

Tackling Invasive Non-Native Species in the UK Overseas Territories

Framework for biosecurity training

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1. Introduction

Training is an important component for officers and staff involved in biosecurity. This includes people specifically employed as biosecurity officers, those with biosecurity functions in their terms of employment, and also those involved in delivering or supporting biosecurity actions, such as customs staff, port authorities, and environmental conservation workers etc.

There is a wealth of material available on-line, mostly free, designed for various different sectors and purposes. It is difficult to know which materials are suitable to fit the biosecurity training needs in any one case. For new biosecurity officers, there is no one-stop-shop which delivers a full training package.

The intention of this training framework is to define the set of 17 topics on biosecurity principles and practices which together comprise a comprehensive training package appropriate for new biosecurity officers. It then identifies where there are on-line training tools available for each topic. People with different levels of interest can select the topics of most concern to them. The document is set out as follows:

- Overview of the biosecurity topics;
- Details of what is available on-line for each of the topics, and where there are powerpoint presentations available;
- Summary table of the on-line tools against each topic;
- Details of each on-line tool, its focus, where it can be found and what it covers.

1.2 Target audience

This training framework is intended for anybody working in biosecurity in a UK Overseas Territory: biosecurity officer, agricultural officer, customs officer, or environmental officer. The training is designed to be delivered to any level of post.

2. Overview of the biosecurity topics

Biosecurity training has three elements, each consisting of a number of topics:

1. Biosecurity principles
2. Biosecurity in practice
3. On-the-job training

2.1 Biosecurity basics – level 1

There are three topics in level 1 which together give an overview of invasive non-native species and the theory behind biosecurity. The content covered in these modules is basic and applicable for all new staff, particularly those with a non-technical and non-biological background.

At the end of the training the officer will:

- Understand the concept of invasive non-native species;
- Be able to provide examples of invasive non-native species from both within and outside their territory;
- Understand the principles behind biosecurity.

Topics:

1. Introduction: the concept of invasive non-native species
2. How species arrive
3. The principles of preventing the arrival of new species

2.2 Biosecurity in practice – level 1

There are seven topics which show how the principles outlined in *Biosecurity basics* are applied in practice. The content covered in these topics is applicable for all officers involved in delivering biosecurity at the border or post-border.

At the end of the training the officer will:

- Be confident in making effective decisions relating to the implementation of biosecurity in their territory;
- Be capable of actively engaging the community and key stakeholders in delivering biosecurity;
- Be able to advise line managers on biosecurity issues;

Topics:

4. Plant health biosecurity procedures: pre-border and border controls
5. Animal health biosecurity procedures: pre-border and border controls
6. Treatments of infested commodities
7. Marine biosecurity
8. Post-border monitoring and rapid response
9. Communication and awareness: engaging the community and stakeholders
10. Data collection, and establishing key performance indicators

2.3 Biosecurity in practice – level 2

There are four topics which cover material of concern for more senior biosecurity officers, responsible for delivering biosecurity across the territory.

At the end of the training the officer will:

- Be aware of international legislation and agreements which affect delivery of biosecurity; in their territory;
- Know the legislation for their territory relevant to the delivery of biosecurity;
- Be capable of critically reviewing and revising the biosecurity programme;
- Be able to advise government and stakeholders on biosecurity issues;
- Know where to find information and advice in a range of technical areas.

Topics:

11. The international framework for biosecurity
12. Biosecurity legislation
13. Risk analysis, including pest risk analysis
14. Horizon scanning and pathway analysis

2.4 Biosecurity in practice – optional extras

In addition to the core topics in *Biosecurity basics* and *Biosecurity in practice* the following four additional topics may be of interest:

15. Developing a biosecurity policy and strategy
16. Agricultural entomology
17. Bee health

2.5 On-the-job training

On-the-job training should include:

- Biosecurity procedures and relevant local regulations: pre-border, border and post-border
- Plant and animal health inspections
- Marine biosecurity
- Biosecurity risk assessments

Note that this document doesn't provide on-the-job training tools as these are very specific to the Territory.

3. On-line training resources

3.1 Biosecurity basics – level 1.

Topic	On-line resources	Comments
1. Introduction: the concept of invasive non-native species	Module 1. Invasive species (GBNNSS)	Between the various modules, the Biosecurity Basics topics are reasonably well covered by on-line resources. GBNNSS module 3b is designed specifically for the Overseas Territories and takes a broad approach. The other modules are much more specific to either sector (eg forestry, conservation) or biosecurity system (Australian and New Zealand), but provide good examples of biosecurity in practice in different contexts. The Plant Health Alliance, UK, provides comprehensive training in plant health biosecurity from a UK and EU perspective.
2. How species arrive	Module 3b. Better Biosecurity for the Overseas Territories (GBNNSS)	
3. The principles of preventing the arrival of new species	<p>Forestry Commission, UK. Guidance for tree pests and diseases.</p> <p>Plant Health Alliance, UK. Plant Healthy Training Modules 2, 3 and 4.</p> <p>PHA Foundation course (BOLT: Plant Health Australia)</p> <p>Department of Conservation, New Zealand: Biosecurity at DOC</p>	

3.2 Biosecurity in practice – level 1.

Topic	On-line resources	Comments
4. Plant health biosecurity procedures: pre-border and border controls	<p>Module 3c. Biosecurity Inspections (GBNNSS)</p> <p>Guidance for tree pests and diseases (Forestry Commission)</p> <p>Plant Health Alliance, UK. Plant Healthy Training Modules 1, 3 and 4.</p> <p>Plant Health Australia Foundation course</p> <p>USDA risk-based sampling training manual</p> <p>IPPO farm worker training videos</p>	<p>On-line training available for the Biosecurity in Practice Level 1 components is patchy.</p> <p>The GBNNSS modules 3c is designed specifically for the Overseas Territories and covers primarily plant health procedures and inspections, as well as treatment of infested products. The course includes some coverage of communication & awareness, and data collection. The other modules covering plant health are much more specific to either sector (eg forestry, conservation) or Australian biosecurity. The USDA risk-based sampling training manual is very comprehensive.</p>
5. Animal health biosecurity procedures: pre-border and border controls	<p>IPPO farm worker training videos</p> <p>Murdoch University Global Biosecurity for One Health</p>	<p>The Plant Health Alliance, UK, provides comprehensive training in plant health biosecurity from a UK and EU perspective.</p>
6. Treatments of infested commodities	<p>Module 3c. Identification and recording (GBNNSS)</p> <p>Department of Conservation, New Zealand: Biosecurity at DOC</p>	<p>Murdoch University (Australia) provide free online training, covering biosecurity to protect human, animal and environmental health.</p>
7. Marine biosecurity	<p>Module 2. Biosecurity Inspections (GBNNSS)</p> <p>Module 4. Introduction to Invasive Non-native Species for Water Company Staff (GBNNSS)</p>	<p>The IUCN Guidelines document gives examples and a checklist of activities for engaging the community and decision makers.</p> <p>Training materials in animal health and post-border monitoring & rapid response are not well covered.</p>
8. Post-border monitoring and rapid response	<p>Biosecurity Online Training (BOLT: Plant Health Australia)</p>	<p>There are no on-line training courses on marine biosecurity, but the GBNNSS has two modules</p>

	<p>Guidance for tree pests and diseases (Forestry Commission)</p> <p>IUCN Guidelines document</p>	<p>which cover freshwater biosecurity, from a UK perspective.</p>
<p>9. Communication and awareness: engaging the community and stakeholders</p>	<p>Module 3c. Biosecurity Inspections (GBNNSS)</p> <p>FAO Biosecurity Toolkit Part 1</p> <p>IUCN Guidelines document</p>	
<p>10. Data collection, and establishing key performance indicators</p>	<p>Module 3c. Biosecurity Inspections (GBNNSS)</p> <p>FAO Biosecurity Toolkit Part 1</p> <p>IUCN Guidelines document</p>	

3.3 Biosecurity in practice – level 2.

Topic	On-line resources	Comments
11. The international framework for biosecurity	FAO Biosecurity Toolkit Part 1	The FAO Biosecurity Toolkit provides an overview of biosecurity from a global perspective.
12. Biosecurity legislation	Developing biosecurity legislation (GBNNS)	The GBNNS biosecurity legislation presentation is designed specifically for the Overseas Territories.
13. Risk analysis, including pest risk analysis	Better Biosecurity for the Overseas Territories (GBNNS) Plant Health Alliance, UK. Plant Healthy Training Module 2	The GBNNS Better Biosecurity module is designed specifically for the Overseas Territories and includes outlines of the topics of risk analysis and horizon scanning.
14. Horizon scanning and pathway analysis	Better Biosecurity for the Overseas Territories (GBNNS)	Plant Health Alliance, UK. Plant Healthy Training Module 2 takes a pest risk analysis approach to plant health. Guidance documents for gardens, nurseries and landscapers are also available.

3.4 Biosecurity in practice – optional extras.

Topic	On-line resources	Comments
15. Developing a biosecurity policy and strategy	IUCN Guidelines document	The IUCN Guidelines document provides some guidance towards developing invasive species management plans and biosecurity strategies.
16. Agricultural entomology	No on-line training available	
17. Bee health	Biosecurity Online Training (BOLT: Plant Health Australia)	<p>Plant Health Australia has a free course on Bee biosecurity, and a paid course on Biosecurity for Beekeepers.</p> <p>There are no on-line training courses on agricultural entomology.</p>

4. Summary of on-line resources available

Topics in Biosecurity Basics are blue, in Biosecurity in Practice Level 1 are green, and Biosecurity in Practice Level 2 are orange.

Organisation	Name of module	Comments	Core topics covered														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
GB Non-native Species Secretariat, UK (GBNNS)	1. Invasive species	UK focus	x	x													
	2. Identification & recording	UK focus							x								
	3. Biosecurity	UK focus	x	x	x												
	3b. Better Biosecurity for the Overseas Territories	Designed for the OTs	x	x	x											x	x
	3c. Biosecurity Inspections for the Overseas Territories	Designed for the OTs				x			x				x				
	4. Introduction to Invasive Non-native Species for Water Company Staff	UK focus									x						
	Developing biosecurity legislation	Presentation, designed for the OTs														x	
Forestry Commission, UK	Guidance for tree pests and diseases	Tree pests and diseases	x	x		x					x						

Topics in Biosecurity Basics are blue, in Biosecurity in Practice Level 1 are green, and Biosecurity in Practice Level 2 are orange.

Organisation	Name of module	Comments	Core topics covered													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Plant Health Alliance, UK	1. Regulations and controls	Plant health UK focus, pdf document				x										
	2. Harmful organisms & pest risk analysis	Plant health UK focus, pdf document	x													x
	3. Pathways of introduction and spread	Plant health UK focus, pdf document		x												
	4. Good biosecurity practices	Plant health UK focus, pdf document			x	x										
Plant Health Australia (PHA)	Biosecurity Online Training (BOLT)	Plant health for Australia	x	x	x						x					
	BOLT	Bee health														
Murdoch University (Australia)	Global Biosecurity for One Health	Australian focus, on-line course.					x									
Department of Conservation, New Zealand (DOC)	Biosecurity at DOC	New Zealand conservation focus	x	x	x			x								
United States Department of Agriculture (USDA)	Risk-based sampling online learning tool	By the North American Plant Protection Organisation				x										

Topics in Biosecurity Basics are blue, in Biosecurity in Practice Level 1 are green, and Biosecurity in Practice Level 2 are orange.

Organisation	Name of module	Comments	Core topics covered														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
International Plant Protection Convention (IPPO)	Short training videos	For Australian farm workers			x	x	x										
Food and Agricultural Organisation (FAO)	Biosecurity toolkit	Pdf document									x			x			
International Union for the Conservation of Nature (IUCN)	Guidelines for invasive species planning and management on islands	Pdf document									x	x	x				

5. Details of on-line resources

Organisation, modules and links for on-line biosecurity training courses.

Organisation	Name of module	Comments	Certificate ?
GB Non-native Species Secretariat Modules 1 – 4 are elearning modules. You are required to register and enrol for the elearning, after which all courses are available.	Module 1. Introduction to invasive non-native species	Designed for the UK. A basic introduction: <ul style="list-style-type: none"> • why they are an issue • what they are, and how many there are in Britain • what impacts they have • how they are introduced and spread • how we respond to them There is an optional assessment (10 multiple choice questions) and a certificate.	Yes
	Module 2. Identification and recording	Designed for the UK. Four topics covering: <ul style="list-style-type: none"> • why recording is important • what to include in a record • where to send records • identification of freshwater plants • identification of freshwater invertebrates • identification of riparian plants There is an optional assessment (10 multiple choice questions) and a certificate.	Yes
	Module 3. Biosecurity	Designed for the UK. A basic introduction covering: <ul style="list-style-type: none"> • why biosecurity is important 	Yes

		<ul style="list-style-type: none"> • how non-native species are spread • planning for biosecurity • practicing biosecurity in the field: <u>Check Clean Dry</u> <p>There is an optional assessment (10 multiple choice questions) and a certificate.</p>	
	Biosecurity for University field staff	The University of Leeds have developed a version of Module 3 for anyone carrying out field work as part of their research.	No
	Module 3b. Better Biosecurity for the Overseas Territories	<p>Designed specifically for the OTs and similar small jurisdictions. There are 5 topics:</p> <ul style="list-style-type: none"> • Why is biosecurity so important? • Biosecurity in action • Risk analysis • Pathway analysis • Horizon scanning <p>There is an optional assessment (10 multiple choice questions) and a certificate.</p>	Yes
	Module 3c. Biosecurity Inspections for the Overseas Territories	<p>Designed specifically for the OTs and similar small jurisdictions. There are 5 topics:</p> <ul style="list-style-type: none"> • Introduction to inspections • Interceptions • Inspecting produce and plants • Inspecting vehicles and machinery • Inspecting other cargo <p>There is an optional assessment (10 multiple choice questions) and a certificate.</p>	Yes

	Module 4. Introduction to Invasive Non-native Species for Water Company Staff	<p>Designed for the UK. Provides a basic introduction to invasive non-native species for water company staff, developed by the Check Clean Dry Partnership. There are 4 topics:</p> <ul style="list-style-type: none"> • What invasive non-native species are and the regulations governing them • Key species of concern to the water industry • What biosecurity is and how to follow good biosecurity at work • Where to find more information 	No
	Link: http://www.nonnativespecies.org/index.cfm?sectionid=123		
	Developing biosecurity legislation	<p>Designed specifically for the OTs and similar small jurisdictions. The resource is a powerpoint presentation covering the basics of biosecurity legislation, the international framework, and model biosecurity legislation.</p>	No
Link: https://secure.fera.defra.gov.uk/nonnativespecies/downloadDocument.cfm?id=2476 .			
<p>Forestry Commission, UK</p> <p>You are required to register and enrol for the online courses</p>	<p>Guidance to prevent the introduction and spread of tree pests and diseases</p>	<p>Designed to prevent tree pests and diseases from getting established, or to prevent or slow their spread and the damage they do. There are five modules:</p> <ul style="list-style-type: none"> • Module 1: Biosecurity awareness • Module 2: Biosecurity – dispersal pathways • Module 3: Biosecurity measures • Module 4: Biosecurity – personal controls • Module 5: Biosecurity – import and export requirements for wood packaging material <p>At the end of each module is a short test.</p> <p>There is also basic information on forestry biosecurity on the forestry Commission webpage.</p>	Yes

	<p>Links: elearning package can be accessed via the Forestry Commission's e-learning portal.</p> <p>Basic information: https://www.gov.uk/guidance/prevent-the-introduction-and-spread-of-tree-pests-and-diseases#e-learning</p>		
Plant Health Alliance, UK	Plant Healthy Training Modules	<p>Designed to promote plant health in the UK. There are very five comprehensive training modules on plant health and biosecurity from a UK government perspective, with relevance to the industry (pdf versions of PowerPoint presentations):</p> <ul style="list-style-type: none"> • Regulations and Controls • Harmful Organisms and Pest Risk Analysis • Pathways of Introduction and Spread • Good Biosecurity Practices • Training and Recognition <p>The site also includes guidance documents written in plain English to help a business achieve an 'Appropriate Level of Protection' by describing systems for statutory obligations for plant health and biosecurity, and doing pest risk analyses to control pests and reduce risk of pest introductions and outbreaks, for:</p> <ul style="list-style-type: none"> • Landscapers • Gardens • Garden Centres and plant retailers • Nurseries • Arboriculture <p>There is also a UK Plant Health Information Portal, with a wealth of information, including the Plant Biosecurity Strategy for Great Britain, and contingency plans for a range of plant pests and diseases.</p>	No
<p>Link: https://planthealthy.org.uk/resource-topics/plant-healthy-training-modules</p>			

<p>Plant Health Australia (PHA)</p> <p>You are required to register for the courses.</p>	<p>Biosecurity Online Training (BOLT)</p>	<p>Designed specifically for the Australian biosecurity system.</p> <p>BOLT provides free access to e-learning courses related to plant biosecurity. There are seven courses available:</p> <ul style="list-style-type: none"> • PHA Foundation course • National EPP Response Management • Growers – Pest Reporting and Responses • Researchers – Pest Reporting and Responses • Bee Biosecurity Awareness • Biosecurity for Beekeepers • Managing giant pine scale in Victoria <p>Access is free (apart from the Biosecurity for Beekeepers course) and available to anyone.</p>	<p>No?</p>
<p>Link: http://www.planthealthaustralia.com.au/resources/training/biosecurity-online-training/</p>			
<p>Murdoch University, Australia</p>	<p>Global Biosecurity for One Health</p>	<p>The on-line course is part of the Global Biosecurity programme, which can lead to a degree. Learn about the drivers, activities and collaborative networks that protect human, animal and environmental health:</p> <ul style="list-style-type: none"> • Why we need biosecurity • What drives biosecurity • Terminology • Impact of outbreaks • One Health and biosecurity • Citizen scientists • Promoting biosecurity in the community • Government and industry approaches to biosecurity • Communicating incursions and outbreaks 	<p>Yes</p>

		Access is free. Other courses in the programme are available.	
	Link: https://www.futurelearn.com/courses/global-biosecurity#which-program-expanded		
Department of Conservation, New Zealand Government	Biosecurity at DOC	<p>Designed for internal biosecurity for conservation This free online course has been developed to introduce the concept of biosecurity and how it relates to DOC's core work. It covers:</p> <ul style="list-style-type: none"> • Why biosecurity is important • Some examples of checking goods for pests and weeds • How you can help (prevent, investigate, report) • What the 'biosecurity system' entails • The agencies involved and their roles and responsibilities. 	No
	Link: https://www.doc.govt.nz/get-involved/training/online-courses/biosecurity-at-doc-online-course/		
United States Department of Agriculture	A learning tool for North American Plant Protection Organisation members	Training manual on risk-based sampling and inspections developed by USDA. An interactive module with exercises. A sample size calculator is also available on this site.	No
	Link: http://www.nappo.org/index.php?cID=967		
International Plant Protection Convention	Short biosecurity videos for Australian farm workers	<p>Six short biosecurity videos (also available as transcripts) relevant to internal plant health developed by Australia:</p> <ul style="list-style-type: none"> • On-farm biosecurity • Animal biosecurity • Plant Biosecurity • Small farm biosecurity • Equipment biosecurity • Biosecurity for Travelling Farm Workers 	No
	Link: https://www.ippc.int/en/core-activities/capacity-development/guides-and-training-materials/contributed-resource-detail/plant-biosecurity-videos/		

Food and Agricultural Organisation	Biosecurity toolkit Part 1. Biosecurity principles and components.	<p>A pdf document providing an overview of biosecurity from a global perspective:</p> <ul style="list-style-type: none"> • What is biosecurity? • Rationale for a harmonised and integrated approach to biosecurity • Biosecurity in a modern world • Harmonisation and integration of approaches to biosecurity 	No
Link: http://www.fao.org/docrep/pdf/010/a1140e/a1140e01.pdf			
International Union for the Conservation of Nature	Guideline for invasive species planning and management on islands	A pdf document which covers a set of guidelines for invasive species management. There is a checklist of necessary actions, and examples of “how to”.	No
https://portals.iucn.org/library/sites/library/files/documents/2018-030-En.pdf			