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SCIENTIFIC OPINION

Pest categorisation of *Eulecanium excrescens*

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The declarations of interest of all scientific experts active in EFSA's work are available at https://open.efsa.europa.eu/experts

Abstract

Following the commodity risk assessments of *Acer* spp., *Malus* spp. and *Prunus* spp. plants for planting from the United Kingdom (UK), in which *Eulecanium excrescens* (Ferris) (Hemiptera: Coccidae) was identified as a pest of possible concern, the European Commission requested the EFSA Panel on Plant Health to conduct a pest categorisation of *E. excrescens* for the territory of the European Union (EU). *E. excrescens*, commonly known as excrescent or wisteria scale, is a polyphagous pest, primarily feeding on deciduous orchard and ornamental trees. It is present in the USA, China (Sichuan) and in the UK. It is not present in the EU. *E. excrescens* can be found on leaves and woody parts of the host plants. The pest completes one generation per year and overwinters on twigs as nymphs. *E. excrescens* is reported as harmful in Oregon (USA) on hazelnut, and in China on fruit trees, without details on the magnitude of yield and quality losses. In the UK, serious damage was reported on wisteria plants in 2001, but since then there have been no further reports of damage. The magnitude of impact in the EU is therefore uncertain. Phytosanitary measures are available to reduce the likelihood of entry. All criteria assessed by EFSA for consideration as a potential quarantine pest are met.

KEYWORDS

Coccidae, excrescent scale, pest risk, plant health, plant pest, quarantine, wisteria scale

CONTENTS

1 | INTRODUCTION

1.1 | Background and Terms of Reference as provided by the requestor

1.1.1 | Background

The new Plant Health Regulation (EU) 2016/2031, on the protective measures against pests of plants, is applying from 14 December 2019. Conditions are laid down in this legislation in order for pests to qualify for listing as Union quarantine pests, protected zone quarantine pests or Union regulated non-quarantine pests. The lists of the EU regulated pests together with the associated import or internal movement requirements of commodities are included in Commission Implementing Regulation (EU) 2019/2072. Additionally, as stipulated in the Commission Implementing Regulation 2018/2019, certain commodities are provisionally prohibited to enter in the EU (high risk plants, HRP). EFSA is performing the risk assessment of the dossiers submitted by exporting to the EU countries of the HRP commodities, as stipulated in Commission Implementing Regulation 2018/2018. Furthermore, EFSA has evaluated a number of requests from exporting to the EU countries for derogations from specific EU import requirements.

In line with the principles of the new plant health law, the European Commission with the Member States are discussing monthly the reports of the interceptions and the outbreaks of pests notified by the Member States. Notifications of an imminent danger from pests that may fulfil the conditions for inclusion in the list of the Union quarantine pest are included. Furthermore, EFSA has been performing horizon scanning of media and literature.

As a follow-up of the above-mentioned activities (reporting of interceptions and outbreaks, HRP, derogation requests and horizon scanning), a number of pests of concern have been identified. EFSA is requested to provide scientific opinions for these pests, in view of their potential inclusion by the risk manager in the lists of Commission Implementing Regulation (EU) 2019/2072 and the inclusion of specific import requirements for relevant host commodities, when deemed necessary by the risk manager.

1.1.2 | Terms of Reference

EFSA is requested, pursuant to Article 29(1) of Regulation (EC) No 178/2002, to provide scientific opinions in the field of plant health.

EFSA is requested to deliver 53 pest categorisations for the pests listed in Annex 1A, 1B, 1D and 1E (for more details see mandate M-2021-00027 on the Open.EFSA portal). Additionally, EFSA is requested to perform pest categorisations for the pests so far not regulated in the EU, identified as pests potentially associated with a commodity in the commodity risk assessments of the HRP dossiers (Annex 1C; for more details see mandate M-2021-00027 on the Open.EFSA portal). Such pest categorisations are needed in the case where there are not available risk assessments for the EU.

When the pests of Annex 1A are qualifying as potential Union quarantine pests, EFSA should proceed to phase 2 risk assessment. The opinions should address entry pathways, spread, establishment, impact and include a risk reduction options analysis.

Additionally, EFSA is requested to develop further the quantitative methodology currently followed for risk assessment, in order to have the possibility to deliver an express risk assessment methodology. Such methodological development should take into account the EFSA Plant Health Panel Guidance on quantitative pest risk assessment and the experience obtained during its implementation for the Union candidate priority pests and for the likelihood of pest freedom at entry for the commodity risk assessment of High Risk Plants.

1.2 | Interpretation of the Terms of Reference

Eulecanium excrescens is one of a number of pests relevant to Annex 1C of the Terms of Reference (ToR) to be subject to pest categorisation to determine whether it fulfils the criteria of a potential Union quarantine pest for the area of the EU excluding Ceuta, Melilla and the outermost regions of Member States referred to in Article 355(1) of the Treaty on the Functioning of the European Union (TFEU), other than Madeira and the Azores, and so inform EU decision making as to its appropriateness for potential inclusion in the lists of pests of Commission Implementing Regulation (EU) 2019/2072. If a pest fulfils the criteria to be potentially listed as a Union quarantine pest, risk reduction options will be identified.

1.3 | Additional information

This pest categorisation was initiated following the commodity risk assessments of *Acer campestre*, *A. palmatum*, *A. platanoides*, *A. pseudoplatanus* (EFSA PLH Panel, 2023a, 2023b, 2023c, 2023d), *Malus domestica*, *M. sylvestris* (EFSA PLH Panel, 2023e, 2023f), *Prunus avium* and *P. spinosa* (EFSA PLH Panel, 2024a, 2024b), plants from the United Kingdom in which *E. excrescens*

was identified as a relevant pest of possible concern for the EU, not yet regulated, which could potentially enter the EU on these plants.

2 | DATA AND METHODOLOGIES

2.1 | Data

2.1.1 | Literature search

A systematic literature search on *E. excrescens* was conducted at the beginning of the pest categorisation (23/7/2024) in the ISI Web of Science and Elsevier SCOPUS bibliographic databases. The literature search string was constructed using as search terms the main scientific name, common names and other scientific names associated with the pest (for more details see Appendix D). All the relevant papers were reviewed, and additional information was obtained from experts, as well as from citations within the references, grey literature and other sources online.

2.1.2 | Database search

Pest information, on host(s) and distribution, was extracted from the references collected in the systematic literature search mentioned above (Section 2.1.1). The CABI Database (CABI, online) and the EPPO Global Database (EPPO, online) were used to integrate the information retrieved through the data extraction.

Data about the import of commodity types that could potentially provide a pathway for the pest to enter the EU and about the areas of hosts grown in the EU were obtained from EUROSTAT (Statistical Office of the European Union).

The EUROPHYT (EUROPHYT, online) and TRACES databases (TRACES-NT, online) were consulted for pest-specific notifications on interceptions and outbreaks. EUROPHYT is a web-based network run by the Directorate General for Health and Food Safety (DG SANTÉ) of the European Commission as a subproject of PHYSAN (Phyto-Sanitary Controls) specifically concerned with plant health information. TRACES is the European Commission's multilingual online platform for sanitary and phytosanitary certification required for the importation of animals, animal products, food and feed of non-animal origin and plants into the European Union, and the intra-EU trade and EU exports of animals and certain animal products. Up until May 2020, the EUROPHYT database managed notifications of interceptions of plants or plant products that do not comply with EU legislation, as well as notifications of plant pests detected in the territory of the Member States and the phytosanitary measures taken to eradicate or avoid their spread. The recording of interceptions switched from EUROPHYT to TRACES in May 2020.

GenBank was searched to determine whether it contained any nucleotide sequences for *E. excrescens* which could be used as reference material for molecular diagnosis (www.ncbi.nlm.nih.gov/genbank/; Sayers et al., 2024).

2.2 | Methodologies

The Panel performed the pest categorisation for *E. excrescens*, following guiding principles and steps presented in the EFSA guidance on quantitative pest risk assessment (EFSA PLH Panel et al., 2018), the EFSA guidance on the use of the weight of evidence approach in scientific assessments (EFSA Scientific Committee et al., 2017) and the International Standards for Phytosanitary Measures No. 11 (FAO, 2013).

The criteria to be considered when categorising a pest as a potential Union quarantine pest (QP) are given in Regulation (EU) 2016/2031 Article 3 and Annex I, Section 1 of the Regulation. Table 1 presents the pest categorisation criteria (Regulation (EU) 2016/2031) on which the Panel bases its conclusions. In judging whether a criterion is met the Panel uses its best professional judgement (EFSA Scientific Committee et al., 2017) by integrating a range of evidence from a variety of sources (as presented above in Section 2.1) to reach an informed conclusion as to whether a criterion is satisfied.

The Panel's conclusions are formulated respecting its remit and particularly regarding the principle of separation between risk assessment and risk management (EFSA founding regulation (EU) No 178/2002). Therefore, instead of determining whether the pest is likely to have an unacceptable impact, deemed to be a risk management decision, the Panel will present a summary of the observed impacts in the areas where the pest occurs and make a judgement about potential impacts in the EU. Whilst the Panel may quote impacts reported from areas where the pest occurs in monetary terms, the Panel will seek to express potential EU impacts in terms of yield and quality losses and not in monetary terms, in agreement with the EFSA guidance on quantitative pest risk assessment (EFSA PLH Panel et al., 2018). Article 3 (d) of Regulation (EU) 2016/2031 refers to unacceptable social impact as a criterion for quarantine pest status. Assessing social impact is outside the remit of the Panel.

TABLE 1 Pest categorisation criteria under evaluation, as derived from Regulation (EU) 2016/2031 on protective measures against pests of plants (the number of the relevant sections of the pest categorisation is shown in brackets in the first column).

Criterion of pest categorisation	Criterion in regulation (EU) 2016/2031 regarding union quarantine pest (article 3)
Identity of the pest (Section 3.1)	Is the identity of the pest clearly defined, or has it been shown to produce consistent symptoms and to be transmissible?
Absence/presence of the pest in the EU territory (Section 3.2)	Is the pest present in the EU territory? If present, is the pest in a limited part of the EU or is it scarce, irregular, isolated or present infrequently? If so, the pest is considered to be not widely distributed.
Pest potential for entry, establishment and spread in the EU territory (Section 3.4)	Is the pest able to enter into, become established in, and spread within, the EU territory? If yes, briefly list the pathways for entry and spread.
Potential for consequences in the EU territory (Section 3.5)	Would the pests' introduction have an economic or environmental impact on the EU territory?
Available measures (Section 3.6)	Are there measures available to prevent pest entry, establishment, spread or impacts?
Conclusion of pest categorisation (Section 4)	A statement as to whether (1) all criteria assessed by EFSA above for consideration as a potential quarantine pest were met and (2) if not, which one(s) were not met.

3 | PEST CATEGORISATION

3.1 | Identity and biology of the pest

3.1.1 | Identity and taxonomy

Is the identity of the pest clearly defined using current methods, or has it been shown to produce consistent symptoms and/or to be transmissible?

Yes, the identity of the pest is clearly defined, and *Eulecanium excrescens* (Ferris, 1920) is the accepted name.

E. excrescens is an insect within the order Hemiptera, suborder Sternorrhyncha, family Coccidae, which was first described by Ferris in 1920 on English walnut (*Juglans regia*) in Palo Alto, California (Ferris, 1920). It is commonly known as excrescent scale or wisteria scale. Synonym of *E. excrescens* is *Lecanium excrescens* (García Morales et al., 2016).

The EPPO code[1] (EPPO, 2019; Griessinger & Roy, 2015) for this species is: EULCEX (EPPO, online).

3.1.2 | Biology of the pest

E. excrescens is a polyphagous insect of Asian origin (Kosztarab, 1996 as cited in Malumphy, 2005). Studies on its biology are limited, and therefore, many aspects of the species are not known in detail. Information has been extracted mainly from the literature published after its introduction in the UK in 2001.

E. excrescens is univoltine and its lifecycle includes egg, three nymphal instars and adult (Figure 1) (Malumphy, 2005). Probably it reproduces parthenogenetically as no male nymphs or adults have been found in a large number of samples examined in the UK (Malumphy, 2005). In the UK, where its lifecycle has been studied, the nymphs overwinter and reach maturity in late spring. Eggs are laid under the female body in May (approximately 2000 eggs per female) and first instar nymphs appear in late May–June (RHS, online; Malumphy, 2005). The nymphs feed on leaves and in autumn, before leaf fall, they move from the leaves to the woody parts of the host plants (Malumphy, 2005) where they remain sedentary (RHS, online).

[1]An EPPO code, formerly known as a Bayer code, is a unique identifier linked to the name of a plant or plant pest important in agriculture and plant protection. Codes are based on genus and species names. However, if a scientific name is changed the EPPO code remains the same. This provides a harmonised system to facilitate the management of plant and pest names in computerised databases, as well as data exchange between IT systems (EPPO, 2019; Griessinger & Roy, 2015).

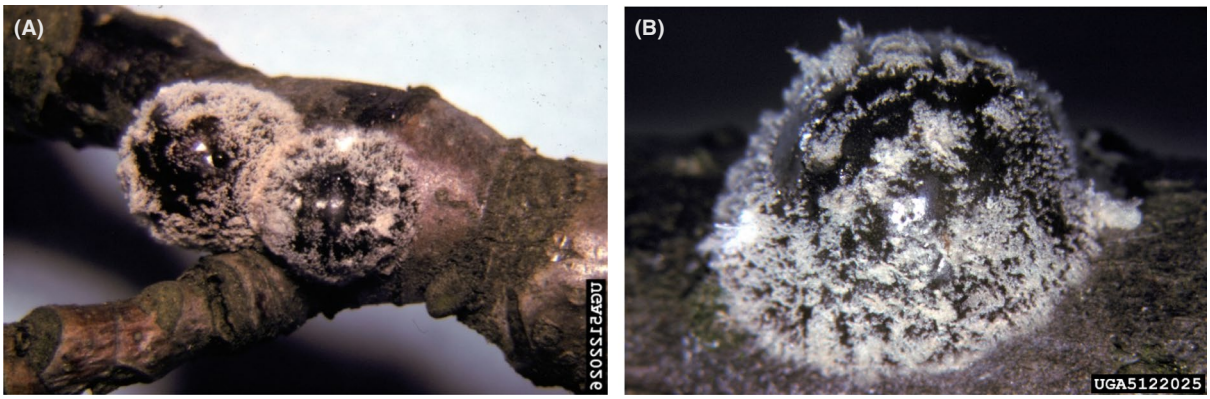

FIGURE 1 (A, B) Wisteria scale (*Eulecanium excrescens*) (United States National Collection of Scale Insects Photographs, USDA Agricultural Research Service, Bugwood.org, licensed under a Creative Commons Attribution-Noncommercial 3.0 License).

3.1.3 | Host range/species affected

E. excrescens is polyphagous, primarily feeding on deciduous orchard and ornamental trees. Economically important host plants are apple, almond, apricot, cherry and peach. In the UK, it has been recorded on several plant species, including plum (*Prunus domestica*) and peach (*P. persica*) (Malumphy C., Fera Science Ltd., email of 20 February 2025), but most findings (> 85%) were on *Wisteria* (Salisbury et al., 2010). Recently, a large population was recorded on *Gleditsia* trees (Malumphy C., Fera Science Ltd., email of 20 February 2025). The full host list is presented in detail in Appendix A.

3.1.4 | Intraspecific diversity

To the best of the Panel's knowledge, no information on intraspecific diversity is reported for this species.

3.1.5 | Detection and identification of the pest

Are detection and identification methods available for the pest?

Yes, there are methods available for the detection and morphological identification of *E. excrescens*.

Symptoms

E. excrescens is a phloem-sap feeding insect which can weaken the host plant and cause leaf loss (MacLeod & Matthews, 2005). When heavy infestations occur, stems can become thickly encrusted with scales and host plants may lack vigour and die back (RHS, online). The pest also excretes honeydew promoting growth of sooty mould. This can lead to reduced photosynthesis rate and deteriorate the aesthetic quality of plants (MacLeod & Matthews, 2005; Salisbury et al., 2010).

Detection

Visual examination of plants is an effective way for the detection of *E. excrescens* due to the large size (up to 13 mm long and 8–10 mm high) of adult female scales (Ferris, 1920). All developmental stages of *E. excrescens* occur on the bark of the host plant. The first- and second-nymphal instars can be found on the undersides of foliage (Malumphy, 2005).

Identification

The identification of *E. excrescens* requires microscopic examination of slide-mounted adults and verification of the presence of key morphological characteristics.

Detailed morphological descriptions, illustrations and keys of all developmental stages of *E. excrescens* can be found in Ferris (1920). Teneral adult females are required for identification. Illustrations and diagnostic keys are provided by Gill (1988) and Kosztarab (1996) (as cited in Malumphy, 2005).

No molecular identification methods have been reported in the available literature and no nucleotide sequences of any gene are included in GenBank.

Description

Eggs are 0.5 mm long and pinkish to orange (Alford, 2014).

The first instar nymphs are orange, while the second and third instar nymphs are brown with distinct waxen patches (Alford, 2014).

Adult females are globular, dark brown to blackish, often covered in a grey powdery wax (Alford, 2014; Salisbury et al., 2010). More details are given in Gill (1988) and Kosztarab (1996) (as cited in Malumphy, 2005).

3.2 | Pest distribution

3.2.1 | Pest distribution outside the EU

E. excrescens is of Asian origin (Kosztarab, 1996 as cited in Malumphy, 2005) with limited distribution in the world (Figure 2). It is present in certain parts of the United States and in Sichuan (China). In the UK, it was first detected in London in 2001 (MacLeod & Matthews, 2005). Between December 2003 and July 2010, 28 verifiable records of *E. excrescens* were reported indicating that the scale has been spreading in South-East England (Salisbury et al., 2010). The pest has been found at numerous sites in London affecting mainly host plants in private domestic gardens and not in commercial sites. In 2024, *E. excrescens* was also reported in the west of England (Malumphy C., Fera Science Ltd., email of 20 February 2025). In Australia, there is a requirement for importing hazelnut nursery stock from Bhutan to be inspected and found free of *E. excrescens* (Micor, online). However, there is no reported record of it in Bhutan.

FIGURE 2 Global distribution of *Eulecanium excrescens* (Source: EFSA systematic literature search and other sources; for details see Appendix B).

3.2.2 | Pest distribution in the EU

*Is the pest present in the EU territory? If present, is the pest in a limited part of the EU or is it scarce, irregular, isolated or present infrequently? If so, the pest is considered to be not widely distributed***.**

No, *E. excrescens* is not known to be present in the EU territory.

3.3 | Regulatory status

3.3.1 | Legislation addressing the pest

There is no specific legislation addressing *E. excrescens*, and the pest is not listed in Annex II of Commission Implementing Regulation (EU) 2019/2072, an implementing act of Regulation (EU) 2016/2031, or in any emergency plant health legislation.

3.3.2 | Legislation addressing the hosts

EU phytosanitary legislation prohibits several *E. excrescens* hosts from entering the EU territory (Table 2 and text below Table 2).

TABLE 2 List of plants, plant products and other objects that are *Eulecanium excrescens* hosts whose introduction into the Union from certain third countries is prohibited (Source: Commission Implementing Regulation (EU) 2019/2072, Annex VI).

List of plants, plant products and other objects whose introduction into the union from certain third countries is prohibited			
	Description	**CN code**	**Third country, group of third countries or specific area of third country**
8.	Plants for planting of […] *Malus* Mill., *Prunus* L., *Pyrus* L. and […] other than dormant plants free from leaves, flowers and fruits	ex 0602 10 90 ex 0602 20 20 ex 0602 20 80 ex 0602 40 00 ex 0602 90 41 ex 0602 90 45 ex 0602 90 46 ex 0602 90 47 ex 0602 90 48 ex 0602 90 50 ex 0602 90 70 ex 0602 90 91 ex 0602 90 99	Third countries other than Albania, Andorra, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Canary Islands, Faeroe Islands, Georgia, Iceland, Liechtenstein, Moldova, Monaco, Montenegro, North Macedonia, Norway, Russia (only the following parts: Central Federal District (Tsentralny federalny okrug), Northwestern Federal District (Severo- Zapadny federalny okrug), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo-Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug)), San Marino, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom (1)
9.	Plants for planting of […] *Malus* Mill., *Prunus* L. and *Pyrus* L. and their hybrids, […]., other than seeds	ex 0602 10 90 ex 0602 20 20 ex 0602 90 30 ex 0602 90 41 ex 0602 90 45 ex 0602 90 46 ex 0602 90 48 ex 0602 90 50 ex 0602 90 70 ex 0602 90 91 ex 0602 90 99	Third countries other than Albania, Algeria, Andorra, Armenia, Australia, Azerbaijan, Belarus, Bosnia and Herzegovina, Canada, Canary Islands, Egypt, Faeroe Islands, Georgia, Iceland, Israel, Jordan, Lebanon, Libya, Liechtenstein, Moldova, Monaco, Montenegro, Morocco, New Zealand, North Macedonia, Norway, Russia (only the following parts: Central Federal District (Tsentralny federalny okrug), Northwestern Federal District (SeveroZapadny federalny okrug), Southern Federal District (Yuzhny federalny okrug), North Caucasian Federal District (Severo- Kavkazsky federalny okrug) and Volga Federal District (Privolzhsky federalny okrug)), San Marino, Serbia, Switzerland, Syria, Tunisia, Türkiye, Ukraine, the United Kingdom (1) and United States other than Hawaii

Although certain host genera are prohibited from entering the EU, some are permitted from the UK and US (see Table 2) where *E. excrescens* occurs.

Acer L., *Corylus* L., *Juglans* L., *Malus* Mill., *Prunus* L., *Ulmus* L. plants other than seeds, in vitro material or naturally or artificially dwarfed woody plants, are listed in Commission Implementing Regulation (EU) 2018/2019 as high-risk plants for planting and their import into the Union is prohibited pending risk assessment (EU 2018/2019).

Derogations are in place since June and July 2023 ((EU) 2023/1203, (EU) 2023/1511, (EU) 2023/1535), allowing the import of specific commodities of *Acer* spp., *Malus domestica* and *M. sylvestris* from the UK into the EU, following the commodity risk assessments performed by EFSA (EFSA PLH Panel, 2023a, 2023b, 2023c, 2023d, 2023e).

3.4 | Entry, establishment and spread in the EU

3.4.1 | Entry

*Is the pest able to enter into the EU territory? If yes, identify and list the pathways***.**

Yes, the pest could enter the EU territory. Possible pathways of entry are plants for planting and cut branches of host plants.

Comment on plants for planting as a pathway.

Plants for planting provide the main pathway to enter the EU.

Possible pathways of entry are plants for planting and cut branches (Table 3).

TABLE 3 Potential pathways for *Eulecanium excrescens* into the EU.

Pathways (e.g. host/intended use/source)	Life stage	Prohibitions (Annex VI) within commission implementing Regulation 2019/2072
Plants for planting	All life stages	Plants for planting that are hosts of *E. excrescens* and are prohibited from being imported from third countries (Regulation 2019/2072, Annex VI) are listed in Table 2. Plants for planting from third countries require a phytosanitary certificate (Regulation 2019/2072, Annex XI, Part A)
Cut branches	All life stages	Foliage, branches and other parts of plants of *Prunus* spp., without flowers or flower buds, being goods of a kind suitable for bouquets or for ornamental purposes, fresh, from certain third countries require a phytosanitary certificate (Regulation 2019/2072, Annex XI, Part A) Foliage, branches and other parts of plants of *Malus* Mill. and *Pyrus* L. of *E. excrescens*, without flowers or flower buds and grasses, mosses and lichens, being goods of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared: – Fresh: ex 0604 20 90, from third countries other than Switzerland require a phytosanitary certificate for their introduction into a protected zone from certain third countries of origin or dispatch (Regulation 2019/2072, Annex XII, Part C)

Notifications of interceptions of harmful organisms began to be compiled in EUROPHYT in May 1994 and in TRACES in May 2020. As of 22 January 2025, there were no records of interception of *E. excrescens* in the EUROPHYT and TRACES databases (EUROPHYT/TRACES-NT, online).

3.4.2 | Establishment

Is the pest able to become established in the EU territory?

Yes, the pest is able to become established in the EU territory. Establishment could occur in most EU Member States, based on climate suitability and host availability.

Climatic mapping is the principal method for identifying areas that could provide suitable conditions for the establishment of a pest taking key abiotic factors into account (Baker, 2002). The approach used in EFSA pest categorisations is based on the Köppen–Geiger climate classification (version of Kottek et al., 2006 and Rubel et al., 2017) which identifies potentially suitable areas based on the climate types present in Europe. Availability of hosts is considered in Section 3.4.2.1. Climatic factors are considered in Section 3.4.2.2.

3.4.2.1 | *EU distribution of main host plants*

Many genera of *E. excrescens* host plants are present or are grown widely across the EU (Appendices C.1–C.8). Among others, almond, apple, apricot, pear, plum, sycamore trees etc. and ornamental plants. The harvested area of some of the hosts in the EU between 2019 and 2023 is shown in Table 4.

TABLE 4 Harvested area (1000 ha) of some of the host plants of *Eulecanium excrescens* in the EU. Source Eurostat (accessed on 17 January 2025).

Harvested area (1000 ha)						
Crops	**Code**	**2019**	**2020**	**2021**	**2022**	**2023**
Almond	F4300	809.56	853.83	881.06	905.33	917.34
Apple	F1110	491.08	489.19	492.56	478.01	471.88
Apricot	F1230	73.22	76.13	73.48	72.09	70.43
Hazelnut	F4200	110.39	116.33	119.75	123.64	128.56
Peach	F1210	144.78	138.31	133.06	129.40	124.01
Pear	F1120	110.66	108.29	106.96	103.10	100.53
Plum	F1250	154.51	160.38	157.68	156.63	157.06
Walnut	F4100	87.62	99.21	97.00	102.46	103.36

3.4.2.2 | *Climatic conditions affecting establishment*

E. excrescens occurs in the United States, China (Sichuan) and the UK (Figure 2). Figure 3 shows the world distribution of selected Köppen–Geiger climate types (Kottek et al., 2006) that occur in the EU, and which occur in countries where *E. excrescens* has been reported. Its current distribution suggests that the largest part of the EU has climate types suitable to its establishment. Dfc was removed from the figure due to its marginal appearance in the area of pest distribution (appears only in some pixels in New York State). The biology of the scale is little studied and no temperature thresholds for development have been reported.

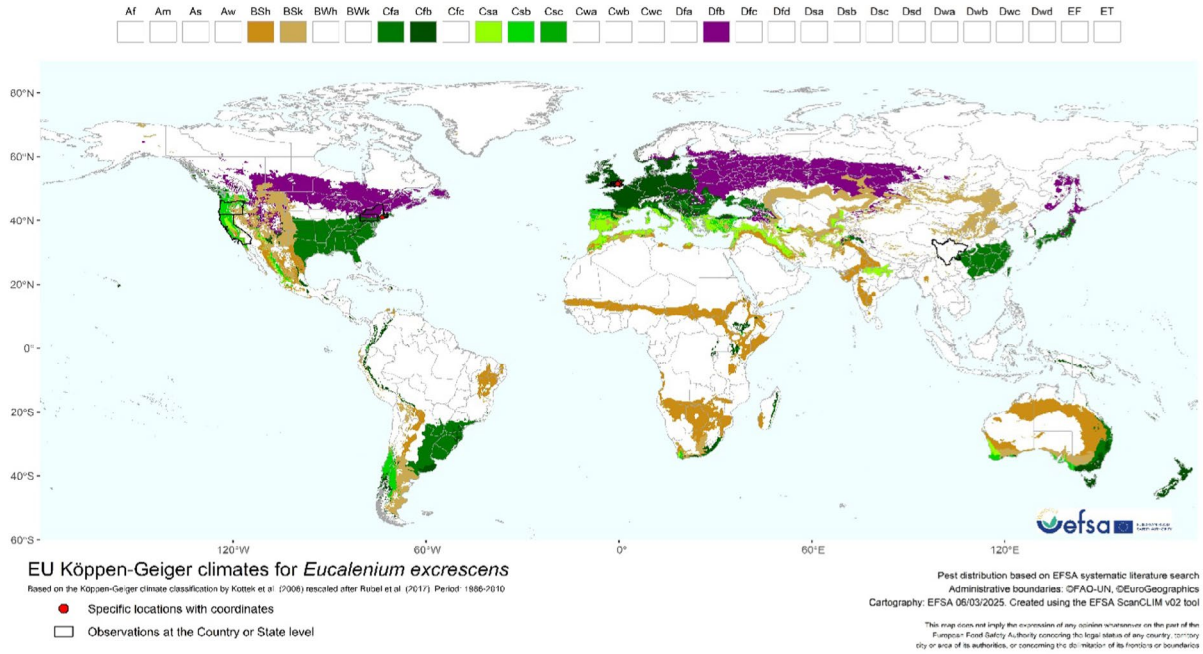

FIGURE 3 World distribution of the Köppen–Geiger climate types that occur in the EU and in countries where *Eulecanium excrescens* occurs (red dots represent specific coordinate locations where *E. excrescens* was reported).

3.4.3 | Spread

Describe how the pest would be able to spread within the EU territory following establishment?

First instar nymphs may disperse over short distances by crawling, wind, rainfall and as occasional hitchhikers on humans and animals.

All stages may be moved over long distances in trade of infested plant material, specifically plants for planting and cut branches.

Comment on plants for planting *as a mechanism of spread*.

The trade of infested plants for planting is the main pathway of *E. excrescens* spread within the EU territory.

Natural dispersal is likely to be slow. However, there is some uncertainty about the natural dispersal rate because first instar nymphs may be passively carried in air currents (Salisbury et al., 2010). Such aerial dispersal has been shown in several coccid species (Washburn & Fankie, 1985: Barras et al., 1994; as cited in Salisbury et al., 2010). In addition, the organism may also spread by animals, humans and machinery (Stephens & Aylor, 1978; as cited in Salisbury et al., 2010). Infested plants for planting and other plant material are the main spread pathways of *E. excrescens* (Salisbury et al., 2010).

3.5 | Impacts

Would the pests' introduction have an economic and/or environmental impact on the EU territory?

Yes, *Eulecanium excrescens* has been reported to have impact on fruit trees in China and on hazelnut trees in Oregon, USA without specific data about the magnitude of yield and quality losses due to the insect. Apart from serious damage on wisteria plants in 2001, it did not have further severe economic or environmental impact in the UK.

In 2001, in the UK, *E. excrescens* caused serious damage on wisteria plants around London and posed a potential environmental/economic threat (Malumphy, 2005; Salisbury et al., 2010). The insect feeds on phloem sap and this can directly weaken the plants. The scale also excretes excess plant sap as honeydew, which can promote the growth of sooty mould, having the secondary effect of reducing photosynthesis and the aesthetic quality of plants. Infestations on wisteria can affect the aesthetic appearance of buildings covered with this plant. Heavy infestations can cause die back. High levels of parasitism by Chalcidoidea and entomopathogenic fungi attacking populations of *E. excrescens* in London have been recorded, providing some control (Malumphy C., Fera Science Ltd., email of 20 February 2025; EFSA PLH Panel, 2024c). The impact on commercial crops is less clear. Mature, well established and healthy plants are able to tolerate small populations and are not likely to be killed by the pest (MacLeod & Matthews, 2005; RHS, online). Apart from the serious damage on wisteria plants around London (large populations on individual wisteria plants have caused defoliation and die back), no severe impacts have been reported in the UK (Malumphy C., Fera Science Ltd., email of 20 February 2025).

In China, *E. excrescens* was reported as a pest of apple, pear and peach trees, causing damage (Deng, 1985), but no further details are provided, as it has been reported only in Sichuan and the available literature is limited. In California, the scale is not considered a pest as it is rarely found (Gill, 1988 as cited in Salisbury et al., 2010). In Oregon, it is included in the list of pests causing severe damage on hazelnut (i.e. *Corylus avellana*) (Murray & Jepson, 2018). Heavy infestations can kill twigs of hazelnut trees. No data were found on the pest's status and impact in other US States. In an old record in the US, Smith (1944) reported that *E. excrescens* and other scales were not injurious to large trees but sometimes to nursery stocks and young sycamore trees.

Although *E. excrescens* is considered an important pest for hazelnut in the USA, its introduction in the UK has not caused serious damage (apart from damage on wisteria plants in 2001 in London). Therefore, there is uncertainty about the magnitude of economic and environmental impact that would result from an introduction of *E. excrescens* in the EU.

3.6 | Available measures and their limitations

Are there measures available to prevent pest entry, establishment, spread or impacts such that the risk becomes mitigated?

Yes, there are phytosanitary measures that prohibit several plant genera as plants for planting from third countries (Section 3.3.2), and requirements for a phytosanitary certificate for other species to be imported into the EU territory (Section 3.4.1). There are also additional measures (Section 3.6.1) to eliminate the likelihood of *E. excrescens* entry, establishment and spread within the EU.

3.6.1 | Identification of potential additional measures

Phytosanitary measures (prohibitions) are currently applied to some host plants for planting (see Section 3.3.2).

Additional potential risk reduction options and supporting measures are shown in Sections 3.6.1.1 and 3.6.1.2.

3.6.1.1 | *Additional potential risk reduction options*

Potential additional control measures are listed in Table 5.

TABLE 5 Selected control measures (a full list is available in EFSA PLH Panel et al., 2018) for pest entry/establishment/spread/impact in relation to currently unregulated hosts and pathways. Control measures are measures that have a direct effect on pest abundance.

Control measure/risk reduction option (blue underline = Zenodo doc, blue = WIP)	RRO summary	Risk element targeted (entry/establishment/spread/impact)
Require pest freedom	As a pest with low mobility, a risk reduction option could be to source plants from a pest free area, or place of production or production site	Entry/spread
Growing plants in isolation	Description of possible exclusion conditions that could be implemented to isolate the crop from pests and if applicable relevant vectors, e.g. a dedicated structure such as glass or plastic greenhouses Growing plants in insect proof place of production or in a place with complete physical isolation, when feasible, could be an effective measure to mitigate the likelihood of entry and spread of *E. excrescens*	Entry (reduce contamination/infestation)/spread
Managed growing conditions	Used to mitigate likelihood of infestation at origin. Plants collected directly from natural habitats, have been grown, held and trained for at least two consecutive years prior to dispatch in officially registered nurseries, which are subject to an officially supervised control regime	Entry (reduce contamination/infestation)/spread
Roguing and pruning	Roguing is defined as the removal of infested plants and/or uninfested host plants in a delimited area, whereas pruning is defined as the removal of infested plant parts only without affecting the viability of the plant According to MacLeod and Matthews (2005), pruning of debris can be included in the management options of the pest. However, if the tree is extensively infested, over-pruning cannot be a viable option	Entry/spread/impact
Biological control and behavioural manipulation	In the UK, the parasitoid *Coccophagus obscurus* Westwood (Hymenoptera: Aphelinidae) was found parasitising on *E. excrescens* at low levels (Malumphy, 2005). Also, high levels of parasitism by some unidentified Chalcidoidea species and infestation by an entomopathogenic fungus were observed (Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025) In China, natural enemies of *E. excrescens* include the beetle, *Anthribus niveovariegatus* (Roelofs) (Coleoptera: Anthribidae) and an unidentified entomopathogenic fungus (Deng, 1985)	Entry/impact
Chemical treatments on crops including reproductive material	According to MacLeod and Matthews (2005), the application of fatty acids could be used against *E. excrescens*, but no further details are provided	Entry/establishment/impact
Chemical treatments on consignments or during processing	Use of chemical compounds that may be applied to plants or to plant products after harvest, during process or packaging operations and storage The treatments addressed in this risk mitigation measure are: a. fumigation b. spraying/dipping pesticides c. surface disinfectants d. process additives e. protective compounds Chemical compounds that may be applied to plants or to plant products after harvest, during process or packaging operations and storage could mitigate the likelihood of infestation of pests susceptible to chemical treatment	Entry/spread
Physical treatments on consignments or during processing	This risk mitigation measure deals with the following categories of physical treatments: irradiation/ionisation; mechanical cleaning (brushing, washing); sorting and grading, and; removal of plant parts (e.g. debarking wood). This risk mitigation measure does not address: heat and cold treatments, or roguing and pruning Brushing with a soft brush or water pressure when applicable could be an effective way of removing *Eulecanium* spp. in general. On large trees and on large areas this measure is not considered applicable (UMass Extension Landscape, Nursery and Urban Forestry Program, online)	Entry/spread
Cleaning and disinfection of facilities, tools and machinery	The physical and chemical cleaning and disinfection of facilities, tools, machinery, transport means, facilities and other accessories (e.g. boxes, pots, pallets, palox, supports, hand tools). The treatments addressed in this risk mitigation measure are washing, sweeping and fumigation	Entry/spread

(Continues)

TABLE 5 (Continued)

Control measure/risk reduction option (blue underline = Zenodo doc, blue = WIP)	RRO summary	Risk element targeted (entry/establishment/spread/impact)
Waste management	This measure covers treatment of the waste (deep burial, composting, incineration, chipping, production of bio-energy…) in authorised facilities and official restriction on the movement of waste According to MacLeod and Matthews (2005), burning of debris can be included in the management options of the pest	Establishment/spread

3.6.1.2 | *Additional supporting measures*

Potential additional supporting measures are listed in Table 6.

TABLE 6 Selected supporting measures (a full list is available in EFSA PLH Panel et al., 2018) in relation to currently unregulated hosts and pathways. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk reduction options that do not directly affect pest abundance.

Supporting measure (blue underline = Zenodo doc, blue = WIP)	Summary	Risk element targeted (entry/establishment/spread/impact)
Inspection and trapping	ISPM 5 (FAO, 2023) defines inspection as the official visual examination of plants, plant products or other regulated articles to determine if pests are present or to determine compliance with phytosanitary regulations Inspection can be an effective way of detecting any scales. In spring, mature females are rounded and swollen and produce honeydew which can be accompanied by sooty mould. These can be visible on leaves, branches or any other surfaces of the plant. Crawlers might be visible among the veins of the leaves; however magnification might be needed to spot them. Moreover, during fall, nymphs could be visible via magnification on the twigs. This can facilitate the planning of dormant oil application in spring (UMass Extension Landscape, Nursery and Urban Forestry Program, online)	Entry/establishment/spread
Laboratory testing	Examination, other than visual, to determine if pests are present using official diagnostic protocols. Diagnostic protocols describe the minimum requirements for reliable diagnosis of regulated pests	Entry/spread
Sampling	According to ISPM 31 (FAO, 2008), it is usually not feasible to inspect entire consignments, so phytosanitary inspection is performed mainly on samples obtained from a consignment. It is noted that the sampling concepts presented in this standard may also apply to other phytosanitary procedures, notably selection of units for testing For inspection, testing and/or surveillance purposes the sample may be taken according to a statistically based or a non-statistical sampling methodology	Entry/spread
Phytosanitary certificate and plant passport	According to ISPM 5 (FAO, 2023) a phytosanitary certificate and a plant passport are official paper documents or their official electronic equivalents, consistent with the model certificates of the IPPC, attesting that a consignment meets phytosanitary import requirements a. export certificate (import) b. plant passport (EU internal trade)	Entry/spread
Certified and approved premises	Mandatory/voluntary certification/approval of premises is a process including a set of procedures and of actions implemented by producers, conditioners and traders contributing to ensure the phytosanitary compliance of consignments. It can be a part of a larger system maintained by the NPPO in order to guarantee the fulfilment of plant health requirements of plants and plant products intended for trade. Key property of certified or approved premises is the traceability of activities and tasks (and their components) inherent the pursued phytosanitary objective. Traceability aims to provide access to all trustful pieces of information that may help to prove the compliance of consignments with phytosanitary requirements of importing countries	Entry/spread
Certification of reproductive material (voluntary/official)	Plants come from within an approved propagation scheme and are certified pest free (level of infestation) following testing; Used to mitigate against pests that are included in a certification scheme	Entry/spread
Delimitation of Buffer zones	ISPM 5 (FAO, 2023) defines a buffer zone as 'an area surrounding or adjacent to an area officially delimited for phytosanitary purposes in order to minimise the probability of spread of the target pest into or out of the delimited area, and subject to phytosanitary or other control measures, if appropriate'. The objectives for delimiting a buffer zone can be to prevent spread from the outbreak area and to maintain a pest free production place (PFPP), site (PFPS) or area (PFA)	Spread
Surveillance	Surveillance to guarantee that plants and produce originate from a Pest Free Area could be an option	Entry/spread

3.6.1.3 | *Biological or technical factors limiting the effectiveness of measures*

- Limited effectiveness of insecticides due to the presence of hard cover over the insects.
- Control with chemical treatments is uncertain.
- Low initial infestations or young developmental stages (crawlers) might be overlooked.

3.7 | Uncertainty

No key uncertainties have been identified in the assessment.

4 | CONCLUSIONS

E. excrescens satisfies all criteria assessed by EFSA for consideration as a potential quarantine pest. Table 7 provides a summary of the PLH Panel conclusions.

TABLE 7 The Panel's conclusions on the pest categorisation criteria defined in Regulation (EU) 2016/2031 on protective measures against pests of plants (the number of the relevant sections of the pest categorisation is shown in brackets in the first column).

Criterion of pest categorisation	Panel's conclusions against criterion in regulation (EU) 2016/2031 regarding union quarantine pest	Key uncertainties
Identity of the pest (Section 3.1)	The identity of the pest is clearly defined and *Eulecanium excrescens* (Ferris, 1920) is the accepted name	None
Absence/presence of the pest in the EU (Section 3.2)	*Eulecanium excrescens* is not known to be present in the EU territory	None
Pest potential for entry, establishment and spread in the EU (Section 3.4)	*Eulecanium excrescens* is able to enter into, become established and spread in the EU territory The main pathways are plants for planting and cut branches	None
Potential for consequences in the EU (Section 3.5)	*Eulecanium excrescens* has been reported to have impact on fruit trees in China and on hazelnut trees in Oregon, USA, without specific data about the magnitude of yield and quality losses due to the insect. Apart from one report of serious damage on wisteria plants in 2001, it did not have any further severe economic or environmental impact in the UK	None
Available measures (Section 3.6)	There are measures available to prevent the entry, establishment and spread of *E. excrescens* within the EU	None
Conclusion (Section 4)	All criteria assessed by EFSA for consideration as a potential quarantine pest are met	
Aspects of assessment to focus on/ scenarios to address in future if appropriate:		

ABBREVIATIONS

EPPO	European and Mediterranean Plant Protection Organization
FAO	Food and Agriculture Organization
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
MS	Member State
PFA	pest free production area
PFPP	pest free production place
PFPS	pest free production site
PLH	EFSA Panel on Plant Health
PPPs	plant protection products
PZ	Protected Zone
RRO	risk reduction option
TFEU	Treaty on the Functioning of the European Union
ToR	Terms of Reference

GLOSSARY

Containment (of a pest)	Application of phytosanitary measures in and around an infested area to prevent spread of a pest (FAO, 2023)
Control (of a pest)	Suppression, containment or eradication of a pest population (FAO, 2023)

Entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 2023)
Eradication (of a pest)	Application of phytosanitary measures to eliminate a pest from an area (FAO, 2023)
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 2023)
Greenhouse	A walk-in, static, closed place of crop production with a usually translucent outer shell, which allows controlled exchange of material and energy with the surroundings and prevents release of plant protection products (PPPs) into the environment.
Hitchhiker	An organism sheltering or transported accidentally via inanimate pathways including with machinery, shipping containers and vehicles; such organisms are also known as contaminating pests or stowaways (Toy & Newfield, 2010).
Impact (of a pest)	The impact of the pest on the crop output and quality and on the environment in the occupied spatial units
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO, 2023)
Pathway	Any means that allows the entry or spread of a pest (FAO, 2023)
Phytosanitary measures	Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO, 2023)
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO, 2023)
Risk reduction option (RRO)	A measure acting on pest introduction and/or pest spread and/or the magnitude of the biological impact of the pest should the pest be present. A RRO may become a phytosanitary measure, action or procedure according to the decision of the risk manager
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO, 2023)

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APPENDIX A

Eulecanium excrescens host plants/species affected

Source: Literature.

Host status	Host name	Plant family	Common name	Reference
Cultivated hosts	*Acer* sp.	Sapindaceae	–	Malumphy (2005)
	Acer pseudoplatanus L.	Sapindaceae	Common sycamore	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Ceanothus sp.	Rhamnaceae	–	Salisbury et al. (2010)
	Corylus avellana	Corylaceae	Common hazelnut	AliNiazee (1981); Murray and Jepson (2018)
	Gleditsia sp.	Fabaceae	–	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
	Juglans regia	Juglandaceae	Common walnut	Malumphy (2005)
	Malus spp.	Rosaceae	Apple	Malumphy (2005)
	Parthenocissus quinquefolia	Vitaceae	Virginia creeper	Salisbury et al. (2010)
	Parthenocissus tricuspidata	Vitaceae	Japanese ivy	Salisbury et al. (2010)
	Platanus spp.	Platanaceae	Sycamore	Smith (1944)
	Podranea ricasoliana	Bignoniaceae	Port St-Johns creeper, Zimbabwe creeper	Salisbury et al. (2010)
	Prunus spp.	Rosaceae	–	Salisbury et al. (2010)
	Prunus armeniaca	Rosaceae	Apricot	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Prunus avium	Rosaceae	Cherry	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Prunus domestica	Rosaceae	European plum	Deng (1985)
	Prunus dulcis	Rosaceae	Almond	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Prunus persica	Rosaceae	Peach	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Pyrus spp.	Rosaceae	–	Essig (1958); Gill (1988) (as cited in Salisbury et al., 2010)
	Pyrus communis	Rosaceae	Pear	Malumphy (2005)
	Ulmus spp.	Ulmaceae	–	Malumphy (2005)
	Wisteria spp.	Fabaceae	–	Malumphy (2005)
	Wisteria sinensis	Fabaceae	Purple wisteria	Salisbury et al. (2010)
	Zelkova serrata	Ulmaceae	Japanese zelkova	Salisbury et al. (2010)

APPENDIX B

Distribution of *Eulecanium excrescens*

Distribution records are based on literature.

Region	Country	Sub-national (e.g. state)	Status	References
North America	USA	California	Present, no details	Ferris (1920); Gill (1988) (as cited in Salisbury et al., 2010)
		Connecticut	Present, no details	Newstead (1913); Felt (1933); Kosztarab (1996) (as cited in Malumphy, 2005)
		New York	Present, no details	Kosztarab (1996) (as cited in Malumphy, 2005)
		Oregon	Present, no details	AliNiazee (1981); Murray and Jepson (2018)
		Pennsylvania	Present, no details	Kosztarab (1996) (as cited in Malumphy, 2005)
Other Europe	United Kingdom	Bath	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Bristol	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Buckinghamshire	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Essex	Present, no details	Salisbury et al. (2010)
		Gloucestershire	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Greater London	Present, no details	Salisbury et al. (2010)
		Hampshire	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Isle of Wight	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Kent	Present, no details	Salisbury et al. (2010)
		Oxfordshire	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Somerset	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
		Surrey	Present, no details	Salisbury et al. (2010)
		Sussex	Present, no details	Malumphy C., Fera Science Ltd., confirmed this by email on 20 February 2025
Asia	China	Sichuan	Present, no details	Deng (1985)

APPENDIX C

EU cultivation/harvested/production area of *Eulecanium excrescens* hosts (in 1000 ha)

C.1 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF ALMONDS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Almonds	2019	2020	2021	2022	2023
EU	809.56	853.83	881.06	905.33	917.34
Bulgaria	1.01	0.93	1.28	1.51	1.08
Greece	15.13	23.71	17.66	18.44	18.68
Spain	687.23	718.54	744.47	761.66	765.54
France	1.18	2.11	2.21	2.21	2.33
Croatia	0.62	0.81	0.81	1.04	1.07
Italy	52.04	52.65	53.72	53.89	54.10
Cyprus	2.71	2.38	2.12	2.25	2.40
Hungary	0.31	0.35	0.39	0.42	0.43
Portugal	49.35	52.34	58.40	63.88	71.69
Slovenia	0.00	0.01	0.01	0.02	0.02

C.2 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF APPLES (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Apples	2019	2020	2021	2022	2023
EU	491.08	489.19	492.56	478.01	471.88
Belgium	5.79	5.48	5.35	5.23	4.90
Bulgaria	4.14	3.56	3.78	3.72	3.56
Czechia	7.32	7.19	7.11	7.01	6.45
Denmark	1.39	1.38	1.40	1.41	1.45
Germany	33.98	33.98	33.98	33.11	33.11
Estonia	0.57	0.62	0.73	0.71	0.75
Ireland	0.71	0.71	0.71	0.71	0.71
Greece	9.82	14.38	10.28	10.65	9.75
Spain	29.64	29.49	29.45	29.25	28.41
France	50.37	54.71	54.21	54.02	53.80
Croatia	4.95	4.36	4.39	3.65	3.65
Italy	55.00	54.91	54.47	53.73	54.08
Cyprus	0.37	0.41	0.41	0.43	0.40
Latvia	3.44	3.50	3.20	3.06	3.30
Lithuania	10.18	10.50	10.18	9.88	9.03
Luxembourg	0.27	0.08	0.10	0.10	0.10
Hungary	30.97	25.97	25.02	23.82	22.79
Netherlands	6.42	6.20	5.97	5.90	5.50
Austria	6.59	6.43	6.35	6.30	6.25
Poland	155.62	152.60	161.90	151.90	150.00
Portugal	14.31	14.31	13.92	13.73	13.94
Romania	52.74	52.34	53.82	54.07	54.29
Slovenia	2.27	2.16	2.09	2.03	2.00
Slovakia	2.06	1.80	1.64	1.54	1.54
Finland	0.65	0.67	0.62	0.62	0.66
Sweden	1.52	1.44	1.46	1.45	1.45

C.3 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF APRICOTS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Apricots	2019	2020	2021	2022	2023
EU	73.22	76.13	73.48	72.09	70.43
Bulgaria	2.91	1.84	3.06	3.05	2.20
Czechia	1.15	1.17	1.12	1.11	1.00
Germany	0.23	0.23	0.23	0.29	0.29
Greece	8.35	12.24	8.96	9.36	9.50
Spain	20.24	19.78	19.44	18.43	18.01
France	12.28	12.08	11.88	11.36	11.12
Croatia	0.26	0.29	0.31	0.31	0.31
Italy	17.91	17.81	17.74	17.45	17.36
Cyprus	0.18	0.20	0.21	0.23	0.20
Hungary	4.99	5.94	6.05	5.82	5.58
Austria	0.82	0.83	0.86	0.86	0.87
Poland	1.06	0.90	0.90	1.00	1.10
Portugal	0.54	0.52	0.53	0.60	0.59
Romania	2.04	2.03	1.92	1.96	2.03
Slovenia	0.08	0.09	0.09	0.09	0.09
Slovakia	0.18	0.20	0.19	0.19	0.18

C.4 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF HAZELNUTS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Hazelnuts	2019	2020	2021	2022	2023
EU	110.39	116.33	119.75	123.64	128.56
Belgium	0.01	0.01	0.03	0.06	0.06
Bulgaria	1.27	1.34	1.56	1.53	1.72
Germany	0.00	0.00	0.00	0.52	0.52
Greece	0.52	0.59	0.75	0.72	0.75
Spain	13.02	13.07	13.11	12.66	12.47
France	5.19	7.43	7.51	7.56	7.92
Croatia	5.53	6.54	6.71	8.24	8.70
Italy	79.35	80.28	82.59	84.43	87.50
Cyprus	0.02	0.03	0.03	0.03	0.03
Lithuania	0.00	0.00	0.18	0.20	0.30
Hungary	0.37	0.43	0.48	0.51	0.54
Poland	3.75	5.40	5.40	5.60	5.60
Portugal	0.32	0.32	0.41	0.55	0.70
Romania	0.89	0.71	0.82	0.84	1.54
Slovenia	0.15	0.17	0.19	0.20	0.21

C.5 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF PEACHES (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Peaches	2019	2020	2021	2022	2023
EU	144.78	138.31	133.06	129.40	124.01
Bulgaria	3.02	2.70	2.57	2.46	1.43
Czechia	0.34	0.34	0.32	0.28	0.25
Germany	0.11	0.11	0.11	0.11	0.11
Greece	33.61	32.94	30.48	29.95	28.88
Spain	47.94	44.42	43.55	41.61	40.19
France	4.65	5.99	6.05	5.91	5.74

(Continued)

Peaches	2019	2020	2021	2022	2023
Croatia	0.68	0.61	0.62	0.49	0.39
Italy	41.93	41.04	39.44	39.13	37.95
Cyprus	0.22	0.23	0.24	0.25	0.24
Hungary	4.79	3.89	3.86	3.61	3.48
Austria	0.18	0.18	0.18	0.18	0.17
Poland	2.15	0.80	1.00	0.80	0.60
Portugal	2.87	2.88	2.86	2.91	2.88
Romania	1.72	1.62	1.27	1.22	1.21
Slovenia	0.25	0.25	0.24	0.23	0.22
Slovakia	0.35	0.31	0.28	0.27	0.26

C.6 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF PEARS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Pears	2019	2020	2021	2022	2023
EU	110.66	108.29	106.96	103.10	100.53
Belgium	10.37	10.66	10.45	10.57	10.63
Bulgaria	0.70	0.50	0.55	0.58	0.47
Czechia	0.80	0.83	0.80	0.80	0.79
Denmark	0.30	0.30	0.30	0.29	0.30
Germany	2.14	2.14	2.14	2.07	2.07
Greece	4.34	5.42	4.37	4.35	4.09
Spain	20.62	20.22	20.02	19.11	18.46
France	5.25	5.90	5.89	5.91	6.08
Croatia	0.86	0.73	0.75	0.60	0.59
Italy	28.71	26.60	26.79	24.52	23.03
Cyprus	0.06	0.07	0.08	0.08	0.07
Latvia	0.20	0.20	0.20	0.22	0.20
Lithuania	0.82	0.85	0.85	0.84	0.75
Luxembourg	0.02	0.01	0.01	0.01	0.01
Hungary	2.81	2.62	2.74	2.48	2.40
Netherlands	10.09	10.00	10.07	10.10	9.86
Austria	0.50	0.54	0.55	0.57	0.60
Poland	7.22	5.80	5.60	5.50	5.60
Portugal	11.33	11.33	11.16	10.85	10.83
Romania	3.08	3.09	3.17	3.20	3.23
Slovenia	0.21	0.22	0.23	0.22	0.21
Slovakia	0.11	0.10	0.09	0.10	0.11
Finland	0.04	0.05	0.05	0.05	0.03
Sweden	0.10	0.11	0.11	0.12	0.13

C.7 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF PLUMS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Plums	2019	2020	2021	2022	2023
EU	154.51	160.38	157.68	156.63	157.06
Belgium	0.04	0.04	0.05	0.05	0.06
Bulgaria	8.02	8.57	9.28	9.40	9.26
Czechia	1.88	1.89	1.94	1.92	1.88
Denmark	0.08	0.09	0.10	0.11	0.10
Germany	4.83	4.84	4.85	4.79	4.77

(Continues)

(Continued)

Plums	2019	2020	2021	2022	2023
Estonia	0.02	0.02	0.02	0.02	0.02
Greece	2.18	2.44	2.15	2.15	2.03
Spain	14.85	14.41	13.69	13.25	12.64
France	14.83	15.70	15.70	15.09	15.11
Croatia	4.46	3.39	3.49	3.56	3.87
Italy	11.94	11.89	11.98	12.04	11.92
Cyprus	0.38	0.43	0.43	0.42	0.40
Latvia	0.06	0.10	0.10	0.07	0.10
Lithuania	0.74	0.75	0.74	0.73	0.54
Luxembourg	0.04	0.04	0.04	0.03	0.03
Hungary	7.96	7.06	7.00	7.00	6.93
Netherlands	0.28	0.27	0.26	0.26	0.26
Austria	0.20	0.21	0.21	0.21	0.21
Poland	13.63	18.70	16.50	16.50	16.90
Portugal	1.83	1.83	1.75	1.64	1.63
Romania	65.58	67.01	66.73	66.71	67.74
Slovenia	0.05	0.06	0.06	0.07	0.07
Slovakia	0.61	0.59	0.58	0.59	0.58
Sweden	0.04	0.04	0.04	0.05	0.04

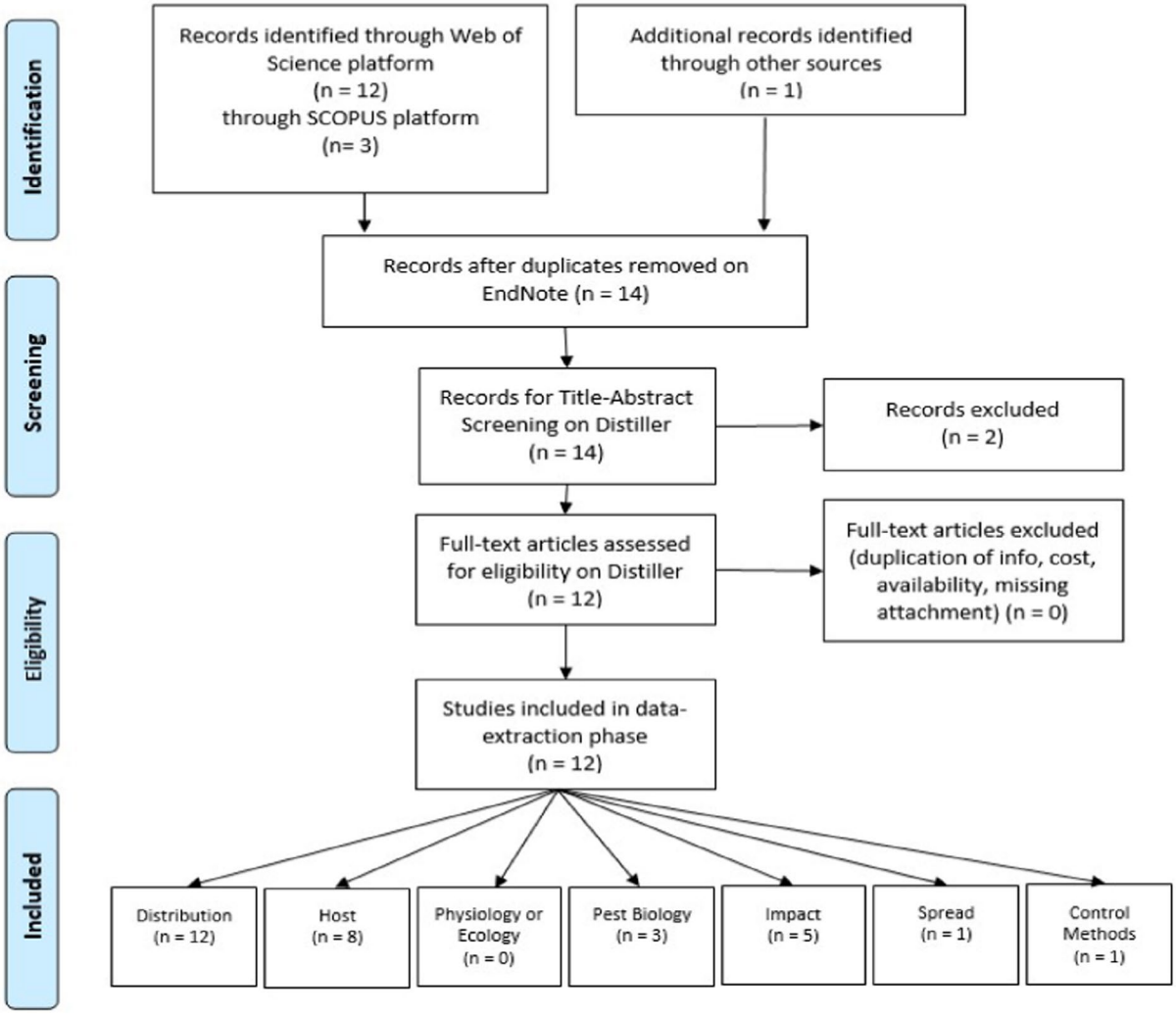
C.8 | EU CULTIVATION/HARVESTED/PRODUCTION AREA OF WALNUTS (IN 1000 HA) (SOURCE: EUROSTAT ACCESSED ON 17 JANUARY 2025)

Walnuts	2019	2020	2021	2022	2023
EU	87.62	99.21	97.00	102.46	103.36
Belgium	0.10	0.10	0.14	0.16	0.16
Bulgaria	6.36	7.10	8.07	8.33	7.51
Czechia	0.13	0.16	0.13	0.14	0.13
Germany	0.29	0.29	0.29	0.73	0.73
Greece	14.82	20.27	16.58	17.10	16.74
Spain	11.44	12.29	12.78	12.71	13.23
France	25.88	27.18	26.85	26.90	26.87
Croatia	7.21	8.11	8.42	8.91	8.65
Italy	4.67	4.93	5.39	5.44	6.13
Cyprus	0.21	0.22	0.22	0.24	0.24
Lithuania	0.00	0.00	0.27	0.30	0.46
Luxembourg	0.01	0.01	0.01	0.01	0.01
Hungary	6.00	6.40	6.44	7.82	7.96
Austria	0.17	0.18	0.19	0.19	0.19
Poland	2.27	3.00	2.70	3.40	3.30
Portugal	5.37	5.40	5.61	5.49	5.60
Romania	1.62	1.91	2.40	2.83	3.59
Slovenia	0.44	0.48	0.52	0.56	0.60
Slovakia	0.63	1.17	0.00	1.19	1.26

APPENDIX D

Prisma 2009 Flow Diagram

Name of the Pest: *Eulecanium excrescens*
Date of the search: 23 July 2024
Approved Literature Search String: ("*Eulecanium excrescens*" OR "*Lecanium excrescens*")



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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