

Defra Group Personal Biosecurity Behaviours

Evaluation of biosecurity training

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1 Executive summary

The Defra Group Personal Biosecurity Behaviours (DGPBB) project aims to provide personal biosecurity guidance and training across relevant Defra group organisations. The long term purpose is to establish a minimum uniform standard of biosecurity practices to be adhered to by staff, contractors and volunteers whose role entails working in terrestrial or aquatic environments where they might come into contact with plants and animals in the 'natural' world.

Forest Research have carried out an evaluation of the biosecurity training being provided as part of this project, and key findings are presented in this report.

Using an online questionnaire (before and after the training) and a number of follow up, in-depth interviews with the recipients of the training, this evaluation research revealed self-reported changes in awareness and behaviours relating to biosecurity.

Key findings: Knowledge and awareness

The following results were derived from 165 completed baseline questionnaires, 58 completed follow up questionnaires and 13 in-depth interviews. All participants are members of staff (plus a small number of volunteers and contractors) with the Forestry Commission.

- Self-reported knowledge of both biosecurity and the impact of invasive species improved after the training. For example, in the baseline survey 41% and 33% of respondents reported their knowledge (of biosecurity and invasive species respectively) to be 'good'; in the follow up results this had risen to 76% and 74%.
- Respondents were also asked about their knowledge of required biosecurity actions, before visiting a site, when on site, and prior to leaving site. Again when comparing responses from the baseline with responses from the follow up, there are positive changes. For example, at the baseline, 21%, 21% and

19% said that they had a low level of knowledge of the required biosecurity actions (before arriving, on site, before leaving, respectively) compared to 4%, 5%, and 3% at the follow up.

- Respondents were asked if they had heard of a number of biosecurity initiatives or campaigns. There was once again positive change in these responses, from the baseline to the follow up, with higher percentages of respondents saying they had heard of all four of the named campaigns in the follow up. For example, at the baseline, 62% said they had heard of 'Keep it Clean', but at the follow up, 89% said they had.
- As well as asking respondents to self-report their level of knowledge before and after the training, there were three questions included only after the training that asked if they felt their level of knowledge had changed. These questions were in relation to 1) the impacts of invasive, non-native species, 2) biosecurity, and 3) the biosecurity behaviours and actions required for site visits. In all cases, a large majority of respondents said there had been a slight or significant change since the training. The respective percentages for 'significant change' for the three areas of knowledge were: 29%, 40% and 41%.

Key findings: Actions and behaviours

- Survey respondents were asked how frequently they undertake certain biosecurity actions when on site. There is an increase in the percentage of respondents saying they 'always' do such actions, in the follow up survey. For example, in the baseline, 50% of those respondents arriving in a vehicle said they made sure they parked on hard standing if possible. In the follow up this increased to 79%.
- Respondents were asked in both questionnaires how frequently they carry out certain biosecurity actions before leaving the site. Results show some

increase in the percentage of 'always' responses following the training, particularly with regard to cleaning footwear, clothing, equipment and tools.

- Respondents were asked in the follow up questionnaire whether there had been any change in the biosecurity actions they take for site visits since the training. With regard to actions taken before visiting a site 63% said yes, actions taken when on site 56% said yes, and before leaving a site 61% said yes.
- They were then asked in an open ended question to provide some details about what had changed. There were a number of themes that arose from respondents' answers to this question. The themes include actions around risk assessment and advance planning, time management and provision of equipment, as well as specific behaviours being applied more thoroughly and consistently.

The in-depth interviews that followed the questionnaires provided the opportunity to investigate in more depth what specifically had changed, in terms of actions and behaviours, since receiving the training.

- There were some specific examples of particular actions that had changed, for example, some interviewees mentioned that they now leave the water used for washing boots on site (previously this had been taken away and disposed of elsewhere increasing the risk of spread); and they now park on hard standing on site whenever possible and avoid parking on verges where there would be greater risk of collecting dirt on vehicles and potentially transmitting pests and diseases that way.
- Some interviewees mentioned that they are now more likely to remember to clean boots; and more likely to mention that it is necessary when organising events. They also commented that there is now a more conscious effort to carry out boot cleaning because they have in mind specific examples of why this is important (eg *P. ramorum*).

- Hence, the training had succeeded in getting biosecurity actions instilled into site visit routines, led to some being more diligent about biosecurity and helping it (biosecurity) become embedded for site visits (and personal activities in the countryside).
- Interviewees felt that there is a need to explain why biosecurity is important and that providing detail about the context is important. It was felt that this would motivate more people to carry out biosecurity actions.

Overall, the findings from both the questionnaires and the interviews show generally positive reported change in knowledge and awareness following the training, across all questions, regardless of how they were asked and what was the specific content. Reported changes in actions and behaviours were also positive but not so large.

2 Introduction

The Defra Group Personal Biosecurity Behaviours (DGPBB) project aims to provide personal biosecurity guidance and training across relevant Defra group organisations. The long term purpose is to establish a minimum uniform standard of biosecurity practices to be adhered to by staff, contractors and volunteers whose role entails working in terrestrial or aquatic environments where they might come into contact with plants and animals in the 'natural' world.

Funded by Defra, and delivered by Forestry Commission, the training materials and guidance have been developed by a working group of representatives from several Defra organisations. The delivery of the training was trialled during the winter of 2021/22 (evaluation of the pilot is reported in Hall et al, 2022¹) and rolled out to Forestry Commission in 2023.

¹ Hall, C., Paterson, A. & Furness, E., 2022. Phase one: Pilot Evaluation. Defra Group Personal Biosecurity Project: Evaluation. Forest Research.

3 Evaluation

To evaluate the impact of the training and guidance, Forest Research were commissioned to survey recipients of the training before and after delivery. This report includes results from before and after surveys distributed to Forestry Commission staff and volunteers in Yorkshire & North East area, East & East Midlands area, and South East & London area. In addition, an intake of Development Woodland Officers (DWOs) was included as well as some newly appointed Enforcement Officers. The link to the online baseline survey was sent to relevant recipients shortly before the training was delivered to them (in 2022 for the DWOs, and 2023 for all others). The link to the online follow up survey was sent out to relevant recipients some months after the training (between 5-6 months) to allow for the possibility of changes being implemented in actions. The follow up survey was followed by 13 in-depth interviews with staff who had received the training.

The aim of the baseline survey was to gather data about peoples' current biosecurity knowledge and actions. The key research questions for the baseline survey were:

- What do staff at all levels, volunteers and contractors, currently understand about biosecurity?
- What are their experiences of biosecurity?
- What biosecurity behaviours are they currently engaged in?
- What challenges have they encountered in relation to implementing biosecurity?
- What information/support/guidance do they need for better biosecurity?

The aim of the follow up survey was to evaluate the effectiveness of the training by identifying any self-reported changes in knowledge and actions. The key research questions for the follow up evaluation questionnaire were very similar, as follows:

- What do staff at all levels, volunteers and contractors, now understand about biosecurity?
- What biosecurity behaviours are they now engaged in?
- What challenges have they encountered in relation to implementing biosecurity?
- How has the guidance/training impacted awareness? (from their own perspective)
- How has the guidance/training influenced behaviours? (from their own perspective)

The aim of the in-depth interviews was to delve more deeply into issues relating to personal biosecurity behaviours at work, and any changes since the training. The key research questions for the interviews included:

- What has been the main impact of the personal biosecurity training?
- In what ways has the training helped (or not helped) to improve biosecurity actions within teams?
- What has changed in terms of knowledge and awareness of biosecurity as a result of the training?
- Are more changes needed in terms of biosecurity actions amongst staff?
- What would help those changes be implemented? What are the barriers and challenges to bringing about those changes?

4 Methods

4.1 Survey design

The surveys were designed by the Society and Environment Research Group at Forest Research and scripted into Smart Survey. The baseline survey consisted of seven sections. These were: 1) Knowledge of biosecurity, 2) Experiences of biosecurity threats, 3) Biosecurity behaviours, 4) Implementing personal biosecurity, 5) Information about biosecurity, 6) Questions about the site(s) usually visited & 7) Questions about their role. The follow up questionnaire included similar sections (including some questions that were repeated so as to allow comparison in the results) with additional sections asking what, if anything, had changed (in terms of knowledge and actions) since receiving the training. Questions were mainly closed with response options being along a Likert scale², with some free text boxes for additional comments and details.

4.2 Participants

As noted above the questionnaires targeted staff and volunteers at three Forestry Commission areas plus an intake of DWOs and some newly employed Enforcement Officers.

4.3 Data analysis

Quantitative responses were analysed using descriptive statistics, producing tables, and charts in Excel. Qualitative responses from the free text boxes were analysed using thematic analysis and answers were coded in Nvivo to enable identification of key themes and topics, and to facilitate a summary of the data.

² Likert, Rensis (1932). "A Technique for the Measurement of Attitudes". Archives of Psychology. 140: 1–55

4.4 Interview design, questions, analysis

The in-depth interviews utilised a semi-structured interview guide with questions focused on background information about interviewees' roles and responsibilities, including the nature of the site visits carried out as part of their role, prior experience of biosecurity issues, historical biosecurity actions, their receipt of the biosecurity training, and, crucially, any changes in knowledge and actions following receipt of the training. The interview also provided interviewees with the opportunity to state where they believed changes were still needed, what the barriers to change might be, how those barriers might be overcome, and any other concerns, opinions and suggestions they had about personal biosecurity behaviours within and beyond the Defra group. The 24 questions were designed to take up to an hour to respond to. Analysis was carried out using NVivo software. A coding framework was designed based on the broad themes of knowledge/ awareness / understanding, actions/ behaviours, and issues beyond the training evaluation, with sub-themes added both deductively and inductively. These three headline themes, the sub-themes and the number of text extracts coded to each, are shown below:

- Knowledge, awareness, understanding (46)
 - Pre-training knowledge, awareness and experience (9)
 - Post-training knowledge, awareness and experience (22)
 - Remaining knowledge needs (15)
- Actions, behaviours (99)
 - Pre-training behaviours and actions (9)
 - Post-training behaviours and actions (15)
 - Own - Areas where behaviour change still needed (3)
 - Colleagues & organisation - Areas where behaviour change is still needed (7)

- Barriers and challenges to bringing about changes (10)
- Support for changes in behaviour (55)
- Beyond the training evaluation (24)
 - Biosecurity concerns (12)
 - Thoughts and hopes about impacts of biosecurity improvements since training (7)
 - Responsibility for improving biosecurity (5)

4.5 Structure of report

In the following section details are provided about the survey respondents and interview participants. Section 5 after that presents the findings from both the questionnaires and the interviews relating to knowledge, awareness and understanding. Section 6 reports the findings relating to actions and behaviours. The final section, section 7, presents concluding thoughts and areas for further development.

5 The participants

5.1 Survey respondents

There were 165 responses to the baseline questionnaire. Responses received were mainly from staff members (90%) and a small number of volunteers (9%). A smaller proportion were contractors (1%).

There were 58 valid responses to the follow up questionnaire. Responses received were mainly from staff members (88%) and a small number of volunteers (12%); there were no responses from contractors.

In the baseline survey over half of respondents (57%) had worked or volunteered for the Forestry Commission for under two years and just over a third (35%) had worked or volunteered for five years or more. In the follow up survey, of those

who responded, 65% had been working for the Forestry Commission for two years or less (**Error! Reference source not found.1**).

Table 1: How long have you been working or volunteering for the organisation?

	Baseline %	Follow up %
Less than 1 year	34	36
1 to 2 years	23	29
3 years to 4 years	8	14
5 years to 10 years	14	12
More than 10	21	9

All the 58 respondents to the follow up survey had received biosecurity training from the Forestry Commission, as part of the DGPBB project and 84% had completed the baseline questionnaire prior to their training.

5.2 Interviewees

The 13 interviewees had a range of roles. There were three Woodland Officers, three Development Woodland Officers (DWO), and three Enforcement Officers. The remaining four interviewees were an Engagement Officer, a Marketing and Communications Manager, a Field Team Manager and an Ecologist. The regularity of site visits differed considerably between roles, with some on multiple sites on numerous days every week, and others only rarely being out on site. While some worked in specific regions of England, others held roles that covered the whole of England. Also, some had site visits that were always (or nearly always) woodland or forest, others covered mainly forest and farmland, while others still could visit almost any type of landscape or habitat where trees are found, including urban and urban fringe. Finally, while the DWOs were newly recruited apprentices, and the Enforcement Investigators were all part of a new team, other post holders had been

within the Forestry Commission for decades. Hence, the interviewees were a diverse sample of Forestry England employees.

6 Knowledge, understanding and awareness of biosecurity

6.1 Questionnaire findings

Two questions were asked of questionnaire respondents, regarding their level of knowledge, before and after the training. These were:

- Invasive non-native species are considered to be “biosecurity threats”. What would you say is your level of knowledge about the potential impact of invasive non-natives?
- What would you say is your level of knowledge of biosecurity?

Self-reported knowledge of both biosecurity and the impact of invasive species improved after the training³. For example, in the baseline survey 41% and 33% of respondents reported their knowledge (of biosecurity and invasive species respectively) to be ‘good’; in the follow up results this had risen to 76% and 74% (table 2).

Table 2: Self-reported knowledge of biosecurity and invasive species before and after training

	Knowledge of biosecurity		Knowledge of invasive species	
	Baseline %	Follow up %	Baseline %	Follow up %
Excellent	5	17	7	19
Good	41	76	33	74
Reasonable	36	-	44	-

³ Please note when interpreting these results that the ‘reasonable’ knowledge option was not available in the follow up questionnaire.

Poor	17	7	16	7
None	1	0	0	0

Respondents were also asked about their knowledge of required biosecurity actions, before visiting a site, when on site, and prior to leaving site. Again when comparing responses from the baseline with responses from the follow up, there are positive changes. For example, at the baseline, 21%, 21% and 19% said that they had a low level of knowledge of the required biosecurity actions (before arriving, on site, before leaving, respectively) compared to 4%, 5%, and 3% at the follow up (table 3)⁴.

Table 3: Knowledge of required biosecurity actions relating to site visits

	Baseline %				Follow up %			
	I have a good level of knowledge	I have a reasonable level of knowledge	I have a low level of knowledge	I have no knowledge	I have an excellent level of knowledge	I have a reasonable level of knowledge	I have a low level of knowledge	I have no knowledge
Before visiting a site?	30	48	21	1	41	55	4	0
When on site?	27	50	21	2	35	60	5	0
Before leaving a site?	35	45	19	1	45	52	3	0

Respondents were asked if they had heard of a number of biosecurity initiatives or campaigns. There was once again positive change in these responses, from the baseline to the follow up, with higher percentages of respondents saying they had heard of all four of the named campaigns in the follow up (Figure 1). For example,

⁴ Please note, slight difference in response options between the baseline and the follow up

at the baseline, 62% said they had heard of 'Keep it Clean', but at the follow up, 89% said they had.

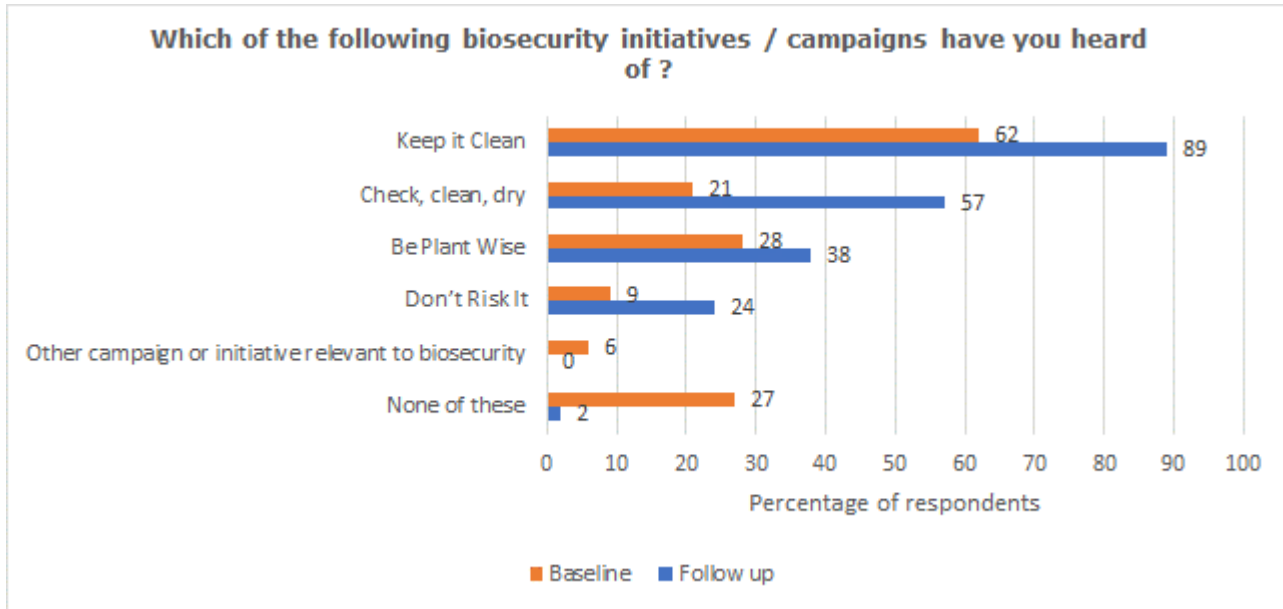


Figure 1: Heard of biosecurity initiatives?

Before and after the training, questionnaire respondents were asked whether they needed to know more about a range of specific issues related to biosecurity. The results are included in Figure 2. Out of 10 detailed sub-topics only one – “How to recognise invasive species / pests / diseases” – showed an increase in the percentage of people who wanted to know more following the training.

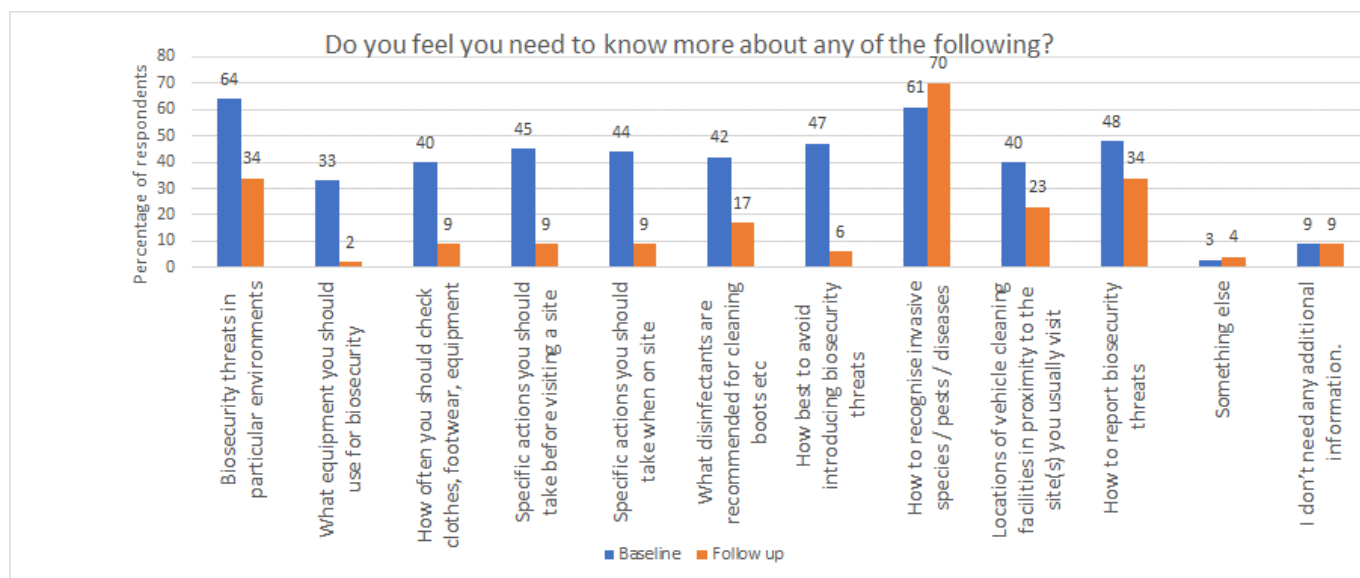


Figure 2: Do you feel you need to know more about any of the following?

As well as asking respondents to self-report their level of knowledge before and after the training, there were three questions included only after the training that asked if they felt their level of knowledge had changed. These questions were in relation to 1) the impacts of invasive, non-native species, 2) biosecurity, and 3) the biosecurity behaviours and actions required for site visits. In all cases, a large majority of respondents said there had been a slight or significant change since the training (table 4). The respective percentages for 'significant change' for the three areas of knowledge were: 29%, 40% and 41%.

Table 4: Since the training do you feel your level of knowledge has changed in relation to ...

	Impacts of invasive non-native species? %	Biosecurity? %	Biosecurity behaviours/ actions for site visits? %
Significant change	29	40	41
Slight change	60	53	52
No change	11	7	7

Overall, the findings reported in this section show significant improvements in respondents' self-reported knowledge, and positive responses with regard to respondents' own opinion about changes in their knowledge following the training.

6.2 Interview findings

The in-depth interviews that followed on from the questionnaires enabled a deeper investigation of what specifically those receiving the training felt they had learned, and how their knowledge had developed as a result. There are some highlights mentioned here, including some of the key areas where knowledge had improved.

Some interviewees reported that they had developed better knowledge of how to identify specific tree health problems (eg *P. ramorum*). They also valued having learnt more background information about different pests and diseases, and some of the causes. This helped them to understand in-depth about different pests and diseases. To add to this interviewees commented that they now had a better understanding of the potential impact of pests and diseases and how they can spread, including better understanding of how easily pests or diseases can be spread from one site to another, something they had not necessarily previously considered. One interviewee reported that they now realised the importance of looking up something if a tree or trees look unhealthy or if there is something that they cannot recognise. They noted that previously they might just take a photograph and think it was something a bit different or interesting (i.e. a different pest or fungus) but that now they realised it was important to investigate it and know how to report a potential tree health threat. Some of the interviewees found it useful to have some background context as to why their own biosecurity actions are important. They also noted the importance of learning how they could personally minimise the risk of transmitting a threat to tree health. Hence the new knowledge they had was in understanding the importance of their own personal biosecurity behaviours to minimise the threat of spread. Where interviewees had

existing knowledge of biosecurity it was useful to have that awareness heightened, to get updated information, and to understand the science better, that is, to have a refresher, and learn about new threats. They also developed understanding of potential routes of introduction, i.e. through imports (commercial, individual travellers or accidental) at the border, which again was new knowledge found to be of value to some. A key finding from the interviews was that the knowledge gained through the training in relation to the ease with which pests are introduced and spread and the potential gravity of the consequences, increased interviewee's motivations to carry out biosecurity behaviours. Hence, increased awareness led to increased adoption of consistent behaviours.

6.3 Remaining knowledge needs

Remaining knowledge needs were identified in the interviews:

- Wider knowledge beyond the commonplace pest and diseases, a more comprehensive understanding of biosecurity threats to be aware of.
- More pest and disease identification skills.

There was concern expressed that some people do not realise how serious the consequences could be of not doing positive biosecurity, and hence this lack of awareness was identified as a barrier. Highlighted as a possible way to address this was the need to improve messaging and heighten understanding about the seriousness of the impacts if good biosecurity is not applied.

7 Actions and behaviours

7.1 Questionnaire findings

As well as asking about knowledge and awareness, the questionnaires included questions about biosecurity actions and behaviours. Again, respondents were asked identical questions before and after the training to see if responses changed, and were also asked to self-report any changes following the training.

First, they were asked how frequently they carry out a range of actions before any site visit. This question was asked before and after the training. Following the training, the results show a reduction in the percentage of respondents saying they 'never' do the actions in question (figures 3 & 4). For example, in the baseline responses 24% said they never carry out a check list of biosecurity equipment before a site visit; in the follow up this was 17%.

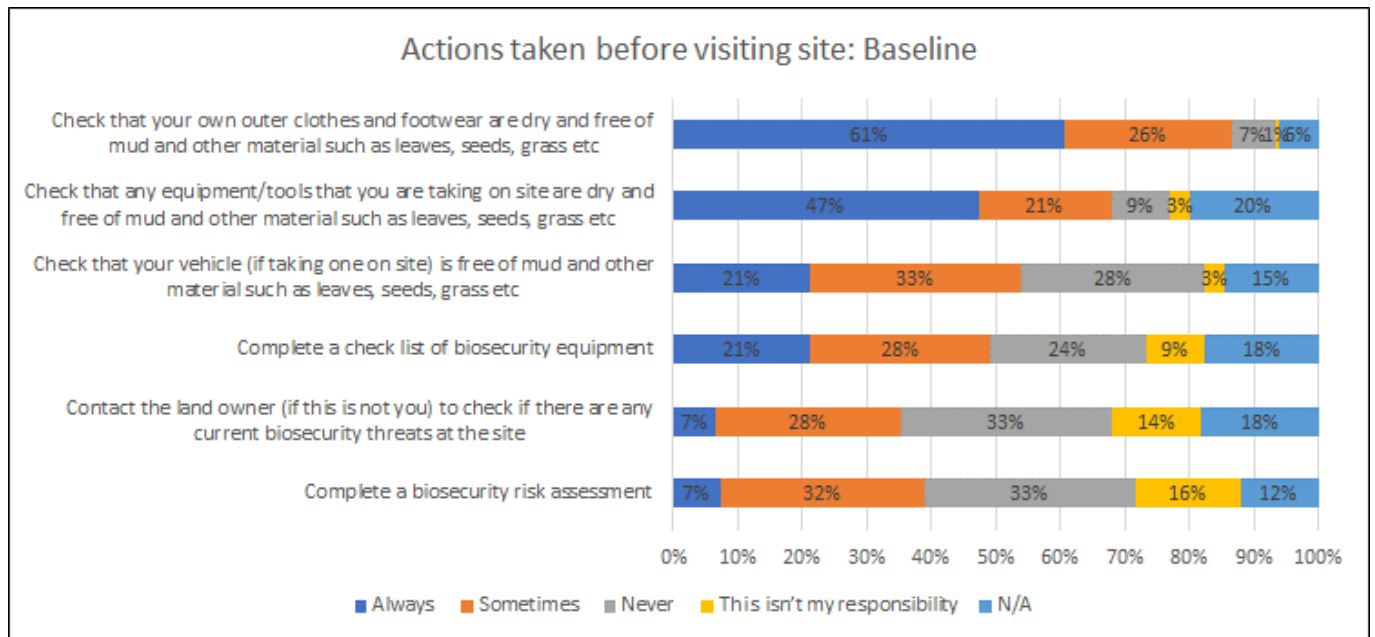


Figure 3: Frequency of taking actions before a site visit (baseline) (percentage of respondents)

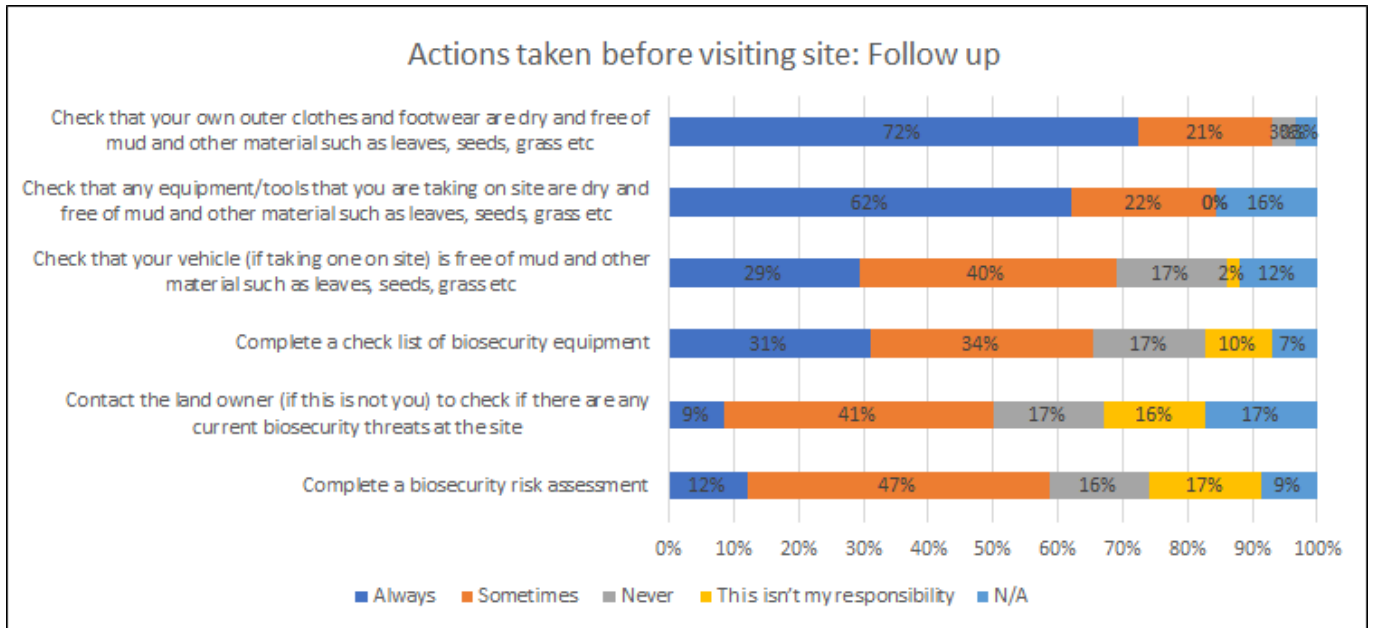


Figure 4: Frequency of taking actions before a site visit (follow up) (percentage of respondents)

Next, survey respondents were asked how frequently they undertake certain biosecurity actions when on site. This time, there is an increase in the percentage of respondents saying they 'always' do such actions, in the follow up survey. For example, in the baseline, 50% of those respondents arriving in a vehicle said they made sure they parked on hard standing if possible. In the follow up this increased to 79% (Figures 5 & 6).

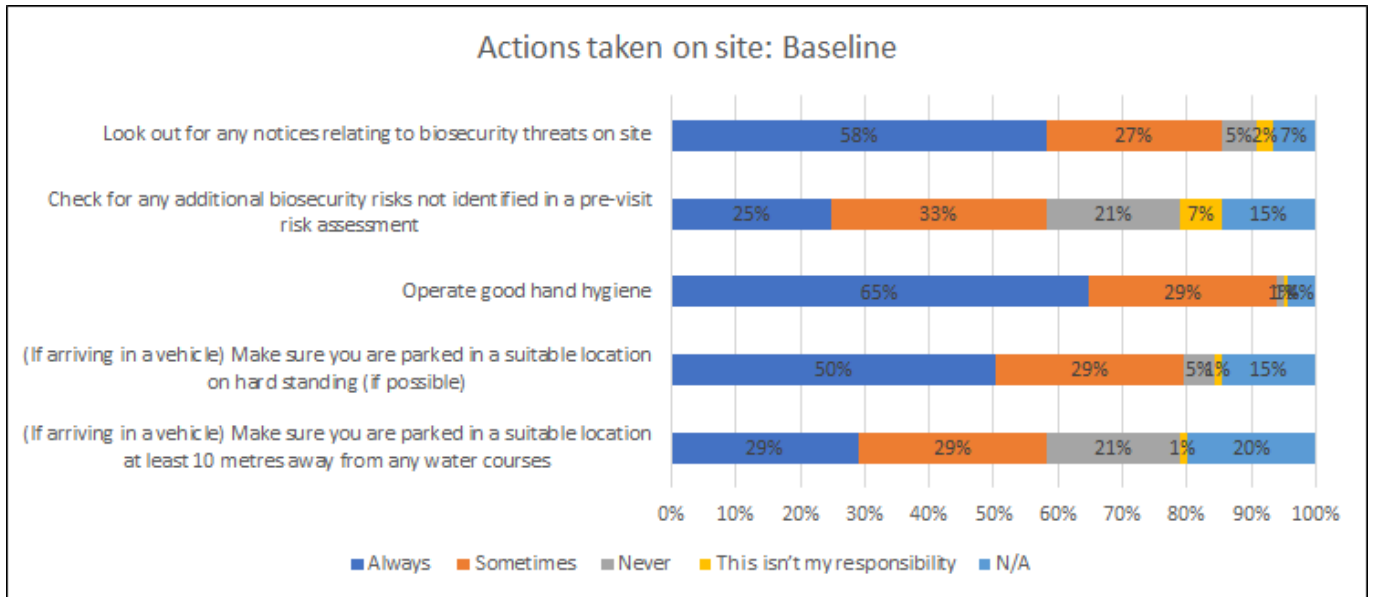


Figure 5: Frequency of taking actions when on site (baseline) (percentage of respondents)

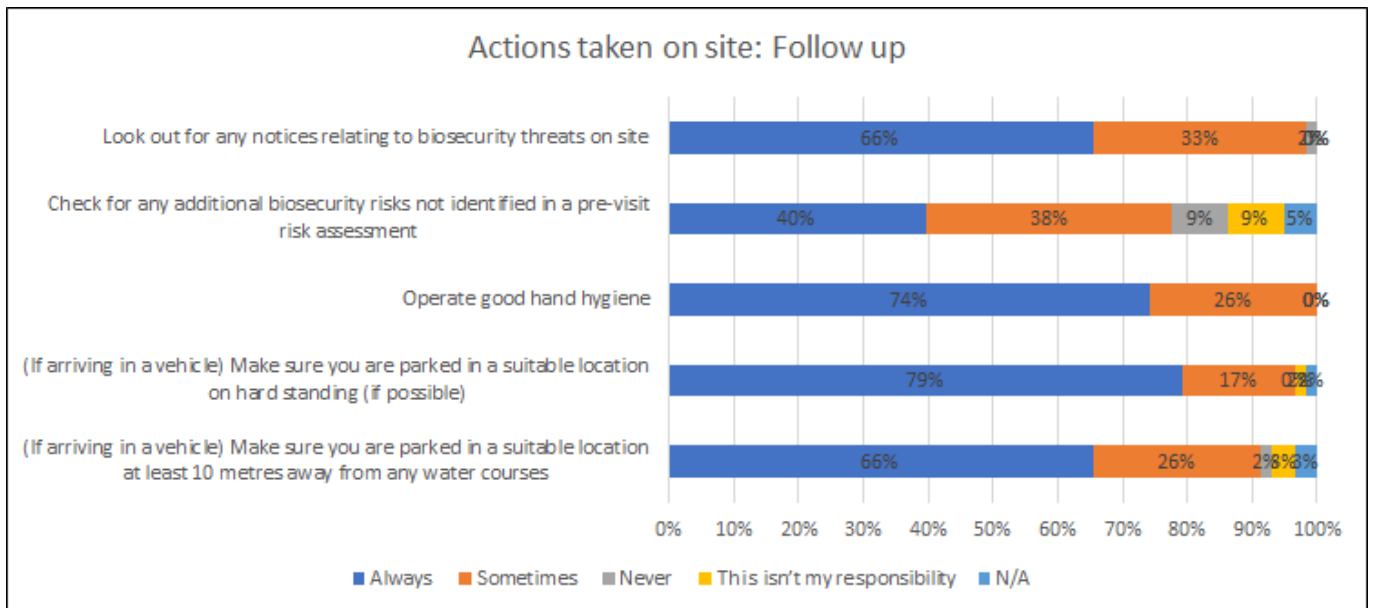


Figure 6: Frequency of taking actions when on site (follow up) (percentage of respondents)

Finally, respondents were asked in both questionnaires how frequently they carry out certain biosecurity actions before leaving the site. Results show some increase in the percentage of 'always' responses following the training, particularly with

regard to cleaning footwear, clothing, equipment and tools (Figures 7 & 8).

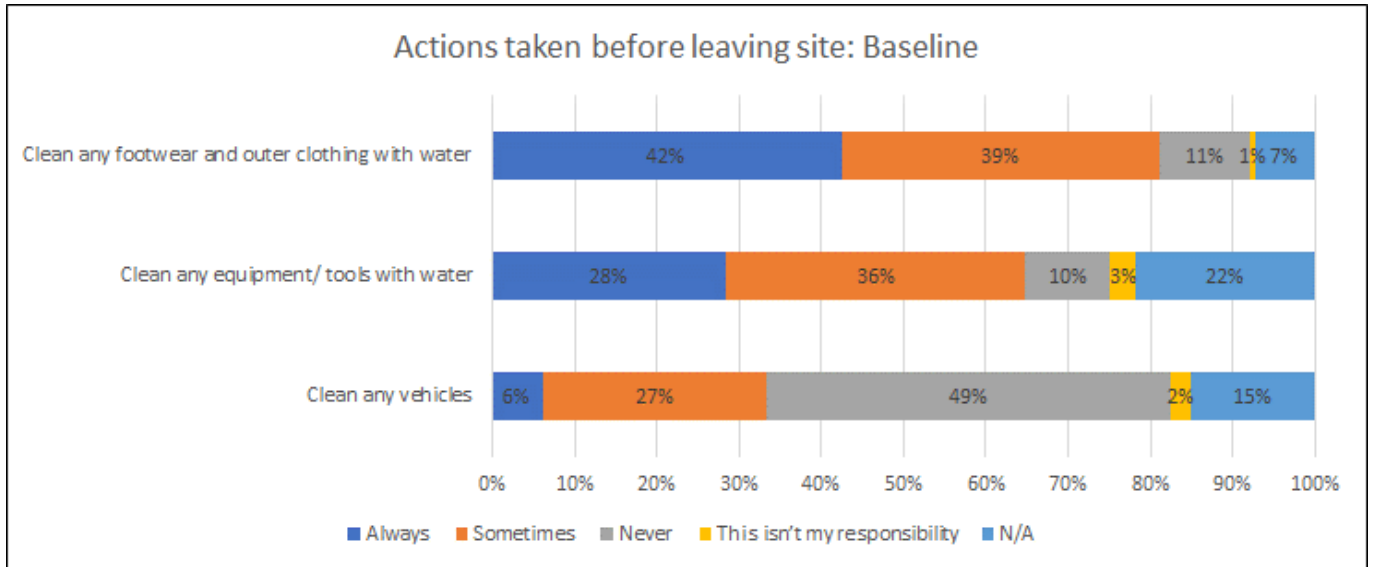


Figure 7: Frequency of taking actions before leaving site (baseline) (percentage of respondents)

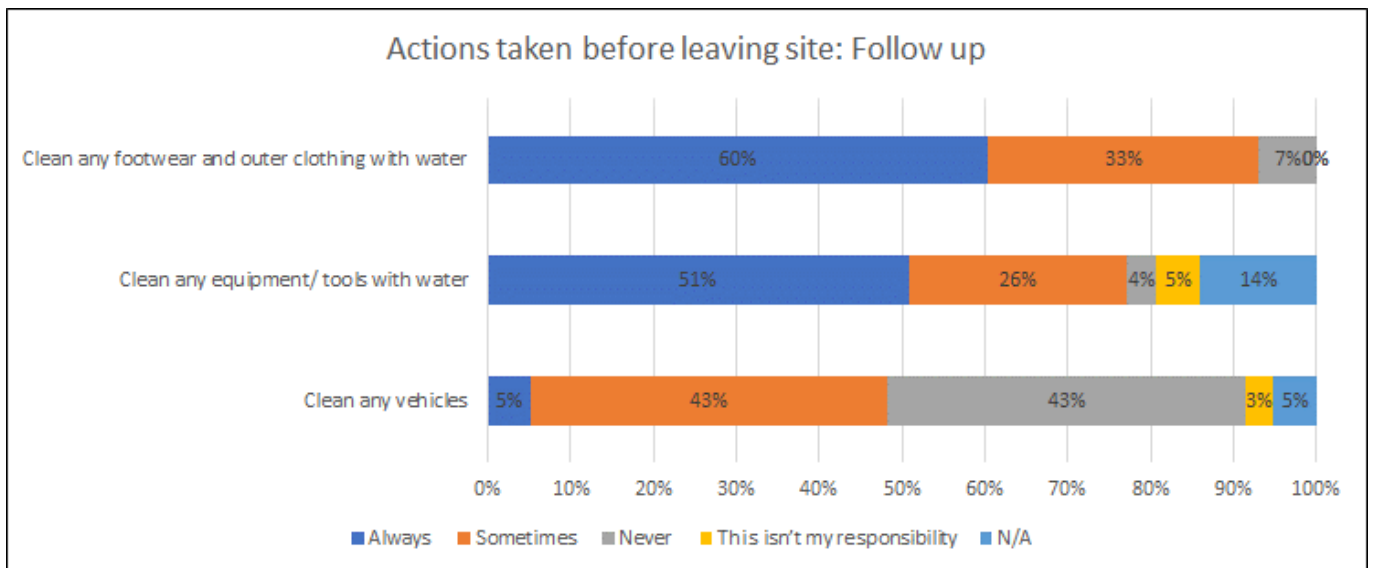


Figure 8: Frequency of taking actions before leaving site (follow up) (percentage of respondents)

Respondents were asked in the follow up questionnaire whether there had been any change in the biosecurity actions they take for site visits since the training. With regard to actions taken before visiting a site 63% said yes, actions taken when on site 56% said yes, and before leaving a site 61% said yes. They were then asked in

an open ended question to provide some details about what had changed. There were a number of themes that arose from respondents' answers to this question (table 5). The themes include actions around risk assessment and advance planning, time management and provision of equipment, as well as specific behaviours being applied more thoroughly and consistently.

Table 5: Examples of improvements in biosecurity actions

Theme	Illustrative quotes from open ended responses
More actions around biosecurity risk assessing	<p><i>"I conduct an informal biosecurity risk assessment before going to site. On site I ask biosecurity questions of landowners and agents."</i></p> <p><i>"Contact agent prior to meeting to establish if any biosecurity risks apply to site."</i></p>
Better planning for site visits	<p><i>"Better planning for visiting sites given possible transmission routes. This could include visiting high risk sites after low risk, route choice when on site".</i></p>
More thorough biosecurity actions	<p><i>"Greater awareness of the threats, and the required mitigation means I am more thorough and assiduous with my actions, particularly boot cleaning".</i></p>
More consistency in carrying out biosecurity actions	<p><i>"I think I am undertaking the same tasks as I did prior to the training, but now undertaking these for every site visit rather than a subset.";</i></p> <p><i>"I am more aware of biosecurity preparations and the actions have become part of my routine, whereas before I was more likely to occasionally forget them."</i></p>
More cleaning of footwear	<p><i>"Cleaning footwear before and after being on site is something I didn't do.";</i></p> <p><i>"I make sure my boots are clean of any mud from other sites before attending site."</i></p>
Parking vehicles with biosecurity in mind	<p><i>"More conscious of where watercourses are in relation to parking my vehicle."</i></p> <p><i>"Making sure to take the time to find an appropriate parking space."</i></p>
Better biosecurity actions on site / dissemination to stakeholders	<p><i>"I am constantly checking on personal biosecurity hygiene when on site, which has also helped with my overall knowledge to pass on to landowners and agents."</i></p>

More likely to have biosecurity equipment	<i>"I have purchased a bucket, brush and water for my car."; "Equipment now provided to ensure thorough cleaning of equipment when on site."</i>
Better time management to enable biosecurity actions	<i>"Highlighted the importance of post site visit biosecurity which can be a challenge with agendas with tight timetables. A good learning point is to ensure meetings / visits have time allocated to both pre and post biosecurity."</i>

7.2 Interview findings

7.2.1 What had changed – Actions and behaviours

The in-depth interviews that followed the questionnaires again provided the opportunity to investigate in more depth what specifically had changed, in terms of actions and behaviours, since receiving the training.

There were some specific examples of particular actions that had changed, for example, some interviewees now leave the water used for washing boots on site (previously this had been taken away and disposed of elsewhere increasing the risk of spread); and some now park on hard standing on site whenever possible to avoid parking on verges where there would be greater risk of collecting dirt on vehicles and potentially transmitting pests and diseases that way.

Some interviewees mentioned that they are now more likely to remember to clean boots; and more likely to mention that it is necessary when organising events. They also commented that there is now a more conscious effort to carry out boot cleaning because they have in mind specific examples of why this is important (eg *P. ramorum*). Hence, the training had succeeded in getting biosecurity actions instilled into site visit routines, led to some being more diligent about biosecurity and helping it (biosecurity) become embedded for site visits (and personal activities in the countryside).

Some also noted a specific change in some biosecurity behaviours, for example, with reference to footwear. One person noted that previously they would put on a pair of boots at the start of the day and wear the same footwear all day. They now had a different pair of shoes for driving and only put work boots on once on site.

Another change noted by an interviewee with responsibility for site visits and events on site involving multiple people, was that they now always make sure there are boot washing facilities. This action had also now become routinely included in any briefing documents being sent out to staff prior to attending.

7.2.2 How to encourage biosecurity actions

Some interviewees expressed an opinion that it is important to 'set a good example' and that if FC staff are seen to be carrying out positive biosecurity actions this can lead to others (either from the public or other organisations) following suit. As one interviewee put it "*If we do it and people see us do it then more will also do it*". One way this can happen if people see certain actions being carried out and are interested enough to ask what are you doing and why, it provides the opportunity to cascade knowledge and potentially generate additional change in others' behaviours.

Being seen to carry out certain positive biosecurity actions can also serve as a reminder to other colleagues on site and this again serves as a way of cascading actions at a particular moment or event. As an interviewee said this can mean that "*... before you know, the whole group of you will be doing the right thing and following the correct biosecurity procedure*".

7.2.3 Barriers & how to overcome them

Interviewees identified remaining barriers to improvements in biosecurity behaviours, and in some cases made suggestions for additional activities that could be useful for increasing positive biosecurity, either within their own teams and

organisation or more broadly, including the public, other organisations and stakeholders.

Some people who were interviewed stressed that one problem is that some do not see the point in striving to carry out biosecurity if others are not, since by themselves they cannot make very much of a difference. Alongside this was the view that some people will just not bother, hence this quote: *"People are lazy and if people don't really care or if they've got that mentality of like 'well you know there are millions of people walking around the UK not doing this so what difference am I going to make', it's easy to just not do it and that's a really big psychological hurdle, particularly to overcome with a group"*. Some interviewees noted that *"just us doing something positive will not make any difference"*.

These points underline the importance of extending biosecurity awareness raising much more broadly to reach other groups of people and hence make sure that any individual actions are part of a much wider application of good practice that collectively will make a positive difference.

One of the barriers identified by some was that, because of time pressures, it is not always feasible to clean everything between one site/woodland and the next, if moving around multiple sites in one day. It was recognised by some interviewees that the actions they are required to do need to be convenient, as if they are too involved and complicated, and take too long, they will not be applied.

A point that was raised by one interviewee was that change needs to happen at a strategic level, as illustrated by this quote: *"I think until you see a change at strategic level, dealing with it at an operational or tactical level is largely redundant"*.

Overall, interviewees felt that there is a need to explain why biosecurity is important and that providing detail about the context is important. It was felt that this would motivate more people to carry out biosecurity actions.

8 Concluding comments

The findings from both the questionnaires and the interviews show generally positive reported change in knowledge and awareness following the training, across all questions, regardless of how they were asked and what was the specific content. Reported changes in actions and behaviours were also positive but not so large. Importantly, the interviews made it possible to explore the issues in much more depth and have enabled the articulation of additional suggestions for actions to overcome barriers to implementing biosecurity.

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