

2024

FFTC Silviculture Field Report





INTRODUCTION

The Forestry Futures Trust Committee (FFTC) has distributed over \$210 million in support of eligible silviculture projects on Ontario's Crown-forest lands since the Trust was established in 1995. FFTC members have visited a number of the projects from their inception through to completion on an ad-hoc basis and while attending Independent Forest Audits. Descriptions of those visits have been documented in their respective FFTC annual reports.

Formal field evaluations, which were initiated in 2013 and conducted in 2014, 2015, 2019 and 2024, were designed to:

1. Document the success or failure of a funded project,
2. Provide an opportunity to discuss challenges encountered in completing the project with the proponent or forest manager,
3. Identify lessons learned from implementing the planned treatments,
4. Evaluate opportunities to implement similar projects under similar conditions, and
5. Produce a summary report of funded FFT silviculture project accomplishments.

The sampling design was focus-based, (not random), to meet one or more of the following requirements:

- Address projects where project objectives are linked to concerns raised in an Independent Forest Audit,
- Capture projects funded under the Job Stimulus program (Round 29).
- Capture older projects,
- Represent the three Ministry of Natural Resources and Forestry Regions (NW, NE, S),
- Inspect projects that received large investments of capital, and,
- Represent four broad treatment types: disturbance renewal, spacing treatments, stand improvement, and stand conversions

This year the program targeted field visits to 32 projects across five forests in Central Ontario. Forest managers were contacted to participate in the field visits and to provide any additional background information to supplement the information documented in the original Project Application and the Final Project Work Reports. On behalf of FFTC, Betty VanKerkhof, R.P.F., Mike Barker and Peter Street, R.P.F. visited forests in the northeast region, Shelley Vescio, R.P.F. in the southern region and James Harrison in the northwest region. Thanks are extended to the following individuals who accompanied us on our site visits

Ryan Miles, R.P.F., Matt Aleska, R.P.F., Mark MacNeil, and Will Byman, R.P.F. - Northshore Forest
Vince Strack, R.P.F. and Jason McLellan R.P.F.- Algoma Forest
Julia Ieropoli R.P.F. and Scott MacDonald R.P.F. in Training, -Spanish Forest
Tom Dolan R.P.F. – Algonquin Park Forest
Robert Partridge R.P.F. – Red Lake Forest

All the projects visited were found to be successful in meeting the project's objectives. A summary of the projects visited follows.

Monday October 7th, 2024 – Algoma Forest

Hosts –Vince Strack & Jason McLellan, Clergue Forest Management Inc.

Preamble - Current forest operations approach on Algoma Forest

Clergue operates with only two RPFs on staff who are very dedicated to managing the forest. The Licensees do their own boundary marking and road location. They also submit Forest Operation Inspection Reports (FOIPs) to Clergue for their approval. Clergue prepares Forest Operations Prescriptions (FOPs), hires contract tree markers, monitors the marking and harvest operation. Marking audits, return to the same spot post-harvest to do a direct comparison.

The current harvest is approximately 30% of the available harvest area. They are not harvesting mixedwoods and white pine due to a lack of demand for the lower quality material. The management system assumes all merchantable material will be harvested but that is not possible in the absence of demand. They are currently, experiencing the poorest extended market for maple and other poor-quality hardwoods. They are managing tolerant hardwoods in the southern part of the management unit and jack pine and black spruce in the northern part. Generally, black spruce and jack pine are planted and supplemented with white spruce, red and white pine to maintain their presence on the landscape.

Clergue rarely returns to tolerant hardwood shelterwood sites to do a final removal harvest except in areas where a diameter limit harvest was done in the mid-1980s and where polewood was established. The intent of managing the tolerant hardwoods is to move towards a selection harvest. Selection harvests leave 16-18 m² per hectare while shelterwood harvests leave 12-14 m² per hectare.

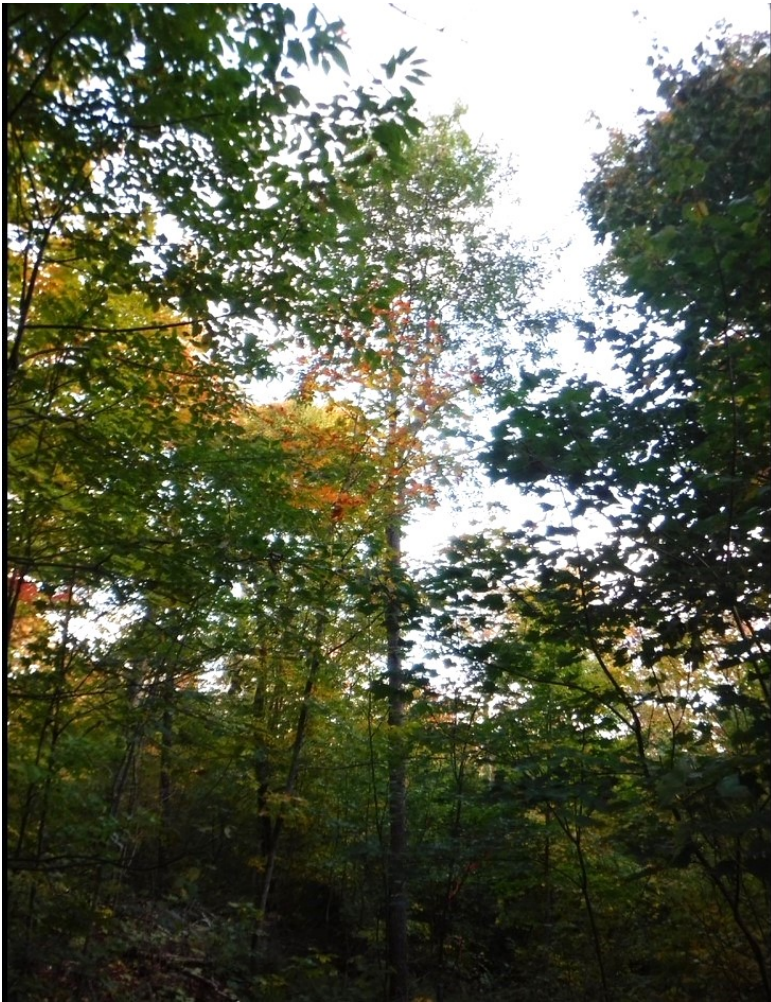
Project 1168-1-R56 – 2023 (one year) - Black Cherry Release

Algoma Forest - \$5005 invested, including \$1050 (21%) from the applicant

The project intent was to use brush-saws to release black cherry from non-merchantable maple competition. It was a very small project, only 8 hectares in size with an effective treatment area of less than one hectare.

The Project was designed to create large release areas (up to 30 metres in size) around young regeneration where a positive response can be expected and smaller release areas (15 metres +/-) around saplings, polewood and seed





trees where a lesser growth response can be expected and where there is a concern around creating a “shock-effect” from over-release. One year later, a shock effect has not been observed.

The Project was completed as prescribed and will be effective in releasing the black cherry. Future actions on the site include monitoring and identifying black cherry trees in adjacent stands for follow-up.

Undertaking such a small Project shows the dedication of the staff at Clergue!

**Project 1013-1-R50, 2020-2023 - Tolerant Hardwood Stand Improvement
Algoma Forest - \$785,154 invested, including \$404,276 (or 51.5%) from the FRT, applicant and partners**

The intent of this Project was to remove Unacceptable Growing Stock (UGS), trees that are either unmerchantable or are marginally economic to harvest, this will provide better quality trees room to grow and provide for more opportunities for natural regeneration.



For the three-year Project, 5,319.7 hectares were treated (a mix of 73.3% selection and 26.7% shelterwood). Poor hardwood markets reduced the planned 12,000 ha treatment area by 56%.

The total Project costs were \$147.59 per hectare. The total costs were higher than normal, but the applicant contributed more than normal.

Overall, the stand improvement work looked very good and many of the stands will be selection cuts the next time they are prescribed for harvesting.



The project location on Mile 67 road was cut with a small forwarder leaving a minimal footprint.

Average basal area is 30 m² per hectare with 36 m² per hectare on better sites. Clergue is observing a 10-20% increase in future Acceptable Growing Stock (AGS) on treated sites.

**Project 828-1-R35, 2013-2016 - Tolerant
Hardwood Stand Improvement
Algoma Forest - \$1,053,512 invested, including
\$495,797 (or 47%) from the FRT and partners**

This Project was also intended to remove UGS trees that are either unmerchantable or are marginally economic to harvest, this will provide better quality trees room to grow and provide for more opportunities for natural regeneration.

For the three-year Project, 7,078 hectares were treated (a mix of 55% selection and 45% shelterwood).

The total Project costs were \$148.84 per ha. The total costs were again higher than normal, but the applicant again contributed more than normal.

Overall, the stand improvement work looked very good and many of the stands will be selection cuts the next time they are prescribed for harvesting.



Clergue is observing an increase of 25% AGS on sites harvested in the mid-1990s under the tree marking system, 25% AGS in mid-1990s to 50% currently.

Project adjacent Dump Road shows good yellow birch and maple regeneration in openings and polewood.



**Project 781-2-R31, 2011-2014 -
Rehabilitation of a 2010 Forest Fire
Algoma Forest - \$104,540 invested,
including \$24,380 (or 23%) from the
FRT plus in-kind from the applicant**

In 2010 a forest fire consumed approximately 1,405 has of productive forest. While parts of the burn will regenerate naturally other areas will require seeding or planting.

This Project entails regenerating 586 hectares of the burned area, with most of this occurring in a 25-year-old jack pine plantation and the balance in a 2003 black spruce plantation and a 2009 jack pine plantation.

The actual area treated includes 471 ha of aerial seeding to jack pine and 115 ha planted to jack pine.



In 2014, 46 hectares of aerial spraying was added to the project with planted areas experiencing competition as the target treatment area

In total the project cost \$178.39 per hectare.

The regenerating jack pine is 5-6 meters tall and the stocking ranges from 0.9 to 1.1. A very successful project! Project has not yet been scheduled for an establishment survey, but it is obviously well established.

Parts of the area were seeded while other parts were planted with jack pine. A portion of the planted trees were taller with better distribution than the seeded areas but some of the planted areas also experienced natural ingress of jack pine and some black spruce leading to overstocking.

Tuesday October 8th, 2024 – Northshore Forest (1st day)

Hosts –Ryan Miles, Matt Aleksa, and Mark MacNeil, Northshore Forest Inc.

Preamble:

Northshore Forest is also challenged in finding a market for their hardwood pulp leading to an under harvesting of tolerant hardwood stands. The situation has worsened with the closure of Domtar's Espanola pulp mill and the partial closure at RYAM's facility in Témiscaming Quebec. This leads to a constrained ability to improve the quality in tolerant hardwood stands meaning poor quality stands persist longer on the landscape. Their approach focuses on using certified tree markers and treating a stand properly or avoiding it until markets improve. Staff are committed to managing the forest properly and are continually looking for ways to improve their success rates.

The outstanding land claim by Thessalon First Nation also means that they are unable to continue active management treatments of red and white pine plantations on the Kirkwood Forest.

A further challenge limiting the ability to complete projects is the decreasing availability of skilled forestry workers.

Project 994-1-R49, 2020-2023 - Tolerant Hardwood Stand Improvement

Northshore Forest – \$39,976 invested, including \$10,705 (or 27%) from the applicant, partners and the FRT

This Project was designed to ensure the removal of undesirable and unmerchantable growing stock (UGS – red maple, balsam, etc.) during regular harvesting operations, thereby allowing stand health and quality to improve.

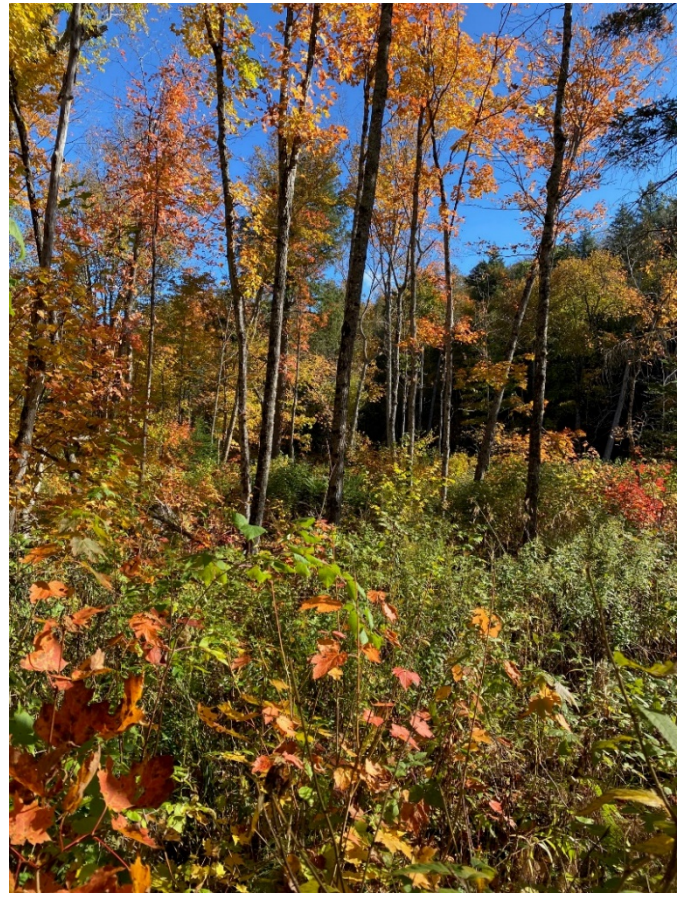
Originally the Project was to treat 2,139 ha, however due to poor markets for hardwood pulp only 351 ha (16%) were treated. Costs averaged 114 per ha.

At both sites, the treatment was found to be very effective at removing the UGS from the stand and in many places the return cut will likely be a hardwood selection harvest (rather than another shelterwood cut). Both sites had ample tolerant hardwood regeneration.



Site two was a small uniform shelterwood harvest off Wharncliffe Road. It shows the challenges of using blue marking in tolerant hardwood prescriptions for shelterwood where the trees are of varying sizes. It can lead to unplanned patches that are very open. They have moved to consistently use orange paint in tolerant hardwoods, while reserving blue marking for red and white pine shelterwoods where there are similar sized large trees.

Northshore staff are considering the best way to implement ongoing monitoring to improve performance and practices over time.

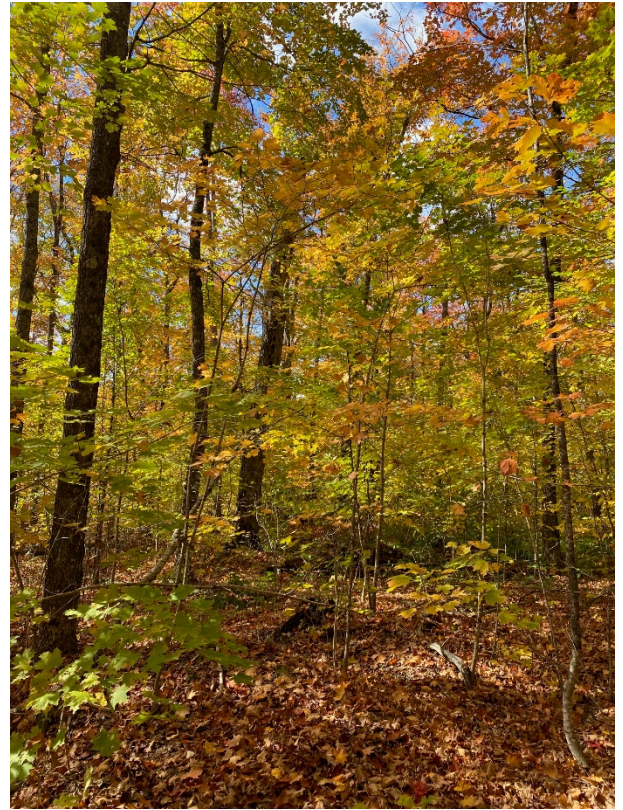


**Project 573-1-R21, 2005-2007 - Tolerant Hardwood
Stand Improvement
Northshore Forest – \$279,387 invested, including
\$76,947 (or 27.5%) from the applicant, partners and
the FRT**

This Project was also designed to ensure the removal of undesirable growing stock during regular harvesting operations (UGS – red maple, balsam, etc.), thereby allowing stand health and quality to improve.

The Project was planned to treat 2,700 ha, and at the end of the Project had treated 100% of the area. The costs were \$103 per hectare. This project benefited from a market for the low-grade hardwood at the time it was conducted, whereas more recent projects are hindered by poor pulp markets.

At all three sites, the treatment was found to be very effective at removing the UGS from the stand and in many places the return cut will likely be a hardwood selection harvest (rather than another shelterwood cut).



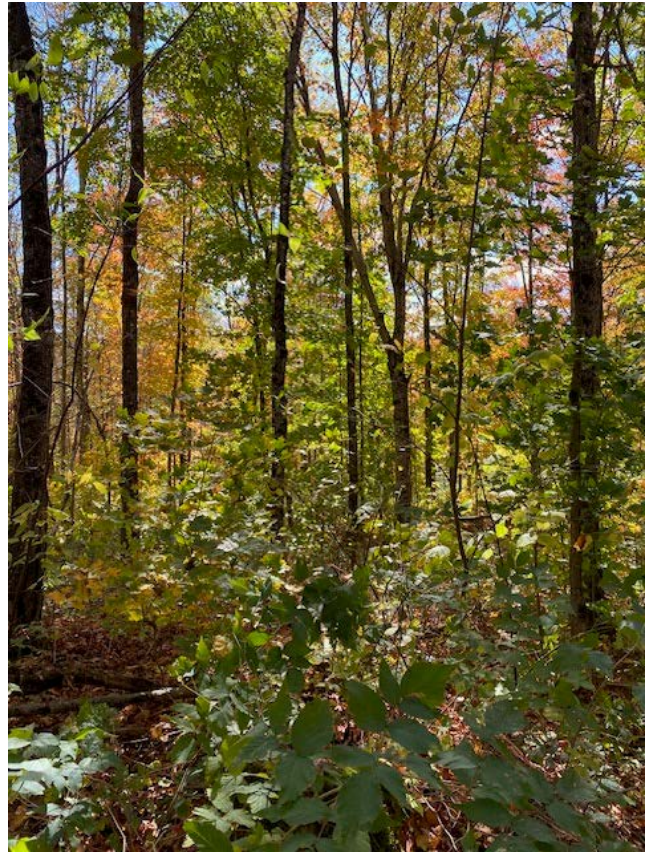
There was variability in the site quality at each of the 3 stops along the Shaw Road. The first being of high quality without exposed rock. It had well established maple and some yellow birch, and a spot check showed 30-32 m² per hectare basal area at 16 or more years post treatment. The next two stops were rugged, hilly and had more exposed rock. There was more yellow and white birch, red oak and some white cedar at these latter two stops.

**Project 884-1-R39, 2015-2018 - Tolerant Hardwood
Stand Improvement
Northshore Forest – \$142,885 invested, including
\$40,786 (or 28.5%) from the applicant, partners and
the FRT**

The objective of this treatment was to significantly improve the health, development and quality of tolerant hardwood stands (mainly sugar maple, yellow birch and some red oak).

The work was carried out during the normal harvesting operation, where trees marked for removal were deemed unmerchantable (often diseased or very a low quality).

Only 1,205 hectares were treated out of a planned project of 2,700 ha (45%), due to poor hardwood markets. The total costs for the Project worked out to be \$119 per hectare.



The treatment was found to be very effective at removing the UGS from the stand and in many places the return cut will likely be a hardwood selection harvest (rather than another shelterwood cut).

**Project 959-1-R46 from 2018-2020 - Tolerant Hardwood Stand Improvement
Northshore Forest – \$82,208 invested,
including \$20,688 (or 25%) from the applicant,
partners and the FRT**

The objective of this treatment was to also significantly improve the health, development and quality of tolerant hardwood stands (mainly sugar maple and yellow birch).

The work was carried out during the normal harvesting operation, where trees marked for removal were deemed unmerchantable (often of diseased or very low quality).

Only 725 hectares were treated out of a planned project of 1,800 ha (40%) due to poor hardwood markets. The total costs for the Project worked out to be \$113 per hectare.

The treatment was found to be very effective at removing the UGS from the stand and in many places the return cut will likely be a hardwood selection harvest (rather than another shelterwood cut).



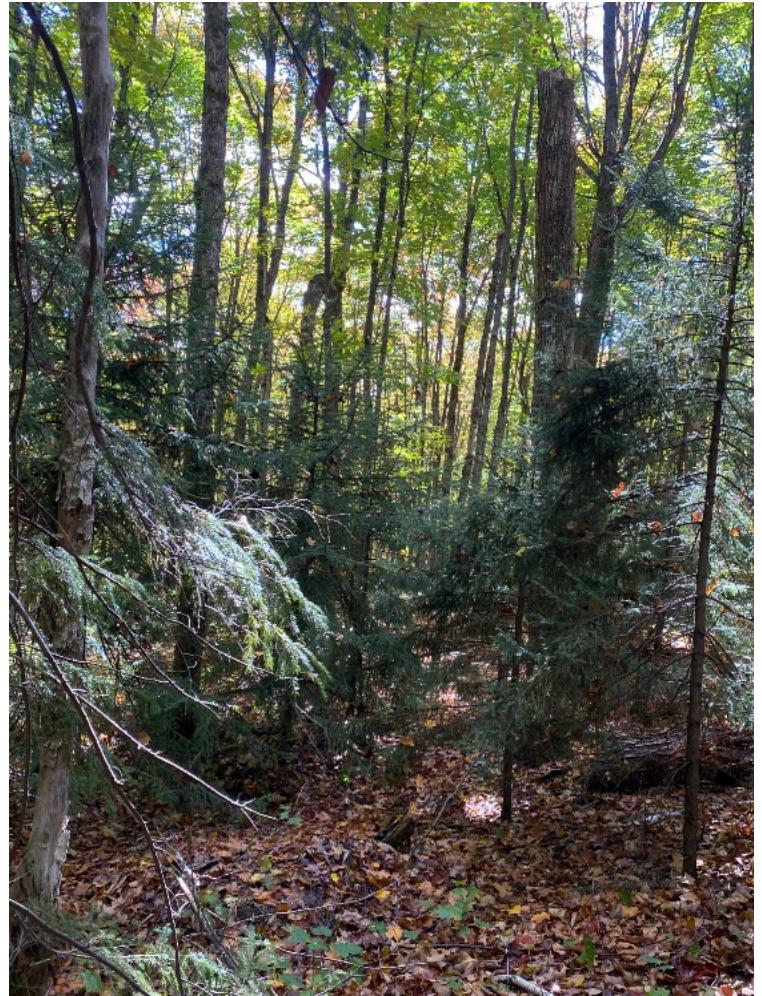
The stop was in an area that included high species diversity including an overstorey of maple, red oak, white and yellow birch, hemlock and other species such as ironwood. The regeneration also varied with all overstorey species represented.

This visit to the Northshore Forest also included two unplanned stops. The first in an area of Planted Red Spruce.

Naturally occurring red spruce was found on this hardwood site. The Company took an interest in promoting more red spruce regeneration so a small area adjacent to the natural red spruce was planted.

The trees are doing well and are 2-3 meters in height.

Red spruce is resistant to deer browsing and can provide good winter thermal cover for the deer.



The second unplanned stop was in an area of blowdown being considered for a prescribed burn.

2020 Blowdown, Planned Prescribed Burn Site

This stop was in an area of approximately 35 hectares of jack pine blowdown on Wharncliffe Road near the intersection with the Shaw Road, making it easily accessible.

Northshore Forest is planning to submit a Prescribed Burn Project to the FFTC using a cost share of FFT, Ministry of Natural Resources (MNR) fire and Forest Renewal Trust funds.

We confirmed that the Project would be eligible for funding – but did not know about past costs for prescribed burns.



Wednesday October 9th, 2024 – Northshore Forest (2nd day)

Hosts – William Byman & Ryan Miles, Northshore Forest Inc.

Preamble:

The increasing challenge in finding experienced forestry workers is evident reducing project completion rates to approximately twenty percent where manual tending is required. Alternative approaches may be necessary.

Project 959-1-R46 from 2018-2020 - Tolerant Hardwood Stand Improvement

The area visited was incorrectly included in this Project. This project as a whole is spread out over numerous blocks, which is probably the reason for the mapping mistake.

It is actually a red oak and white pine site, not a tolerant hardwood site. The red oak and white pine are doing very well, and the area should be monitored and considered for a future intensive treatment to manage the red oak and white pine regeneration. There is some competition including red maple and birch.



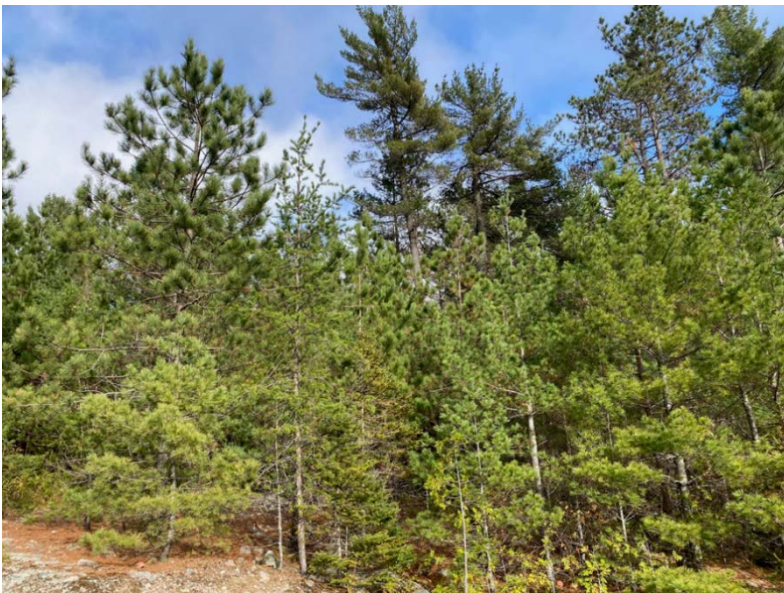
Project 505-1-R18 from 2004-2006 - Regeneration of X & Y Lands to White Pine

Northshore Forest – \$247,291.70 invested, including \$46,310 (or 19%) from the applicant and the FRT

This project is located in patches, interspersed with bald rock and cliffs. It appears to have had a relatively light harvest in the past.

A total of 498 hectares were treated at a cost of \$497 per ha. In 2004 white pine was planted on 105 hectares (ha) and 353 ha were aerial tended with glyphosate. In 2005 white pine was planted on 387 ha and 111 ha was also manually tended by Sagamok First Nation using brush saws.

The planted white pine regeneration is doing very well and averages 4 to 5 meters in height. There is also an ingress of smaller natural white pine, and some taller pole wood sized white pine left over from the harvest. Other natural regeneration is also present including red pine, spruce, balsam fir, white cedar and white birch.



**Project 995-1-R49 from 2020-2022 - Manual
Tending in Regenerating White Pine stands**

**Northshore Forest – \$66,010.15 invested,
including \$14391.75 (or 22%) from the FRT and
the applicant.**

Due to Covid restrictions there was no activity during the first 2 years of the Project. In Year 3, 114.2 ha were manually tended by Sagamok First Nation (just over a quarter of what was originally planned. Costs were \$578 per ha.

The areas treated were 2016 white pine shelterwood cuts that were supplementary planted between 2017 to 2020.

The white pine regeneration is doing well, but the area will require an additional tending in 2-3 years to reduce competition from species such as red maple and white birch.



There is a large area that remains untreated as well as the need to re-treat areas where the competition has resprouted around cut stems. The intent will be to release the white pine regeneration while maintaining some cover to reduce the incidence of white pine weevil.

Project 498-1-R18 from 2004-2006 - Pre-Commercial Thinning of Jack Pine

Northshore Forest - \$147,398 invested, including a combined contribution of \$24,583 (17%) from the FRT and the applicant.

A total of nine areas were thinned with brush saws by Sagamok First Nation. There was a wide range in the age of the stands being thinned (planted from 1979 to 1988). A total of 300 hectares were treated. Costs averaged \$491 per ha.

We could only access a small portion of the Project that was along a well-maintained road. The other Project areas were inaccessible.

The area we did visit was around 40 years of age and contained about 40% red pine. The red pine was doing well but the jack pine did not appear to respond very well to the treatment. The jack pine is clumped with dense patches of small stems. It had poor form and was quite limby. It is unclear whether the seed source was the problem or if the site quality was impacting the form.



Thursday October 10th, 2024 – Spanish Forest

Hosts – Julia Ieropoli & Scott MacDonald, Interfor Corporation

Preamble:

The stops on October 10th primarily consisted of pre-commercial thinning of jack pine stands that had been previously seeded. The intent of these treatments is to reduce the density, increase the volume per tree, improve the quality of the trees and shorten the rotation age with an objective of producing sawlogs.

The thinning projects visited were well done and effective. They had very high project completion rates ranging from a low of 86% to greater than 100%. This is a notable success rate given the challenges in obtaining forestry workers.

The cost of the thinning projects visited ranged from \$419 to \$693 per hectare with the applicant frequently providing approximately 50%, largely from the FRT. Much of the thinning work was carried out by First Nations Contractors.

The one planted area also needed thinning due to the ingress of naturals but it is not clear whether the work done on the “Job Stimulus Program” would automatically qualify for future FFT funding.



While several of the thinning project descriptions mention follow-up assessments, due to staff retirements, it is not known at this time if any follow-up plots and surveys were carried out. Company staff were advised that follow-up assessments would be required if additional pre-commercial thinning projects were applied for. The staff were very welcoming and dedicated to the forest and although they may not have been present when the treatments were carried out, had made best efforts to investigate and are continuing to do so.

Project 547-1-R20 from 2005-2008 - Pre-Commercial Thinning of Jack Pine

Spanish Forest - \$614,108 invested, including a combined contribution of \$122,822 (20%) from the FRT and the applicant

There was a total of 1,037.2 hectares (ha) treated over 3 years. Costs averaged \$592 per ha over the 3-years of the treatment.

The stands had been site prepared and aerial seeded in 1993, 12-15 years prior to thinning and had an average density of 6,500 stems per hectare and were approximately 4.5 metres tall. A portion of the project area was also aerial tended in 2001 with glyphosate. Brush saws were used to thin the stands down to approximately 2,150 stems per hectare.



There was difficulty in finding forestry workers to complete the treatment in the first two years of the project. This was resolved in year three enabling a completion rate of 86%.



The jack pine has responded well, and the diameter now is at least twice the diameter of adjacent un-thinned stands. The crowns are healthy, and the stems are self-pruning. Given the age since pre-commercial thinning the concept of using the site to demonstrate the effectiveness of the treatment was discussed.

Project 398-1-R13 from 2001-2003 - Pre-Commercial Thinning of Jack Pine

Spanish Forest - \$756,001 invested, including a combined contribution of \$377,333 (50%) from the FRT and the applicant

There was a total of 1,123.78 ha treated over 3 years. Costs averaged \$673 per ha.

The stands had been site prepared and aerial seeded in 1991, 10+ years prior to thinning and had an average density of 6,000 stems per hectare and were approximately 4.5 metres tall. A portion of the project area was also aerial tended in 1994 with glyphosate. Brush saws were used to thin the stands down to approximately 1,900 stems per hectare.



The project proposal did indicate that permanent sample plots would be established to monitor the long-term effect of the treatments, but staff are unaware if this occurred.

The jack pine has responded well, and the diameter now is 2-3 times greater than the diameter of adjacent un-thinned stands. The crowns are healthy, and the stems are self-pruning.



Some of the treated area is shallow soils over bedrock, this will not support a dense stand and is reflected in the treatments.

**Project 712-1-R28 from 2010-2013 -
Pre-Commercial Thinning of Jack
Pine**

**Spanish Forest - \$1,320,000
invested, including a contribution of
\$660,000 (or 50%) from the FRT**

There was a total of 3,141.2 ha treated over 3 years. This was slightly greater than planned due to lower negotiated contract prices. Costs averaged \$420 per ha.

The stands had been site prepared in 1997, and aerial seeded in 1998, 10-15 years prior to thinning. They had an average density of 6,500 stems per hectare and were approximately 4.5 metres tall. The majority of the Project area was also aerial tended in 2001 with glyphosate. Brush saws were used to thin the stands down to approximately 1,900 stems per hectare.



The jack pine has responded well, and the diameter is now 2-3 times greater than the diameter of adjacent un-thinned stands. The crowns are healthy, and the stems are self-pruning.

Some of the treated area is shallow soils over bedrock.

**Project 721-2-R29, one year – 2010 -
Mechanical Site-Preparation and
Planting of Jack Pine**

**Spanish Forest - \$309,884 invested,
including a combined contribution of
\$9,884(3%) from the FRT**

Six hundred hectares were treated on an area that was previously depleted due to a severe Jack Pine Budworm infestation. Cost per hectare was \$516.

The funding for this project was provided to create silvicultural employment opportunities on areas that would have otherwise been prescribed for a lesser intensive treatment.

The site is flat and sandy and the site-preparation very effective.

Due to the time restraints on the funding announcement, jack pine was sown in the spring and current jack pine stock was planted in mid-August. The stock was quite variable in size but was deemed acceptable for planting.



The planted jack pine had good survival and there has also been natural ingress of jack pine and spruce. Overall, the plantation is successful – but it is dense and could use an additional thinning. It varies in height from approximately 8 to 10 metres.

Project 908 1-R41 from 2016-2018 - Pre-Commercial Thinning of Jack Pine

Spanish Forest - \$1,023,328 invested, including a combined contribution of \$496,097 (or 49%) from the FRT plus in-kind costs from the applicant

There was a total of 2,089.2 ha treated over 3 years. Costs averaged \$494 per ha.

The Project included area that had been aerial seeded approximately 10-15 years prior as well as a proportion of the area planted in 2010 under Project 721-2-29 approximately 6 years prior. The seeded areas had an average density of 8,603 stems per hectare and were approximately 4 metres tall. Brush saws were used to thin down to an average of approximately 2,062 stems per hectare.



The jack pine has responded well, and the current diameter is 2-3 times greater than the diameter of adjacent un-thinned stands. The crowns are healthy, and the stems are self-pruning.

It was still possible to age the cut stems, including those planted approximately six years prior to the treatment, the increase in diameter was evident. This could also be used to provide treatment response evidence.

Project 820-2-R34: Petawawa River Storm Damage Renewal

Algonquin Park Forest (2012-13 to 2013-14)

\$162,985 Investment: \$103,100 FFT and \$59,885 (37%) Applicant



- The objectives of this project were to tend pine plantations and rehabilitate jack pine stands that were damaged in previous storm events
- Jack pine forests are a high priority for maintenance in the Algonquin Park Forest because of their uncommon occurrence and uniqueness of habitat for wildlife species
- 325 hectares of red, white, and jack pine plantations that were established after severe windstorms in 1983 and 1999 were tended in 2013; these stands were not observed during this visit
- Instead, a 23-hectare, 40-year-old jack pine stand was visited that had been salvaged after a heavy, wet-snow event in 2011 was site prepared and planted in 2013
 - 19 hectares were mechanically site prepared and planted with jack pine stock
 - These areas will be evaluated for potential commercial thinning in 2060 and then harvested in 2080 or 2090
 - Pre-commercial thinning in pure jack pine stands is not economically feasible due to the value of the final product.



- The remaining four hectares of the 23-hectare area were scarified for natural regeneration and will not receive further treatments until harvest
- All trees observed at this location appeared to be healthy and vigorous



Project 922-2-R42: Northern Algonquin Pre-Commercial Thinning Phase II

Algonquin Park Forest (2016-17 to 2019-20)

\$200,895 Investment: \$149,448 FFT and \$51,447 (26%) Applicant



- Jack pine budworm outbreaks in the late 1970s and early 1980s resulted in about 1,000 hectares being salvage harvested and planted to red pine and jack pine
- A series of FFT-funded, pre-commercial thinning projects was initiated in 2012-13 to improve the health and vigour of plantings and to increase opportunities for earlier commercial thinning, higher-quality future yields and reduced rotation ages, as well to address an anticipated mid-term wood-supply shortfalls in high-value pine products
- Round 34 funded Phase I of Northern Algonquin Pre-Commercial Thinning projects through which 350 hectares of approximately 30-year-old trees were tended between 2012 and 2014

- This Round 42 project was Phase II for which another 326 hectares were pre-commercially thinning between 2016 and 2019
- In older plantations (> 30 years), no more than 33% basal area is removed at one time so that the risk is reduced of remaining trees becoming susceptible to damage during weather-related events



- After pre-commercial thinning has occurred, older plantations are assessed every 15 years for commercial thinning opportunities
- Depending upon the level of stocking, up to five commercial thinning operations could occur in pine stands before they reach their rotation age of 120-140 years

- Approximately 1,000 working days were generated by this project for contractors, tree markers and AFA staff

1063-3-R51: Pre-Harvest Understory Beech Cleaning

Algonquin Park Forest (2021-22 to 2023-24)

\$179,696 Investment: \$140,348 FFT and \$39,348 (22%) by Applicant



- The purpose of this project was to manually clean and remove all understory beech regeneration about five years before expected harvest, to allow for the release and establishment of other species such as hard maples, red oak and yellow birch
- 244 hectares were cleaned using brush saws and chainsaws; these stands were not visited during this tour
- Instead, a 10-hectare pilot project that received the stem-specific herbicide treatments of hack-and-squirt and basal bark spray was visited
- That pilot project was initiated in 2023 after the AFA received an unexpected approval by the MNR for the use of herbicides to treat beech bark disease
- Before 2023, herbicide use was prohibited in Algonquin Park but, as disease effects became more widely understood, willingness increased to treat it more aggressively using herbicides that were proven to be more effective and cost efficient than manual cleaning
- A section of the pilot-project area was visited and the effectiveness of chemical treatments were observed by the number of dead beech trees in the lower and mid-story canopy layers
- Approximately, 506 working days were generated by this project for contractors and 37 days for AFA staff



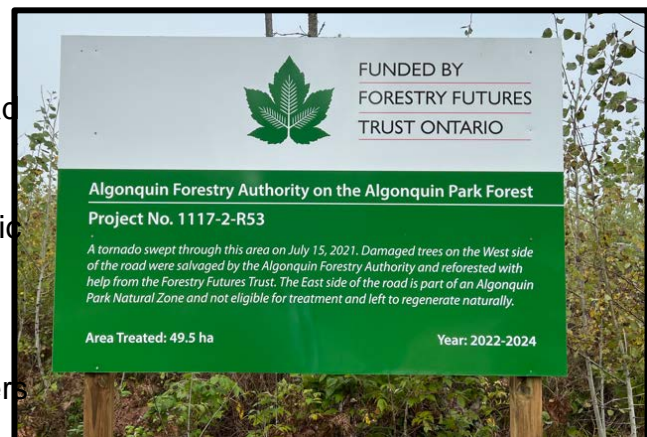
1117-2-R53: 2021 Tornado Renewal

Algonquin Park Forest (2021-22 to 2023-24)

\$95,607 Investment: \$82,035 by FFT and \$13,572 (14%) by Applicant



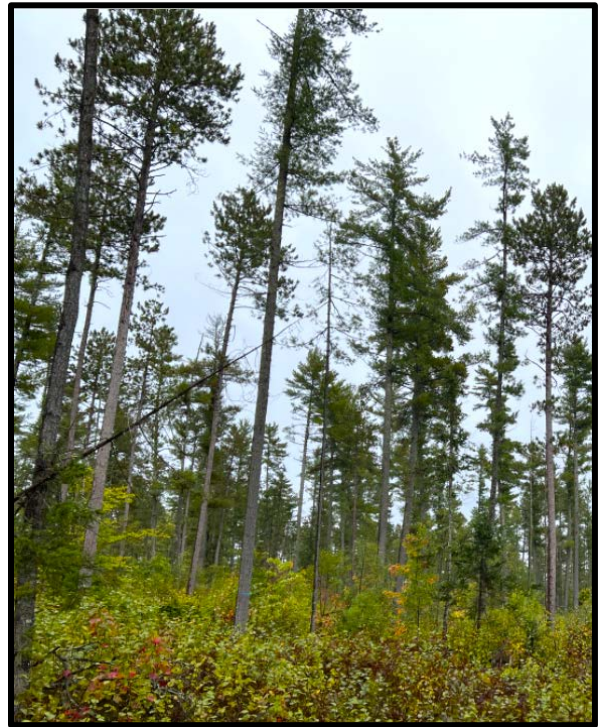
- In July 2021, a tornado near Lake Traverse touched down over a 150-hectare area, resulting in the knocking down of trees and destruction of the red pine, white pine and poplar overstory
- Of the damaged area, only 63 hectares could be salvaged because of boundary proximities to protected areas and Areas of Concern
- 50 of the 63 hectares were site prepared and planted with red pine seedlings, while the remaining 13 hectares did not require treatment due to sufficient stocking with natural regeneration
- In addition to the FFT-funded tree planting, hand seeding of low-quality pine seed was also done. This seed did not have high enough viability to be used for nursery stock production
- Both seedling and seeded trees were growing well and unrestricted
- Due to its location on a public access road with different land uses allowed on either side, this site is being used as a “demonstration” area to educate the public on sustainable forest management practices in the Park
- Approximately 128 working days were generated for contractors and tree markers and another 41 days for AFA staff



1126-1-R54: Even Aged Stand Improvement (*in progress*)

Algonquin Park Forest (2022-23 to 2024-25)

Planned \$565,800 Investment: \$423,000 by FFT and \$142,800 (25%) by Applicant

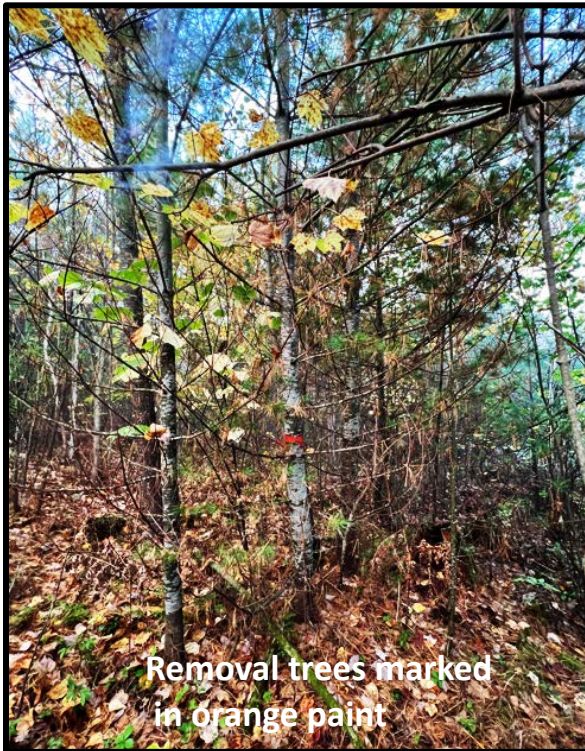


- Stand improvement operations were planned to occur concurrently with harvest over a three-year period
- The objective was to increase forest productivity and improve forest quality by removing trees of undesirable species, form, quality, or condition
- Red and white pine trees were the primary species targeted for treatment but shade intolerant species such as red oak and yellow birch were also selected
- A total of 4,200 hectares (1,400 ha/year) were planned for treatment over this project's three-year period but, due to reduced harvest capacity, only 1,136 hectares were completed after two years
- The reasons for reduced harvest capacity are complex and include factors such as retirements, high investment costs for equipment, poor/non-existent markets for pulp and reduced willingness for employees to stay in bush camps or have long commutes
- The project sites visited showed good mid-story removal and natural regeneration with limited competition
- Approximately 234 working days were generated by this project for contractors and AFA staff

1158-1-R56: Pre-Commercial Thinning and Tending in 1999 Blowdown (*in progress*)

Algonquin Park Forest (2023-24 to 2025-26)

\$183,500 Planned Investment: \$143,500 by FFT and \$40,000 (22%) by Applicant



- A severe windstorm in 1999 blew down about 250 hectares of forest that were then salvage harvested and planted with white and red pine seedlings
- In 2023-24, this pre-commercial thinning project was initiated to remove the nearly 25-year-old white pine trees that had succumbed to white pine weevil and displayed poor form and heavy branching
- Infested trees and competing hardwoods were marked for removal so that high-quality red and white pine stems could be released from competition
- On-going difficulties in finding available and experienced contractors and in retaining trained tree markers has proven challenging to accomplishing pre-commercial thinning objectives
- Approximately 40 days were generated by this project for contractors and tree markers and another 5 days for AFA staff in 2023-24

1203-3-R58: Algonquin Park Beech Cleaning (*in progress*)

Algonquin Park Forest (2024-25 to 2026-27)

\$517,000 Planned Investment: \$454,000 by FFT and \$63,000 (12%) by Applicant

Hack-and-Squirt Application Method



Basal Bark Spray Application Method



- The objective of this project was to remove all understory beech regeneration using a combination of motor-manual felling with brush saws or chainsaws and chemical tending using the stem-specific methods of hack-and-squirt or basal bark spray
- The use of herbicides in Algonquin Park has been a controversial topic and only recently approved for beech bark disease treatment, as described previously for project 1063-3-R51
- To date, only the stem-specific application methods are allowed but the AFA may seek approval for foliar applications to control beech root suckers, stump sprouts and advanced regeneration.
- At this visit, demonstrations of the hack-and-squirt or basal bark spray application methods were provided

1204-1-R58: North Algonquin Pre-Commercial Thinning Phase IV (*in progress*)

Algonquin Park Forest (2024-2025 to 2026-2027)

\$191,300 Planned Investment: \$93,500 by FFT and \$97,800 (51%) by Applicant



- This Round 58 project was Phase IV of the North Algonquin Pre-Commercial Thinning operations funded by the FFT for red and jack pine plantations established after jack pine budworm outbreaks in the late 1970s and early 1980s
- With this stage, another 240 hectares (of the 1000 hectares originally damaged) were planned for treatment to be conducted jointly with a commercial harvest
- Excluding extraction trails, about 20% BA is removed in tending operations that occur in conjunction with harvest operations
- The plantations are now about 45 years old and will be commercially thinned in 15 years and then potentially again every 15 years until rotation age is reached



903-2-R40: Post-Salvage Harvest Renewal

Red Lake Forest (2014-2015 to 2016-2017)

\$70,286 Investment: \$61,496 by FFT and \$8,790 (13%) by Applicant



- The objective of this project was for the renewal of post-salvage harvest areas affected by 2012 snow down. This natural disturbance resulted in significantly lower harvest volumes. In order to support regeneration of this affected area, it was site prepared and artificially regenerated (black spruce, white spruce, jack pine) through planting and seeding.
- The MNR survey of the snowstorm damage in November 2012 observed some snow down effects on the Whiskey Jack, Trout and Whitefeather Forests but that the majority of the damage occurred within the Red Lake Forest. On average, damage ranged from 5 to 30% across the area that was surveyed. Damage in some areas was even greater.
- Renewal was carried out over a three-year period from 2014 to 2017.
- A total of 97 hectares were planted and 56 hectares were seeded to jack pine.
- The site is currently very well stocked, healthy and trees average two to three metres in height.

911-1-R41: Snowdown Salvage Area Regeneration

Red Lake Forest (2015-2016 to 2017-2018)

\$149,885 Investment: \$134,891 by FFT and \$14,994 (10%) by Applicant



- The purpose of this project was for the regeneration of areas harvested within the region of the 2012 snowdown. This natural disturbance resulted in lower harvest volumes and increase in operational costs. In order to support regeneration of this portion of affected area site preparation and artificial regeneration (jack pine, black spruce, red pine, white spruce) occurred. Some area of this project planned for planting were site prepared under project 903-2-R40.
- Similar to project 903-2-R40, the MNR survey of the snowstorm damage in November 2012 observed some snowdown effects on the Whiskey Jack, Trout and Whitefeather Forests but that the majority of the damage occurred within the Red Lake Forest. On average, damage ranged from 5 to 30% across the area that was surveyed. Damage in some areas was even greater.
- The project was conducted over a three-year period from 2015 to 2018.
- A total of 207 hectares were planted.
- The site was currently well stocked and averaged two metres in height.

931-2-R43: Natural Disturbance Salvage Renewal

Red Lake Forest (2016-2017 to 2018-2019)

\$130,921 Investment: \$112,713 by FFT and \$18,208 (14%) by Applicant



- The objective of this project was for the regeneration of areas harvested within the region of the 2012 snowdown and then subsequently infested by insects. The combination of these natural disturbances significantly increased the amount of low quality and unmerchantable wood fibre. The goal is to return this area into a productive, healthy forest of approximately 166 hectares. The defined area will be site prepared and artificially regenerated (black spruce, jack pine, red pine, white spruce).
- Similar to project 903-2-R40, 911-2-R53, the MNR survey of the snowstorm damage in November 2012 observed some snowdown effects on the Whiskey Jack, Trout and Whitefeather Forests but that the majority of the damage occurred within the Red Lake Forest. On average, damage ranged from 5-30% across the area that was surveyed. Damage in some areas was even greater.
- The project spanned the three years of 2016-2019.
- Areas that were initially proposed for seeding were planted with a final total of 122 hectares being site prepared and planted.
- This site was recently tended.
- The site was currently well stocked and averaged one metre in height.

1138-2-R54: Post Salvage Renewal (*in progress*)

Red Lake Forest (2022-2023 to 2024-2025)

Approved Investment: \$41,197 by FFT and \$46,576 (53%) by Applicant



- The Red Lake Forest area has been impacted by several types of natural disturbance during the past 10 years, namely, snowdown, jack pine budworm infestation and most recently wildfire. The damaged area was harvested as salvage on highly productive conifer dominated stands close to the lake and Chukuni River on lacustrine soil deposits.
- In the fall of 2012, an early winter storm, which featured heavy, wet snow and strong winds impacted the Red Lake Forest. This resulted in cracked tree tops and downed trees. The cumulative impact of these weather events has also increased the forest susceptibility to insect and disease damage. This was followed by an intense Jackpine budworm infestation. These natural disturbances have significantly decreased the merchantable volume of the forests in this area.
- This project proposes to renewal treatments to establish a healthy and productive forest of approximately 125 hectares. The defined area will be site prepared and artificially regenerated (black spruce, white spruce, and red pine).
- The project has been extended by one year to carry out the aerial tending portion of the project
- Currently, the area is well stocked, healthy with regeneration averaging 1.5 – 2 metres in height

991-3-R48: 2019 Jack Pine Budworm Pest Management Program
1080-3-R52: 2021 Jack Pine Budworm and Spruce Budworm Insect Pest
Management Program

Red Lake Forest Portions (2019 and 2021)

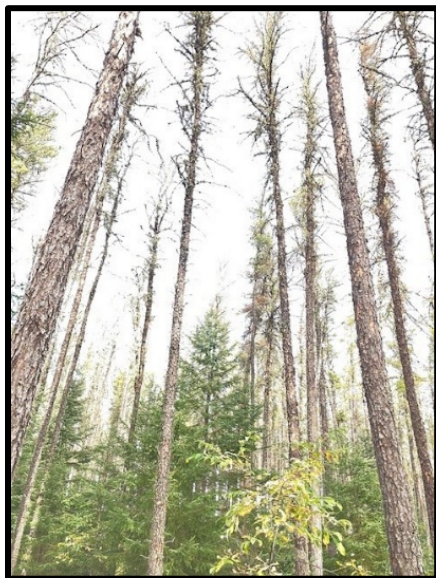
While touring the Red Lake Forest, a selection of the 2019 and 2021 jack pine budworm spray program areas were visited.



Young mixedwood stand displaying no effects of budworm



Block sprayed for jack pine budworm with no sign of damage



Stands that did not receive jack pine budworm spray and are showing damage



Stands that did not receive jack pine budworm spray and will be chipped