Health in Ireland Chapter 8.

9. External Communication

Measures for provision of information to Commission, other member states and all stakeholders in the event of a confirmed or suspected presence of *Agrilus anxius* shall be in accordance with DAFM Generic Contingency Plan for Plant Health in Ireland Chapter 11.

10. Training and Testing of Personnel

Principles concerning the training of personnel of the competent authorities and, where appropriate, the bodies, public authorities, laboratories, professional operators and other persons shall be in accordance with DAFM Generic Contingency Plan for Plant Health in Ireland Chapter 12

Appendices

Appendix 1: Factsheet for *Agrilus anxius*

DAFM Plant Pest Factsheet

Agrilus anxius
Bronze birch borer

EU Priority Pest!

Fig 1: *Agrilus anxius* adult on birch bark

Pest Characteristics

- **Pest:** *Agrilus anxius*
- **Common name:** Bronze birch borer
- **Hosts:** *Agrilus anxius* is only known to feed on species of birch (*Betula*). There are two native Irish birch species both of which are considered major hosts of the pest: downy birch (*B. pubescens*) and silver birch (*B. pendula*).
- **Invasive risk:** The pest has not yet spread beyond its native distribution range in North America. To date, there have been no reported interceptions of the pest on imports entering into the EU from North America.
- **Entry pathways:** The most likely entry route for this pest into Ireland is on imports of host plants and wood products from regions where the pest is known to be present, pathways which are already regulated. Inspections of imports conducted at Irish Border Control Points should reduce the likelihood of entry via these pathways.
- **Symptoms:** Visual detection of early *A. anxius* outbreaks is difficult. Infestations initiate in the treetops and work their way downwards slowly. The first sign/symptoms identifiable visually are treetop dieback, sparse and chlorotic foliage (Fig 2). As infestations make their way downwards symptoms that can be visually identified include welts above larval galleries, calluses on stems and D-shaped adult emergence holes which are typically ~3.2mm long. Currently, there are no pest specific traps for *A. anxius*, however, green funnel traps and purple prism traps have shown promise if hung in birch tree in locations exposed to sunlight.

Fig 2: *Agrilus anxius* infestation symptoms: (a) birch treetop dieback (b) calluses on stem bark (c) larval gallery under bark (d) adult emergence holes on bark. More photos are available on the EPPO Database

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DAFM Plant Pest Factsheet

Fig 3 *Agrilus anxius* lifecycle

- **Distribution:** The pest is native to North America and is widespread throughout the USA and Canada (Fig 4).
- **Dispersal:** Adults are capable of flight but only appear to disperse over short distances if suitable hosts are near. The average maximum yearly spread has been estimated to be 1.3km.
- **Climatic suitability:** The pest appears to be suited to establishment in the Irish climate should it be unintentionally introduced into the environment.
- **Lifecycle:** Adults can emerge from infested trees from the spring to early summer, depending on the local climate. Adults must first feed on birch foliage to reach sexual maturation before they can mate. Mature adults have lifespans ranging from 2-5 weeks. Eggs are oval in shape (~ 1.5mm long, ~ 1mm wide) and are laid in bark crevices. Freshly hatched larvae bore through the birch bark to reach the cambium & phloem layers upon which they feed forming "zig-zag" galleries. Larvae undergo 4/5 developmental stages called "instars". Depending on the local climate larval development can take 1 or 2 summers. The final larval instar overwinters as a prepupa in their gallery. Pupation is triggered by temperatures falling below 0°C (generally occurs in the early spring in its native ranges).
- **If suspected:** If you find suspected symptoms or specimens, please submit images to DAFM at: plantpestreport@agriculture.gov.ie

Fig 4: World map of *A. anxius* distribution taken from the EPPO database (EPPO)

Photo credits: Fig 1, 2 & 3 EPPO (Link)

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Appendix 2: *Agrilus anxius* distribution worldwide

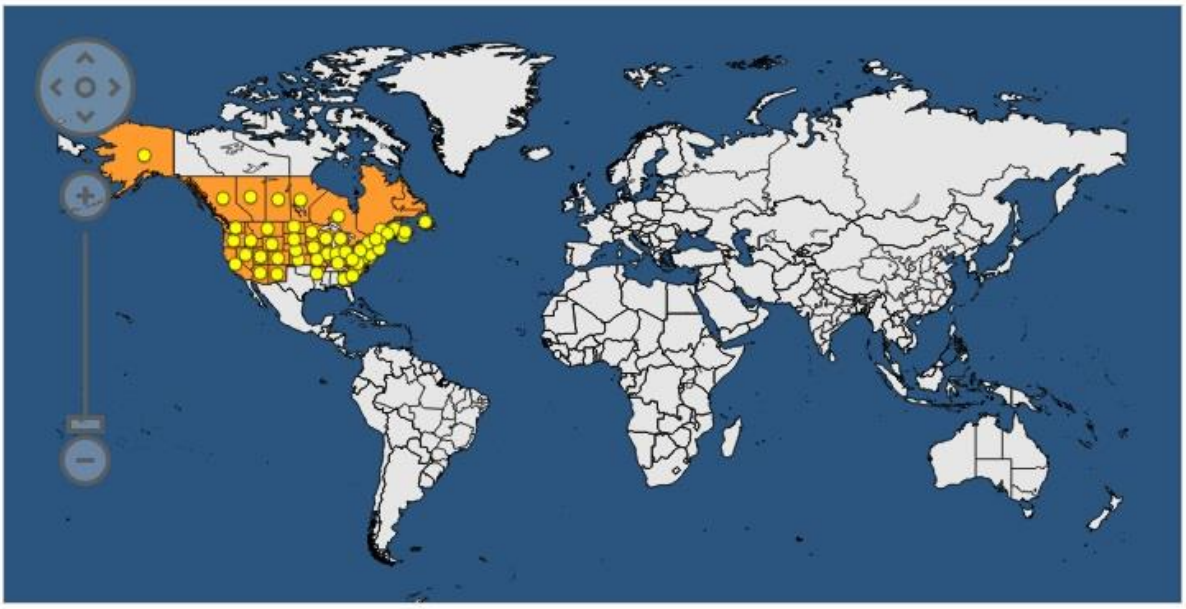

Fig 2: EPP0, Map showing distribution of *Agrilus anxius* 2020 - Agrilus anxius (AGRLAX)[World distribution]| EPPO Global Database

Reference Material:

EFSA. 2019. European Food Safety Authority), Pest survey card on *Agrilus anxius*. Gritta Schrader, Mart Kinkar, Sybren Vos. Pest survey card on Agrilus anxius | EFSA (europa.eu)

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