



# Backgrounder on the Forests for Tomorrow Review of Juvenile Spacing Investments

## Introduction

The Forests for Tomorrow (FFT) program focuses a portion of investments on improving the mid-term timber supply in interior management units impacted by Mountain Pine Beetle and wildfires as well as other areas in the province (Coast; Northwest; Southeast) where land use constraints, or area reductions of the timber harvest land base, are causing increased pressure on the mid-term timber supply. FFT funding for juvenile spacing treatments has been limited, as the focus has been on late rotation fertilization to address mid-term timber supply gaps. Currently, there is renewed interest in certain parts of the province to consider juvenile spacing as a priority treatment.

A review was completed in 2017 to assess Forests for Tomorrow juvenile spacing treatments from 2010 to 2016. The objectives of the project were to:

- Assess the consistency with objectives and treatment strategies in silviculture strategies and FFT silviculture funding criteria.
- Assess the range of stand-level impacts for the main types of juvenile spacing treatments in terms of yield, value and rate of return on investment.
- Provide recommendations for changes to FFT silviculture funding criteria and strategic planning for juvenile spacing.

Following is background on the FFT spacing program, key findings from the review report, next steps, and additional material on juvenile spacing.

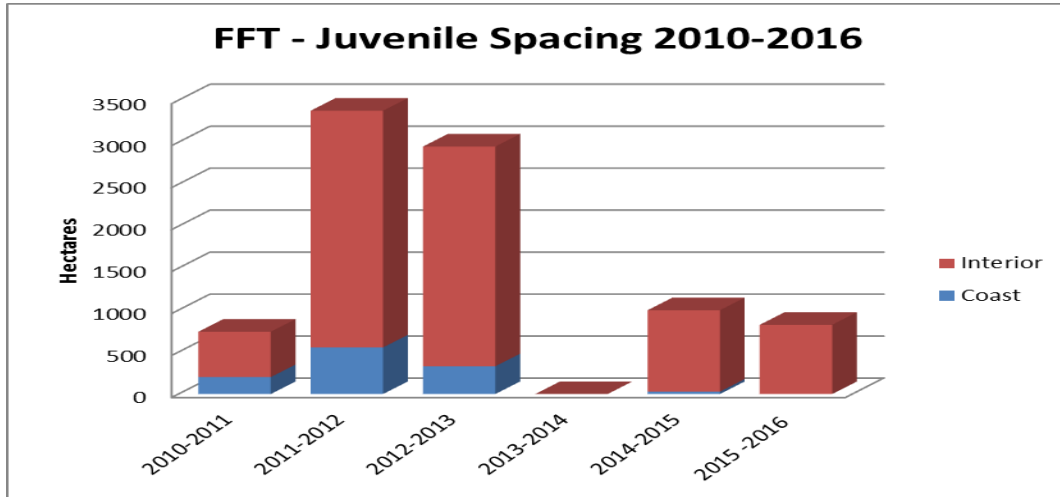
## Background

FFT has funded a small spacing program over the last six years (Figure 1) as the focus has been on late rotation fertilization investments to address mid-term timber supply gaps. The FFT program funded 8,800 hectares of spacing from 2010-2016, 72% of the overall provincial juvenile spacing treatments (12,200 ha) conducted during that time period. The next largest investment was industry appraisal funded treatments (17%) mostly in the South area. The remaining treatments were funded under job opportunities programs.

Investments in juvenile spacing treatments (also called "juvenile thinning" and "pre-commercial thinning"), make stands merchantable sooner to address forest level mid-term timber supply gaps or age class imbalance and to prepare stands for future treatments (e.g. fertilization, commercial thinning). Treatments may also provide other benefits in terms of long-term fuel reduction, wildlife habitat, managing tree species composition, and risk reduction from damaging agents (e.g. disease, insects, wind storms, snow press).



Figure 1. Juvenile Spacing treatments 2010-2016



Large funding programs (e.g. Forest Resource Development Agreement; Forest Renewal BC) in the 1990’s provided an opportunity for significant juvenile spacing programs (40,000 – 55,000 ha/year) as part of an overall stand tending regime of spacing, pruning, fertilization and commercial thinning. In conjunction with these programs, an abundance of research and analysis work was undertaken, demonstrating the benefits and stand selection criteria.

Since then, there has been considerable work on developing management unit strategies, discussion on identifying suitable stands and the benefits of juvenile spacing treatments with regard to changes in forest management, forest health impacts, non-timber values, and climate change. To further refine the FFT spacing program, a review was initiated in 2016 to assess previous FFT investments.

**Review of FFT Juvenile Spacing Investments**

The review considered FFT juvenile spacing treatments carried out between 2010 and 2016. The project consisted of a review of treatment information in the Reporting Silviculture Updates and Land Status Tracking System (RESULTS), linkages to silviculture strategies, and an assessment of treatment impacts. Not all possible stand types and treatment options were analysed.



Some common themes from the report were:

- Spacing treatments are generally consistent with strategies and FFT funding criteria, however, criteria and strategies have been evolving and past treatments would not meet current criteria. Alignment with a forest level strategy ensures treatments address mid-term timber supply gaps.
- Changes in harvesting practices and regeneration practices (lower total establishment densities/and or the planting of genetically improved stock) are resulting in fewer stands that could potentially benefit from juvenile spacing.
- Although more analysis work is required, the review suggests that there are limited opportunities where juvenile spacing provides a 2% return at the stand level. Provided certain conditions are met, red alder, repressed lodgepole pine, and multi-storied dry belt Douglas-fir stands can be candidates for juvenile spacing.
- Analyses for coastal Douglas-fir/western hemlock and western hemlock/amabilis fir stands indicate that the spacing must result in both a large enough increase in value and a large enough decrease in harvest costs before spacing provides a 2% return at the stand level.
- Stand level financial analyses identified that the age at which the juvenile spacing treatments are harvested is critical in meeting the 2% return at the stand level. If harvested too soon, the stand level benefits are not achieved. Work needs to be undertaken to reduce the risk associated with harvesting stands too soon.
- Recommendations included further analysis work related to the FFT funding criteria, the updating of survey and prescription templates, ensuring required information is provided (e.g. expected harvest age range), and forest level analyses to use appropriate values.

## Next Steps

Based on the review findings:

- Further analysis work will be done on areas identified in forest level strategies. Local harvest costs will be used where available.
- Revisions to the FFT Silviculture Funding Criteria will be made to focus on spacing in alder stands on the Coast and multi-storied drybelt Douglas-fir in the interior. Repression density spacing criteria for lodgepole pine was added to the FFT criteria in 2016. Revised criteria will align with the need for treatment identified in forest level strategies.
- Templates, cost caps, and guidance documents will be updated.



## Additional Information

A key document identified in the review is the [\*Guidelines for Developing Stand Density Management Regimes, January 1999\*](#), BC Ministry of Forests, which outlines a process to determine the need for stand density management activities. Biological, economic and forest-level factors must be integrated by the prescription writer to determine the need and opportunity for density management, and the priority of stand-specific treatments.

A previous FFT report, [\*Repression Density Treatment Decision Key 2016\*](#), Associated Strategic Consulting Experts, was a follow-up to a 2015 Interior FFT field trip with the goal to develop a stand-level decision key and revise the FFT funding criteria for treatments of high density stands. The report included a literature review, financial analysis, decision key and proposed revised FFT funding criteria.

There are a number of research installations currently being assessed. [An extension note \(114\) is available on \*A 20-year Analysis of Incremental Silviculture in Mixed Western Hemlock-Sitka Spruce Stands in the Coastal Western Hemlock Biogeoclimatic Zone\*](#), and work is underway for an assessment of a research installation in the Soo TSA. Past research reports on juvenile spacing are available from the [research website](#) and [extension notes](#) page.

The FFT review of juvenile spacing also considered Post Incremental Treatment Assessments (PITA) reports in the Chilliwack and Sunshine Coast Districts. PITA is a scheduled stand level operational assessment, performed a minimum of 10 years after an incremental treatment completion (primarily spacing and spacing & pruning), designed to collect stand attributes and growth and performance data, in order to determine if the treatment prescription has been achieved or is on track to achieving the stated objectives or not. PITA reports are attached in RESULTS

## Summary

The *Forests for Tomorrow Review of Juvenile Spacing Investments* (2017) report provides an overview of the treatments completed and recommendations for modifications to FFT funding criteria. The report represents a renewed interest in identifying, in the current forest management context, what stands are suitable to treat and the expected benefits from the treatment. The stand level criteria are only relevant if there is a clear need identified at the forest level for such treatments. Further analysis and research is planned to address the report recommendations, and determine appropriate treatments to address forest management objectives.



## Additional Links

[Forests for Tomorrow – Timber Supply Mitigation - Spacing  
Resource Practices Branch – Stand Tending](#)

A copy of the full report *Forests for Tomorrow Review of Juvenile Spacing Investments, 2017*, B.A. Blackwell and Associates Ltd. 2017. Can be obtained from:

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