

**PROPOSED ERADICATION OF
OF HOST-TREE MATERIAL AT FIVE RED PINE SITES
IN NEWFOUNDLAND FOUND TO BE INFECTED WITH
THE EUROPEAN STRAIN OF SCLERODERRIS CANKER,
(AN INVASIVE AND SERIOUS TREE DISEASE OF HARD PINES)
THROUGH CUTTING AND BURNING OF
PORTIONS OF TREES CONTAINING
FRUITING STRUCTURES AND SPORES POSING A
RISK OF SPREAD OF THE DISEASE TO OTHER PINE STANDS**

Submission to:

**DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL ASSESSMENT DIVISION**

by:

**DEPARTMENT OF NATURAL RESOURCES
FORESTRY AND AGRIFOODS AGENCY
FORESTRY SERVICES BRANCH**

August 2013

NAME AND ADDRESS OF PROPOSER

This application is submitted on behalf of

**FORESTRY AND AGRIFOODS AGENCY
FORESTRY SERVICES BRANCH
CORNER BROOK, NL**

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THE UNDERTAKING:

In fulfilment of the mandate and commitment of the Forestry and Agrifoods Agency - Forestry Services Branch to protect the forest resource and ecosystem from significant impacts from native and invasive pests with due regard to human health and non-target environmental effects, and as a partner in the Invasive Alien Species Strategy for Canada, the following undertaking is proposed.

NATURE OF PROPOSED APPLICATION

The Province currently has seven locations infected with the **European strain of Scleroderris Canker** - a serious disease of hard pines. This invasive tree disease is particularly fatal to red pine and is capable of killing trees of all age classes. If left uncontrolled, the potential exists for this disease to spread to other red pine plantations, as well as, rare indigenous red pine stands. At risk are silvicultural investments of \$3.1 million dollars in planted red pine, and the potential loss of rare indigenous red pine sites of ecological significance. The Forestry and Agrifoods Agency – Forestry Services Branch is proposing to carry out an eradication program at these five locations to prevent build-up and spread of this disease to other sites.

PURPOSE OF PROPOSED APPLICATION

Background:

New threats to our forest from invasive alien species have emerged as a result of today's global economy and the increased movement of goods from all over the world. Invasive pests arriving on our shores can cause both direct impacts to our forest, as well as, indirect impacts to trade. Given the absence of

natural controls typically found in their place of origin these pests often cause greater impacts in the areas where they're introduced. In light of the threats posed by invasive alien species, in September 2004 the Government of Canada and its provincial/territorial counterparts introduced an Invasive Alien Species (IAS) Strategy for Canada. The goal of the strategy is to reduce the risk of IAS to the environment, economy, and society, and to promote environmental values such as biodiversity and sustainability. Partners in the strategy included: the Canadian Food Inspection Agency, Environment Canada, Agriculture and Agri-Food Canada, Canada Border Services Agency, Fisheries and Oceans Canada, Natural Resources Canada, Parks Canada, Transport Canada and **all provincial ministries responsible for forestry**, fisheries and aquaculture, parks and natural resources. The strategy has four key components:

- i) to prevent the harmful intentional and unintentional introduction of invasive species to Canada;
- ii) to detect and identify new invaders;
- iii) to respond rapidly to new invaders upon detection; and
- iv) to manage established and spreading invaders through eradication, containment and control.

This application is made to protect silvicultural investments and sites of ecological significance on the island and exercise part iv of the strategy.

EUROPEAN STRAIN SCLERODERRIS CANKER

Background:

The European strain of Scleroderris Canker was first found in the St. John's area in 1979. Pine nursery stock brought in from Europe is suspected as the source of the

disease. The disease causes branch dieback, stem cankers and eventual tree mortality with red pine being most susceptible, Scots and Austrian pine being moderately affected, and jack pine being the most resistant. Multi-celled spores or conidia produced in fruiting structures called pycnidia are dispersed during wet weather in late spring and summer (Figure 1).

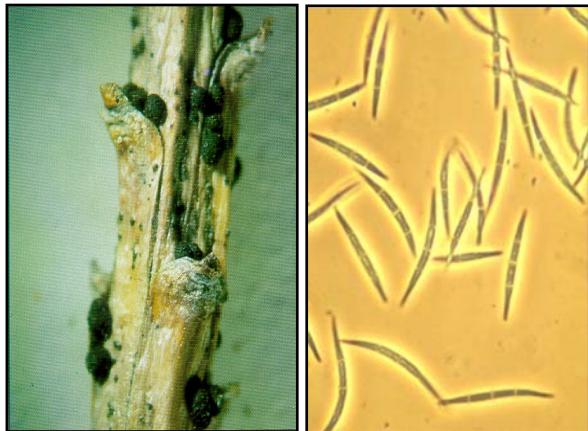


Figure 1. Black pycnidia (left) on twig; conidia/spores (right).

Spores infect current-year shoots with infection occurring at bract scales at the base of needle clusters. Symptom expression in the form of basal yellowing and reddening of needles may occur in the autumn following spring infection, but is more typical the following spring. Needles eventually turn red and later fall off leaving dead shoots or candles (Figure 2).



Figure 2. Basal discoloration of needles and dead candles.

Infection spreads back along branch to the stem of tree with horizontal infection occurring in

lower branches covered with snow. The disease builds up on sites such as frost pockets and cold air drainages where plant surfaces stay wet for long periods of time. On these sites eventually vertical transmission takes place leading to top infection, dead tops, mortality centres with dead trees, and areas of tree mortality (Figure 3).



Figure 3. Vertical transmission leads to dead tops and trees.

The first major impact from this disease was extensive mortality in a red pine plantation in the Torbay area – the plantation was burned to eradicate the infected material. Additional surveys in the mid to late 1990's found additional sites outside of urban St. John's – all were traced back to planting stock from the Back River Nursery (Salmonier Line) used for the Provinces reforestation program from 1939-52. Based on these finds, additional eradication work was conducted at sites on the Avalon

Peninsula and sites just north (Bonavista Peninsula, Sunnyside) of the Avalon. A quarantine zone preventing the movement of living pine material was also expanded to include the Avalon Peninsula. This quarantine zone was put in place by the Canadian Food Inspection Agency (CFIA) under the *Federal Plant Protection Act*.

For 28-years this quarantine zone, the natural barrier of the isthmus, and previous eradication efforts were successful in limiting the spread of this disease. In 2007, however, a red pine plantation in the Berry Hill Pond area, approximately 400 km from the quarantine zone was found to have discoloured red trees confirmed to have the disease. In 2008, disease at this site expanded and intensified with top-down infection observed for the first-time. Eradication work was conducted involving the cutting down of all host red pine trees in a 13-ha area. Cut tops and branches were placed in wind rows and cut stems in 4 foot lengths were cross-piled. Repeated attempt to burn this material, however were only partially successful.

In 2011, discoloured red pine was identified in red pine plantations approximately 3½ km north of the Berry Hill Pond site identified in 2007. A delimitation survey confirmed the presence of the disease throughout 47 ha of planted red pine. Several weeks later discoloured red pine was also observed in 21 hectares of red pine in the White Hills area north of Clarenville. Once again presence of the disease was confirmed through lab analysis. In the same year, the disease was also found at one location in a jack stand in the Conne River Pond area about 10-

km south of Berry Hill Pond.

A working group comprised of staff from the Newfoundland and Labrador Department of Natural Resources (Insect & Disease Control, Silviculture, Regions/Districts), Canadian Forest Service, Canadian Food Inspection Agency, and Newfoundland and Labrador Department of Environment and Conservation (Wildlife, Parks and Natural Areas) was formed to provide technical information and recommendations on what should be done with the new positive finds of this disease. Given the threat to planted and indigenous red pine, the working group recommended a number of items - they included: 1) conducting a survey in 2012 to determine if this disease could be found at more sites on the island; 2) conducting eradication of infected materials at sites found to positive to eliminate its spread to other areas; 3) notices of prohibition of movement for positive sites identified in 2011; and 4) public education.

In 2012, silvicultural information and information on indigenous red pine was used to identify a total of 463 confirmed red pine sites (Figure 4). A survey was subsequently conducted with trained staff visiting 182 or 40% of the above locations. Of the 182 locations assessed, 178 were found to be negative with no evidence of the disease, however, four new sites (Bay d'Espoir Hwy, Terra Nova, Seal Bay – Kippens Ridge, Cold Brook) were found to be positive (Figure 5). The latter site (Cold Brook) was found to be positive for Scleroderris EU by CFS staff, but was not confirmed by the CFIA. At this site trees were found to be heavily infected by another disease called Sirococcus shoot blight.

This is a native disease that kills current-year shoots with repeated attacks resulting in foliage

loss, stunted growth, and eventual tree mortality.

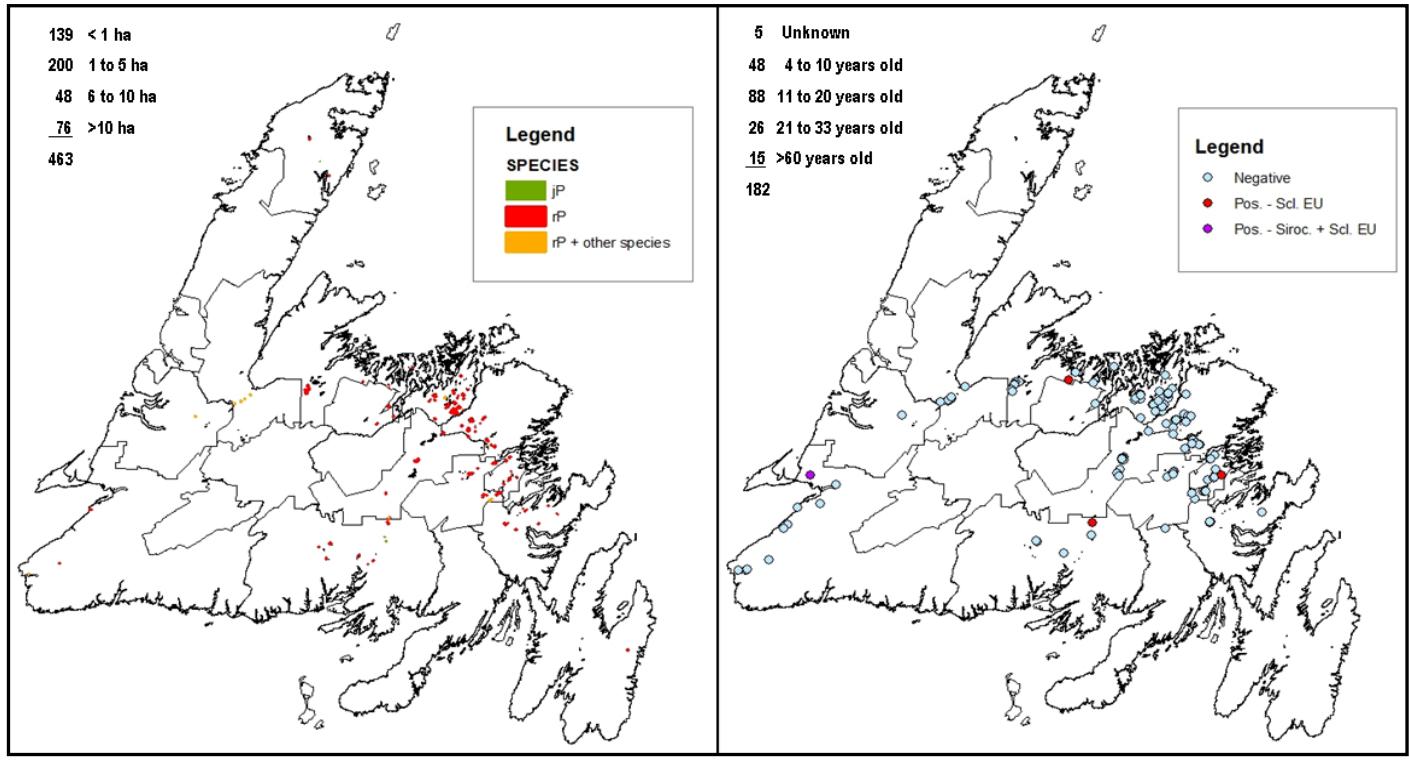


Figure 4. Map showing confirmed red pine areas (n=463).

Figure 5. Map showing positive and negative sites identified in 2012.

Current situation:

With the positive finds from 2011 and 2012, there are now seven sites with the European

strain of Scleroterris canker outside of the existing quarantine zone on the Avalon Peninsula (Table 1).

Table 1. Summary information - seven sites positive for Scleroterris (EU) canker in Newfoundland.

Year Detected	Location Name	Location	Year Planted	Area (ha)	Age Trees	Stock	Origin	Comments
2011	White Hills	Approximately 10km NW of Clarenville, on the south side of the TCH (D.2)	1988	21	26	rP Container	Wooddale Provincial Tree Nursery	75,000 seedlings shipped
2011	Berry Hill	East side of Bay d'Espoir Hwy, south of Berry Hill Pond (D.7)	1989	48	25	rP Container	Wooddale Provincial Tree Nursery	125,000 seedlings shipped
2011	Conne River	West side of Bay d'Espoir Hwy. ca. 10 km south of Berry Hill (D.7)	1987	91	25	jP	Aerial Seeding	
2012	Bay d'Espoir Hwy	East side of Bay d'Espoir Hwy, south of Berry Hill Pond (D.7)	1989	2	25	rP Container	Wooddale Provincial Tree Nursery	
2012	Terra Nova	3km up the Terra Nova River from bridge over the TCH (D.5)	1949	5	63	rP Bareroot	Back River Tree Nursery, Salmonier	Seed came from Ontario
2012	Seal Bay - Kippens Ridge	North of South Twin Lake (D.9)	1992	9	22	rP Container	Wooddale Provincial Tree Nursery	15,000 seedlings shipped
2012	Cold Brook	West of community of Cold Brook (D.14)	1988	10	26	rP Container	Private Nursery (Black Duck or Loch Leven, both in District 14)	Seed purchased from a private company in Nova Scotia

Maps for each of these sites are also provided in the attachments at the end of this document. With the exception of the Terra Nova site, all sites found to be positive are in the 20 to 30 age class range and from planting stock originating from the Wooddale Provincial Tree Nursery. To date there's been no evidence of this disease at this nursery. In contrast the Terra Nova site originated from bareroot stock from the Back River Tree Nursery (known to have infected trees), however, disease expression has been absent from this site until very recently. While three locations (Berry Hill, Bay d'Espoir Hwy, Conne River) are close together, the other sites are a considerable distance apart. This certainly raises additional questions with respect to identifying all the pathways and mechanisms associated with spread of this disease. This, however, does not address the immediate concerns over spread of the disease from the existing sites.

Control options:

The only means of effective control for this disease especially when dealing with larger trees is eradication and destruction of the infected materials. Specifically the cut branches and tops with shoots containing the fruiting structures (pycnidia) and spores (conidia) must be destroyed.

This can be accomplished using different methods: i) cutting and burning of the infected material to reduce any spread immediately; ii) cutting and leaving the cut branches and tops on site to prevent later spread (the disease will still persist for several years on infected materials). With respect to the merchantable stems or logs,

information from Dr. Gaston LaFlamme (CFS pathologist specializing in Scleroderris) indicates that there is very little risk of spreading the disease on the cut wood or stems, especially in the absence of any stem cankers.

DESCRIPTION OF UNDERTAKING

The ongoing presence of this invasive disease at the sites identified provides opportunity for this disease to continue to build-up and spread to other sites. At risk if left unchecked is over 3 million dollars invested in planted pine and the potential loss of indigenous red pine of ecological.

Scleroderris EU Canker Control Activity

To help reduce the risk of spread of this disease to other pine areas, the Department of Natural Resources with agreement from its partners on the Scleroderris (EU) Working Group proposes to eradicate the disease at the six infested red pine sites. Presently the Conne River jack pine site is thought to pose little threat with respect to spread of the disease given the very low levels of disease expression/symptomology and low incidence of pycnidia and spores.

For infected red pine sites having a merchantable component, wood with cankers absent will be harvested and removed from the site, while cut tops and branches will be left on site and burned. For sites with no merchantable component, trees will be cut and burned on site. All sites will be replanted by the Department of Natural Resources to species other than pine following eradication.

UNDERTAKING PARAMETERS

ERADICATION PROCEDURES

The Department of Natural Resources, Forestry Services Branch routinely oversees harvesting operations and conducts silvicultural activities (i.e. prescribed burns, plantings) on Crown land. Red pine sites where eradication is to be conducted will be assessed by Regional/District staff so that the most appropriate harvest methods are used. All harvesting equipment is to be steam cleaned on-site following harvesting operations to prevent any movement of spores on equipment to other parts of the Province. All appropriate procedures to conduct prescribed burns will also be followed to burn the infected material on site.

WORKER SAFETY

The Forestry Services Branch has well established safety guidelines for contractors and workers involved in harvesting operations. These will be followed as part of eradication efforts. There are also well established protocols for conducting prescribed burns.

PUBLIC HEALTH CONSIDERATIONS

Cabin owners will be notified with respect to prescribed burning activities at these sites.

ENVIRONMENTAL SAFETY

The Forestry Service Branch has an established environmental management system with standard operating practices to be followed by contractors conducting harvesting operations - these are to be followed as part of eradication efforts at these sites.

PUBLIC NOTIFICATION

As part of the program, the public and media will be notified of eradication work to be conducted through news releases or through appropriate contact as required.

POTENTIAL CONFLICTS:

Potential conflicts for five of the six sites identified are as follows.

White Hills – two blocks fall within Marten core area, public water supply area and municipal boundary.

Berry Hill Pond – blocks are close to several cabin owners, otherwise no conflicts.

Bay d'Espoir Hwy – block falls within protected road buffer.

Terra Nova – portions of block fall within 100m river buffer.

Seal Bay – Kippens Ridge – block falls with Marten core area.

Cold Brook – no conflicts.

Many of the above are only minor conflicts requiring a development permit (i.e. road buffer). Others (e.g. Marten core areas) may also be considered minor given much larger threat to indigenous red pine areas and species (e.g. red crossbill) dependant on this habitat.

ALTERNATE OPTIONS FOR SCLERODERRIS (EU)**CONTROL**

No other options exist for eradication of existing sites. For red pine plantations currently free of disease, pruning of lower branches found to be an effective means of disease prevention/control.

APPROVAL OF THE UNDERTAKING

Part 5 of the Provincial Forestry Act, Section 88, indicates the minister may undertake all reasonable measures to provide for effective protection of the forests whether on Crown lands, public land or privately owned land. Under Section 8 of the Provincial Plant Protection Act, there are also provisions for the treatment/destruction of pests or plant materials to prevent the spread of pests and diseases destructive to vegetation.

SCHEDULE

The insects will emerge, and the best time for application of control, is expected to be early July to late July, but weather dependent. Because of the logistics and acquisition of supplies and services, it is essential that approval be given at the earliest.

August 9, 2013

Original signed by

Date

Jim Evans

CEO - Forestry &
Agrifoods Agency

ATTACHMENTS

Maps of sites found to be positive with the European strain of Scleroterris

