

**BC Interior Forestlands
Kamloops BC**

Tree Farm Licence 35 – Jamieson Creek

Appendix 16 - Forest Health Plan

Weyerhaeuser - Kamloops Forestlands

TFL 35 Forest Health Plan

Introduction

Tree Farm License 35 (TFL 35) encompasses a gross land base of 36,563.6 hectares. The forest and related forest resource features on TFL 35 are a significant component of the local economy and recreation resource. Therefore, the protection of all forest resources is of utmost importance. For Weyerhaeuser, protection of the forest resource from the most significant damaging agents; defoliators, root disease, bark beetle and stem diseases is an integral component of our management responsibilities for TFL 35 and are considered in the formulation of all harvesting and silviculture plans and activities.

It is the Company's intention to continue to cooperate with the MOF in the detection, monitoring and management of the damaging agents on TFL 35 and to have a plan to deal with the endemic and epidemic populations of pests should they occur.

This plan will outline Weyerhaeuser's forest health management objectives and strategies for TFL 35 in accordance with the Forest Practices Code of BC Act, Kamloops Regional and District strategies and tactics.

The plan will also provide a summary of the major forest health agents found on TFL 35. For each agent, a brief description, an overview of the damage they cause, and a summary of the control methods will be provided.

Forest Health Management Objectives/Measure:

Forest health agents are natural components of forest ecosystems. However, these agents can have a significant impact on forest resource values. The level of incidence and the potential detrimental effects of these agents must be assessed prior to implementing management decisions.

Forest health management decisions will reflect adjacent resource values.

Weyerhaeuser's forest health management objectives under this plan include:

- to minimize, where practical and appropriate, losses to existing and post harvested regenerated stands caused by pests and disease;
- to continue to monitor and manage the existing and endemic populations we are aware of;
- to detect any new populations (or moving populations) before they become a serious problem.

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- to consider and have an acceptable impact on other resource values while accomplishing the above.
- to accomplish the above while maintaining competitive overall delivered log costs.

New development planning and harvest scheduling is currently heavily influenced by forest health and salvage priorities, especially with regard to the management of mountain pine beetle (IBM). Insect and disease prevention and/or control is a consideration in the formulation of all harvesting and silviculture plans and activities. The historical occurrence of insects and disease on a particular site, the present incidence, and the future potential will be considered. The following sections outline proposed management measures for the major risks to timber resources on TFL 35.

Annually, our office must define with the Ministry of Forests the role and degree of leadership involved in coordinating activities. It is crucial to attain commitment and alignment from all parties involved for effective management of pests.

Funding responsibilities must be established annually. The above items must be discussed at any pest strategy meetings held between District staff and licensees.

Management Measures

This plan will identify treatments for serious pest and disease infestations. This plan will be referred to MOF staff and be coordinated with adjacent licensee's pest management strategies as much as possible. The operational portion of this plan will be updated and submitted to the MOF annually to receive input from agency staff and ensure licensee's strategies are in alignment.

An overview flight will be conducted as specified in our **best method for Aerial Overview Flights** to monitor beetle activity and occurrence of windthrow. This flight will be followed up with field reconnaissance and decisions on management and control.

Decisions on harvest responsibilities in salvage or sanitation situations within Weyerhaeuser's operating area are made by Weyerhaeuser in consultation with the Kamloops Forest District. Salvage/sanitation opportunities identified through aerial and ground detection operations are discussed in the spring and fall with the Ministry. Harvest feasibility is the primary factor used by Weyerhaeuser in determining responsibility for management actions. Any opportunities for single tree treatment will be identified to Ministry staff in the operational pest management plan. Responsibility of these sites will be decided in conjunction with MOF staff during discussions on the District's beetle strategy.

Salvage

Exemption under Section 30(1)(c) of the Forest Practices Code of BC Act from the requirement to prepare Silviculture Prescriptions for single tree treatments or minor salvage will be requested at time of FDP submission.

Treatments may include MSMA, fall and burn, or minor salvage of individual trees or small isolated patches of less than one hectare in size. It should be noted in some cases, special referral obligations still exist as specified in the referral section below. Maps identifying the location and extent of these treatments, as well as an estimated number of trees to be harvested, will be submitted to Kamloops Forest District staff prior to these operations being conducted. Salvage practices will be conducted in accordance with the "Terms and Conditions for Minor Salvage in Sensitive Ecosystems in Areas without a Silviculture Prescription" when applicable.

Priorities

First priority for salvage is trees that are attacked by insects such as the pine, spruce and fir bark beetles, where the infestation will not only kill the affected trees, but, if not harvested, will intensify and spread to a larger area. Our objective is to have a plan in place prior to the next beetle flight where applicable.

Second priority for salvage is blowdown trees and other damaged trees that are highly susceptible to insect attack and subsequent spread such as Spruce and Douglas-fir. These trees will be harvested where practical and appropriate. If infested by a bark beetle, the goal will be to harvest them prior to the next flight of the insect.

The third priority for salvage is all remaining damaged timber where pest control is not an objective. These trees will be harvested where possible and as soon as possible, depending on commitments for higher priority salvage.

Other Values

All provisions of the Forest Practices Code and higher level plans must be followed during salvage harvesting to ensure that other values are adequately protected. In addition, it is recognized that salvage logging should not lead to the complete sanitation of our forests. A certain amount of dead and down timber, approximating normal endemic levels, is viewed as favorable to contribute to wildlife habitat, stream stability, biological diversity and soil building processes.

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Notice and Review

The salvage situations cannot be predicted in advance, however to achieve pest control and utilization objectives, they must be harvested expeditiously. For these reasons, individual salvage patches (up to 500 m³ or clear-cut less than one hectare) are not shown in the Forest Development Plan. Referral procedures for these situations must be considered as specified below. For salvage volumes between 500 and 2,000 m³ and other salvage, amendment procedures will be in accordance with the most current "Kamloops Forest District Guidelines for Forest Development Plan Amendments".

Referral

Where a resource agency or First Nation has requested, individual salvage proposals will be referred for specific areas. Directly affected stakeholders, such as ranchers, trappers, and water licensees, will be consulted. In addition, any proposals that were not included in the F.D.P. will be submitted to the Designated Environment Official if any of the following conditions are met:

- Any clear-cut (FPC definition) greater than 1.0 ha.
- Where road construction is proposed - note: A trail is acceptable if no side cuts and not within a "sensitive ecosystem".
- Where there have been repetitive salvage entries nearby and some planning is needed.
- Within proposed or approved wildlife tree patches identified in SPs or FDP.
- An "A or "B" Lakeshore Zone is affected; or "C" lake - but in the "C" case, only where a lake-specific issue identified in LRUP or other plan would be affected.
- Within listed Community Watershed (FPC).
- Within a Wildlife Habitat Area, OGMA, and WHF.
- Within a Riparian Management Area.
- Within a Resource Management Zone favoring BCE interests, where the salvage might affect the values for which the area was labeled.

Note: Refer to "Terms and Conditions for Minor Salvage in Sensitive Ecosystems in Areas without a Silviculture Prescription." It is important to understand when these conditions apply. It is also important to note that these conditions may be amended from time to time so ensure you have the most current document.

Major Forest Health Agents

Mountain Pine Beetle

Issues

MPB is one of the most significant insect pests on lodgepole pine in western Canada. Highly susceptible stands exhibit the following characteristics: high stand density; overmature; and declining tree vigor. Other factors contributing to infestation levels include elevation, aspect and weather. MPB infestations may result in significant impacts to timber values as well as other resource values (ie; recreation, aesthetics, range, fish and wildlife and watershed).

Currently, mountain pine beetle (IBM) is the forest health factor, which presents the most significant risk to forest resources on TFL 35. The TFL 35 Operational Pest Unit Plan provides a summary of current infestation sites. Effective control of this pest is of highest priority due to its potentially serious impacts on timber volume, fiber quality and landscape values. It is Weyerhaeuser's intent to take an aggressive salvage approach, in order to reduce the risk of spread to adjacent pine. Weyerhaeuser will communicate beetle management strategies with Ministry of Forests staff and adjacent licensee's.

Strategies

Strategies will be developed for each pest management unit as shown within the operational section of this plan. General strategies will be as follows: Prevention, Suppression, Maintain low, Holding Action, Salvage and No Control. For details on each strategy and where they would apply refer to the Bark Beetle Management Guidebook.

Most commonly on TFL 35, strategies used to control mountain pine beetle populations will consist of suppression and salvage. Infestation sites will be identified and assessed for feasibility of harvest. As much as is possible with consideration to our above objectives, sanitation of the insect while in the larval stage will be done through harvesting infested stems. When necessary, single-tree treatments will be discussed with the Ministry of Forests as to responsibility, timing and funding for operations. As beetle populations are reduced, pending climatic conditions, planning will move more to a strategy of prevention. This will consist of reducing the susceptibility of forest landscapes to IBM infestations. This will be accomplished through the identification and harvesting of highly susceptible stands.

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Tactics

Tactics used to achieve the strategies and objectives above will include brood removal harvesting (sanitation harvest) and removal of dead and damaged timber, if any value can still be extracted (salvage harvest).

Detailed baiting strategies are specified in the operational text and tables below. Some baiting around areas that have been sanitation harvested will be conducted in order to mop up residual beetles and to monitor the remaining population. Some baiting of green CP-approved blocks that are very near to substantial infestations may be conducted to concentrate populations for future sanitation harvest. In some cases, this may create non greened-up openings larger than 40.0 ha. If a situation like this is created it should be specified in section 5.2 of the current Forest Development Plan.

An aerial flight will be used for a site overview and detection. Field reconnaissance will be conducted on all sites identified and the Pest Management Plan will be updated in conjunction with the Ministry of Forests, accordingly.

See **best methods** for baiting procedures.

Spruce Beetle (IBS)

Issues

Spruce beetle is the most destructive pest of mature spruce trees in British Columbia. Out breaks usually last two to five years and may severely deplete the large diameter spruce component of forest stands.

At endemic level the beetle prefers to infest hosts such as recent blowdown, slash, stumps and damaged trees.

Spruce beetle is currently having a low to moderate impact on forest resources on TFL 35. Spruce beetle has been a concern in the past in the mid to upper elevations.

Management Measures

Strategies will be developed for each pest management unit as shown within the operational section of this plan. General strategies will be as follows: Prevention, Suppression, Maintain low, Holding Action, Salvage and No Control. For details on each strategy and where they would apply refer to the Bark Beetle Management Guidebook.

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Our objective for Spruce Beetle management is to maintain the population at low levels, thereby minimizing losses that would occur from infestations of this insect.

Strategies used to control spruce beetle populations consist largely of prevention and suppression.

Measures to Protect

Prevention, where practical and appropriate, will consist largely of prompt windthrow salvage, disposing of chunks greater than 20 cm in areas of high hazard, and population monitoring through the establishment of trap trees. The operational section of this plan outlines all the sites related to this pest as well as specific action items to be conducted this year. Suppression would be conducted through sanitation harvests if and when increased populations are detected. Currently, there is no spruce beetle sanitation harvesting proposed.

Douglas-Fir Beetle (IBD)

Issues

Douglas-fir beetle is the most destructive pest of mature Douglas-fir in British Columbia. At endemic level the beetle prefers to infest hosts such as recent blowdown, slash, stumps and damaged trees.

Douglas-fir beetle is currently having a low to moderate impact on forest resources in TFL 35. Douglas fir beetle concerns do exist in the vicinity of Jamieson Canyon and Venn Creek.

Management Measures

Strategies will be developed for each pest management unit as shown within the operational section of this plan. General strategies will be as follows: Prevention, Suppression, Maintain low, Holding Action, Salvage and No Control. For details on each strategy and where they would apply refer to the Bark Beetle Management Guidebook.

The management goal is to maintain the fir beetle population at low levels, thereby minimizing losses that would occur from infestations of this insect.

Strategies used to control fir beetle populations will consist largely of prevention and suppression.

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Measures to Protect

Prevention, where practical and appropriate, will consist largely of prompt windthrow salvage, disposing of chunks greater than 20 cm in diameter in areas of higher hazard and population monitoring through the establishment of trap trees. The operational section of this plan outlines all the sites related to this pest as well as specific action items to be conducted this year. Suppression would be conducted through sanitation harvests if and when increased populations are detected.

Root Diseases

Issues

Armillaria ostoyae, *Phellinus weirii*, *Inonotus tomentosus*, and black stain *Leptographium wageneri* are the root diseases found within the planning area which result in significant forest health concerns. Evidence seems to suggest that they can be found on most sites throughout the planning area. While these diseases may vary in the concentration and activity of the inoculum, they seem to be most active in the Interior Douglas-fir and Montane Spruce biogeoclimatic zones, particularly around the transition between the two zones.

Management Measures

Weyerhaeuser is required to perform root rot surveys for fir-leading blocks proposed in the MSdm2, IDFxh1, IDFxh2, and all IDFdk1, IDFdk2 and ICH stands and sites where root rot incidence is detected. Current management strategies relate only to managing these diseases at the stand level, when encountered in harvest planning. The overall goal, where root diseases are encountered, is to plan stand level treatments, which allow silviculture obligations and future stand objectives to be met. Generally, these future stand objectives will target species recommended in the Root Rot Guidebook but, in some cases, meeting this and the normal stocking standards may not be feasible.

Measures to Protect

Treatments will be identified in the silviculture prescription and, will depend on the incidence and impact the disease is having on the stand. Treatments can include:

- Planting or natural regeneration of more resistant species.
- Stump surveys (post harvest).
- Stump removal or pushover harvesting.

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- Maximizing diversity of suitable coniferous and deciduous species.
- Alternate species planting.

Western Spruce Budworm

Issues

Western Spruce Budworm (WSB) is one of the most important native defoliator of Interior Douglas-fir Forests. WSB outbreaks within susceptible interior forests are influenced by weather, therefore, fluctuating in an irregular and unpredictable fashion.

The greatest impact and highest mortality due to WSB is among suppressed and intermediate trees. Factors contributing to stand susceptibility include high stand density, species composition (high percent Douglas-fir), stand structure (multi-layer), elevation, aspect and tree vigor.

Repeated WSB defoliation may cause scattered tree mortality over large areas, reduction in growth rates, volume loss and reduced lumber quality. Sustained attack may result in complete defoliation in 4 – 5 years.

WSB is currently not a significant issue of TFL 35. A minor occurrence of WSB has been identified within selectively harvested stands in the vicinity of Venn Creek.

Management Measures

The primary strategy for the management of WSB on TFL 35 is to monitor infestation levels, prescribe even-aged silviculture systems within susceptible stands; use of alternate/less susceptible species and stand manipulation/improvement.

The management of WSB will be conducted consistent with the FPC Defoliator Management Guidebook.

Western Balsam Bark Beetle

Issues

Western Balsam Bark beetle is currently at low to moderate endemic levels throughout the range of Balsam (*Abies lasiocarpa*) in TFL 35.

Management Measures

No specific management strategies have been employed to manage western balsam bark beetle. Infestation levels will be monitored during annual beetle reconnaissance flights. Management strategies to include salvage harvesting and use of trap trees where necessary.

Spruce Weevil

Issues

Spruce weevil primarily attacks immature spruce although lodgepole pine is sometimes attacked. The weevil prefers vigorous, open grow 1.5 to 10.0 meter tall trees and causes terminal dieback of at least two years' growth. In addition to growth loss, attacks may reduce timber quality by inducing forked and crooked stems.

Spruce weevil currently having a low impact on post harvest regenerated stands on TFL 35.

Management Measures

The current strategy is to monitor regenerated stands for spruce weevil damage at time of free growing survey or pre-stand tending survey. Management strategies will be developed consistent with the Management of Terminal Weevils in BC Guidebook and may include mixed species planting, planting to higher densities or leader clipping.

Western Gall Rust

Issues

Western gall rust is found at endemic levels throughout TFL 35. The primary host is lodgepole pine, although it is also found on ponderosa pine.

Mortality from this disease is uncommon, occurring only occasionally in an infected area. Mortality results from complete girdling by stem cankers or wind breakage at the canker-weakened points. The majority of damage involves growth reduction resulting from branch cankers and reduction in timber value due to defect caused by stem cankers. Vigorously growing trees are more vulnerable to infection. The disease occurs more often in open growing stands than in dense stands.

Management Measures

The current strategy is to monitor regenerated stands for western gall rust damage at time of free growing survey or pre-stand tending survey. Specific strategies to address infestations include pruning or removal of all infected trees prior to stand tending. In areas where a high level of gall rust is evident, alternate or mixed species plantations may be used. Management strategies will be developed consistent with FPC Pine Stem Rust Management Guidebook.

Dwarf Mistletoe

Issues

There are no known mistletoe infestations on TFL 35. Lodgepole pine is the preferred host, however, ponderosa pine is occasionally attacked and interior spruce and Douglas-fir are rare hosts. The distribution of Dwarf Mistletoe is throughout the range of Lodgepole pine in Interior BC.

Dwarf mistletoe causes widespread damage in interior lodgepole pine stands. Brooming is particularly more severe in open stands. Trees infected when immature are either prematurely killed or never attain a merchantable size. Infected mature stems may exhibit 15 – 30% less volume as a result of Dwarf Mistletoe. Stem infection reduces wood quality due to deformity and canker formation. Spike tops commonly occur.

Management Measures

Monitoring for mistletoe will continue. Management strategies to include complete overstory removal and eradication of remaining live stems, favoring of non-hosts in mixed stands and cutblock layout to minimize periphery infestations. Strategies will be developed consistent with the FPC Dwarf Mistletoe Management Guidebook.

Pine Needle Cast

Issues

Pine needle cast (*Lophodermella concolor*) has been noted on regenerated lodgepole pine stands throughout TFL 35. Infected needles turn reddish brown. The disease can cause severe defoliation. Growth reduction and mortality may result. However, climatic condition required for extensive defoliation seldom occur in successive years.

Management Measures

Mixed species planting may help reduce the impact of this disease. Continued monitoring of pine needle cast will be accomplished through silviculture surveys and annual overview flights.

Windthrow

Issues

Windthrow is found throughout the operating area, usually occurring along the fringes of cutblocks or road right-of-ways that were harvested within the last five years. Although they occur periodically, there are currently no major windthrow situations requiring salvage within the planning area.

Management Measures

The goal in managing windthrow is to minimize it, where possible, through choice of block configurations and boundary locations. Where windthrow occurs, the strategy is to salvage the windthrow where practical and appropriate, to minimize potential forest health problems, and reduce volume and value losses. At the stand level, a windthrow hazard assessment is completed for every cutblock.

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BEST METHOD FOR AERIAL SURVEY PROCEDURES

Safety

Consider this activity to be an uncommon work practice and apply the principles as specified in Weyerhaeuser's safety manual.

Refer to Weyerhaeuser's SRM for Helicopter Safety

Ask for a brief safety orientation on the particular machine from the pilot before taking off.

Purpose:

To identify and map sites related to forest health factors within and adjacent to our operating area.

Preparation and preplanning:

- For increased accuracy and decreased flying costs use a 1:30,000 FDP map.
- Two flights are recommended, the first should allow adequate time to conduct actions pre-beetle flight (April or May pending on faders). The second flight when you are confident all faders are showing up (July/August).
- Three people are recommended for flight. Two mappers should compare maps immediately after flight. The third person can aid the pilot in navigation and record data such as G.P.S coordinates.
- Fixed wing or helicopter can be used. If the flight is intended to provide more detail than just site location then a helicopter should be used.
- Equipment used for flight should include:
 - maps
 - clipboard
 - colored pens
 - camera with spare film
 - note paper to record G.P.S locations photo numbers etc.

Procedures

- When mapping you should try to use the following symbology for consistency
 - X – For single trees, or for polygons estimating the number of attacked trees.
 - L – 0-5% of total stems affected in the stand
 - 1 – 6-15% of total stems affected in the stand.
 - 2- 16-25% of total stems affected in the stand.
- Flight times should be limited to 5 hours per day to reduce error due to fatigue.
- Review flight lines with the pilot. Flight lines should run parallel over level terrain.
- Flight lines should consider direction of sun and severity of infestation.
- Make passes at a slow speed of approximately 80 knots at 500 to 700 meters above the ground
- Record GPS coordinates over sites if possible. These are very useful!!!

Best Method – MPB Baiting Procedures

Safety

Refer to Weyerhaeuser's safety manual on WHMIS for handling pheromone baits.

Purpose

To reduce losses caused by Mountain Pine Beetle by implementing the following tactics:

1. contain and concentrate for sanitation harvest.
2. contain for single tree treatments.
3. monitoring populations.
4. mop-up of residual beetles post treatment.

Preparation and Procedures

Any placement of baits must have a subsequent treatment plan in place.

The use of baits must always be followed, within one year, by actions to remove the concentrated beetle populations.

Baits must be ordered in a timely fashion. This must be based on a bait plan.

Baits are to be stored in the fridge in the fire shed. Ensure that MSDS sheets are kept current. (See WHMIS lead for more info.)

The bait plan will consist of a 1:5000 map indicating bait locations on strips.

Mark the bait tree with two yellow ribbons.

There should be at least 5 uninfested pine trees within one tree length of the bait tree.

Consider treatment ie. Don't bait inoperable areas or poor quality trees if your plan is to salvage harvest them.

Think of logging chance ie. Uphill side of R/W is better than downhill; flat terrain is better than steep broken terrain etc.

Place your name, date and bait number on bait then staple high, on north side of tree.

At the end of each baiting day, complete form(see **Pest Tracking Activity Sheet**) and map and return to supervisor.

All unused baits must be returned to the fridge at the end of each day.

If baiting (for mop-up purposes) in areas that have been sanitized, focus baits on rub trees.

If grid baiting in a proposed block try to remain 50 meters from block boundary.

Ensure you are not baiting within an OGMA, Riparian Reserve or W.T.P. and avoid baiting near these features.

Baits should be hung no less than 50 meters apart.

Baiting Tactics

Contain and concentrate – Baits are placed throughout a target stand on a 50 m grid to facilitate sanitation harvesting. Baits are placed prior to beetle emergence. The intent of this pattern is to restrict the dispersal of beetles out of the stand and to concentrate their distribution within the stand. This facilitates sanitation harvesting, ensuring that the greatest number of beetles are removed, thereby reducing the local population available to infest adjacent stands.

Use with single tree treatment – Baits placed in single tree treatment areas will localize any residual beetles and facilitate subsequent treatments. In effect, the use of baits will preselect the sites for treatments such as MSMA where timing of application is critical for success.

Monitoring – Baits can be used to monitor the timing and duration of the beetle flight period. Such monitoring is helpful for timing MSMA application and to determine the period when hauling restrictions are necessary. To monitor beetle emergence:

A number of factors must be considered when selecting a bait-use strategy in a particular area. These factors are:

- current infestation status in the drainage under consideration
- proximity to the nearest active infestation within the drainage (risk)
- area affected/infested

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- spatial distribution of currently attacked trees within a candidate stand
- hazard class of residual stand
- infestation status of adjacent stands
- outbreak status (infestation increasing, static, or declining).

General guidelines for baiting patterns in a variety of circumstances are:

A. Uninfested drainage

1. Low to moderate risk (prevention strategy)

- i. no access – baits should not be placed in inaccessible stands where existing beetle populations are negligible.
- ii. access available – baiting is not recommended.

2. High risk (prevention strategy)

- i. no access – baits should not be placed in inaccessible stands where existing beetle populations are negligible.
- ii. access available – grid bait for one year only, prior to harvest, with the guarantee of harvest within the one-year period.

B. Infestation exists in some or all stands in a drainage.

1. Drainage mostly uninfested (suppression or maintain low strategy)

- i. isolated spot infestations – spot baiting to restrict dispersal; limited grid baiting only in infested portions of stands and must be done in conjunction with application for a cutting permit or other treatment.
- ii. some occurrences of patch infestation – spot baiting of any discrete clumps of infestation; grid baiting of patches with assured harvest or other treatment. Any particular stand should not be grid baited any longer than two consecutive years if harvest cannot be done in the first year.

2. Drainage generally infested (maintain low or holding strategy)

- i. many stands affected with spot or patch infestations – sanitation harvesting with small block extraction, where

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possible, utilizing grid baiting. To maximize the sanitation effect of harvesting, ensure that grid baiting is done in smaller discrete blocks that address concentrated areas of infestation within affected stands. Spot bait to hold areas with lower levels of infestation for harvest or other treatment within one year.

2001 Operational Plan for TFL 35 Pest Unit

Pest: Mountain Pine Beetle

Forest health Unit #2 : Stuart Lake

Current Status

Approximately 40ha's of MPB sanitation was conducted subsequent to the 2000 flight. These activities are scattered throughout the southern half of the unit in blocks of relatively small size (5-10ha's). Along the eastern edge of this unit on the slopes facing the Thompson River scattered small infestations were detected. These consisted mainly of small wood in Fir dominated types on steep slopes which can only be accessed with steep adverse roads along the hillside. These sites have been addressed through a combination of harvesting and the single tree treatment fall and burn. This area remains a concern and will be monitored carefully before and after the 2001 flight. CP 85, a green wood permit in the area, still presents an opportunity for baiting of approved blocks for beetle control in the southern end of the unit.

Strategy

- Suppression- all infestations will be addressed prior to next year's beetle flight where feasible.
- Control/Minimize spread of beetle into adjacent stands.

Tactics

- Baiting in order to contain and concentrate population for sanitation harvesting is planned in areas as shown on the March 2001 TFL Pest Unit Map .
- Some further recce is planned in suspect areas prior to flight. If populations are detected at high enough levels, baiting tactics will be employed to contain and concentrate for sanitation.
- Aerial detection activities will occur in order to identify sites for ground recce.

Pest: Mountain Pine Beetle

Forest Health Unit #1 & 2: Wentworth/Venn Creek

These forest health polygons are as shown on the March 2001 TFL Pest Unit Map. The north end is bounded by Wentworth Creek while the western portion follows the Wentworth road down to the southeastern corner of the TFL and including a small portion of FL-A-18694 around O'connor Lake.

Current Status

Extensive harvesting for MPB control had occurred in this unit over the last two years. CP 75, 78 and 68 blocks remain that can be utilized for baiting in the future. An aggressive baiting/sanitation program will be implemented in this area if deemed necessary due to the amount of historical beetle activity that has occurred within it. Several sites as shown on the map will be visited pre-flight in order to determine if a bait to hold and concentrate tactic would be effective.

Strategy

- Suppression – all infestations will be addressed prior to next year's beetle flight.
- Control/Minimize spread of beetle into adjacent stands.

Tactics

- Annual monitoring through pest flights.
- Surveys pre&post beetle flight.
- Bait to hold and concentrate populations
- Sanitation harvesting.

Pest: Mountain Pine Beetle

Sub-unit: Skull Creek – Forest Health Unit #1

Current Status

Approximately 20 ha's of beetle sanitation took place in this area subsequent to the 2000 MPB flight. There is a high component of fir and deciduous in this area. Effective beetle control activities are hampered by these mixed forest types. Large populations of beetle are known to exist in adjacent licencee area's. This area remains a concern and will be monitored carefully before and after the 2001 flight.

Strategy

- Suppression will be the chosen strategy for this sub-unit.

Tactics

- Annual monitoring through pest flights.
- Surveys pre&post beetle flight.
- Bait to hold and concentrate populations if detected.
- Sanitation harvesting if necessary.

Pest: Mountain Pine Beetle

Sub-unit: Other (remainder of pest unit)

Current Status

Several small infestations have been located in the higher elevations by CP's 91, 78, 86, 83 and 79. The remainder of this area had some suspect looking patches but there was lots of mortality last year due to IPS, root rot and drought. Close attention will have to be given to this area during the aerial flight next year. Some sites will be assessed prior to the 2001 MPB flight as to the feasibility of baiting to hold and concentrate for sanitation.

Strategy

- Suppression will be the chosen strategy for this sub-unit.

Tactics

- Annual monitoring through pest flights.
- Surveys pre&post beetle flight.
- Bait to hold and concentrate populations where detected.
- Sanitation harvesting when deemed necessary.

Pest: Spruce Bark Beetle **Sub-unit – TFL (entire unit)**

Current Status

- Low endemic levels throughout the range of spruce in this PU.

Strategy

- Maintain Low and Suppression will be chosen as a combination within this unit depending on the location of the infestation.

Tactics

- Monitor through flights and daily field operations
- Skid all chunks > 20 cm diameter in areas of moderate to high hazard
- Prompt Spruce windthrow salvage.

Pest: Douglas Fir Bark Beetle

Sub-unit – TFL (entire unit)

Current Status

Low to Moderate levels of Douglas Fir Beetle are estimated within the unit with the highest concentrations located along the Jamieson and Venn Creek canyons. Due to the steep slopes in these areas sanitation harvesting becomes difficult. Management options will arise with the development of CP's 68 and 89. The above mentioned areas are areas of concern and will be carefully monitored over the next few years.

Strategy

- Maintain Low and Suppression will be chosen as a combination within this unit depending on the location of the infestation.

Tactics

- Leave fir trap trees
- Monitor activity through trap trees and recces for MPB
- Skid all chunks > 20 cm diameter in areas of moderate to high hazard
- Prompt removal of Fd windthrow