Observatree
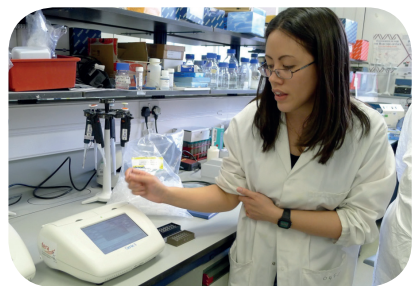## monitoring tree health

Tree Health Citizen Science
Good practice guidelines:
an Observatree perspective

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Department for Environment Food & Rural Affairs

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Tree Health Citizen Science - Good Practice Guidelines: An Observatree Perspective

Observatree has successfully established a tree health early warning system by empowering a network of volunteers to confidently identify and report on pests and diseases. Our volunteers receive extensive training in a variety of formats and are supported by educational resources, a dedicated volunteer manager and access to the UK's lead authorities on tree health. This project is helping to deliver effective support for the UK's tree health professionals and has established itself as a reputable brand for the provision of quality pest and disease information.

During the four years of this project (2013-2017), we have learned lessons along the way and refined some of our systems and methods. To help others learn from our success and experience, we have produced these good practice guidelines designed to assist anyone working within a multi-partner project or with volunteers and citizen science data.

Partnership working

Our project benefits from the combined knowledge and expertise in different aspects of woodland, forest and land management, tree health, and pest and disease research. We combine Government departments with charities and commercial organisations (Fera Science Ltd.) and add the interests of the different geographic regions of the UK. This means that we have representatives within the partnership from various parts of the UK and from different sectors which helps us to disseminate our messages and resources across all of these groups.

One of the strengths of our project is the partnership at its heart. Investing lots of time in relationships, both **within** and **between** partnership organisations is vital, especially when the project is piloting new approaches and ways of working and so can be pressured and seem risky.

Partnership **'within'** organisations is important because many of us have had to work across different teams in the same organisation for the project. For example, between our scientists, policy advisors, communications and administrative staff and creating mutual understanding and buy in internally is vital.

Partnership **'between'** organisations involved in the project is important because different priorities could clash. The strength of partnership relations and the common vision shared is the best way these issues can be resolved. Working with different organisations can be challenging, but also very rewarding. We have learned a lot from each other and, as a result, we are able to work more collaboratively. This improved collaboration has benefits beyond the scope of Observatree as greater understanding and improved communication can help to identify other shared visions and therefore invite new collaborative projects. Our partnership benefits from a strong, shared belief in project aims and success and this has been helped by a relatively low staff turnover, allowing strong professional relationships with mutual respect and trust to develop.

Regular communications are essential. There is no substitute for face to face meetings, especially in the early days when trust is being built. When face-to-face meetings are not possible, telephone conversations are still preferable to written correspondence as there is less likelihood of being misinterpreted. However, it is important to still document the outcomes of such conversations to provide a record of what was agreed.

Cultivating a 'no surprises' culture where everyone is open about any challenges in delivering their particular part of the project is also incredibly helpful, so that potential risks and issues can be addressed in the early stages.

Our recommended Good Practice guidelines with respect to partnership and project management are:

- Ensure good communication with regular partner meetings and updates
- Set out a clear project management structure, clearly defined roles of project manager and volunteer manager, and clear accountability
- Make clear from the start what is in scope or out of scope of the project and ensure that all partners and staff are fully aware of these limitations
- Clear project aims and objectives are important to avoid project deviation from agreed focus
- Have a nominated representative from each partner to participate in meetings
- Shared buy-in and ownership in deliverables and progress is important, as this facilitates communication and collaboration
- Shared success is equally important and all partners should be acknowledged in 'good news' communications and celebration events
- Shared belief in the project, its purpose and a desire for it to succeed is helpful and should be encouraged where possible. If some partners are less committed to the project or their priorities change, deliverables can fail and tension can occur between project staff
- Reporting results to the project board, senior staff within the partnership and policy makers is essential to ensure continued support at high levels
- It is important to demonstrate the value of the project to regular partner / sector operations and business where possible
- Demonstrating value and deliverables to wider stakeholders and practitioners also gains wider support for the project
- There are mutual partner benefits and learning to be gained as a result of increased collaboration between different organisations. These should be promoted
- It is important to consider what motivates the volunteers, policy makers and scientists, and the value of co-created projects
- The value of informal networks with other citizen science groups and greater engagement with similar projects and the wider citizen science and plant health communities both nationally and internationally should be promoted, good practice shared and opportunities for collaboration explored
- Establishing an online file and photo-sharing system is a very helpful method of facilitating access to documents, finances, data, images and video between partners
- Be prepared to compromise. When dealing with different partner organisations, potentially with different working practices, it may be necessary to adopt different methods of working. Where possible, put the priorities of the project first

Training

Significant time is invested in training our volunteers to provide them with the knowledge, skills and confidence to look for and report tree health pests and diseases. Whilst we provide our volunteers with a lot of detailed knowledge we do not expect them to become experts in all pests or diseases. There are many pests and diseases that are currently a threat to trees within the UK. These are reviewed annually by the project scientists and in consultation with fellow experts and with reference to wider tree health policies to identify a priority selection for the project. We have focused on 21 that include some pests or diseases that are already present in parts of the UK (thereby providing the volunteers with something definite to look for and report) and others that are not thought to be present at this time but are believed to pose a significant threat. Whilst our list of pests or diseases remains the same throughout the UK we often give more regional emphasis to some pests and diseases already present, especially in areas where their full extent is less well known. We have also selected pests and diseases that we feel can be identified in the field and do not require any specialist tests.

Our training processes have highlighted the following good practice guidelines:

- Volunteers value face-to-face training sessions as they appreciate the time given to them by professionals and the opportunity they have to question and learn from the experts. These sessions also allow our experts to witness the knowledge and enthusiasm of our volunteers which has led to an increased professional confidence in the quality of the data being reported
- Volunteers value practical training sessions as it gives them greater confidence in their surveying
- Volunteers value opportunities to meet each other as they may wish to work together, share knowledge and gain more confidence through shared experiences
- Our volunteers are backed up by many high quality survey aids and training resources, many of which have been designed specifically for them by the project team. Because these resources are also being used by plant health professionals, their high credibility means they are appreciated and valued by volunteers
- Our pest and disease training is delivered by some of the UK's leading tree health experts
- Our volunteers ultimately have access to tree health professionals within the partnership, through face to face training, webinars and online forums, and value that contact
- Regional training events are held to make sessions more accessible and many of these events are held on Saturdays (as requested by volunteers) to make them accessible to those who are in full-time employment and cannot attend weekday training
- Part of each training session is tailored to fit volunteer requirements and is based upon feedback received from previous training events
- Biosecurity is an essential part of our training to ensure that our volunteers are not accidentally spreading pests or diseases as a result of their survey actions
- It is not possible to hold an event that is convenient for everyone within a geographic region. But events held during the spring or summer when weather conditions are likely to be more favourable, with good transport links, pleasant surroundings and with good catering all help to get volunteers to attend training sessions
- Our training has evolved from predominantly face-to-face, fact based presentations to an increasing use of e-learning for core delivery and face-to-face training for development of

practical skills such as sampling, tree identification and surveying. These more practical-based training sessions, combined with group visits to see pests and diseases on site and practice reporting on them, all help to increase confidence and promote reporting

- Training (and underpinning resources) needs to be adaptable to allow for any changes to our list of 21 priority pests or diseases following its annual review or in the event of an unforeseen outbreak of something new for which our volunteers have not been trained
- Webinars, blogs, mentoring and coaching events have all added to the online training toolbox and ensure that information is available to our volunteers and others. Going forward, we will consider options for developing competency-based learning, with assessments after each module, which would be recognised by stakeholder groups as accredited training for Professional Development

Data collected by volunteers

Many volunteers responded more enthusiastically to more targeted surveys. For example, in different geographic regions, we often have a focus on a specific pest or disease. Many of our volunteers find it easier to report on the presence or absence of a single pest or disease rather than reporting on the absence of 21 pests of diseases from mixed woodland with a variety of tree species.

Our priority list of 21 pests and diseases included some known to be in the UK, but for which their full geographic extent was unknown. Whilst including these pests and diseases provided valuable information on their distribution, it also gave the volunteers something to immediately report. This also allowed them to practice their skills, build confidence and help them prepare for spotting something potentially new in the UK.

We selected pests and diseases that do not need laboratory tests for basic identification. This was important to allow our volunteers to function without the need for any specialist equipment. This is not a reflection on the ability of our volunteers, but more the reliability of some field test equipment. Going forward, we will continue to review this and we will train and equip our volunteers to take samples or undertake analysis on site where procedures are simple, reliable and necessary. Our volunteers report 'suspected' signs of pests or diseases and these suspected cases are confirmed by a combination of plant health inspectors and scientists using the information provided together with follow-up sampling / site visits when necessary.

Unlike many other tree health projects, our volunteers also report surveys where NO pest or disease was found. These negative data are very important, as they allow us to monitor the speed with which a pest or disease spreads into a new area. Additionally, these data can help to identify areas where a pest or disease is unable to become established, perhaps due to some local genetic variation in the host species, or an environmental factor. In either case, this could lead to important information on how to protect trees in other areas.

If an outbreak of a new pest or disease occurs within the UK, decisions need to be made on whether or not it is appropriate for our volunteers to provide support. For example, if there is a higher health and safety or biosecurity risk, it may not be appropriate for our volunteers to become involved. If the invasive species does not have clear symptoms and requires more specialist testing or identification,

it may not be suitable for volunteers to search for it. Finally, if the work under consideration would normally be carried out by a professional inspector or contractor as part of a statutory duty, it may not be a task for our volunteers. We have devised a decision support mechanism to be used in the event of an outbreak to determine whether or not our volunteer network should assist.

It has been important to clarify that our volunteers are not replacing the work of professional plant inspectors or contractors. The volunteer network is designed to provide ADDITIONAL surveillance and complement any statutory survey work. Nonetheless, for some outbreak situations during the time of this project, our volunteers have provided important survey data to staff working on the event.

Ensuring quality data

The focus for Observatree is very much on quality, rather than quantity of survey reports. All reports submitted by volunteers come to project staff. A positive reporting of a pest or disease requires a diagnosis. It is essential that there is sufficient information and good quality photographs provided with findings to allow a diagnosis to be made. It is important that our volunteer network does not create additional work for our professional tree and plant health inspectors or researchers by submitting a large number of inaccurate reports which may require an on-site visit by a professional.

As volunteers gain more experience they become more confident and the quality of their submitted reports continues to improve. Some of our volunteers produce reports of a very high standard and their work is praised by many professionals who have received their reports. It has taken time during the project to develop this level of competency. Due to some targeted recruitment in latter stages of the project, not all of our volunteers have the same level of experience. We therefore encourage our lead-practitioners to team-up during surveys to support those who are newer to the role.

Guideline points for consideration:

- Don't expect instant high quality results from volunteers. If they are learning new skills this will take time to develop
- What quality / quantity of data are right for your project? If you only require the distribution of a species rather than allowing for a diagnosis from symptoms, perhaps more, less detailed data would suit your purpose
- Be aware of the quality of your data and the limitations it may have during any follow-up analysis

Volunteer management

The role of the volunteer manager is absolutely crucial to this project. They maintain consistency, regular contact, provide volunteers with updates on the project and represent volunteer's interests during evaluation of project data and validating new concepts and training methods. The volunteer manager liaises between project staff and volunteers and is able to represent either group during meetings, discussions and training events.

Observatree has been very selective in choosing suitable volunteers to be involved in the project. Potential volunteers were put through a rigorous recruitment process including the completion of an application form, a telephone interview and an online survey to help establish their existing skills and experience. Although the volunteer network is made up of a diverse group of people, volunteers are expected to have good tree identification knowledge and previous experience of other biological surveying. Telephone interviews act as a good opportunity to manage volunteer expectations in terms of the role they will be carrying out and the level of training and support offered.

Observatree volunteers are kept fully informed of progress and any planned changes within the project. Additionally, they are given plenty of opportunities to provide feedback on their experience of the project making suggestions on potential future developments and ways of working. The recruitment process, on-going support and an active role in evaluating the project has meant that the majority of volunteers have remained with the project throughout Phase 1. This has resulted in a network of highly trained and dedicated volunteers.

Some of our recommended Good Practice guidelines with respect to volunteers include:

- Careful selection of volunteers to ensure some basic knowledge and willingness to commit to the project
- Safety of the volunteers is essential. For Observatree this includes Health and Safety Risk Assessments and Public Liability Insurance
- Our volunteers are provided with official letters of authority, business cards and branded hi-visibility clothing to assist them with site access and in case their activities are questioned
- Most surveys are carried out on land either owned by one of the project partners or where public access is allowed. This reduces the need to seek permission for land access to undertake surveys
- Biosecurity kits and training in their use is provided to all volunteers to ensure their activities are not helping spread pests or diseases
- Sharing results with volunteers is essential to help them see the value of their efforts
- Celebrating success of volunteer activity. We are keen to share any positive feedback or success stories with volunteers to show that their contributions are valued
- We provide our volunteers with regular communications including updates, feedback and news
- Volunteers benefit from having a dedicated, full-time point of contact via the volunteer manager
- We undertake surveys of our volunteers to collect their views on the project and their experiences. This helps to give them a feeling of ownership with the project and being a valued part of the team
- We have provided a 'members forum' on the project website. This allows volunteers to share ideas and thoughts amongst themselves, whilst also being able to post questions for project scientists to answer
- Ensuring volunteers remain motivated and continue to have an active involvement with the project can be challenging. Volunteers do vary in their levels of commitment and their ability to participate in a project. It is essential to outline the levels of expected commitment when recruiting volunteers as it informs them of the effort required and provides a mechanism for replacing inactive individuals from the network if necessary

- Identify minimum objectives for volunteers e.g. a minimum number of survey reports submitted on an annual basis. This not only tells the volunteers what is expected from them but also manages expectations of professional staff involved with the project. It is important to remember that volunteers are not paid staff. Many will have other demands upon their time so it is important to discuss their ability to participate in the project during the recruitment process. Nonetheless, personal circumstances may change and it is not possible to guarantee levels of volunteer activity. Periodic reviews of volunteer activity can help to identify any who are struggling to contribute to the project, which may lead to discussions about their long-term participation
- We have created a volunteer working group who act as a sounding board for new ideas and approaches before they are put to the wider volunteer network

Project Communications

Communication materials and processes used to promote the project are very important. They help to raise wider awareness on tree health and plant biosecurity, promoting the role that members of the public can play. Because of the high quality of our educational materials and their reputation, other stakeholders are keen to work with us to promote our resources using their own communication channels where possible.

Our focus on providing high quality educational resources (therefore receiving better quality survey reports in the process) has meant we have avoided mass public engagement. Instead, we have explored more targeted audiences. For example, by placing advertorials with magazines that focus on countryside, woodland / forestry / horticulture and gardening, we are selecting readers who have an interest in plants and the natural environment. We have also attended key shows, exhibitions and other events where there was a similar focus and promoted our project. These targeted audiences are more likely to participate in learning about tree health issues and reporting findings.

Volunteer communications are an important aspect of keeping volunteers both informed of project progress and engaged with their survey work. We have produced monthly 'volunteer updates' to inform them of the latest tree health news (from within the partnership and beyond), news on the activities of volunteers within the network and general project news. We also produce special updates in the run up to training events, often containing 'homework' tasks for volunteers to complete before attending. This helps to make the most of face-to-face time volunteers have with tree health professionals.

Our external newsletter is produced four times a year and is circulated to staff from within the project partnership and also anyone who has expressed an interest by 'signing up' to our mailing list. Members of the public and other stakeholders are able to 'sign up' via an online form on our website or by providing their contact details at an event attended by Observatree staff. With an electronic distribution list of over 500 people our newsletters reach key stakeholders and international audiences.

The project has an extensive website which supports the project in many ways. These include:

- Hosting our educational literature and toolkits for download
- Hosting our webinars and e-learning videos
- Providing background information on all of our priority pests and diseases
- Providing links to further pest or disease information on other websites
- Hosting a member's forum to allow volunteers to share information / questions with each other and some of the scientists working within the partnership
- Promoting our connections with Tree Health Citizen Science networks, both within the UK and internationally
- Hosting monthly blogs, provided by staff from across the partnership, some of our volunteers and other invited guests
- Latest news and forthcoming events
- Background project information
- Information on biosecurity and how to report tree pests and diseases
- Frequently asked questions

Our suggested good practice guidelines with respect to project communication are:

- A well-maintained website with regular updates is essential as a core part of project communications with external audiences
- If you are also seeking to engage with a professional audience, materials will need to be of a suitable quality for them to become accepted as reliable
- Scientifically robust materials will help establish your project as a reputable brand
- The use of video media, where possible (such as on the website) will help bring the project to life
- Face-to-face communications are the best method of getting your message across whilst building your reputation. Events can be expensive to attend so consider offering presentations to interested groups

Project Monitoring and Evaluation

Throughout the project we have captured quotes (both positive and negative) from all sources and communications. We have been able to use the few negative comments to improve systems where possible. We have also shared some of the positive comments with volunteers and partners, although we could possibly make more use of the latter in future.

Evaluation of the project is key to measuring its success but it can be a challenging activity. One measure of volunteer activity is the number of reports submitted. We are asking volunteers to submit relevant, high quality reports. However, we need to have an indication of their activity. Training and managing the volunteer network is a costly process and a measure of its cost-effectiveness is useful. Volunteers also submit information on the number of hours of activity. During 2016 this was seen to increase, whilst the number of reports submitted showed a relatively smaller increase. Discussions with our volunteers suggested this might be linked to difficulties in how to submit reports stating that NO pest or disease was found. As a result, we have emphasised the importance of reporting where and when no pests or diseases are seen and simplified reporting mechanisms for such observations.

Going forward, we are looking for mechanisms to allow our volunteers to monitor and report on the health of individual trees as an alternative.

What is more difficult to evaluate is the wider impact of raising awareness of tree health and plant biosecurity and pests or diseases. In addition to our own communications many of our volunteers have spoken about their activities with Observatree to other groups and societies. One has a show on a local radio station where her role in a significant finding for Observatree was discussed. Other volunteers have also spoken on this radio show. Capturing the value of this added dissemination and general awareness raising can be challenging, but its impact should not be ignored.

Beyond volunteer activity, the project also aims to raise awareness of tree health, encouraging others to be aware of pests and diseases and learning how to identify and report them through our online resources. During the lifetime of the project we have seen an increase in members of the public (which includes our volunteers) reporting pests and diseases via official channels. Our project has placed advertorials in selected press and, whilst we know the readership of these media, the impact of the campaign is more difficult to measure.

Our suggestion of good practice guidelines with respect to monitoring and evaluation are:

- Surveys of volunteers and professionals at the start of the project and after a three year period to establish the impact of project delivery, achievements and obtain feedback for improvements
- Ongoing evaluation by collecting feedback from the volunteers and staff after each training event
- Conducting surveys of stakeholders at the start and later in the project to assess how the project has made a difference
- Monitor quantities of materials printed, presentations given and web activity. This all provides valuable data for reporting on activity
- Setting up website analytics (even the most basic) will let you know how well the website is performing and visitor behaviour (how they found you etc.)
- Capture as much data about all aspects of the project as possible and use it to show the types of benefits your project is providing
- See and share the bigger picture. Your project may be providing benefits in many more areas than are immediately obvious – it's not just about dots on a map!

The Observatree Team

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To find out more about Observatree and the resources we have produced, visit www.observatree.org.uk