

**Mitigating the Effects of Mountain Pine Beetle (MPB)
Infestations at Provincial Recreation Sites and Trails
in British Columbia**

Report 2007/2008

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Addendum (June 23, 2008)

Name Change

The Ministry of Tourism, Sport and the Arts' name was changed on June 23, 2008 to "Ministry of Tourism, Culture and the Arts".



Executive Summary

The Ministry of Tourism Sport and the Arts (MTSA) is responsible for managing the Province's 1240 recreation sites and 650 recreation trails. The current mountain pine beetle infestation in British Columbia spans more than 10 million hectares and is impacting a significant number of recreation sites and trails in the interior of the province. To address concerns related to the MPB outbreak, MTSA is implementing a MPB Mitigation Program funded by the Federal MPB Program.

The two years of funding received from the Federal MPB Program is assisting MTSA to address the MPB problem at recreation sites and trails, and will help keep the sites and trails open, safe and accessible to the public. The first year of the MPB mitigation program concluded on March 31, 2008.

The overall objectives of the recreation site and trail MPB Mitigation Program are to:

- Ensure that safety, public health and environmental issues are addressed on provincially designated recreation sites and trails affected by MPB infestations;
- Minimize the negative economic impacts to tourism and local communities; and
- Restore recreation resource values at recreation sites and trails affected by the MPB.

Management activities under the program include: site assessments and prescriptions; field operations (tree removal, bucking and piling firewood, piling and burning limbs/debris); public communications; and program monitoring, reporting and adjustment.

During the winter months of 2007/08, the program was successful in treating 166 recreation sites and nine recreation trails. Approximately 20,500 dead and dying trees were felled. In addition, 30 Archaeological Impact Assessments were completed.



Treatments were concentrated in the developed areas of recreation sites and trails (e.g., campsites, outhouses). Felled trees were bucked and piled for firewood, and limbs and fine materials were piled and burned.

The majority of treated areas will need to be re-assessed in the spring of 2008 to address the continuing spread of MPB and assess remaining fuel management concerns resulting from heavy volumes of bucked firewood remaining on site and snow levels hampering efforts to pile and burn residual limbs from felled trees.

Due to lower than expected unit costs for treatments, expenditures for 2007/08 were approximately \$677,277. The approved budget for 2007/08 was \$685,000.

It is worthy to note that the MPB Mitigation Program contributed to short-term economic benefits in a number of small, rural communities where many of the contractors utilized to deliver the mitigation treatments are based.



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1 Introduction

British Columbia's forests provide outdoor recreation enjoyment for millions of residents and tourists every year. Camping, hiking and fishing are just a few of the activities that draw many visitors to the Province's forested areas. Revenue derived from outdoor recreation activities directly supports local economies and contributes significantly to provincial and federal revenues.

Management of public recreation opportunities on Crown land outside of parks and settled areas is the responsibility of the Ministry of Tourism, Sport and the Arts (MTSA). Through the Recreation Sites and Trails Branch, the ministry manages 1240 recreation sites and 650 recreation trails. Recreation sites and trails are widely supported by local communities, provide a variety of opportunities to participate in outdoor recreation activities, and facilitate active/healthy lifestyles.

The MPB outbreak in the interior of British Columbia currently spans more than 10 million hectares. Recreation sites and trails throughout the interior of the province are in varying stages of MPB infestation. Many recreation sites and trails have been significantly impacted by the beetle, while others are in the early stages of attack or have the potential to be affected.

To address concerns related to the MPB outbreak at provincial recreation sites and trails, and help keep the sites and trails open, safe and accessible to the public, MTSA is implementing a MPB Mitigation Program. Funding for the two-year program has been provided by the Federal MPB Program. Results from the first year of the program (2007/08) are presented in this report.

2 Rationale

MTSA is conducting operations at recreation sites and trails impacted by the MPB to address the following issues:

- Dead and dying trees are presenting health and safety hazards to recreation site and trail users through tree failure and windfall.
- Large volumes of dead trees at recreation sites and surrounding areas are creating excessive forest fuels that can contribute to uncontrollable wildfires that threaten recreation sites, trails and adjacent communities.
- Public and private infrastructures located in and around recreation sites and trails may be damaged by tree failure or windfall (e.g., toilets, fences, other structures, etc.).



- Closure of key recreation sites and trails due to safety or wildfire concerns may adversely affect local and regional tourism revenues, further contributing to the economic decline in areas already affected by MPB infestations.
- MPB infestations may jeopardize cultural/historical values, wildlife habitat, and other resource values/features at recreation sites and trails.

3 Objectives

The overall objectives of the MPB Mitigation Program are to:

- 1) Ensure that safety, public health and environmental issues are addressed on provincially designated recreation sites and trails affected by MPB infestations;
- 2) Minimize the negative economic impacts to tourism and local communities; and
- 3) Restore recreation resource values at recreation sites affected by the MPB.

Program performance was measured through a single performance measure—the number of recreation sites treated annually. For 2007/08, the performance measure was to treat at least 69 sites.

Table 1 outlines program objectives and the performance measure for 2007/08.

Table 1: Objectives

Objective	Performance measure
Address safety, public health and environmental issues	69 sites treated for 2007/08
Minimize negative economic impacts	
Restore recreation resource values	

4 Materials and Methods

For 2007/08, a variety of treatments and activities were conducted to realize defined program objectives. Mitigation activities included:

1. Site assessment and prescriptions
2. Field operations:
 - Tree removal
 - Bucking and piling firewood
 - Piling and burning limbs/debris
3. Public communications
4. Program monitoring, reporting and adjustment.



4.1 Site assessment and prescription

Preliminary site assessments were completed for recreation sites and trails that were impacted by MPB, and a risk rating was applied to each site or trail. Recreation sites and trails with high use levels located near urban centers received the highest risk ratings. Assessment criteria included safety, cultural, environmental and ecological factors, as well as fuel loading considerations. Site prescriptions were developed by District Recreation Officers based on the field assessments. Some sites required formal Ministry of Forests and Range site prescriptions to determine best practices.

4.2 Field operations

The main method used for tree removal was hand felling and bucking/piling firewood, as well as piling and burning of limbs and debris materials. A couple of districts used heavy machinery as this was more cost effective. Buffers around developed portions of the recreation sites and trails, as well as some access road buffers within the recreation reserve were treated. Firewood was left on site for use by campers. Some sites contain a heavy volume of bucked firewood, and removal options to reduce the level of fuel loading will be considered.

Retaining existing advanced regeneration was the preferred choice for reforesting the site. Some additional clean-up and repair activities will be needed in the spring after snow melt. The Recreation Sites and Trails Program may potentially receive a small amount of funding from the Forests for Tomorrow Program (Ministry of Forests and Range) to address further reforestation needs.

4.3 Public communications

Decisions to treat or close a recreation site or trail may affect public use of the area. For the majority of the areas treated, this did not become a problem as treatments were conducted during the winter. On occasion, small groups of ice fishermen were affected. Poster and sign templates were developed in collaboration with Natural Resources Canada and the public was kept informed of activities under the MPB Mitigation Program using posters or signs. Advertisements in local newspapers were also used to inform the public, as well as to solicit tenders for projects. Where necessary, advertisements were placed in local papers when a site needed to be closed to address safety concerns. The Recreation Sites and Trails Branch website was also used to post program information.

4.4 Monitoring, reporting and adjustment

All management activities were implemented according to BC Government General Management and Accounting Procedures, and the majority of contracts were awarded on



a competitive bid basis to ensure maximum return on investment. Seasonally hired MPB Coordinators, as well as District Recreation Officers, were directly responsible for program implementation quality assurance and reporting of results.

All funding was utilized within the cost schedule approved by the Federal MPB Program. All projects were monitored to ensure that treatment goals were met, allocations and expenditures were balanced, and ministry accounting, contracting and financial management standards were maintained. Expenditures are summarized in Section 8. Detailed expenditures are available through MTSA’s Financial Services Branch.

An ACCESS database was developed to track the sites treated, the type of treatment, and the number of trees or hectares treated.

5 Results and Discussion

The success of the MPB Mitigation Program is the result of a cooperative effort between MTSA staff in headquarters, three regional offices, and 11 recreation districts.

Table 2 outlines the achievements of the MPB Mitigation Program for 2007/08.

Table 2: Overview of activities completed (2007-2008)

Activity	Completed
Site Assessments (SA) or Prescriptions (SP)	SA-166*, SP -7
Tree Removal including bucking and burning	20,497 trees
Public Communications – Posters (P) Signs (S)	P - 800, S - 40
Total number sites treated	166 sites, 9 trails
Archaeological Impact Assessments (AIA)	30

*Estimated

Approximately 105 hectares (mainly along trails) were treated.

The program began in the fall of 2007 when approval to begin operations was received. A total of 166 recreation sites and nine recreation trails were subsequently treated. The areas treated within recreation sites included the buffers (usually 1.5 tree lengths) around camp sites, outhouses or other developed areas. Dead trees were felled, bucked and piled, and the limbs were piled and burned. Additional treatments are required in the buffers along on-site access roads for 2008/09. Road buffers were not treated during 2007/08 as they were deemed to be a lower priority.

Before treatments could begin in some areas, Archaeological Impact Assessments (AIAs) and Preliminary Field Reconnaissance (PFR) work was needed to ensure protection of



First Nations values. A total of 30 AIAs and numerous PFRs were conducted by qualified archaeological contractors.

Table 3 summarizes the work accomplished in 2007/08 by recreation district.

Table 3: Site treatment summary

District	No. of Units Treated		FN/Arch/RAAD	No. of trees
	Sites	Trails		
100 Mile	48	5	RAAD* checks only	3,518
Cascades	27	2	11 PFRs**	3,667
Columbia	2			130
Kamloops	10	2	3 PFR and RAAD	7,263
Kootenay	1			240
Nadina	5		RAAD checks only	427
Okanagan	26			2,122
Prince George	31		30 AIA*** + RAAD	1,408
Quesnel	7		1 PFR and RAAD	1,222
Vanderhoof	5		Site alteration permit	438
Headwaters	4		RAAD checks only	162
Total	166	9		20,597

* RAAD – a digital program that allows remote access to archaeological data.

** PFR – Preliminary Field Reconnaissance.

***AIA – Archaeological Impact Assessment.

All trees were felled, bucked into short lengths, and either piled or burned. The majority of areas treated contain a large amount of bucked and stacked firewood. Recreation staff will need to pursue ways of reducing this fuel loading within the rules set by the Ministry of Forests and Range. Limbs and fine material were piled and burned as much as possible.

Some districts used machinery to fell and skid trees to landings where the entire bole and fine materials were burned. This methodology was determined to be more economical in those areas.

Treated areas will need to be re-assessed in the spring of 2008 to assess the remaining amounts of fine material that may need to be piled and burned. Heavy snowfalls during 2007/08 hampered contractors' efforts to complete the piling and burning of limbs from treated trees.



In-kind contributions from the MTSA in staff time have been estimated to be approximately \$100,000. MTSA staff time includes preparation of the project proposal, administration of budgets, and set up of field reporting and monitoring systems, as well as field and contract administration time.

Targets for the second year of the MPB mitigation program are to treat 107 recreation sites. During 2008/09, the program will be reviewed to determine if a third year of treatment is required.

6 Collaboration with Partners

The majority of the treatments were completed using contracted falling and cleanup crews. Protection crews were used in some districts to complete site assessments, tree removal and cleanup work. MTSA also acknowledges the support provided by Ministry of Forests and Range administration and field operations staff that assisted District Recreation Officers with the preparation of tenders, approvals to remove trees, site assessments, etc.

7 Problems Encountered

The intent of the program was to complete mitigation treatments by late fall. However, the late start to the program presented problems in areas where snow levels were high, such as in the northern and central areas of the province. Treatment sites in these locations will need to be re-evaluated for fuel management concerns once the snow pack melts. It is expected that a small portion of the second year funding will need to be utilized to address this issue.

Two districts had problems with contractors completing the assigned work, which led to a failure to completely expend the districts' allocated funding by the end of March 2008. These districts will have to assess this non-performance, and re-tender the outstanding work for fiscal 2008/09.

Additional issues exist related to the amount of wood bucked, piled and left on site. It is hoped that the public will remove this wood as firewood. MTSA will continue to work with the Ministry of Forests and Range to determine appropriate ways for legally removing the piled wood resulting from mitigation efforts.

In some cases, a delay in the submission of Preliminary Field Reconnaissance resulted in treatments not being completed in 2007/08.



8 Financial Summary

In some districts, unit costs submitted by contractors were very low owing to variables such as small diameter trees. This allowed more work to be completed with the available funding. Unit costs ranged from a low of \$13.89 per tree to a high of \$45 per tree.

Table 4 outlines program expenditures for 2007/08. The approved budget was \$685,000.

Table 4: Expenditures

Eligible Cost	Expenditure
Salaries and benefits	\$68,288.67
Travel	\$3,862.50
Admin Expenses	\$2,854.00
Communications	\$1,052.28
Field supplies	\$13,244.66
Contract costs*	\$587,974.87
Total	\$677,276.98

* includes site treatments, project management, AIA

A detailed financial accounting of expenditures is available upon request from MTSA's Financial Services Branch.

It should be noted that the MPB Mitigation Program has contributed short-term economic benefits within a number of small, rural communities where many of the contractors utilized to deliver the treatments are based.

9 Acknowledgements

This project was funded by the Government of Canada through the MPB Program, a three-year, \$100 million program administered by Natural Resources Canada—Canadian Forest Service. Publication does not necessarily signify that the contents of this report reflect the views or policies of Natural Resources Canada—Canadian Forest Service.

Appendix 1: Treatment Pictures



Piling and Burning at BIG OK Lake in the Cascades District



Site mitigated by machinery at Rikey Lake in the Cascades District



Bucked and piled mountain pile beetle damaged trees in the Eastern Lake in Nadina District.



Small diameter trees bucked and piled at Coop Lake in Nadina District



Community Lake in Kamloops District note some districts use machinery rather than hand fall and buck. Material was skidded to landing and burned.



Piling by hand in preparation for burning at Dairy Lake West – Kamloops District



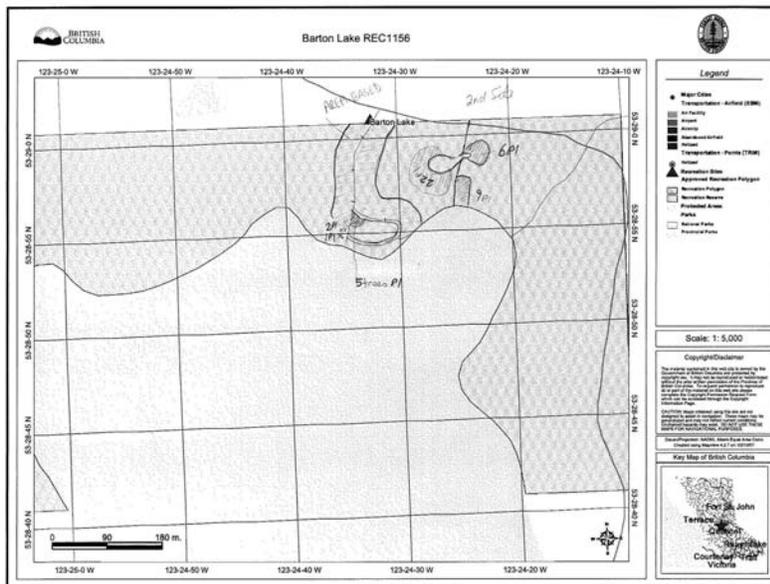
Example of advanced regeneration at Mackenzie Lakes in Prince George District



Appendix 2 Example of Site Assessment

Recreation Site Assessment and Treatment Prescription Form 01

1.	Rec Site#: 1156	Rec Site Name: Barton Lk	Location: A2 Rd.	Assessor's Name: A. Silanovich	Date: Oct 5/07
2.	Tree Species Composition: 70 Fd 20 Sx 10 PI		Damage Agent: 11PB	% Rec Site Affected	
3. Treatment Prescription	Overall treatment objectives: single tree removal developed areas on site 1 & 2				
	Wildlife Considerations:				
	Sensitive Habitat				
	Riparian values or concerns				
	Cultural Resources: known CMT's		Archaeological Assessment Required: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> already completed		CMTS: <input type="checkbox"/> Pre 1846 <input type="checkbox"/> Post 1846
	Recommended treatment type: Trees remain on site: <input checked="" type="checkbox"/> single tree selection <input type="checkbox"/> fall and buck <input type="checkbox"/> fall and burn <input type="checkbox"/> stack firewood <input type="checkbox"/> other			Debris: <input checked="" type="checkbox"/> Piling <input checked="" type="checkbox"/> Burning	
	% area _____; # of trees to cut: 37 - site 2 - Alternate treatment options: <input checked="" type="checkbox"/> partial cut; <input type="checkbox"/> clear cut; other: selective site 1 (If volume based treatment see description for Recreation Site Prescriptions) tree stubbing required: <input type="checkbox"/> yes <input type="checkbox"/> no			Treatment cost estimate	
	Other: <input type="checkbox"/> DM approval Required <input checked="" type="checkbox"/> Contract Required <input type="checkbox"/> Cutting permit Required <input type="checkbox"/> Other _____				
	Prewrite Instructions:				
	Safety Considerations:				
General Comments/Recommendations or Instructions: SITE 1 - AREA BASE - ACCESS - (200m) Handfall developed area SITE 2 - Handfall/buck/stack.					
Wildlife/Danger Tree Assessment Attached: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Trees Marked/Numbered: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Rec Site Buffering Considerations: SITE 1 - Buffer access SITE 2 - Handfall.	
Treatment Follow-up Instructions: (site preparation for planting, fuel management, fill planting, tree spade)					
Reforestation Objectives/Considerations:					
Est. Site preparation costs _____ Est. seedlings needed _____ Est. planting costs _____					
Signature of District Recreation officer _____ Date _____					



forest. forward.

moving beyond the pine beetle



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Canada

Ressources naturelles
Canada

Canada

Recreation Site Assessment and Treatment Prescription Form 01

1.	Reg Site#: 1159	Reg Site Name: Bobtail Lk	Location: 15km Bobtail Rd	Assessor's Name: A. Bilawick	Date: Oct 5/07
2	Tree Species Composition: 90% D 10 S A		Damage Agent: MPB	% Rec Site Affected: 2%	
3. Treatment Prescription	Overall treatment objectives: Remove 35x1 Ed from site 1, 2 PI from site 2, 8 PI from site 3.				
	Wildlife Considerations: N/A				
	Sensitive Habitat: N/A				
	Riparian values or concerns: N/A				
	Cultural Resources:		Archaeological Assessment Required <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> already completed		CMTS: <input type="checkbox"/> Pre 1846 <input type="checkbox"/> Post 1846
	Recommended treatment type: Trees remain on site: <input checked="" type="checkbox"/> single tree selection <input type="checkbox"/> fall and buck <input type="checkbox"/> fall and burn <input checked="" type="checkbox"/> stack firewood <input type="checkbox"/> other			Debris: <input checked="" type="checkbox"/> Piling <input checked="" type="checkbox"/> Burning	
	% area _____; # of trees to cut 14; estimate sph _____ Alternate treatment options: <input type="checkbox"/> partial cut; <input type="checkbox"/> clear cut; other _____ (If volume based treatment see description for Recreation Site Prescriptions)			Treatment cost estimate	
	tree stubbing required: <input type="checkbox"/> yes <input type="checkbox"/> no				
	Other: <input type="checkbox"/> DM approval Required <input checked="" type="checkbox"/> Contract Required <input type="checkbox"/> Cutting permit Required <input type="checkbox"/> Other _____				
	Prework Instructions: Do not fall 2 leaders toward lake.				
Safety Considerations: Post signs when falling.					
General Comments/Recommendations or Instructions: Handfall/buck/stack -					
Wildlife/Danger Tree Assessment Attached <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Trees Marked/Numbered: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Rec Site Buffering Considerations: N/A	
Treatment Follow-up Instructions: (site preparation for planting, fuel management, fill planting, tree spade) Burn Debris					
Reforestation Objectives/Considerations: N/A					
Est. Site preparation costs _____		Est. seedlings needed _____		Est. planting costs _____	
Signature of District Recreation officer _____			Date _____		

