The Food & Environment Research Agency

Rapid Pest Risk Analysis for

Tropidosteptes pacificus

This document provides a rapid assessment of the risks posed by the pest to the UK in order to assist Risk Managers decide on a response to a new or revised pest threat. It does not constitute a detailed Pest Risk Analysis (PRA) but includes advice on whether it would be helpful to develop such a PRA and, if so, whether the PRA area should be the UK or the EU and whether to use the UK or the EPPO PRA scheme.

STAGE 1: INITIATION

1. What is the name of the pest?

Tropidosteptes pacificus (Van Duzee) (Hemiptera: Miridae).
Originally described as *Neoborus pacificus* Van Duzee, 1921.

T. pacificus is commonly known as the ash mirid plant bug.

2. What is the pest's status in the EC Plant Health Directive (Council Directive 2000/29/EC[1]) and in the lists of EPPO[2]?

Tropidosteptes pacificus is not listed in the EU plant health legislation or in the EPPO A2 list.

3. What is the reason for the rapid assessment?

T. pacificus was found outdoors at two public parks in London during 2012. Adults were collected (using a sweep net) from mature European ash (*Fraxinus excelsior*) trees at Alexandra Palace, North London, in June (first generation) and September (second generation, hundreds of bugs were present) (Bantock & Stewart, 2013; Nau, 2013; Stubbs, 2013), and a single adult was caught in a trap at a park in South Kensington (Bantock, pers. comm., 2013). A risk assessment has been requested to help inform decisions regarding further regulation of ash trees.

STAGE 2: RISK ASSESSMENT

4. What is the pest's present geographical distribution?

T. pacificus is native to western North America where it occurs in an area ranging from northern California (USA), to British Columbia (Canada). Published records of *T. pacificus* from Arizona and Utah (USA) (Henry & Wheeler, 1974) are likely to be based on misidentifications of a closely related species, *T. vittifrons* (Knight) (Aukema *et al*., 2009).

T. pacificus has naturalised in southern Netherlands (since 2007), northern Belgium (since 2010), and been found at two locations in London (2012). It is recorded as present in:

North America: Canada; USA (Aukema *et al*., 2009).

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000L0029:20100113:EN:PDF
[2] http://archives.eppo.int/EPPOStandards/PM1_GENERAL/pm1-02(21)_A1A2_2012.pdf

Europe: Belgium; Netherlands (Aukema *et al*., 2009); UK (Bantock & Stewart, 2013; Nau, 2013; Stubbs, 2013).

5. Is the pest established or transient, or suspected to be established/transient in the UK?

T. pacificus has been found outdoors at two public parks in London during 2012. At one of these locations it was present in large numbers on mature ash trees.

6. What are the pest's natural and experimental host plants; of these, which are of economic and/or environmental importance in the UK?

Ashes (*Fraxinus* sp., Oleaceae) are the preferred hosts, including European or common ash *F. excelsior,* and the following exotic species: Oregon ash *F. latifolia*; green or red ash *F. pennsylvanica*; and velvet or Arizona ash *F. velutina.* It has also been collected from maple (*Acer* sp.) and poplar (*Populus* sp.) (Aukema *et al*., 2009), but the significance of the latter is unclear. Adult *T. pacificus* are highly mobile (they can fly) and may be collected from non-host plants.

Fraxinus excelsior was the third most commonly recorded broadleaved species in Britain in the most recent Census of Woodlands and Trees, and is the second most widely planted broadleaved tree (see http://www.forestry.gov.uk/website/forstats2011.nsf/LUContents/BF32BD6C9B18DD3680257360004FE23E). The distribution of the species is stable throughout the UK. North American ash species may be planted as ornamentals but their distribution is very limited compared with *F. excelsior* and mostly confined to landscaped environments and gardens.

7. If the pest needs a vector, is it present in the UK?
No vector is required for this insect.

8. What are the pathways on which the pest is likely to move and how likely is the pest to enter the UK? (*By pathway*):

There are no interception records of *T. pacificus* in England and Wales.

Pathway 1 - Ash plants for planting within the EU, other than seed

The Plant Health (England) Order was amended in 2012 to restrict the import of ash plants and seeds to those originating in pest-free areas for *Hymenoscyphus pseudoalbidus* (*Chalara fraxinea*). As no country has declared a pest-free area for this pathogen, this means that currently there are no imports of ash trees from other EU member states. This could change if a country declares a pest-free area.

Plants for planting:	Very unlikely	✓	Unlikely		Moderately likely		Likely		Very likely	

Pathway 2 - Ash plants for planting from outside the EU (North America), other than seed

The Plant Health (England) Order was amended in 2012 to restrict the import of ash plants and seeds to those originating in pest-free areas for *Hymenoscyphus pseudoalbidus* (*Chalara fraxinea*). As no country has declared a pest-free area for this pathogen, this means that currently there are no imports of ash trees from third countries. This could change if a country declares a pest-free area and it is important to note that there are no records of the pathogen causing ash dieback in North America. Additional requirements for *Fraxinus sp*. are included in Annex IV AI of Council Directive 2000/29/EC, which stipulates that wood of *Fraxinus* should originate from an area free from *Agrilus planipennis* and that

plants for planting of this genus should either have been grown throughout their life in an area free from *Agrilus planipennis*, or have been grown for two years in a place of production certified as free from *Agrilus planipennis*. These regulations do restrict the movement of ash plants from North America and are currently under review with the view of strengthening the legislation.

	Very unlikely	Unlikely	Moderately likely	Likely	Very likely
Plants for planting:	✓				

Pathway 3 – Natural dispersal

The adult bugs can fly, however, there is no detailed published information on their natural dispersal potential. The insects are small and it is unlikely that they could fly across the channel but they could be carried in air currents, although there is a high degree of uncertainty regarding this.

	Very unlikely	Unlikely	Moderately likely	Likely	Very likely
Natural dispersal:		✓			

Pathway 4 – Hitch-hiking

This is the most likely pathway of introduction due to the volume of traffic and goods moving from areas where the bug naturally occurs and the UK.

	Very unlikely	Unlikely	Moderately likely	Likely	Very likely
Plants for planting:			✓		

9. How likely is the pest to establish outdoors or under protection in the UK?

A large population of *T. pacificus* has been found on a mature *F. excelsior* tree outdoors in London, with no known import connection. The insect is present in Canada, USA, Belgium and the Netherlands. The current distribution of the pest suggests that given the opportunity it would be able to survive outdoors throughout most of the UK.

Establishment under protection in the UK is rated as very unlikely as its hosts are not generally found under protection.

	Very unlikely	Unlikely	Moderately likely	Likely	Very likely
Outdoors:					✓
Under protection:	✓				

10. How quickly could the pest spread in the UK?

Adult bugs can fly and it could therefore disperse naturally, at least locally. However, there appears to be no published data on its flight capability and its behaviour in British climatic conditions, and therefore dispersal potential, is difficult to predict.

It could be dispersed rapidly in trade to disparate locations around the UK, particularly in the egg stage, which are inserted into petioles or bark and are almost undetectable.

	Very slowly	Slowly	Moderate pace	Quickly	Very quickly
Natural spread:		✓			
In trade:			✓	✓	

11. What is the area endangered by the pest?

Based on published information on the distribution of *T. pacificus* in North America, all areas of the UK where ash is grown are potentially suitable for the bug to establish, however the concentration of hosts decreases further north and it is not known if there may be a northern limit for the spread of the bug in the UK.

12. What is the pest's economic, environmental or social impact within its existing distribution?

T. pacificus can damage the buds, leaves, seeds and young twigs, and may cause early defoliation, of *Fraxinus.* It is recorded as a pest in the USA but there appears to be no quantitative information available. It is not recorded to be a pest in Europe.

USA

Very small	Small	Medium	Large	Very large
	✓			

Europe

Very small	Small	Medium	Large	Very large
✓				

13. What is the pest's potential to cause economic, environmental or social impacts in the UK?

The bug has been established in the Netherlands for at least 6 years but it has not had any significant economic, environmental or social impact and the situation is likely to be similar in the UK. It is reported to be a pest in North America and therefore has the potential to damage ash trees in the UK.

There is a high degree of uncertainty regarding its impact on trees stressed by ash die back (*Chalara fraxinea*), as stressed trees are often more susceptible to insect attack.

Very small	Small	Medium	Large	Very large
✓	✓			

14. What is the pest's potential as a vector of plant pathogens?

T. pacificus is not known to vector other plant pathogens.

<u>STAGE 3: PEST RISK MANAGEMENT</u>

15. What are the risk management options for the UK? *(Consider exclusion, eradication, containment, and non-statutory controls; under protection and/or outdoors).*

Exclusion
The bug is already established at two sites in London and may be more widespread, so exclusion is not possible. By regulation of the organism on ash plants for planting it may be possible to reduce further introductions. However this would not prevent further introductions as it is possible that the pest will hitchhike on non-host plants or vehicles moving from infested area. Therefore regulation would not seem to be appropriate in this case.

Eradication
The bug is established on large mature ash trees in a public park in London and eradication is unlikely to be achievable. Due to the fact that the pest can fly removal of infested trees will not eradicate the pest as it would be able to move on to another host. It also seems to be possible for the pest to survive on (but not reproduce) on species other than ash.

Containment
The adult bugs can fly and ash trees are common in private and public areas in London. Containment is unlikely to be achievable.

As the pest is already present in the UK and is capable of natural spread there is little prospect of eradication or containment activities being effective. Additionally there is a risk of spread with non-host plants and vehicles from infested area therefore regulation of this pest on ash plants for planting are unlikely to prevent the pest entering the UK. The difficulty of putting in place effective measures to prevent the entry and spread of this pest in the UK coupled with the low level of damage it is likely to cause mean that statutory action against this pest is not recommended.

16. Summary and conclusion of rapid assessment.
(Highlight key uncertainties and topics that will require particular emphasis in a detailed PRA) General / overall summary and conclusion and then specific text on each part of assessment...

This evidence presented in this rapid assessment suggests that action is not appropriate.

Risk of entry: two potential pathways have been identified. Moderately-likely by hitch-hiking with traffic or goods from areas where the bug occurs, and unlikely by being blown across the English channel from the continent. High level of uncertainty.

Risk of establishment: Very likely outdoors in the UK, very unlikely under protection. Low level of uncertainty.

Economic impact: very small to small on ash trees. High level of uncertainty, especially in connection with ash die back.

Endangered area: all areas of the UK where ash is grown.

Risk management: the bug is already established on mature trees in public parks in London and the adults can fly. Therefore there are no practical and proportionate management measures for exclusion, eradication or containment.

17. Is there a need for a detailed PRA? If yes, select the PRA area (UK or EU) and the PRA scheme (UK or EPPO) to be used. ***(for PH Risk Management Work stream to decide)*** ✓ ***(put tick in box)***

This Rapid Pest Risk Analysis is based on the current available data and literature. There remain uncertainties in the analysis, particularly regarding dispersal and the impact in association with ash die back. These uncertainties are, however, unlikely to be addressed by a more detailed PRA at this time.

No	✓

Yes		PRA area: UK or EU		PRA scheme: UK or EPPO	

18. Given the information assembled within the time scale required, is statutory action considered appropriate / justified?

Yes Statutory action		No Statutory action	X

Statutory action against this pest is not considered appropriate as it is already present and further introductions cannot be ruled out. It is unlikely to cause significant economic impacts, although there is some uncertainty about its effects on stressed trees. Stakeholder groups may be interested in monitoring spread and impacts. Information on this pest will be passed on to OPAL and the Plant Health Seeds Inspectorate with reference to monitoring ash trees.

REFERENCES

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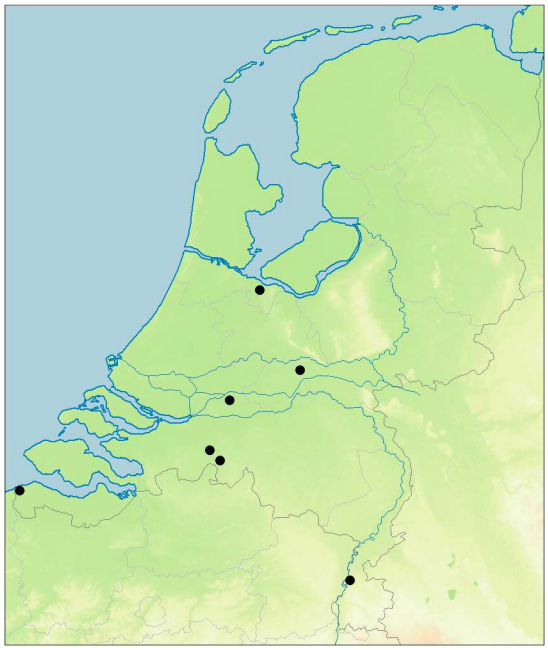

Distribution of ash mirid bug in the Netherlands © Berend Aukema

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