

# PHC News

## CATCHING UP ON THE LATEST FROM THE PLANT HEALTH CENTRE

Welcome to the August 2019 issue of the Plant Health Centre’s newsletter. In this issue we review some of the 14 projects we have funded in our first year, including a new web resource for plant diseases in the natural environment, (page 3), the distribution and identification of psyllid vectors for the potato zebra chip pathogen in Scotland (page 3), improvements to our national surveillance monitoring for *Xylella fastidiosa* (page 4 and 5) and where people in Scotland get their plant health information (page 6).

Thanks to all those who attended Scotland’s Plant Health Conference held on 28th May 2019 in Edinburgh. This conference amalgamated two previous meetings; the Scottish Government’s Plant Health Forum and the Plant Health Centre’s yearly stakeholder meeting. The 125 conference attendees were welcomed by Prof Gerry Saddler (Chief Plant Health Officer for Scotland) before the conference was officially opened by Mairi Gougeon (Minister for Rural Affairs and Natural Environment—see page 2).

Download the presentations and posters here:

[www.planthealthcentre.scot/events/scotlands-plant-health-conference](http://www.planthealthcentre.scot/events/scotlands-plant-health-conference)

*Image below: Bronze Birch Borer (see Watching Brief on page 3). Credit— Karl Hillig.*



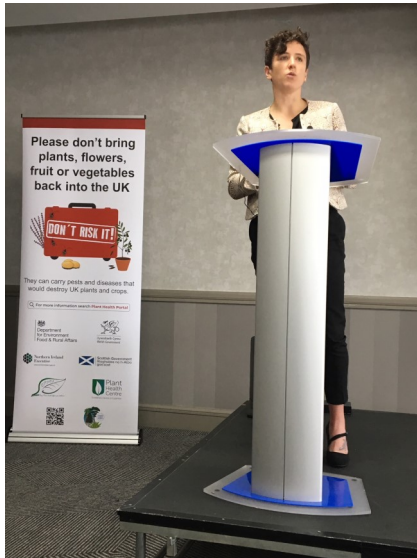
### INSIDE THIS ISSUE

Scotland’s Plant Health Conference .....	2
Commissioned projects .....	2
New web resource for plant diseases in the natural environment.....	3
Zebra chip and its vectors .....	3
Are we ready for <i>Xylella</i> ?.....	4
Networking: Where do people in Scotland get their plant health information?.....	6

### SPECIAL POINTS OF INTEREST

- PHC Pest Reviews
- Watching brief: Bronze Birch Borer
- Knowledge Exchange
- Watching brief: Oak Processionary Moth
- Conserving oak and ash-associated species
- Website and Twitter
- Contact us

## SCOTLAND'S PLANT HEALTH CONFERENCE



Scotland's Plant Health Conference was held in Edinburgh on 28th May and is the first of its kind, bringing together both the Scottish government's Plant Health Forum and the Plant Health Centres stakeholder meeting. While our original estimate for delegate numbers was in the 60s, final figures reached 125; a good indication that engaging in plant health is increasingly seen as important. A wide mix of individuals from the different sectors (Environment, Horticulture, Forestry and Agriculture) attended the event with lots of useful discussions during the intervals and poster session.

The day began with a welcome from Prof Gerry Saddler (Chief Plant Health Officer for Scotland) before the conference was officially opened by Mairi Gougeon (Minister for Rural Affairs and Natural Environment—pictured left). This was followed by an update on the Centre after its first

year of operation, a session on projects commissioned by the Centre on dealing with the threat from *Xylella*, and then a wider introduction to other commissioned projects in a series of short talks — supported by posters during lunchtime. In the afternoon there were talks on both the economics and value of plant health and its management standards, followed by discussions on the possible effects of Brexit and climate change on plant health.

The Centre will use stakeholder views expressed at the meeting to inform our future programme of work. Thanks to all those who attended the conference and helped to make it a very productive and interactive day.

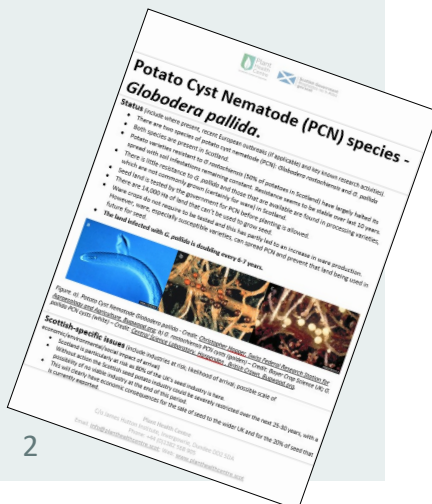
To view the posters and presentations visit :

[www.planthealthcentre.scot/events/scotlands-plant-health-conference](http://www.planthealthcentre.scot/events/scotlands-plant-health-conference)

“It is important we have a collaborative approach to support the way forward. Science, innovation and production need to work hand in hand for us to achieve our goals” Mairi Gougeon

### PHC PEST REVIEWS

Look out on our web site over the coming months for our new **PHC Pest Reviews**, which will provide a short overview of different threats and how they might affect Scotland, together with knowledge gaps, a PHC perspective and recommendations.



### COMMISSIONED PROJECTS

During 2018/19 the Plant Health Centre funded 14 projects across a range of sectors and topics. In our first year of operation, the Centre has focused commissioning on work that allows us to better understand how the different sectors operate in terms of their needs, capabilities and information networks, and also what options there are for sharing information and solutions between sectors.

To read more visit: [www.planthealthcentre.scot/projects](http://www.planthealthcentre.scot/projects)

Image: Delegates at Scotland's Plant Health Conference, Edinburgh 2019



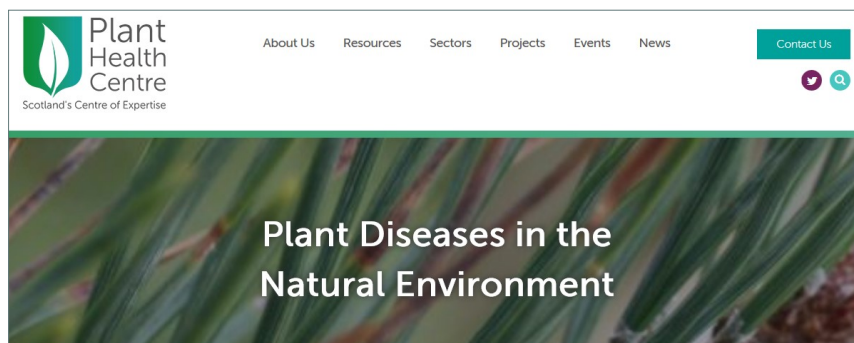
## NEW WEB RESOURCE FOR PLANT DISEASES IN THE NATURAL ENVIRONMENTAL

Based on feedback from our stakeholders, a Centre project was commissioned to develop a web resource for those working with the natural environment. This resource was developed by Katy Hayden and Joanna Taylor from the Royal Botanic Garden Edinburgh in conjunction with relevant stakeholders and Scottish Government. The resource describes key pests and diseases (some of which are being investigated in

other projects), habitat type and host as well as an overview of prevention and control options, recommended sources for further reading and key contacts in the event of a suspected new threat being found.

The resource can be found at:

[www.planthealthcentre.scot/plant-diseases](http://www.planthealthcentre.scot/plant-diseases)



## ZEBRA CHIP AND ITS VECTORS

A Centre project was commissioned to assess the distribution and host plants of the psyllid insect (*Triozia anthrisci*), which is known to vector *Candidatus Liberibacter solanacearum*; the zebra chip pathogen. Zebra chip has caused devastation in the US, and more recently in New Zealand, where it leaves potato tubers with a striped appearance (see image below) leading to significant economic losses. Although the zebra chip pathogen has not been found in Scotland, a variant of the bacteria was found in *T. anthrisci* in Scotland. Extensive sampling by Forest Research, JHI and SASA identified the vector exclusively on carrot crops in the north east of Scotland, helping to

inform risk assessments for disease transmission to potato crops in Scotland, and guide future surveillance. A course was held at SASA to train Scottish entomologists from various organisations to identify the vector. Insects were also used to form colonies for future work on feeding and transmission studies, which has formed the basis of a larger project submission to the BBSRC Bacterial Plant Pathogens initiative.

For more information visit:

[www.planthealthcentre.scot/publications](http://www.planthealthcentre.scot/publications)



### WATCHING BRIEF: BRONZE BIRCH BORER

The bronze birch borer (BBB) is absent in Scotland but is widespread in Canada and the USA. It attacks many native and introduced birch species (*Betula* spp.), with European species being more susceptible than those of N America. Potential pathways of spread include untreated wood products, plants for planting and hitchhiking on vehicles. Initial efforts to combat the pest are focussing on effective surveillance and improved analysis of pathways of entry. The rapid mortality of European birch suggests that the beetle could establish and do significant damage in Europe. Experts from the Plant Health Centre are taking part in a Europe-wide project called PREP-SYS aimed at assessing the risks of BBB and the equally devastating Emerald Ash Borer.

Fact sheet:

[www.planthealthcentre.scot/useful-links](http://www.planthealthcentre.scot/useful-links)

Risk Register entry:

[www.tinyurl.com/bronze-birch-borer](http://www.tinyurl.com/bronze-birch-borer)

Images: Bronze Birch Borer. Credit - Karl Hillig; European white birch (*Betula pendula*). Credit Wikipedia.



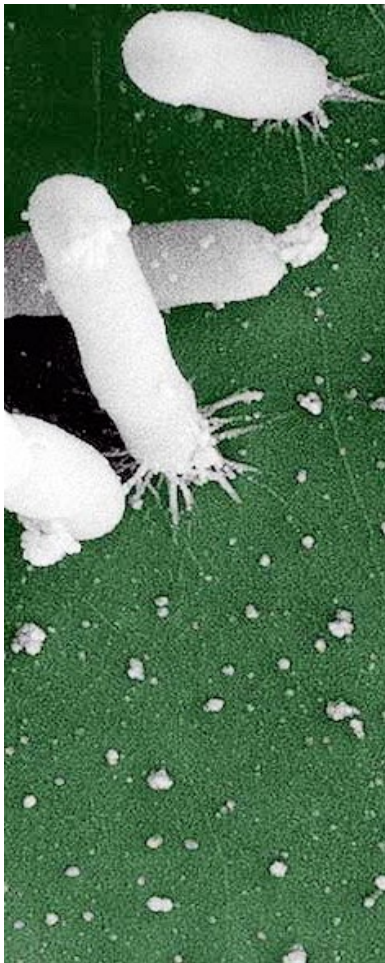


Image: *Xylella fastidiosa*. Approx. length 0.5  $\mu\text{m}$ .

## ARE WE READY FOR XYLELLA?

*Xylella fastidiosa* (image on left) is a bacterial pathogen affecting over 500 plant types and is vectored by plant xylem-feeding insects. A current outbreak in the south of Italy has seen many millions of olive trees destroyed and an industry in turmoil. The disease is vectored by a range of xylem-feeding insects, including the spittlebug *Philaenus spumarius* which is common across Europe. Spittle bugs are easy to spot from the protective spittle the nymphs produce on plants (Fig. 1). However, it is the adult that transmits the bacteria.



Figure 1

Following discussions with the Chief Plant Health Officer for Scotland, the Centre commissioned three projects on *Xylella fastidiosa* with the intention of identifying practical solutions for pathogen surveillance in Scotland.

The three projects had a remit to:

### 1. Identify the most effective surveillance monitoring systems

The project was led by Dan Chapman (University of Stirling) and involved CEH. Based on models of *Xylella* spread developed to investigate outbreaks in Italy, using climate and other parameters more suited to Scotland, it was shown that the best surveillance strategy (targeting 'risk-based' or a more random 'national' approach) was dependant on how well the likely sites of any introduction could be predicted, e.g. 'risk-based' if pathways for *Xylella* entry can be identified and narrowed down; potentially aimed at busi-

nesses importing plants that present a high risk. However, the vector is known to move long distances and start secondary infection zones, which would mean that some 'national' surveillance would also be necessary. The projects below narrowed down the search areas.

### 2. Pinpoint the most likely regions in Scotland for an outbreak to occur

The project was led by Kevin Watts and Samantha Broadmeadow (Forest Research). Using available data on climate suitability for *Xylella*, land-cover suitability for the spittle bug, sites of plant trade around Scotland, and designated and high priority woodland habitats, risk maps were produced in an attempt to narrow down the surveillance areas (it should be noted that in many cases available data were limited). Results suggested a high risk zone that focusses mainly on the borders, central belt and east coast of Scotland which unfortunately covers 96% of agricultural land, 51% native woodland and 41% national forest inventory, as well as 81% of the population and 79% of plant nurseries. Based on the results the densely populated central belt from Clydeside and Stirlingshire in the west to Fife and the Lothians in the East were deemed the most likely areas to target together with areas of national park within this zone (Fig.2).

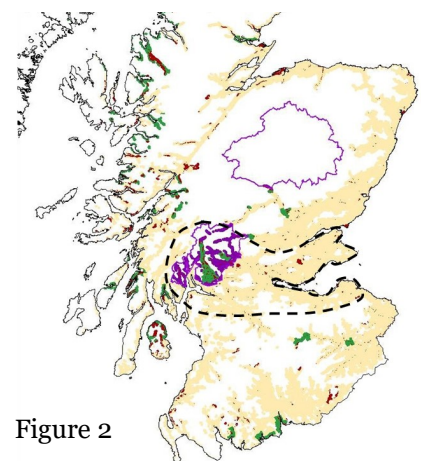
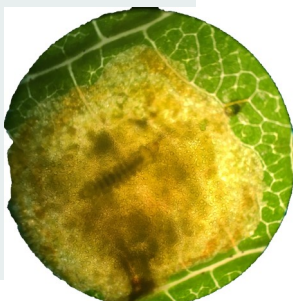


Figure 2

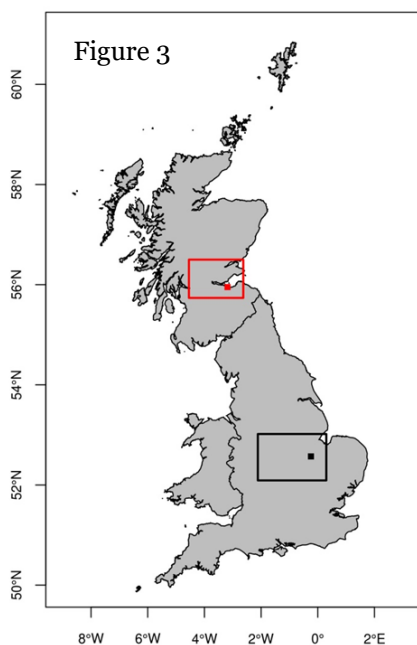
## KNOWLEDGE EXCHANGE

We continue with our busy programme of knowledge exchange, including a presentation about the Centre and the 'Don't Risk It' campaign to plant science students at the Gatsby Summer School in July. This image of a horse chestnut leaf miner was taken during a plant health practical class; the leaf coming from the local garden, which also presented plenty of cases of ash dieback.



### 3. Improve methods for monitoring the vector and identifying its presence

The project was led by Kirsty Park (University of Stirling) and involved Forest Research and SASA. The WrEN project is a large-scale, long-term experiment examining the effects of land-use change on biodiversity ([www.wren-project.com](http://www.wren-project.com)). Using DNA collected for this project over a number of years, a survey was carried out for the spittle bug in 106 secondary woodlands in Scotland (n = 67 sites) and England (n = 39) (Fig. 3). Three species of spittle bug were identified using morphological characteristics (*Philaenus spumarius*, *Aphrophora alni* and *Neophilaenus lineatus*), which were found to be less abundant in broadleaved woodlands, other semi-natural habitats and areas with low hedgerow densities. Molecular identification methods (barcoding and metabarcoding) were developed for different species of bug and the DNA samples tested. A single barcode was developed that could detect all three spittle bug species to allow future improvements in surveillance.



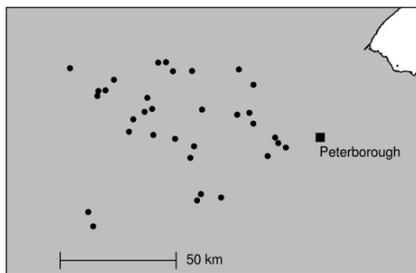
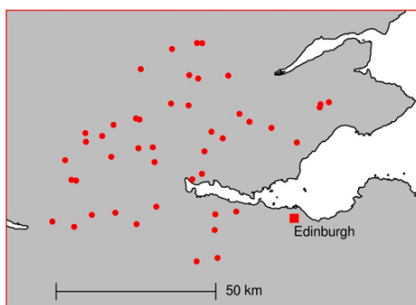
We are now discussing the results of these projects with government with the aim of improving *Xylella fastidiosa* contingency plans for Scotland. Colleagues within the Centre are also participating in European (POnTE, XF-ACTORS) and UK (BRIGIT) *Xylella* projects with results being fed back to the Centre, stakeholders and Scottish Government.

*Images: Fig. 1. Spittlebug Philaenus spumarius nymph stage; Fig.2 Map of Scotland (from project 2) showing Xylella risk zone (cream) national park boundary (purple line); and National park (solid purple), National scenic areas (green), SSSIs (red) in risk zone; most likely areas for surveillance (black dotted); Map showing location of woodlands from the WrEN project used in project 3.*

Full project reports will be available soon at the address below and our *Xylella* PHC Pest Review is available now at:

[www.planthealthcentre.scot/publications](http://www.planthealthcentre.scot/publications)

For further reading go to the Defra fact sheet: [www.tinyurl.com/PHC-Xylella-fact-sheet](http://www.tinyurl.com/PHC-Xylella-fact-sheet)



### WATCHING BRIEF: OAK PROCESSIONARY MOTH (OPM)

Caterpillars of the OPM are pests of oak trees and a hazard to human and animal health. OPM established in London and surrounds in 2005 with the rest of the UK remaining a protected zone for OPM. In July 2019, the import of oak trees from the Netherlands and Germany led to OPM being intercepted in around 60 consignments across the UK, including five in Scotland: Angus, East Lothian, Fife, Inverness and Lanarkshire. Action is being taken to eradicate the pest through tracing imports of oak, ground surveillance and destruction of all trees within the infested consignments. New legislation has also been introduced to reduce the risk of future introductions.

For more information see the link to the Forest Research fact sheet on our resource page:

[www.planthealthcentre.scot/useful-links](http://www.planthealthcentre.scot/useful-links)

*Images: Oak Processionary Moth (OPM) caterpillars and adult. Credit - L. Hooogenstein and H Bass, respectively.*



### CONSERVING OAK- AND ASH-ASSOCIATED SPECIES

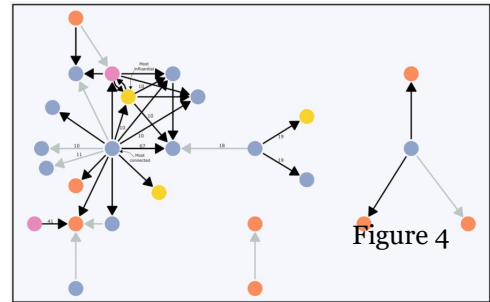
Read two new articles from Ruth Mitchell (JHI) on conserving oak- and ash-associated species in the face of pests and diseases.

[www.planthealthcentre.scot/news](http://www.planthealthcentre.scot/news)



## NETWORKING: WHERE DO PEOPLE IN SCOTLAND GET THEIR PLANT HEALTH INFORMATION?

Understanding how people get and share plant health information both within and between sectors is essential in order to maximise the distribution of useful knowledge while minimising information overload. With that in mind, the Centre has commissioned a study led by Rehema White at the University of St Andrews and Elliot Meador at SRUC and involving Forest Research to identify the sources of information and the strength of their effect on Scottish stakeholder communities to help form future knowledge exchange methods and priorities. The project identified some influential sources of information and some obvious connections that could be made to aid knowledge flow, as shown in figure 4, and these will be used to inform our communication and KE strategy going forward.



To learn more visit: [www.planthealthcentre.scot/projects](http://www.planthealthcentre.scot/projects)

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