TREE HEALTH AND PLANT BIOSECURITY INITIATIVE

PHASE 1: INITIAL CALL FOR CAPACITY BUILDING AND ANNOUNCEMENT OF AN ASSOCIATED TOWN MEETING AND WORKSHOP

The Living with Environmental Change (LWEC) Partnership announces an initial capacity-building call, and associated town meeting, as the first phase of a new LWEC *Tree Health and Plant Biosecurity*[1] *Initiative*. The second phase will be a call for collaborative research proposals in spring 2013.

BACKGROUND

1. Trees make a huge impact on our rural and urban landscapes and contribute to a vital part of our heritage, rural economy and well-being[2]. The National Ecosystem Assessment highlighted the significant contribution of trees and forests in terms of the ecosystem services they provide to society, as well as through direct economic value and social amenity[3]. Trees can also help mitigate climate change by capturing and storing carbon. Preserving the health of our trees, woodlands and forests is therefore vital.

2. In the last few years, several new pests and pathogens have emerged as significant risks to the UK's woodlands, commercial forests and urban trees. The globalisation of trade has led to a marked increase in the volume and diversity of plants and plant products entering the UK, which has increased the risk of importing pests and pathogens capable of causing serious damage to woodland flora or commercial tree crops. There have been many instances where outbreaks of new tree pests and diseases have been traced or linked to the import of infected plants or plant products, such as the now widespread *Phytophthora ramorum* and a recent outbreak of Asian longhorn beetle (*Anoplophora glabripennis*) in Kent. Predicted climate change effects, such as warmer winters and changes in seasonal rainfall and storm patterns, may also increase the risk of pest and/or pathogen establishment, spread and impact.

3. These threats have been highlighted by an increasing number of new pest and pathogen problems in the UK, including for example: *Phytophthora ramorum*[4] and *Phytophthora kernoviae*[5] affecting trees, heathland plants and heritage gardens since 2002; *Phytophthora alni* (a species hybrid[6], with variants within a so-called hybrid swarm, affecting alder in riparian ecosystems since 1993); oak processionary moth (*Thaumetopoea processionea*) with its associated threat to human health since 2006;

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[1] Plant Biosecurity is defined as '*exclusion, eradication or effective management of risks posed by plant pests and diseases to the economy, environment and human health*'; 'biosafety' (GMO-related issues) and 'agrobioterrorism' are separately defined and excluded from the scope of 'biosecurity'.
[2] Office of National statistics (measures for wellbeing): http://www.ons.gov.uk/ons/dcp171766_272242.pdf
[3] UK National Ecosystem Assessment: http://uknea.unep-wcmc.org; and www.defra.gov.uk/environment/natural/uknea/
[4] *Phytophthora ramorum:* http://www.forestry.gov.uk/forestry/WCAS-4Z5JLL
[5] *Phytophthora kernoviae*:http://www.forestry.gov.uk/forestry/infd-66jlgb
[6] *Phytophthora alni ('hybrid swarm')* on alder: http://www.forestry.gov.uk/fr/INFD-737HUN

Dothistroma needle blight[7] (*Dothistroma septosporum*) now seriously affecting commercial pine and threatening native Caledonian pine forests; acute oak decline[8], whose causes are still not yet known; horse chestnut bleeding canker (*Pseudomonas syringae* pv *aesculi*) and horse chestnut leaf miner (*Cameraria ohridella*) which together are likely to result in a long-term decline of UK horse chestnut trees. More recently, in the last year, the UK has had its first outbreaks of Asian longhorn beetle[9] (*Anoplophora glabripennis*), sweet chestnut blight[10] (*Cryphonectria parasitica*), ash dieback[11] (*Chalara fraxiniae*), *Phytophthora lateralis*[12] (on Lawson cypress) and *Phytophthora austrocedrae* (a newly-described, non-native species found in the UK on native juniper[13] of high environmental and biodiversity importance). In addition to these new problems, other known threats are on the horizon, including the emerald ash borer (*Agrilus planipennis*) and the bronze birch borer (*Agrilus anxius*). Many newly-emerged threats have been previously unknown to science (e.g. *Phytophthora ramorum* and *Phytophthora kernoviae*), and there is also a significant risk that other as-yet-unknown threats will continue to emerge.

4. A consortium of funders has established a joint strategic research initiative to bring the widest possible research capacity and capability in the UK to focus on the area of tree health and its associated plant biosecurity issues. The funders recognise the importance of trees, woodlands and their associated ecosystems and ecosystem services, and share concerns about increased risks from pests and diseases, potentially exacerbated by a changing environment. Each of the funding partners has a different mission and remit, but all of them agree that there is an urgent need for innovative and cutting-edge research to help ensure the future health and resilience of trees, woodlands and their associated ecosystems.

5. Collectively, funders including the Biotechnology and Biological Sciences Research Council (BBSRC)[14], the Department for Environment, Food and Rural Affairs (Defra, with the support of the Welsh Government)[15]and the Forestry Commission (FC)[16], with other potential funders (e.g. the Economic and Social Research Council (ESRC)[17], the Natural Environment Research Council (NERC)[18] and the Scottish Government[19]) will commit several million pounds over the next few years to support strategic research in this area under the auspices of the Living With Environmental Change (LWEC) Partnership[20]. The initiative also directly supports the objectives of the joint Defra and Forestry Commission *Tree Health and Plant Biosecurity Action Plan* launched in October 2011[21].

PURPOSE

6. The purpose of this multi-disciplinary Tree Health and Plant Biosecurity Initiative is to generate natural and social scientific knowledge to inform the development of innovative ways of addressing current and emerging threats to trees and woodland

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[7] Dothistroma needle blight of pine: http://www.forestry.gov.uk/fr/INFD-6ZCKAE
[8] Acute oak decline: http://www.forestry.gov.uk/fr/INFD-7UL9NQ
[9] *Anoplophora glabripennis* (Asian longhorn beetle): http://www.forestry.gov.uk/asianlonghornbeetle
[10] *Cryphonectria parasitica* (sweet chestnut blight): http://www.forestry.gov.uk/forestry/infd-8s5qbf
[11] *Chalara fraxiniae:* http://www.forestry.gov.uk/ashdieback
[12] *Phytophthora lateralis*: http://www.forestry.gov.uk/forestry/INFD-8BPLHD
[13] *Phytophthora austrocedrae* on juniper and cypress: http://www.forestry.gov.uk/forestry/INFD-8RAJZ3
[14] www.bbsrc.ac.uk
[15] www.defra.gov.uk
[16] www.forestry.gov.uk
[17] www.esrc.ac.uk
[18] www.nerc.ac.uk
[19] www.scotland.gov.uk
[20] www.lwec.org.uk
[21] http://www.defra.gov.uk/food-farm/crops/tree-health/; note on-going applied research funded by Defra and FC

ecosystems from pathogens and pests. The overarching aim is to support the future health and resilience of trees, woodlands and their associated ecosystems. The initiative is intended to facilitate collaboration between specialists in tree or forest research, and leading-edge scientists from the wider natural, biological, social, economic or other relevant research communities who have other, broader expertise that could be brought to bear on the increasing concerns about tree health. It will seek to take advantage of technical advances, for example: molecular biology and chemical ecology approaches to better understand the complex interactions between pest/pathogen, host and environment; state-of-the-art genomic and post-genomic technologies; pest and disease detection techniques (including remote sensing, pest trapping and environmental sampling); and epidemiological and ecological modelling techniques. Translation of knowledge and evidence from studies of pests and diseases of agricultural crops, and from ecological and environmental studies is of particular interest. Importantly, the initiative will also aim to encourage and make best use of interdisciplinary and systems approaches, and improve the impact and integration of social research and economics in this area.

SCOPE

7. The scope of the initiative includes trees[22] in forest, woodland and urban environments and of commercial, environmental and social value. The scope also extends to related plant biosecurity, i.e. risks to trees from pests or pathogens spread by human activity (e.g. through the movement of plants or plant products in trade, or on people or vehicles). The funders do not wish to specify the pests and pathogens to be studied (other than highlighting that the focus and relevance must be to trees and that the scope does not include vertebrate pests or weeds), but the strategic relevance of the proposed research will be one of the assessment criteria, and applications should demonstrate what impact the research is likely to have on tree health and associated biosecurity. Research proposals should address challenges under one or more of the following themes, which are not intended to be prescriptive or exclusive. Research may address any level of biological organisation from the molecule to the population or ecosystem, as well as interactions with the environment, or wider systems studies including social or economic aspects. Examples of relevant social and economic research might include: identification and valuation of economic and social impacts in policy appraisal; process and impact evaluation[23] of interventions, including behavioural alternatives to regulation; establishment of the rationale for intervention (and by whom) and prioritisation of options through social cost-benefit analysis (including non-monetary evidence).

- **Biology:** improved fundamental understanding of pest/pathogen and host interactions and biology, as well as the application of genomics and post-genomic methods and modelling, to improve tree health and underpin and inform pest and disease management.
- **Detection:** improved methods and approaches for early detection of tree-related pests and pathogens and for surveillance and monitoring, especially including use of new or emerging technologies as well as through improved public and stakeholder engagement.
- **Systems:** improved tree and forest health that supports the sustainability of trees, woodlands and their associated biodiversity in a changing environment (including climate change and increased international trade in plants and plant products), through, for example, the better use of genetic resources, the application of

[22] Excluded from the scope are orchard trees grown solely for food production, e.g. apple, pears, plums.
[23] Using HMT Magenta Book guidance: http://www.hm-treasury.gov.uk/d/magenta_book_combined.pdf

ecological principles, integrated control strategies, and improved policy and governance frameworks.

- **Biosecurity:** improved biosecurity through better regulation, management and awareness - including understanding and use of behavioural insights[24] - of both stakeholders and the public, together with an improved understanding of how biosecurity policies can best be developed and implemented.

8. The funders are particularly keen to encourage innovative proposals from multidisciplinary groups of researchers with optimal combinations of expertise to address aspects of tree health and its related plant biosecurity. Where appropriate, this should involve collaborations between scientists with established skills in tree and forest health and others with expertise in areas such as microbiology, pathology, entomology, epidemiology and ecology, and associated informatics and mathematical modeling, as well as other relevant disciplines including social science and economics. However, it is not expected that all projects need to be multidisciplinary.

9. In addition, the funders recognise that significant knowledge of tree health and plant biosecurity resides with tree and woodland managers and others in the wider stakeholder community. Their participation in research proposals is welcomed as project collaborators, but such individuals or organisations should refer to paragraphs 22-27 below regarding eligibility for funding under each phase of the initiative.

PHASES AND TIMING OF THE INITIATIVE

10. The initiative will have two phases. The timetable for these two phases is expected to be as follows:

Phase 1: Capacity and Consortium-Building (CCB)

- 5 September 2012 Launch of call, including town-meeting invitation
- 17 September 2012 Deadline for registration to attend town-meeting
- 20 September 2012 Town meeting / workshop (in London)
- 22 October 2012 Closing date for CCB applications
- November 2012 Assessment of CCB applications
- December 2012 CCB contracting and start of work
- 31 March 2013 End of Phase 1

Phase 2: Tree Health and Plant Biosecurity Initiative (provisional timetable)

- Early April 2013 Launch of call for full proposals
- End May 2013 Closing date for full proposals
- October 2013 Assessment of full proposals
- December 2013 Research grants awarded and projects start

[24] http://www.cabinetoffice.gov.uk/resource-library/test-learn-adapt-developing-public-policy-randomised-controlled-trials

APPLICATION, ASSESSMENT, FUNDING AND REPORTING

11. The initiative comprises two phases: an open call for applications for *Capacity and Consortium-Building*, followed by an open call to submit *Research Proposals*. The application and assessment processes and funding for each phase will be as follows:

Phase 1: Capacity and Consortium-Building

12. Interested parties are invited to register to attend a town-meeting and workshop, to be held in London on 20 September 2012, by emailing tree.health@bbsrc.ac.uk

Email registrations to attend this meeting need to be received by 17 September 2012. This event is free-of-charge but registration is required to attend. Attendance will be on a first-come-first-served basis, so early registration is recommended.

By registering, attendees agree to have their names and contact details included in a list of attendees which will be provided to all participants and potentially more widely.

The purpose of this town-meeting and workshop will be to:

- Introduce the initiative and explain its aims and scope.
- Bring different research communities and disciplines together to explore opportunities for collaborative working in this area and to start building consortia.

13. Applications for Capacity and Consortium-Building projects must be submitted on the Defra outline proposal form (provided in the competition pack on the Defra website[25], of which this call document forms a part) by 4 pm on **22 October 2012**.

Submissions should be made electronically to: alan.inman@defra.gsi.gov.uk.

Applicants should refer to the associated guidance document (provided in the competition pack on the Defra website[24]) for completing the Defra outline proposal form. Enquiries about completing the form should be directed to: alan.inman@defra.gsi.gov.uk

14. Applications will be assessed against the following criteria:

Understanding of Requirements, Proposed Work and Impact:

- Does the application fall within the purpose and scope of the call (see paragraphs 6 and 7 above)?
- Does the application have strategic relevance and potential for impact?

Experience and Capabilities of Organisations and Team:

- Do the applicants have relevant knowledge, expertise and capability? Do the applicants represent novel consortia and combinations of different expertise, partners and/or disciplines?

Resources and project management:

- Are the resources requested appropriate and do they represent value for money?
- Is the project management appropriate?

[25] Defra Research Competitions webpage: http://www.defra.gov.uk/evidence/funding/competitions/

15. The contracting and funding of the CCB research contracts will be by Defra. The total amount of funds available for this phase up to £500k and it is anticipated that awards might typically be up to £50k, but costs and value for money will be one of the criteria taken into account when evaluating applications.

16. Successful applicants will be expected to start work on or shortly after the award date and to have completed the proposed work by 31 March 2013. This must include the production of a brief summary report (no more than five pages, by the end of the project or within one month of the end of the project by agreement with Defra) detailing the main outcomes of the activities undertaken: this is expected to include a list of the key opportunities for collaborative work identified. The report is primarily for Defra's administrative purposes but will be made available to all the Initiative's funding partners; it will not be made publicly available.

Phase 2: Tree Health and Plant Biosecurity Initiative (Research Projects)

17. An open call to submit proposals for research grants is expected to be launched in April 2013. Further guidance about the requirements for research grant proposals will be provided at that stage. However, applications will be submitted through the Research Councils' Joint Electronic Submission (Je-S) system and will be processed by BBSRC. As such, potential applicants should note that eligible individuals or institutions must be registered on the Je-S system. Any eligible institution or individual considering submission of a proposal, but not currently registered to use the system, should consider early registration and contact the Je-S Helpdesk (JeSHelp@rcuk.ac.uk; 01793 444164).

18. Research grants will be funded from the joint funds of BBSRC, Defra, Forestry Commission and other funders contributing to this initiative (which is expected to include ESRC, NERC and the Scottish Government). Funding awarded under the initiative will be administered by BBSRC. It will be subject to the Council's usual terms and conditions for research grants, and specific additional or alternative requirements to be agreed jointly by the funding partners.

19. Most of the research projects funded through this initiative are likely to be of three years' duration.

20. Projects under Phase 2 of this initiative will be funded at 80% of Full Economic Cost (FEC) in accordance with the Research Councils' usual practice.

21. Brief annual reports and a final report will be required to meet the accountability requirements of Defra and the Forestry Commission. Successful applicants will be advised by Defra on the format of these reports and where to send them. The final reports will be published on the Defra and Forestry Commission websites.

ELIGIBILITY

Eligibility for Capacity and Consortium-Building Awards (Phase 1)

22. Applications will be accepted from eligible individuals/organisations detailed in paragraph 23 below. Private sector organisations, charities, NGOs, overseas organisations, and organisations which do not have IRO (RCUK-approved Independent Research Organisation) status may also participate as collaborative partners; such individuals or organisations are eligible to receive Defra funding from Phase 1 of this Initiative as it is Defra's aim to be as inclusive as possible in

this capacity building phase and facilitate the sharing of ideas and knowledge between research communities, scientific disciplines and relevant interested parties (e.g. tree and woodland stakeholders).

Prospective applicants who have any queries about their individual or institutional eligibility, or that of prospective collaborators, should contact Defra (alan.inman@defra.gsi.gov.uk) which is leading the administration of Phase 1.

Eligibility for Research Grants (Phase 2):

23. Applications will be accepted only from eligible individuals in the following classes of eligible UK institutions:

- Higher education institutions (HEIs)
- Research Council institutes
- RCUK-approved Independent Research Organisations (IRO)
- UK Government Research Establishments
- Scottish Government Main Research Providers

N.B. Eligibility to apply to the Tree Health and Plant Biosecurity Initiative does not confer eligibility to apply for other research council schemes, which will have specific eligibility criteria.

24. Overseas research institutions can be collaborative partners in projects but are not eligible to receive funding under Phase 2. Research grant proposals will not be accepted from overseas institutions, or from UK applicants if proposals contain requests for funding for overseas co-applicants.

25. Private sector organisations, charities and NGOs which do not have Independent Research Organisation status may also participate as collaborative partners, but such organisations are not eligible to apply for or receive funding from Phase 2 of the Initiative (see paragraph 24 above).

26. Details of eligibility criteria can be found in the BBSRC Research Grants Guide at http://www.bbsrc.ac.uk/web/FILES/Guidelines/grants_guide.pdf

27. Prospective applicants who have any doubts about their individual or institutional eligibility should contact BBSRC (see paragraph 28), which is leading the administration of the Tree Health and Plant Biosecurity Initiative.

CONTACT INFORMATION

28. The administration of the initiative is being led by BBSRC on behalf of all of the funding partners. General enquiries about this initiative should be addressed to:

Debbie Harding
email: tree.health@bbsrc.ac.uk
Tel: 01793 414653

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