Scottish Forestry
Coilltearachd na h-Alba

Maintenance of a Pest Free Area

The west of Scotland pest-free area for *Dendroctonus micans*, *Ips cembrae* and *Ips sexdentatus*

2021 - 2026

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Scottish Forestry is the Scottish Government agency responsible for forestry policy, support and regulation

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Contents

1. Introduction and Background

This dossier describes how the UK plant health services operate and maintain the Pest Free Area (PFA) for the following three PFA quarantine pests in the west of Scotland;

- *Dendroctonus micans*
- *Ips cembrae*
- *Ips sexdentatus*

Scottish Forestry (SF) maintains a PFA in line with International Standards for Phytosanitary Measures (ISPM), specifically ISPM 4; *'Requirements for the establishment of pest free areas; Uninfested part of a Country in which a limited Infested Area is present'*

Details of the biology and lifecycle of the pests are given at Appendix 1.

A Research Report that describes and assesses the threats posed by bark beetles in the genus *Ips* that are of concern in relation to maintaining this PFA; 'The threat to UK conifer forests posed by Ips bark beetles' by Hugh Evans and published in 2021, is available on the Forest Research website here.

1.1 Roles and responsibilities

Department for Environment, Food and Rural Affairs (Defra)

The function of the UK National Plant Protection Organisation (NPPO) is provided by Defra, which represents the United Kingdom of Great Britain and Northern Ireland (UK) in international and European fora. The head of the NPPO is the Chief Plant Health Officer (CPHO).

Within this paper the UK plant health services is a generic description of the four national authorities which co-operate to provide plant quarantine and plant certification services in England, Wales, Scotland and Northern Ireland.

Scottish Government (SG)

In Scotland, Scottish Ministers have responsibility for tree and plant health policy and legislation. Scottish Forestry advises Scottish Ministers and implements plant health forestry policy and official controls. The Scottish Government provides policy advice on plant health and plant and seed certification and plays a major part in UK representation on matters relating to seed potato certification.

Inspection for imports, export and surveillance is undertaken by the Scottish Government's Horticulture and Marketing Unit except that inspections relating to potatoes are carried out by inspectors of the Scottish Government's Agriculture and Rural Delivery Division.

A Memorandum of Understanding has been agreed between respective Governments to deliver a range of plant health (forestry) cross-border activities. For further detail on forestry and cross-border activity, see below section on 'Forestry Commission'.

Scottish Forestry (SF)

Scottish Forestry is the Scottish Government agency responsible for forestry policy, regulation, grants incentives, technical forestry advice and new cross-border arrangements with other GB administrations. Scotland has 1.4 million hectares of forest that Scottish Forestry regulates, supports and promotes. As part of its effort to manage tree health to help safeguard the resilience of forestry, Scottish Forestry works with partners to understand the biology of pests and diseases and learn how to combat or live with them, uses tree health inspectors to undertake aerial and ground surveillance of Scotland's woodlands to spot early signs of tree health issues, and helps to inform importers and exporters of the relevant regulations and restrictions. Scottish Forestry also issues Statutory Plant Health Notices (SPHNs) when necessary, requiring that woodland owners act to contain or slow down pest or pathogen outbreaks, and further supports land owners by providing targeted tree health grants via the Forestry Grant Scheme offering financial support for the sustainable management of existing woodland.

Department of Agriculture Environment and Rural Affairs (DAERA)

In Northern Ireland, the DAERA Plant Health Directorate, under the overall direction of the Minister for Agriculture, Environment & Rural Affairs, has authority and responsibility for plant health matters including policy, legislation and the implementation of official controls across agriculture, horticulture, forestry and wood products. This includes responsibility for: the implementation of official controls for plant health; import and export inspections; plant passporting; phytosanitary certification to facilitate trade; in-country surveillance; certification services for seed potatoes; and regulation & enforcement across agriculture, horticulture and forestry.

Scientific support and evidence is provided under an Assigned Work Programme with the Agri-food and Biosciences Institute (AFBI). The Plant Health Directorate works with partners in the UK plant health services and the Republic of Ireland to evaluate and manage the risk of priority pests and diseases identified on the recently published Northern Ireland Plant Health Risk Register.

DAERA is represented on the various governance bodies that underpin this Framework, including the Plant Health Risk Group, where that Group can advise on technical matters to support decision making by DAERA, having due regard for the NI Protocol. DAERA also contributes to UK-focused discussions within such groups including matters which affect UK and international trade and trade in Qualifying Northern Ireland Goods. For reserved matters which affect GB biosecurity DAERA will have observer status. For matters concerning trade and international strategy, DAERA will contribute through representation on the NPPO and the Market Access Working Group.

Formal North South Ministerial Council arrangements provide a context for mutual cooperation and a shared responsibility for plant health on the island of Ireland. A Plant Health & Pesticides Steering Group oversees an annual work programme, which enables DAERA and the Department of Agriculture, Food and the Marine (DAFM) to develop shared strategic partnership approaches.

Forestry Commission (FC)

The Forestry Commission is responsible for Plant Health (Forestry) and Forest Reproductive Materials matters in England, including import controls on wood and wood products and most of the operational delivery of tree health policy such as surveillance, responding to outbreaks and advice. It is represented on the various governance bodies that underpin this Framework. It delivers cross-border plant health (forestry) functions on behalf of Great Britain, as detailed in Schedule 3 to the Memorandum of Understanding for the Cross-Border provision of Forestry Functions and Research Delivery. Schedule 3 sets out the arrangements for the functions relating to Plant Health (Forestry) and Forest Reproductive Materials by the Forestry Commission on behalf of England, Scotland and Wales. This schedule establishes an agreed framework for the roles, responsibilities, relationships and co-operation between the Users and the Forestry Commissioners in relation to the regulation of Plant Health (Forestry) and Forest Reproductive Materials.

Forest Research (FR)

Forest Research is Great Britain's principal organisation for forestry and tree-related research with functions in Scotland including delivery of some of the field operations for FC and SF.

Plant Health Risk Group

The UK-wide Plant Health Risk Group (PHRG) and its sub-groups manage the research and development programme within the Plant Health Evidence and Analysis team.

The PHRG meets monthly to coordinate work across the UK plant health services, including commissioning and reviewing Pest Risk Analyses and deciding on actions arising from entries to the UK Plant Health Risk Register. More information can be found within Appendix 2.

1.2 Background

The PFA was established in 2005 following the repeal of the GB protected zone for *Dendroctonus micans* by the Plant Health (Forestry) (Great Britain) Order. The existing PFA boundary was predicated on extensive surveys, including pheromone trapping, in GB since the establishment of protected zones for conifer bark beetles according to Commission Directive 92/76/EEC.

The PFA defines an area in which the absence of findings of three bark beetles found elsewhere in GB, *Dendroctonus micans*, *Ips cembrae* and *Ips sexdentatus*, can be demonstrated. It is also possible to confirm the absence of the GB priority pests *Ips duplicatus*, *Ips typographus* and *Ips amitinus* in this area. All these species are listed on the UK Plant Health Risk Register. The publicly available register is a tool that is used to prioritise action against pests and diseases which threaten our crops, trees, gardens and countryside and focuses on pests of greatest importance to the UK. These UK priority pests are not covered in detail in this dossier.

Crucially, the absence of these bark beetles, and the routine inspection of felled timber in the PFA, has enabled the export of conifer roundwood to the island of Ireland, where Protected Zone (PZ) status for *Dendroctonus micans*, *Ips cembrae* and *Ips sexdentatus* is maintained.

Dispersal of these beetles depends on weather, especially wind and warm temperatures, and availability of suitable host trees, especially stressed host trees that are less able to resist beetle attacks.

From Evans. H (2021) 'The threats to UK conifer forests posed by Ips bark beetles':

"Dispersal of beetles tends to be very local, especially at low population densities, with most new attacks being within 500 m and mainly <100 m from source. However, long distance flights, >50 km, can take place especially when they are wind-assisted. Movement of beetles in wood and wood products in trade is the main pathway for long distance dispersal, evidenced by interceptions of all the *Ips* species in various countries globally."

To justify the ongoing status of this PFA, and in line with ISPM 4 requirements, a two-pronged approach has been adopted. Firstly, the maintenance of a programme of monitoring plots and pheromone traps within the PFA, and secondly the physical inspection of felled conifer roundwood

produce and the immediate areas of adjacent conifer crops prior to authorising phytosanitary certificates for consignments of conifer roundwood destined for export.

A single physical inspection of conifer roundwood prior to export was not deemed sufficient to meet the needs of ISPM 4 as it could fail to identify all the life stages of the pests. Accordingly these inspections at felling coupes need to go hand in hand with annual plot-based surveys.

In addition to the standardised plot and coupe inspections an annual aerial surveillance programme has been in place covering Scotland since 2013, principally looking at larch and spruce trees, followed up with ground inspections of any suspicious trees identified.

Through ongoing general and specific surveillance of the area we have sufficient evidence to show that the six listed species of conifer bark beetles are not known to occur there.

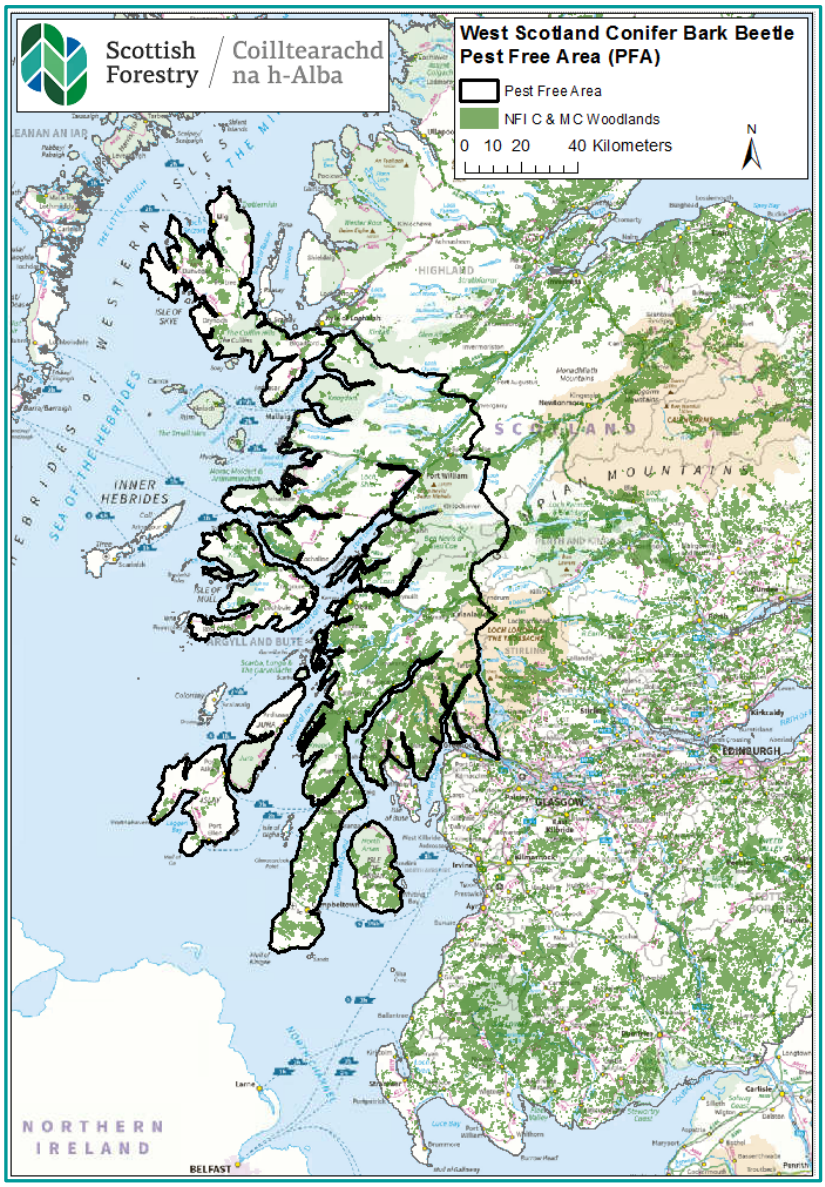
Northern Ireland (NI) and the Republic of Ireland (RoI) have EU protected zone status for these pests, which means that imports of conifer roundwood and bark must meet certain plant health landing requirements. The roundwood trade from Scotland to the island of Ireland is c. 200,000 tonnes per year, from approximately 70 felling coupes. In February 2023 the UK Government and the European Commission announced the 'Windsor Framework' a new agreement between the UK and the EU that amends the text and provisions of the original Northern Ireland Protocol, which will affect the moment of trade (e.g. timber) into Northern Ireland. The necessary steps to translate these joint solutions into legally binding instruments will take place with the intention to implement these in October 2023. Any changes that affect the PFA will be noted in the 2024 review.

The evidence from surveillance has met the necessary requirements to allow free movement of wood and bark without treatment under the EU plant passport regime.

From 1st January 2021 UK timber plant passports are not recognised by the EU. The relevant felling area will be inspected as before, to ensure that timber is pest free and a phytosanitary certificate showing the point of origin will be issued by FC and will accompany the timber to its point of destination.

2. Delimitation of the pest free area (PFA)

Map 1 - Detail of the PFA. Showing detail of the PFA, including indicative distribution of conifer and mixed conifer (C & MC) woodlands from the Forest Research National Forest Inventory (NFI)



The eastern boundary for the Pest Free Area runs from Dumbarton along the A82 to Crianlarich. From Crianlarich the boundary continues along the A82 to Loch Tulla and then it follows the railway line from Loch Tulla to Rannoch Station, to Tulloch Station to Roybridge Station. It then follows the C road by the river Roy up to Brae Roy Lodge, following the River Turret then cutting across the watershed following the Allt an t-Sidhean stream to the A82 at Laggan and then to Invergarry where it follows the A87 to the Kyle of Lochalsh. Not all islands to the west of this boundary are in the Pest Free Area. Skye, Mull, Jura, Arran, Scarba, Seil,

Luing, Shuna, Torsa, Ulva, Gometra, Kerrera, Lismore and Eilean Shona are included in the Pest Free Area.

2.1 Biology and distribution

The biology and lifecycle for the pests is given at Appendix 1.

General considerations covering all three pest species:

Dispersal of these beetle species tends to be very local, especially at low population densities, with most new attacks being within 500 m and mainly <100 m from the source. However, long distance flights, >50 km, can take place especially when they are wind-assisted. Warm temperatures in spring and summer may also have a significant role in insect spread.

Movement of beetles in wood and wood products in trade is the main pathway for long distance dispersal, evidenced by interceptions of all the *Ips* species in various countries globally. For each pest the best estimation of natural and assisted dispersal from known incursions is as follows;

Pest species (main host species in **bold**)	**Known pest distribution in UK**
Dendroctonus micans (Great spruce bark beetle) Host tree species *Abies* Miller *Coniferous trees* *Larix* Mill. *Larix decidua* Mill. ***Picea* A.Dietr.** ***Picea abies* (L.) H. Karst.** *Picea orientalis* (L.) Link ***Picea sitchensis* (Bong.) Carr.** *Pinus* L. *Pinus sylvestris* Linnaeus *Pseudotsuga* Carr. *Pseudotsuga menziesii var. menziesii* (Mirbel) Franco	Predominantly a pest of spruce found in forests throughout parts of Great Britain, including Wales, western England and southern Scotland. It was first discovered in 1982, when it was identified as the cause of deaths of Sitka spruce trees in Shropshire, England. Subsequent research later found evidence that it had been breeding in Shropshire as early as 1972. It was most likely accidentally introduced with a consignment of imported timber, and became an established pest in Wales and western England before expanding its range to southern Scotland. Closest known locations to the PFA: Inverclyde (roughly 6km from the PFA boundary) and Southern Stirling (roughly 15 km from the PFA boundary). No positive findings were made within the PFA in 2022 For the latest version of the map showing *Dendroctonus micans* spread please use this link: Scottish Forestry - Great spruce bark beetle in Scotland"
Ips cembrae (Large larch bark beetle) Host tree species *Abies* Miller *Coniferous trees* ***Larix* Mill.** ***Larix decidua* Mill.**	Predominantly a pest of larch (occasionally pine and spruce) that was first observed in 1955, supposedly from shipments of German timber that had arrived into several ports in north-eastern Scotland in the period 1946–1948 (Crooke and Bevan, 1957). Entomologists in Forest Research have been unable to explain why further

Larix sibirica (Muenchh.) Ledeb. *Picea* A.Dietr. *Pinus* L. *Pseudotsuga* Carr.	dispersal does not appear to have occurred but limitation by climate may be a contributing factor. More recent findings of breeding populations in SW Scotland and Perthshire (closest is roughly 40 km from the PFA boundary) are being closely monitored. Fifteen pheromone lures in traps were deployed in a range of forest sites across Scotland in 2022 and caught a small number of beetles principally in areas where historic populations had been recorded. Three pheromone trap locations within the PFA intercepted small numbers of beetles and these have been treated as interceptions. Following extensive aerial / drone and ground surveys no breeding populations were found. The locations of these three lures where interceptions were made in 2022 are at Glengarry, near Fort William and south of Oban. Close monitoring of these sites will continue in 2023.
Ips sexdentatus (Six-toothed bark beetle) Host tree species *Abies* Miller *Coniferous trees* *Larix* Mill. *Picea* A.Dietr. ***Pinus* L.** ***Pinus sylvestris* Linnaeus**	Normally associated with pine and occasionally spruce and fir that has only been recorded in GB in the south of England and in Wales (National Biodiversity Network). Findings from the early 1900s indicate localised dispersal. No Scottish records. Absent.

3. Establishment of the PFA

Various methods of surveillance were, and continue to be, undertaken to establish freedom from all six pests within the PFA. Both specific and general surveillance is conducted by government agencies. The UK Plant Health Risk Group (PHRG) also continually monitors and reviews any new information that may become available to recommend any changes in approach. The PHRG's main remit is to advise the UK Chief Plant Health Officer of new and emerging plant health threats with recommendations for actions. The PHRG utilises and maintains the UK Plant Health Risk Register to facilitate risk assessment and consultation on risk management measures against plant pests and pathogens which pose a potential risk to UK crops, trees and ecosystems.

3.1 Inspections and surveys

A Memorandum of Understanding (MoU) is in place between the Secretary of State for Environment, Food and Rural Affairs (UK Government), the Cabinet Secretary for the Rural Economy and Tourism (Scottish Government), the Minister for the Environment, Energy and Rural Affairs (Welsh Government), and the Forestry Commissioners for the cross-border provision of Forestry Functions and Research Delivery. Schedule 3 of that agreement is for the provision of Plant Health (Forestry) services.

Under the MoU agreement FC carry out the following activities in relation to plant health and in particular to the PFA;

- Port inspections: to ensure compliance with UK landing requirements including International Standards for Phytosanitary Measures (ISPM 15)
- Issue Phytosanitary Certificates for exported controlled products
- Enforce plant health and official controls legislation regarding protective measures against pests of plants
- Apply plant health (forestry), plant health (forestry) fees and forest reproductive materials legislation
- Pest surveys in the PFA for *Ips cembrae*, *Ips sexdentatus* and *Dendroctonus micans* as outlined below

Phytosanitary certificate process

Movements of timber from GB to Northern Ireland require a Phytosanitary Certificate (PC), not a Plant Passport, from 1st January 2021 because Northern Ireland remains part of the EU's Sanitary and Phytosanitary Measures (SPS) after that date. Further information is available on GOV.UK under point 5.

It is not considered that the Windsor Framework will have an impact for timber movement. Northern Ireland and the Republic of Ireland are, and have been since before EU exit, considered as a single phytosanitary area. Therefore movement of logs from GB to NI would still need to be from the PFA and accompanied with a phytosanitary certificate as at present. We don't expect any changes to the import situation either, movement of timber and or logs from NI to GB is negligible but this will be confirmed in the 2024 document review.

Site inspections for timber due to be traded to the island of Ireland

Physical inspection of trees or logs must be made by a FC authorised inspector to confirm absence of signs of bark beetles for all harvesting sites in the PFA. This check must be completed before the Phytosanitary Certificate can be processed for timber to be moved to the island of Ireland.

Up to 200 trees / cut logs are inspected at each site with numbers reflecting the diversity of tree species included in the area to be felled.

170 inspections have taken place in the last 3 years.

Pheromone lures located at timber handling sites

12 mobile Theysohn lure traps are maintained across the PFA at timber processing sites, ports and piers, during the recognised bark beetle flight season of April to October. The specific product is the *Ips typographus* lure (active ingredients ipsdienol and cis-verbenol) which is known to attract the range of *Ips* beetles required for this purpose. These lures are located so they would attract male beetles either present in the local forests or recently arrived in timber movements.

No pheromone lures are available for *Dendroctonus micans.*

Billet traps located in and around the PFA

Billet traps consisting of freshly cut and stacked logs are established in late spring each year at forest locations across the UK to maintain a monitoring network for bark beetles. In the late summer the billet traps are decommissioned with bark being stripped from the logs and any larvae found being sent to FR entomology for identification. In the PFA there are seven locations where these traps are maintained annually.

Additional checks - Aerial surveillance, , is carried out bi-annually across Scotland, covering roughly 95% of the coniferous forest in the PFA in any given year. Any larch or spruce trees that are spotted in ill health are ground surveyed to check for the presence of tree pests or pathogens of concern. Since 2013 this method has been used to successfully detect infestations of *Dendroctonus micans* in southern Scotland as it has slowly progressed north. These early detections have allowed for the predatory beetle, *Rhizophagus grandis,* to be released on new sites to control the population of *Dendroctonus micans* and reduce the damage caused to the spruce crop.

3.2 Northern Ireland and the Northern Ireland Protocol

The Department of Agriculture, Environment and Rural Affairs (DAERA) is responsible for overseeing surveillance activity within Northern Ireland.

DAERA carries out environment surveys for each pest or disease where Northern Ireland have a designated pest free area. There is also a particular focus on areas with a higher risk of entry, such as those around Belfast ports. Any absence of pests is recorded.

Northern Ireland Protocol

Following the UK's exit from the EU, the Northern Ireland Protocol ('the Protocol') will take effect. The Protocol is a practical solution to avoid a hard border with Ireland whilst ensuring the UK, including Northern Ireland, leaves the EU as a whole, enabling the entire UK to benefit from future Free Trade Agreements (FTAs). There will be special provisions which apply only in Northern Ireland while the Protocol is in force. The impacts of the Windsor Framework (2023) as described on page 7 above are currently unconfirmed

Third country imports to Northern Ireland

Mandatory pre-notification of import of plants for planting is required from third countries. Identity and documentary checks are completed, and any applicable plant health inspections are carried out on arrival. From January 1st 2021 this includes the requirement to notify of any imports of timber from third countries which will from that date include Scotland (and the wider UK). The impacts of the Windsor Framework (2023) as described on page 7 above are currently unconfirmed.

Moving timber to Northern Ireland from GB

The European Timber Regulations will apply in Northern Ireland. The impacts of the Windsor Framework (2023) as described on page 7 above are currently unconfirmed.

3.3 Surveillance summary

Surveillance	Responsible Party	Comment
Specific Surveillance	FC Plant Health Forestry	Includes NFI plots *Ips typographus* pheromone traps Conditions and checks associated with issuing phytosanitary certificates for exports to the island of Ireland Forest Condition survey plots - NFI (wider environment) Industry and Stakeholder engagement
	Scottish Forestry	Aerial and ground surveys of larch and spruce for presence of bark beetles *Ips cembrae* lures (since 2018) Industry and Stakeholder engagement
General Surveillance	Scottish Forestry	Aerial and ground surveys
	Forest managers	Requirements under the UK Forestry Standard (UKFS) and the UK Woodland Assurance Standard (UKWAS)
	Citizen Science	Observatree and TreeA!ert

3.4 Surveillance operations

A map showing the location of *Ips cembrae* traps and where beetles were detected in traps or in trees over the three previous years' surveillance operations can be viewed at Appendix 5

4. Maintenance of the PFA

To ensure that freedom from infestation is maintained, relevant measures are in place out-with the PFA to monitor distribution of PFA species where they are present in Scotland.

4.1 Quarantine Listing and Regulations

The list of PFA quarantine pests and description of GB pest free areas are contained at Annex 3 of the retained EU law version of Commission Implementing Regulation (EU) 2019/2072 ("the Phytosanitary Conditions Regulation").

The power to amend the list of PFA quarantine pests and description of GB pest free areas is contained at Article 32 of the retained EU law version of Regulation (EU) 2016/2031 ("the Plant Health Regulation").

The requirement to immediately notify the competent authority where a person becomes aware of, or has reason to suspect, the presence of a GB quarantine pest or the presence of a PFA quarantine pest in the GB pest free area established in respect of that pest is contained at Article 37(1)(e) and schedule 3 of the Plant Health (Official Controls and Miscellaneous Provisions) (Scotland) Regulations 2019, as amended by the Plant Health (Amendment etc.) (EU Exit) Regulations 2020.

The Plant Health (EU Exit) (Scotland) (Amendment) (No. 2) Regulations 2021, using powers under the European Union Withdrawal Act 2018, made amendments to legislation in the field of plant health as it applies in Scotland. These 2021 Regulations also modify the fee structure for forestry goods exported from Scotland to Northern Ireland in that they remove the requirement to pay fees on forestry exports from Scotland to Northern Ireland for professional operators and for private individuals.

4.2 Documentation and review

Further to the annual surveillance that has been previously mentioned, the UK plant health services conduct annual reviews of pest free areas by reviewing surveillance methodologies and data to ensure the obligations of a pest free area are still being met. This is primarily done through the Surveillance, Contingency and Incidents Group which reviews the annual survey returns then reports to the UK Plant Health Risk Group.

4.3 Contingency plan

The Scottish generic plant health contingency plan is in place to form the basis for any actions should they be required.

4.4 UKFS Guidance and Requirements for Tree Health

The UK Forestry Standard (UKFS) states that *"It is vital that all those involved in forest management take a proactive role in monitoring tree health, keeping abreast of emerging threats and deciding when intervention is necessary"*. Details of the UKFS and the UK Woodland Assurance Standard (UKWAS) requirements can be seen in Appendix 3.

4.5 Stakeholder engagement

The UK plant health services have frequent engagement with stakeholders to promote biosecurity and plant health in the UK;

- To try to raise public awareness, the UK Government launched the 'Don't risk it!' campaign, asking members of the public to avoid taking unnecessary risks by bringing back plants, seeds, flowers, fruit or vegetables from abroad. The campaign is promoted in displays at airports across the UK, with encouragement for the media to promote it too.

- 'Ditch the Debris' posters are displayed at piers and other locations (see Appendix 4).

- Forest health days are run by Scottish Forestry on an annual basis, providing updates to the sector on a range of ongoing work programmes.

- Defra operates the Plant Health Portal, which hosts an abundance of valuable information and guidance which stakeholders and the public can access with ease. Information available on the Plant Health Portal includes:
    - Reporting a pest or disease
    - Pest and disease alerts and factsheets
    - Pest risk analyses
    - UK plant biosecurity strategy
    - Citizen Science
    - Contingency plans

- The Scottish Tree Health Advisory Group (STHAG) meets twice a year and exists to advise Scottish Forestry on;
    - Reviews of the Scottish action plans for pest and pathogen threats
    - A priority list for future Scottish action and contingency plans
    - A means of addressing gaps in the skills and capacity required to support tree health surveillance e.g. training and citizen science
    - Communication of key tree health messages to relevant audiences
    - The development of policies to build resilience across the whole sector – including nurseries, woodland managers, conservation and landscape interests and timber processors

- The Confederation of Forest Industries (Confor) is represented on the STHAG

- The Timber Transport Forum Code of Practice (2020, 5th Edition) provides a general statement of the legal and technical issues relating to the road haulage of round timber in Great Britain. The Code of Practice recognises the increasing number of pests and diseases of plants and trees that pose a threat to forests and woodlands across GB and recommends biosecurity measures for timber hauliers.

Scottish Forestry also engages with stakeholders through the Tree Alert (TreeA!ert) system and other forums. In addition to the above, there are requirements in the UK Forestry Standard and the UK Woodland Assurance Standard for woodland owners and managers to monitor and report tree health at forest or woodland level. Scottish Forestry also have a bespoke email address for the public to report issues.

Government departments and agencies working on plant health from across the UK engage with stakeholders by attending regular events and trade shows to raise awareness and promote the work taking place to protect trees and woodlands and maintain biosecurity.

Appendix 1

Biology and Lifecycle:

Dendroctonus micans

Lifecycle

Female *Dendroctonus micans* (*D. micans*) beetles emerge from the gallery having already mated with a male sibling, and typically will walk to other locations on the same tree to find a suitable fresh site to establish a new gallery.

Beetle attacks have greatest success on spruce trees where areas of lower sap pressure are found on the main stem, callused bark around healing wounds, above and below branch junctions and in areas where the main stem has forked.

Lifecycle in the UK is typically 1 – 2 years.

Scale of damage observed in the UK

Rarely causing significant tree mortality once *Rhizophagus grandis* (*R. grandis*) population has been established. Exceptions include sites where local conditions have resulted in extreme stress to the host trees that may have caused mortality on its own (for example significant changes to the water table resulting in waterlogging or drought).

The ongoing SF aerial surveillance program allows for identification of typically single dead or stressed trees. Field surveys of any infested sites will typically find an established population that has been present for 2 – 3 lifecycles where *D. micans* is the cause of the observable stress or dieback in the spruce trees.

Controls

Rhizophagus grandis is a predator beetle that has co-evolved with *D. micans* and the females will only lay their eggs when stimulated by the presence of *D. micans* larvae. *R. grandis* is bred by Forest Research and released in Scotland under license from NatureScot. Newly detected populations of *D. micans* have small pots of 25 *R. grandis* beetles released at the tree base during the summer months.

R. grandis populations will then self-regulate and maintain local *D. micans* populations at a level where yield loss in the standing spruce crop is limited and tree death is rare.

R. grandis populations are capable of spreading with a locally expanding population of *D. micans*. Where longer distance dispersal takes place it is important to manually introduce populations of *R. grandis* as the predator.

Further information on the biology and control of *D. micans* can be found at:

Great spruce bark beetle - Dendroctonus micans - Forest Research

The latest information on the known spread of *D. micans* in Scotland can be found at:

Scottish Forestry - Great spruce bark beetle in Scotland

The European and Mediterranean Plant Protection Organization (EPPO) publishes datasheets on pests recommended for regulation. The EPPO datasheet for *D. micans* can be found at:

EPPO (2021) Dendroctonus micans

Ips cembrae

Lifecycle

In Scotland, it is thought that one generation per year is generally possible although adult emergence and dispersal can occur in early or late summer dependent on suitable warm temperatures. Male beetles initiate a gallery then release an aggregation pheromone to attract females.

Scale of damage observed in the UK

Availability of suitable breeding material can be a limiting factor. Storm or snow damage can result in an abundance of suitable material resulting in a population spike. Standing dead and stressed trees caused by other pests or diseases may also have a role locally.

Occasionally populations develop into a local outbreak where they may kill small numbers of trees. *Ips cembrae* is considered a secondary pest of larch trees in Scotland.

Controls

Sanitation felling of infested trees or removal of suitable breeding material is the only viable control of a breeding population. This is rarely required.

Site management, where stacked timber is removed from site and processed before the early summer emergence period, will help to control populations.

The EPPO datasheet for *Ips cembrae* can be found here:

EPPO (2021) Ips cembrae.

Ips sexdentatus

Lifecycle

In Scotland, it is thought that one generation per year is generally possible although adult emergence and dispersal can occur in early or late summer dependent on suitable warm temperatures. Male beetles initiate a gallery then release an aggregation pheromone to attract females.

Scale of damage observed in the UK

Limited data on any observed damage in the UK. Not known to be present in Scotland.

Controls

Site management, where stacked timber is removed from site and processed before the early summer emergence period, may help to control populations.

Information about *Ips sexdentatus* from the EPPO can be found here:

Ips sexdentatus (IPSXSE)[Overview]| EPPO Global Database

Appendix 2

Plant Health Risk Group specific actions:

- To consider new and revised issues arising and agree Risk Register ratings and entries.
- To advise on prioritisation of risk assessments and other actions and identify those issues which require a full Pest Risk Analysis.
- To make decisions on action against pest risks, identified as a threat through horizon scanning, or in response to findings (generally where statutory action has been taken against two interceptions or a single outbreak).
- To identify priority pests for which new or revised publicity is needed.
- To advise on use of the Plant Health Information Warehouse.
- To advise on prioritisation of quarantine surveillance work.
- To agree publication of risk assessments for consultation, with an accompanying recommendation for action on each pest.
- To confirm or amend the recommended action, in the light of comments received from stakeholders after publication of risk assessments.
- To identify new or changed risks of sufficient magnitude which require political decisions on the appropriate risk management measures.
- To oversee production of contingency plans for appropriate pests.
- To identify research needs related to issues considered.
- To agree UK positions and attendance for SCPH meetings.
- To advise and input to any governance arrangements involving external stakeholders.
- To exchange information and experiences on pest incursions and outbreaks and ensure effective responses to such incidents.

Appendix 3

UKFS Guidance

Legal Requirement 8: Statutory orders made under the Plant Health Acts to prevent the introduction and spread of forest pests and diseases must be complied with; in Scotland suspected pests and diseases must be reported to the forestry authority (Scottish Forestry) if they are notifiable. Access must be given to Plant Health Inspectors and their instructions must be followed.

General Forestry Practice Requirement 6: Managers should be aware of the risks posed by pests and diseases, be vigilant in checking the condition of their forests and take responsible measures to combat threats to tree health.

General Forestry Practice Requirement 7: Information should be reported to the forestry authority that might assist in preventing the introduction or spread of forest pests and diseases.

General Forestry Practice Requirement 8: Suspected pests and diseases should be investigated, reported to the forestry authority and biosecurity control measures recommended by the forestry authority carried out.

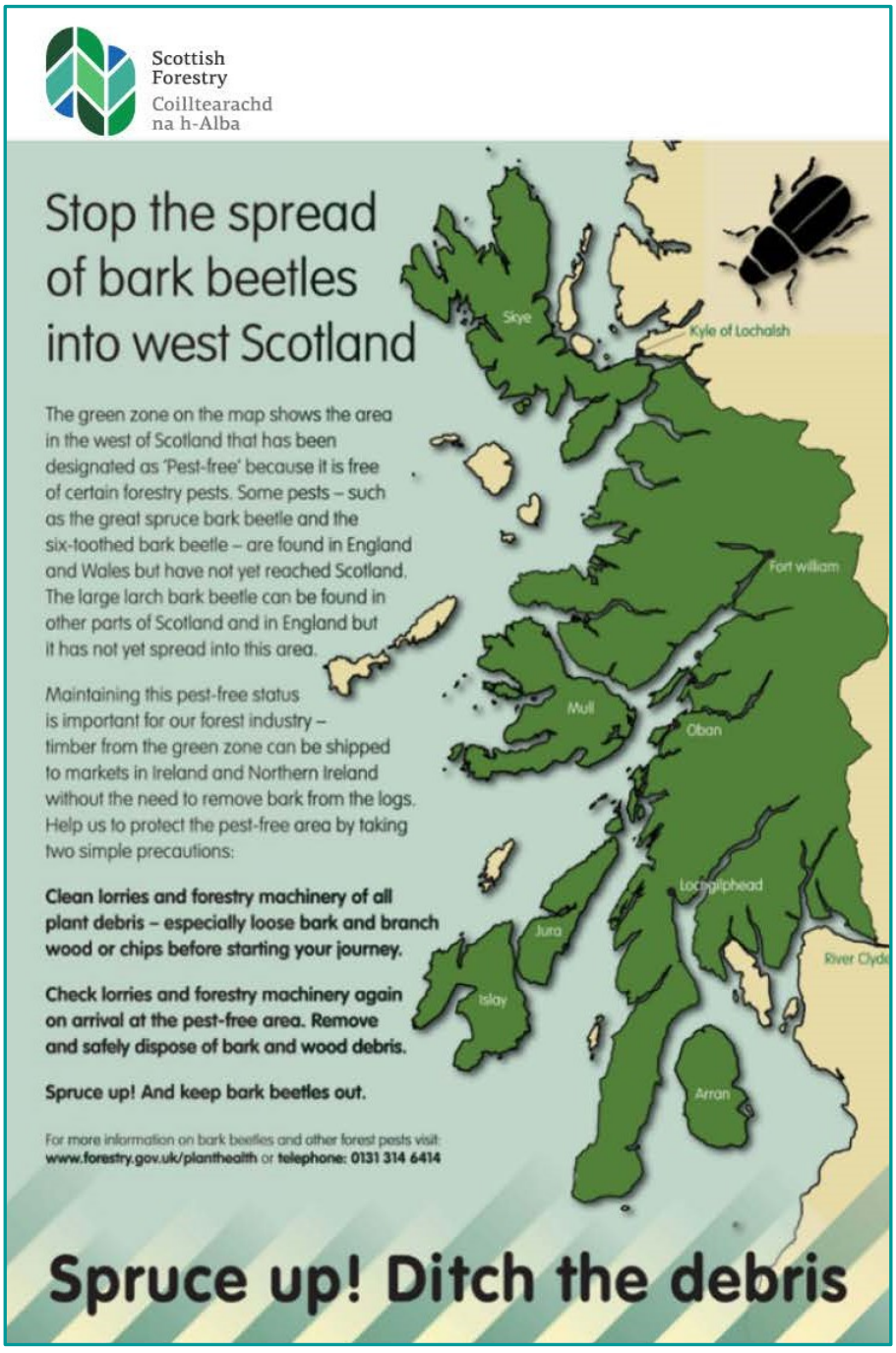
General Forestry Practice Requirement 23: Be vigilant for pests and diseases in forests and woodlands, including those in urban areas where the risks of new introductions can be high.

The UK Woodland Assurance Standard Version 4 (2018) is designed to reflect the requirements set out in the governmental UK Forestry Standard and other relevant international agreements. Specifically:

- Paragraph 2.12.2 requires that for certification there shall be an emergency response plan in place to cover outbreaks of pests, diseases or invasive species, appropriate to the level of risk.
- Paragraph 2.5.3 requires that woodland owners and managers shall assess the potential negative impacts of natural hazards, including drought, floods, wind, fire, invasive plant and animal species, and other pests and diseases.
- Paragraph 4.2.1 requires that the adverse ecological impacts of pests, diseases and non-native species shall be identified and inform management.
- Guidance under paragraph 2.9 notes that the use of non-native biological control agents such as *Rhizophagus grandis* "may be desirable to control non-native pests".

Appendix 4

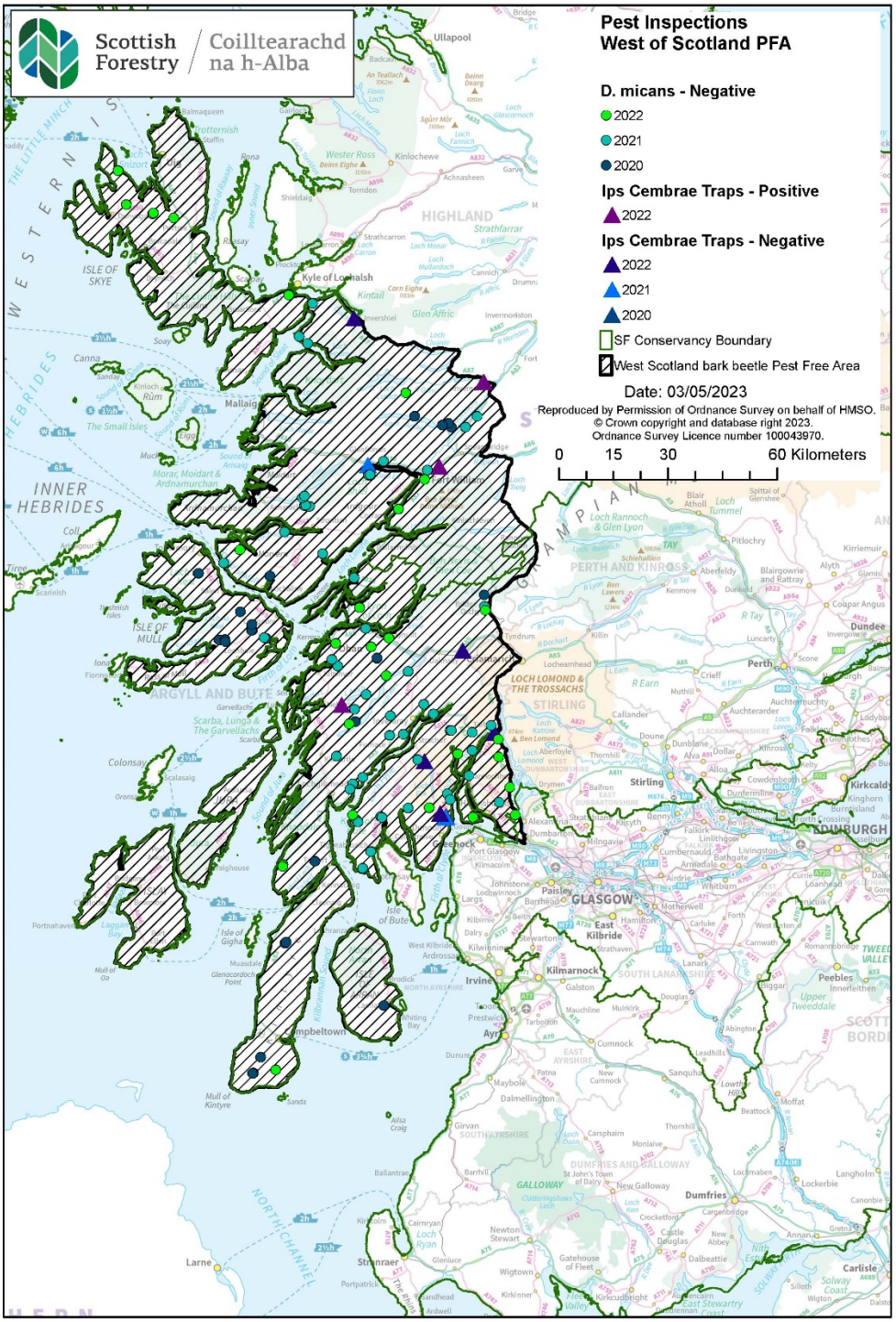
Ditch the debris poster



Appendix 5

Ips cembrae and Dendroctonus micans monitoring results;

No evidence of breeding beetle populations have been found in the PFA to date, however individual adult *Ips cembrae* were found in three traps during 2022. This map shows the location of traps between 2020 and 2022.



Year	*No of D. micans traps*	*No of Ips cembrae traps*
2020	26	2
2021	55	2
2022	30	8