

LIVING WITH TREE PESTS AND DISEASES WORKSHOP

HOLIDAY INN, BRISTOL CITY
25TH MAY 2011

PROGRAMME

10.00	Registration Tea/coffee	
10.30	Welcome	Wilma Harper
10.35	Context	John Morgan
10.50	Introduction to workshops	Roger Coppock
11.00	Workshop session 1	
12.15	Plenary 1	
12.30	Lunch	
13.30	Lessons from case studies: Pr on Japanese larch, Dendroctonus micans, Oak Processionary Moth (10 minutes each)	Bruce Rothnie Hugh Evans Nigel Straw
14.00	Workshop session 2	
15.15	Plenary 2	
15.30	Tea/coffee break	
15.45	Action priorities and ownership	Roger Coppock
16.15	Closing remarks	Geraint Richards
16.30	Workshop ends	

Workshops

Each workshop will be run twice, to allow delegates to attend two of the four breakout groups available. You will be allocated breakout groups at registration. This is to ensure we get a good mix of expertise in each of the breakout groups. The plenary sessions will report on the key conclusions of each group, and there will be opportunity to feed additional comments in, if you have not been allocated a group that you would have wished to join.

Each group will have a facilitator, and a rapporteur, who will introduce themselves at the start of each workshop.

There will be four breakout groups as detailed below.

1) Understanding and minimising the threat

International trade and changing environment are generally accepted as the most important factors influencing the establishment of new pests and diseases. Do managers have sufficient information to protect the establishment of new woodland habitats available or are there opportunities to improve our understanding of how we might adopt successful models for dealing with pests and diseases? How might we need to amend our existing practices to identify biosecurity threats at an early stage? How do we best communicate these risks?

Issues that might be discussed in this group include:

Identifying tree health threats

- native pests and diseases (scope excludes animals and plants)
- naturalised pests and diseases (scope excludes animals and plants)
- recently introduced pests and diseases
- potential new pests and diseases

Pathways under the influence of practitioners

- endemic or introduced threats responding to a changing environment
- movement of endemic or introduced threats through trade
- natural dispersal mechanisms for endemic or introduced threats

Pest risk analysis (PRA)

- consider PRA coverage for priority pests and diseases
- measures to control and mitigate risk based on epidemiology.

Communications - from the sector and to the sector

2) Mitigating the risk

Our management of woodland must incorporate resilience against the major threats from pests and diseases. Do our sustainable forest management policies and practice adequately account for the threat from pests and diseases or are there conflicts that need to be re-prioritised and addressed? How do we best communicate these risks?

Issues that might be discussed in this group include:

Means of mitigating risk

- Surveillance and monitoring
- Practical rapid action once an outbreak is identified
- Biosecurity protocols

Communications - from the sector and to the sector

3) Managing pests and diseases

There is an expectation that new quarantine organisms will either be contained or controlled as a high priority. What do we perceive to be a quarantine organism and what is our action required to avoid consequent damage. We have learned to live with a number of well established quarantine and non-quarantine organisms so are there general principles that need to be established? How do we best communicate these issues?

Issues that might be discussed in this group include:

Management options

- Containment
- Eradication
- Concept of protected zones

Management best practice

- Alternative silviculture systems
- Decision support

Communications - from the sector and to the sector

4) Mitigating the impact of pests and diseases

Our trees and woodlands offer a wide range of social and economic benefits as well as providing essential habitat for other flora and fauna. The impact of tree pests and diseases is indiscriminate. Losses are incurred at all levels, from the individual owner and the local community to the forest industry and society as a whole. What further steps do we need to take to mitigate these impacts? How do we best communicate these impacts?

Issues that might be discussed in this group include:

Economic impact on whole community

- Timber processing industry
- Timber co-products / by-products
- Supporting industries (forestry and non-forestry)

Protection of valuable ecosystems and heritage trees

Communications - from the sector and to the sector

Living with new and emerging pests and diseases – some issues to consider?

INTRODUCTION

Pests and diseases of trees are on the increase in Britain. This situation is fuelled by a number of factors including increased global trade and favourable climatic conditions. Although the ideal solution is both to prevent their entry and eradicate those that do arrive, this is not always possible as demonstrated by the current problems faced. Pests and diseases can have significant negative impacts, as can the management strategies used in their control, on all landscapes where trees are grown from the forest through to parks and gardens and the peri-urban and urban environment, and all industry associated with this from nurseries and garden centres through to timber processors can be affected. In addition to direct financial losses incurred by the tree growing industries, there can also be other detrimental effects on e.g. biodiversity, landscape value, archaeology, public access, human health issues etc. It is also worth noting that management strategies in themselves may cause similar detrimental impacts.

The majority of Britain's conifer plantations contain a number of exotic tree species that were introduced in the 19th century. In most cases their natural pests are largely absent from Britain and certain introduced conifers actually offer resistance to some of our endemic pests. The threat to introduced conifer species from pests in their native range has always been recognised and we now realise that pests that naturally occur in other parts of the world can be equally or more invasive. When new pests are introduced there is a high risk that they may spread unchecked due to a number of related factors:

- Pests and their hosts may have evolved in separate environments where there has been no natural selection for host resistance;
- The natural biological controls of introduced pests may be absent;
- Intervention with chemical or biological control is either ineffective, impractical or unacceptable.

Although many of Britain's trees are recent introductions from elsewhere, we also have a rich and varied native woodland heritage. These forests and woodlands are of huge biodiversity and cultural significance, and many have been features of the British landscape for centuries. In many cases, they have adapted to co-exist with their natural predators. However, the introduction of new pests and diseases can have, as in the case of the British elm, devastating consequences. The iconic oak tree is under attack from both bacterial pathogens (Acute oak decline), and insect parasites (Oak Processionary moth). Beech trees can be killed by severe infections of *Phytophthora ramorum*, and a number of other species would be at risk if potential pathogens are allowed to gain access through our borders. We need to ensure that biosecurity measures are able to protect all of Britain's forests, woodlands and trees. There is much that we can learn from the measures that have been used in the past to successfully treat previous pest and disease outbreaks. However, we also need to think about how we build resilience into forests, trees and woodlands to give them the best possible chance of combating the threats posed, both by new pathogens and by a changing climate

ADDRESSING THE THREATS

If pests and diseases become established, the emphasis tends to progress from eradication measures and on to practical actions that will minimise their negative impacts. Current issues currently requiring consideration in Britain include red band needle blight (*Dothistroma septosporum*), several *Phytophthora* species (e.g. *P. ramorum*, *P. kernoviae*, *P. lateralis* etc), Oak decline (causal agent unknown), horse chestnut bleeding canker (*Pseudomonas syringae* pv. *aesculus*), oak processionary moth (*Thaumetopoea processionea*) and pine lappet moth (*Dendrolimus pini*). In addition to these, there are numerous 'known' threats that are present and causing significant damage in Europe that could also cause widespread damage if they were to become established in Britain e.g. Pitch pine canker (*Fusarium circinatum*), Ash dieback (*Chalara fraxinea*), Pine processionary moth (*Thaumetopoea pityocampa*), as well as numerous 'unknown threats' i.e. those that have yet to be identified.

For management to be effective an understanding of the pest/disease is required e.g. What hosts and what host parts (i.e. roots, stems, leaves) are affected, and at what age? What is the nature of the infection e.g. defoliation, necrosis of tissue etc? Will it cause tree death and/or have other impacts e.g. a temporary decrease in yield, loss in aesthetic value (i.e. Horse chestnut leaf minor), human health risks (i.e. oak processionary moth) etc? Can a host act as a source of inoculum or a resource for breeding? If so, at what stage does the host cause the greatest 'risk' in terms of increased pest/disease spread e.g. sporulation of *P. ramorum* on senescing needles of larch, conifer stumps as a breeding ground for *Hylobius abietis* (the large pine weevil) that then attack young transplants? What are the pathways of the pest and pathogen e.g. plants for planting, timber or natural dispersal, and in case of the latter, how far can they travel? Are secondary hosts required for the lifecycle to be completed (as is the case for rusts)? What are the impacts of climatic (e.g. temperature, rainfall, humidity etc), and other environmental influences (aspect, topography, altitude)?

MANAGING FOR RESILIENCE

In terms of management, the first questions to be asked is whether either eradication or containment is possible, and if so how? Are there chemical or biological control agents available? Are there any other management methods available e.g. pruning or excision of diseased tissue etc, or will whole plants or even forest stands need to be removed? Is a change of species required for future plantings? What biosecurity measures are required to prevent further spread of the pest or disease e.g. limiting public access, cleaning of tools, vehicles, boots etc? How can publicity (signs, information notes, newspapers, internet, TV, radio, interested parties meetings etc) help raise awareness on the problem? Furthermore, an assessment of the risks associated with different management options i.e. risks to other species/ ecosystems, human health etc needs to be carried out, whether the chosen option is to do nothing, a change of species or cultural or chemical application.

EARLY WARNING

Regardless of the industry or environment, surveillance and monitoring is often an initial step in the process, helping to answer some of the key questions to enable suitable management options to be undertaken. For example, what is the state of health of your trees; do you have a pest or disease issue? What is the causal agent? Is there a greater risk of specific pests and diseases due to species composition, geographical location (including climatic influences) or certain business activities (e.g. high visitor numbers)? 'One off' surveys are rarely appropriate, and regular

monitoring is often advisable to determine if a pest or disease outbreak is stable, getting worse, or even better! Legislative issues also need to be considered, e.g. are there any legal requirements associated with growing a particular tree species, and if a problem is found who needs to be notified, and what processes must be followed?

PLANTS AND SPECIES CHOICE

There are also more specific issues that need to be considered depending on the sector/environment. In terms of nurseries the issues that arise may include determining the most suitable methods of pest/disease detection from seed to transplant. What measures can be taken to minimise pest/disease outbreaks e.g. where plants are sourced, containerised versus bare root, weeding regimes, chemical regimes (both positive and negative implications), the position of nurseries in relation to surrounding crops that may be a source of inoculum etc? If a pest or disease is discovered, what are the practical issues surrounding the implementation of phytosanitary measures i.e. methods and cost of plant destruction? Can areas where potentially infected plants have been sent be traced to minimise the spread of a pest or disease in the natural environment? If a certain species proves to be no longer viable, what species will the sector require instead? As well as nurseries, many of these questions will also face other plant distributors such as garden centres.

For the forest manager, in addition to the more generic surveillance, management, phytosanitary and biosecurity measures mentioned above, a number of other issues will need to be considered in light of a pest or disease outbreak. As with the plant production industry, alternative species may need to be selected. The ease of this will be dependent on factors including site conditions and potential future markets. Often this decision can be made with the aid of local knowledge, information from historical species trials and models such as the Environmental Site Classification (ESC). However, in some circumstances e.g. sites with deep peats or calcareous soils, the information on potential alternatives can be limited and operational trials of 'new' species may be advisable. This problem is exacerbated in areas of the country that are likely to be more affected by the impacts of climate change meaning that species that are potentially suitable now, may not be in the future; a serious concern given the lifespan of most tree species.

SILVICULTURE AND MANAGEMENT

Other silvicultural changes that may provide benefits in terms of disease management may include different initial planting densities, changes to thinning intensity and cycle length, respacing of young crops, pruning, brashing and the greater use of mixtures and continuous cover forestry. However, the impacts of such changes to the silvicultural management, including species change, on landscape at both a local (i.e. within a forest stand or garden) and over a larger landscape scale also need to be considered. This will usually require changes to management and design plans requiring lengthy consultation with interested parties. Premature felling and restocking with alternative species will also impact on timber supply, both current and future, raising questions including the availability of markets and associated timber prices, and associated changes to production forecasting. It is worth noting that the scale of the problem will often influence the management opportunities available e.g. 1 ha of infected material in a 20,000 ha forest, may well require a different strategy to 15,000 ha of infected material. As pests and diseases do not respect boundaries, the number of different land owners may also be an important factor in management strategies. A good example of where this has caused issues in the past are the problems that have been faced in deer management initiatives

where the land to be protected has been covered by numerous landowners, not all who can be traced, and some who may not wish to participate in the control measures, particularly if they are not legally bounded to.

The management of pests and diseases in both parks and gardens, and also within the urban and peri-urban environment will face many of the issues outlined above. However, there can be additional issues including the desire to protect collections of rare plants and the volume of public traffic. Previous accepted practices e.g. cold composting of dead plants may need to be reviewed.

Timber processing industries can also be impacted by outbreaks of pests and disease. For example they may need to cope with fluctuations in timber supplies e.g. more timber of a particular species in the short term due to sanitation measures; species change including those less well known; potentially more mixed species in the future. There may also be timber quality issues altering the suitability of the intended end use be it construction, chip, fencing. As with other parts of the industry, timber processes will also need to consider the impacts of implementing legally required phytosanitary measures when dealing with infected material.

PAST SUCCESSES

It is worth remembering that, although the number of pests and diseases we are currently facing in Britain and else where in the world is unprecedented, there are a number of 'success' stories, where active management developed through strong research initiatives has enabled tree growers to live successfully with pests and diseases. Within the forest industry examples include an integrated pest management system for *Hyllobius abietis*, both chemical (Urea) and biological control (*Phlebiopsis gigantea*) options for *Heterobasidium annosum* (Fomes root rot) and the biological control of *Dendroctonus micans*. Even with Dutch elm disease, often viewed as a failure in terms of disease management, where stringent control measures were adopted e.g. Brighton and parts of East Sussex, including regular disease monitoring, sanitation pruning and felling, debarking and destruction of infected timber, many large specimens of this iconic tree survived when compared to areas where the control measures were abandoned.

Anna Brown
18/04/11