

Planting in Caledonian pinewoods: reducing risks from Dothistroma Needle Blight (2017)

Introduction

1. Our forests are at risk from tree pests and diseases. These can dramatically affect the health of our trees, upsetting the delicate ecosystem balance and devastating large areas of woodland. Pests and diseases can be moved on trees and in mud and debris on shoes, ending up in new forests. Everyone is encouraged to take appropriate biosecurity measures¹ when visiting, raising or planting tree seedlings.
2. Planting pine sourced from anywhere but within any of the Caledonian Pinewood Inventory (CPI) areas carries a risk of introducing the fungal pathogens that cause Dothistroma Needle Blight (DNB), *Dothistroma septosporum* and *Dothistroma pini* (the latter is not known to be present in the UK) and/or new strains that could make any existing infection worse. This guidance focus on providing advice specifically for *Dothistroma septosporum*.
3. The previous Action Plan for DNB contains a presumption against planting any pine species within the 600 m buffer zone around existing core CPI sites. However, it is recognised that in some exceptional circumstances planting of native Scots pine will be considered. This guidance clarifies the circumstances where planting will be considered and explains the procedures that will need to be followed before and after planting to eliminate as far as practicable the risk of different strains of DNB being introduced.
4. Existing areas of lodgepole pine (LP) in the CPI areas should be removed since this species can be highly susceptible to DNB and can thus act as a large

¹ <https://www.forestry.gov.uk/biosecurity>

source of inoculum. These areas should not be replanted with LP or other highly susceptible species².

5. Where CPI areas are also designated for their pinewood features as SSSIs or SACs, SNH will need to be consulted for their view in relation to designated interests on any land manager's planting proposals.

Background

6. **DNB is a serious fungal disease of pine trees** which has become increasingly problematic in the UK over recent years³. It can infect all pine species grown in Scotland, including our native Scots pine. Two mating types and a large number of genotypes of the pathogen, *Dothistroma septosporum*, are known to be present in Scotland. At least three distinct populations are thought to be present.
7. Action is underway to tackle the threats posed by DNB and a strategy and action plan⁴ have been developed at GB and Scottish levels respectively. So far the main impact of DNB infection has been in planted stands of pine, and survey work on the National Forest Estate (NFE) has steadily improved our picture of this since 2006. However some DNB infections have been found in and around native pinewood sites.
8. A programme to protect the unique CPI sites from DNB is now being developed, as it has become increasingly clear that Scots pine can be susceptible to this pathogen. A stakeholder group was set up in early 2013 to oversee this programme, led by FCS and SNH. As well as producing this guidance on planting, a surveillance programme and a package of advice and support will be developed to increase Caledonian Pinewoods' resilience to future threats.
9. CPI sites are composed of the core pinewood area, surrounded by a 100m regeneration zone, and a further 500m buffer zone beyond that. The Action Plan for DNB buffer zones concerns the combined CPI regeneration zone and

² <https://www.forestry.gov.uk/fr/infd-6zhc69>

³ <http://www.forestry.gov.uk/forestry/infd-74jjfk>

⁴ <http://scotland.forestry.gov.uk/images/corporate/pdf/dothistroma-needle-blight-action-plan-scotland.pdf>

CPI buffer zone. The buffer zone may include ground on the other shore of a loch (e.g. Loch Hourn).

10. There are a range of scenarios where planting or replanting is acceptable within the CPI buffer: Some areas where there are plans for planting new native woodland fall within the 600 m CPI buffer area and will be affected by the current guidance. Additionally some recently felled sites due for replanting may fall within the buffer zone. Some of these may be plantations on ancient woodland sites (PAWS), where the presumption is to return the woodland back to native pine, but many sites are non-PAWS.
11. Given the importance attached to designated CPI sites (the core, regeneration and buffer zones) there are only a few **exceptional circumstances when planting of Scots pine will be considered**, for example:
 - Where there is an agreed current need to take action to protect the future integrity of priority species habitat (e.g. Capercaillie).
 - Where there is an urgent ecological need to regenerate the site with Scots pine, no other species is suitable and failure to act quickly will result in the loss of pinewood (designated) habitat.

Guiding principles

12. It is important to recognise that the long term integrity and health of our Caledonian pinewood ecosystems, the history of which stretches back many thousands of years to the last Ice Age, is our main concern.
13. Our overriding objective is to safeguard Caledonian Pinewood Inventory (CPI) sites and their associated ecosystems.
14. The risks associated with planting Scots pine in the CPI buffer have been reviewed in 2015 in light of our increasing knowledge of DNB and its management. Planting pine presents the greatest potential risk of introducing new 'strains' of DNB to Caledonian pinewoods and **should only be undertaken when it is deemed to be essential to the short term survival and longer term integrity of that pinewood's ecosystem**. Where contractual commitments for grant aiding pine planting have been made, FCS will honour these but will also seek to explore alternative options with grant applicants.

15. Managers should maximise any opportunities for recruitment of natural regeneration in the core Caledonian Pinewood Inventory sites and their combined regeneration and buffer zone (600 m). This may involve improved protection from browsing pressure (e.g. deer or sheep), and operational interventions that encourage natural regeneration (e.g. ground preparation, and direct seeding).

Encouraging use of natural regeneration

16. In the CPI areas, policy since the 1980's has been to prefer and encourage natural regeneration of Scots pine in and around the core areas to maintain the predominantly semi-natural character of most of the remnant Caledonian Pinewoods. The risks from DNB further emphasise the need for natural regeneration to be promoted wherever possible.
17. Because it promotes genetic adaptation through natural selection, natural regeneration plays a key role in supporting adaptation of native pinewood ecosystems to future climate change and supports improvements in their resilience to threats, including future plant diseases or pests (Ennos, 2015).
18. There was limited uptake of grant support for natural regeneration during the previous Scottish Rural Development Programme. FCS worked with the DNB & Native Pinewoods Group and subsequently improved the natural regeneration option in FGS. Details of grant support for encouraging natural regeneration expansion are available on the [New Natural Regeneration Establishment](#) web pages.
19. Further advice on practical methods of promoting natural regeneration of Caledonian Pinewoods can be found in the handbook *Managing the pinewoods of Scotland* (FC 2004)⁵ and in FC Practice Guide *The Management of Semi-natural Woodlands, 7. Native Pinewoods*⁶.
20. Only if pine natural regeneration recruitment is impracticable (e.g. there is a lack of a source of seeds) should managers then consider whether there is an opportunity to diversify the woodland composition by either planting or natural regeneration to secure a mixture of broadleaved species and juniper native to

⁵ <https://www.forestry.gov.uk/fr/infid-659ce9>

⁶ <https://www.forestry.gov.uk/website/publications.nsf/WebpubsbyISBN/0855385863>

the site. Enriching such sites by planting Caledonian pine plants might also be appropriate at a later date. Non-native conifers can be considered in small quantities where their presence will benefit priority species such as capercaillie or red squirrel but without compromising other key pinewood attributes.

21. Some expansion of native woodlands in the CPI buffer area may be considered where the protection of the existing pinewood's ecosystem is not the objective, and the local source of seeds is deemed appropriate for the site. In these circumstances expansion will only be possible via new planting. Regeneration recruitment is unfeasible where there is no local source of seed. In these circumstances planting with local provenance Scots pine planting stock will be acceptable, provided it is sourced under the guidance provided in sections 24 – 29 of this document.

Use of other native species

22. The diversity of other characteristic tree and shrub species in Caledonian Pinewoods is often inhibited as a result of past or present management. The risk from DNB to the dominant tree, Scots pine, increases the urgency and importance of increasing the component of other native species characteristic of the ecosystem, such as birches, rowan, bird cherry, alder, sessile oak, aspen, holly, and native willows. Doing this should also help biodiversity aims and enhance adaptation to climate change.
23. Natural regeneration is preferable where possible for these species, but where there is no suitable source of seed, some planting may be needed to re-establish viable populations of these species in an acceptable timescale. If planting is to be undertaken then provenance choice is an important consideration - see FCS guidance note: *Seed sources for planting native trees and shrubs in Scotland*⁷ and FC Practice Guide *The Management of Semi-natural Woodlands, 7. Native Pinewoods*⁸ for additional guidance.
24. Only where neither natural regeneration **nor** planting of alternative species is feasible, or sufficient to protect the habitat and long term integrity of the pinewood habitat, shall planting with local provenance native Scots pine within

⁷ <http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/biodiversity/native-woodlands/seed-sources>

⁸ <https://www.forestry.gov.uk/website/publications.nsf/WebpubsbyISBN/0855385863>

the combined regeneration and buffer zone (600 m) be considered. **Planting may only be undertaken if approval is received from the local FCS Conservator.** Where appropriate, or obligatory⁹, advice will be sought from SNH's local manager and FCS's Head of Tree Health before proceeding.

Use of Scots pine planting Stock

25. **Where the planting of pine is considered to be absolutely necessary, the preferred option will be to use Scots pine planting stock grown in a nursery within the CPI site, from seed collected within that CPI site.** All such seed must, ideally, have been free from needle fragments, and should have been heat treated (to 40°C) during the extraction process, before being germinated and grown-on solely in a nursery within that CPI site.
26. Prior to lifting and planting that pine stock it will be subject to formal inspection. Ideally this will be through voluntary formal annual inspection either by the Scottish Government Horticultural and Marketing Unit, by Forest Research or by contractors appointed by the FCS Tree Health Operations Manager. In some circumstances inspection will be acceptable if it is conducted diligently by the owner/site manager for signs of DNB, and only plants not visibly showing signs of infection for at least two consecutive growing seasons should be planted.
27. Scots pine trees grown on site, destined for CPI buffer areas, should be grown in-line with best practice guidance in the existing '*Resilience Action Plans for Forest Tree Nurseries in Scotland*¹⁰'. Managers should ensure production of stock is fully compliant with policy and legislative process: this will include:
 - Recognised industry certificates of competence (or their equivalent) to ensure appropriate legislative compliance with best practice (e.g. master seed certificates, plant passport, compliance with UKWAS standards).
 - Informally registering the nursery with FCS Tree Health Team and complying fully with the Resilience Action Plans for Forest Tree Nurseries in Scotland.

⁹ <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/natura-sites/natura-site-protection/>

¹⁰ <http://scotland.forestry.gov.uk/images/corporate/pdf/DNB-nursery-resilience-action-plans-guidance.pdf>

- Nurseries will be subject to annual inspection either by the Scottish Government Horticultural and Marketing Unit, by Forest Research or by contractors appointed by the FCS Tree Health Operations Manager. These inspections will focus on DNB but other tree pests/pathogens will also be included during inspections.
28. If there is no nursery within the CPI site then Scots pine planting stock can be considered if sourced from other Scottish forest tree nurseries meeting either of the following two criteria (in ascending order of risk):
- Pine stock is less than 1 year old and has been germinated and grown-on under cover (e.g. in polytunnels or glass houses), with the exception of late-season hardening off, in a nursery otherwise in a nursery otherwise included in formal DNB inspections by the Scottish Government Horticultural and Marketing Unit, by Forest Research, by a member of the FCS Tree Health Operations team or by contractors appointed by the FCS Tree Health Operations Manager. Such stock will be subject to formal inspection (by one of the above bodies) at the appropriate time for identifying DNB symptoms, either (by mutual agreement) at the supplying nursery or, after arrival but prior to planting, at the CPI site. If stock is to be grown-on for a further growing season at a nursery within the CPI site, formal inspection can be deferred accordingly but diligent voluntary inspection by the site owner/manager is recommended on arrival of the plants from the supplying nursery.
- or
- Following formal inspection either by the Scottish Government Horticultural and Marketing Unit, by Forest Research, by a member of the FCS Tree Health Operations team or by contractors appointed by the FCS Tree Health Operations Manager that growing season, DNB is not known to have been present for at least two consecutive growing seasons: this information should be made available to FCS through provision of 'suitable documentation'. Prior to planting, such stock should be inspected diligently by the owner/site manager on arrival on site (and after any subsequent period if those plants are grown-on at the CPI site nursery) for signs of DNB, and only plants not visibly showing signs of infection for at least two consecutive growing seasons should be planted.

Felling Lodgepole pine in CPI areas

29. **The priority should be to remove LP areas that present the greatest risk as soon as opportunities allow.** Decisions on replanting of these areas will need to consider the policy on control of woodland removal and FCS guidance on replanting peatland habitats.

References

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