Title	**Demonstrate knowledge of forest health protection**		
Level	**4**	**Credits**	**5**

Purpose	People credited with this unit standard are able to demonstrate knowledge of: forest protection regulations, authorities, and research facilities; the potential risk to New Zealand forests, trees, and wood from fungi and insects not yet established in New Zealand; insects, fungi, and abiotic agents affecting forests, trees, and wood in New Zealand; forest protection strategies and methods of detecting potentially injurious agents; assessment, control, and management methods associated with injurious, or potentially injurious, insects, fungi, and abiotic agents affecting trees, forests, and wood in New Zealand. This unit standard is recommended for entry to some of the unit standards in the Forest Health Surveillance domain. The knowledge and skills detailed in this unit standard can be applied to the protection of plantation, native or urban forests, and also to forest produce. This unit standard may be used to recognise the knowledge and skills required for forest managers' general overview of forest surveillance.

Classification	Forestry > Forest Health Surveillance

Available grade	Achieved

Guidance Information

1 Legislation relevant to this unit standard includes the Biosecurity Act 1993, the Hazardous Substances and New Organisms (HSNO) Act 1996, and any subsequent amendments.

2 References
Exotic Pests and Diseases of Pine not wanted in New Zealand (2003). FRI Bulletin 227, available at https://www.scionresearch.com/.
An Introduction to the Diseases of Forest and Amenity trees in New Zealand. FRI Bulletin 220, available at https://www.scionresearch.com/.
Field Guide to Common Pests, Diseases, and other Disorders of Radiata Pine in New Zealand (referred to as the Field Guide in this standard). FRI Bulletin 207, available at http://www.scionresearch.com/.
New Zealand Institute of Forestry. *Forestry Handbook* (referred to as the Handbook in this standard), available at http://www.nzif.org.nz/.

3 Definition
Forest Health Database refers to the database managed by the Forest Health Reference Laboratory at Scion used to store records of forest health inspections and samples.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of forest protection regulations, authorities, and research organisations.

Performance criteria

1.1 Legislation is explained in terms of how it provides protection for New Zealand forests.

Range Biosecurity Act, HSNO Act.

1.2 The legal powers authorised by the Biosecurity Act are described in terms of the development of national and regional pest management strategies.

1.3 The functions of the organisations involved in forest and plant protection in New Zealand are explained in accordance with the Handbook.

Range New Zealand Forest Health Research Collaborative, Forest Biosecurity Consultative Committee, Ministry of Primary Industries, New Zealand Forest Owners' Association – Forest Health Committee.

Outcome 2

Demonstrate knowledge of the potential risk to New Zealand forests, trees, and wood from fungi and insects not yet established in New Zealand.

Performance criteria

2.1 The factors affecting the survival of a new organism in New Zealand forests are described in accordance with the reference texts.

Range host, climatic conditions.

2.2 The experience and case history of forest insects and fungi from other countries which are potentially threatening to New Zealand trees, forests, and wood are outlined in accordance with the reference texts.

Range one example each of – a bark beetle, an insect defoliator, a wood borer, a fungus causing defoliation, a rust, a root pathogen.

2.3 The main variables affecting the likelihood of a new pest becoming established in New Zealand forests, both plantation and native, are described in accordance with the reference texts.

Range proximity of forests to import entry points, narrow species diversity, climatic conditions, transport infrastructure, silvicultural regime, transitional facilities.

2.4 The different risk ratings of Forest Health Biological Regions are identified and the reasons for their classification are explained in accordance with the Handbook.

2.5 The potential biological effects and economic impacts of an incursion of an insect or fungus afflicting New Zealand's plantation and/or native forest tree species are explained in accordance with the reference texts.

Range one example each of – an injurious insect, an injurious fungus.

2.6 The potential economic impacts of an epidemic of an injurious insect or fungus introduced from other countries that afflicts wood in service within New Zealand and/or contaminates New Zealand forest product exports is explained in accordance with the reference texts.

Range one example each of – an injurious insect, an injurious fungus.

2.7 The resources and cost of controlling recent incursions are discussed in relation to the potential risk in terms of the Handbook and the reference texts.

Range White-Spotted Tussock Moth, Asian Gypsy Moth, Painted Apple Moth, Pine Pitch Canker.

Outcome 3

Demonstrate knowledge of insects, fungi, and abiotic agents affecting forests, trees, and wood in New Zealand.

Performance criteria

3.1 Significant insect pests within New Zealand plantation forests are identified, symptoms are described and control methods explained for each identified insect pest in accordance with the Field Guide and the reference texts.

Range four insect pests to be identified.

3.2 Significant fungal diseases within New Zealand plantation forests are identified, symptoms are described and control methods explained for each identified fungal disease in accordance with the Field Guide and the reference texts.

Range three fungal diseases to be identified.

3.3 A significant insect found in forest produce in New Zealand is identified, symptoms are described and control methods explained for the identified insect in accordance with the Field Guide and the reference texts.

3.4 A significant fungus found in forest produce in New Zealand is identified, symptoms are described and control methods explained for the identified fungus in accordance with the Field Guide and the reference texts.

3.5 Tree health symptoms caused by factors other than insects and fungi in New Zealand native and plantation forests are identified in accordance with the Field Guide and the reference texts.

Range four symptoms to be identified.

Outcome 4

Demonstrate knowledge of forest protection strategies and methods of detecting potentially injurious agents.

Performance criteria

4.1 Methods used to minimise the introduction of insects and fungi to New Zealand are described in accordance with the Handbook.

Range international agreements on phytosanitary standards with exporting countries, advice to shipping companies, advice to exporters and importers, banning importation of specific items.

4.2 New Zealand border quarantine detection methods used to prevent the entry of insects and fungi from other countries that could afflict trees, forests, and wood in New Zealand are described in accordance with the Handbook.

Range Ministry of Primary Industries Import Health Standards, border inspection, border surveillance.

4.3 Methods employed to detect newly introduced insects and fungi in New Zealand’s native and plantation forests are described in accordance with the reference texts and the Handbook.

Range High Risk Site Surveillance, forest surveillance, forest nursery surveillance.

4.4 The interrelationship of the three elements of New Zealand's forest protection strategy is described in accordance with the Handbook.

Range the three elements include – offshore quarantine, border quarantine inspection, forest health surveillance.

4.5 The roles of government agencies and other organisations in supporting the protection of New Zealand forests are explained in accordance with the Handbook.

Range agencies and organisations include – Ministry of Primary Industries, Ministry of Foreign Affairs and Trade, Environmental Protection Authority, New Zealand Forest Research Institute Limited (Scion), Regional Councils, Department of Conservation, New Zealand Customs Service, New Zealand Forest Owners' Association.

4.6 The information that is required to populate the four main tables of the Forest Health database is identified, and the main use of the database is explained in accordance with the reference texts and the Handbook.

Range database tables include – site, disorder, inspection, identification.

Outcome 5

Demonstrate knowledge of assessment, control, and management methods associated with injurious, or potentially injurious, insects, fungi, and abiotic disorders affecting trees, forests, and wood in New Zealand.

Performance criteria

5.1 The purpose of conducting surveys to monitor the distribution and behaviour of established insects, fungi and abiotic disorders is explained in accordance with the reference texts and the Handbook.

5.2 Methods used to assess, control, and manage an insect and a fungus affecting forests in New Zealand are described in accordance with the reference texts and the Field Guide.

Range one example for an introduced insect and one for an introduced fungus from the Field Guide.

Planned review date	31 December 2028

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 February 1997	31 December 2017
Review	2	29 August 2001	31 December 2017
Review	3	17 September 2010	31 December 2017
Review	4	10 December 2015	N/A
Rollover and Revision	5	28 May 2020	N/A
Rollover	6	26 April 2024	N/A

Consent and Moderation Requirements (CMR) reference	0173

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Muka Tangata - People, Food and Fibre Workforce Development Council qualifications@mukatangata.nz if you wish to suggest changes to the content of this unit standard.