Proceedings of a

Workshop to Present the Results of the 2nd Year of a project to produce a

Provincial Level Projection of the Current MPB Outbreak

March 4, 2004

Funded by the Mountain Pine Beetle Initiative and the Ministry of Forests

Canada BRITISH COLUMBIA

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Workshop Objectives

- To present the results of the second year of the project to produce a provincial level projection of the current mountain pine beetle outbreak.
- To elicit feedback from clients that will provide direction for possible future work.
- To obtain any immediate critical feedback on the work completed and to interest relevant domain experts in providing detailed peer review of the model.

Workshop Agenda

Scheduled Time	Topic
0900 – 0915	Introduction
0945 – 1000	Project history and summary of this year's work
1000 – 1030	Refreshments provided
1030 – 1115	Details of the beetle projection model
1115 – 1200	Details of the management model
1200 – 1300	Lunch – not provided
1300 – 1345	Executive Summary for Principal Clients
1345 – 1400	Principal Client Feedback
1400 - 1500	Model sensitivity and detailed results
1500 - 1515	Next steps

Workshop Attendees

Attended the Full Session

Last Name	First Name	Affiliation
Belanger	Kevin	CFS
Chatwin	Steve	Forest Practices Board
Clarkson	Mike	MOF FAB
Densmore	Nancy	MOF FPB
Dobbin	Barry	MOF NIFR
Ebata	Tim	MOF FPB
Eng	Marvin	MOF Research
Fall	Andrew	Gowlland Technologies Ltd.
Fletcher	Christine	MOF FAB
Gawalko	Lyle	BC Parks
Hall	Peter	MOF FPB
Hodgkinson	Robert	MOF NIFR
Hughes	Josie	Consultant
Jim	Goudie	MOF Research Branch
Lavoie	Nathalie	MOF Protection Branch
Ley-Shirok	Traci	MSRM
Maclauchlan	Lorraine	MOF SIFR
Niemann	Tom	MOF FPB
Nigh	Gord	MOF Research
Prasad	Atmo	MOF FAB
Rankin	Leo	MOF SIFR
Riel	Bill	CFS
Safranyik	Les	CFS
Su	Qiong	MOF FAB
Taylor	Steve	CFS
Walton	Adrian	MOF Research
Walton	Adrian	MOF Research Branchg
White	Ken	MOF NIFR
Wood	Colene	MWLAP

Attended the Executive Summary Only

First	Last Name	Affiliation
Phillips	Barrie	MOF Research Branch
Shcultz	Fern	MSRM
Clark	Bob	MOF NIFR
Bedford	Lorne	MOF FPB
Briteneff	Anthony	MOF FPB
Nyberg	Brian	MOF FPB
Bradford	Peter	MOF FPB
Parfitt	Ben	CCPA
Duffy	Chris	MOF Protection Branch
Sproul	Jim	SBED
Haves	Brooke	SBED
Stinson	Graham	CFS
Pederson	Larry	MOF BCTS
Boyce	Melanie	MOF FAB

Summary of Questions (& Answers) and Comments

INTRODUCTION and REVIEW

Do you think and of the blow back is due to IPS beetles?

- Entirely possible

When the population of beetles is high and since they disperse in any direction, the beetles will move back into areas that were already infested and find areas that were missed

What is the difference between cumulative and annual?

- The difference in area between years is the increase between years.

Shelf life

What is the end point on that time since death axis?

- We model only 20 years out.

What did JS Thrower base their results on?

- Survey of licensee opinion in the Vanderhoof District

The concept is OK, the uncertainty is where the lines occur.

Diameter, density of beetle attack and density/severity of woodpecker attack influences shelf life.

Scenarios

Beetle populations can collapse in areas without low winter temperatures.

Factors influencing the population:

Synchronicity of the development with the seasons

Winds – influencing dispersal

Habitat fragmentation – influences dispersal

There is very little information on these factors. They are mostly theoretical.

How did we arrive at the 66% and 80% scenarios?

- 66% was the highest level of mortality experienced during previous outbreaks in BC. 80% was the hypothesised volume impact on the entire province from the current outbreak. There is strong relationship between diameter and percent kill. Once 40% of the pine is killed then this is most of the pine over 12cm diameter.

Model Overview and Management Model Details

Merchantability is based on the shelf-life model.

The model used a volume-based AAC.

The harvesting model is a semi-optimization model.

Explain why low and moderate severity are a higher priority then high severity

Why did you single out VQOs as the only constraint?

- We had provincial scale coverage of VQOs and visuals will be quite constraining.

Beetle Model Details

Why is there a fall off in infestation progress as an effect of age?

- It may depend on the relative geographic location of the old pine.

We are under predicting the outbreak using the 2003 data.

Isn't it difficult to draw comparisons between the model results and the observation data? If you plot the residual between observed and modeled indicates the model underestimated in the high volume killed mgmt units and overestimate in the low volume killed mgmt units. Pattern may be due to topography. Management activities may contribute to difference. It would be interesting to view the comparison for previous years.

There was very little territorial spread from 2003 to 2004, instead there was an intensification of the attack.

Did you incorporate climate into the model?

- We intend to incorporate this as a next step once information form MPBI funded climate modelling is available.

Executive Summary

No-uplift scenario means no expedited uplifts and no future uplifts.

What happens to timber supply over the next 100 years? What is the mid-term timber supply?

- While this is an important question it is not one we can answer with this model. We are concentrating on the short term impact of the current outbreak. Folks at Forest Analysis Branch are working on the timber supply implications.

To make decision about doubling the cut then or other management actions then the long-term impact on timber supply must be assessed.

There is an impact on pine less than 60 years of age.

- District staff are actively engaged in studying the impact on young stands

Are you looking at fall-down/blow-down impact with respect to salvage?

- No.

There is field data already gathered on fall-down rates, are people interested in that data (Brad Hawkes)?

- The chief forester is getting a group together to come up with an action plan to address the information gaps on shelf life.

The shelf life estimates are pessimistic given that companies are willing to invest in salvage.

No one foresaw how long we would be able to use the dead wood coming out of the Chilcotin outbreak (20 years). But the Chilcotin may have been an unusual case. The model should broaden the self life uncertainty –take it out to 20 years and see the sensitivities. Then we can run some timber supply analysis.

Self life is really a three variable model: site wetness, what do you want to make out of it, and what is the market demand for that product.

People are doing retrospective self life studies – but the information is proprietary.

But that study must be done in more places then Vanderhoof.

It is difficult to determine the exact time of death, which makes the study difficult, time consuming and expensive.

We will not know what the shelf-life of beetle killed wood is until after it has stopped being utilized. Experience on the Chilcotin and elsewhere has taught us that. Because economic factors are so important in determining shelf-life we simply must wait until after the industry has decided what they can use economically.

Detailed Results

Model Sensitivity

We might have the wrong wind data – maybe they fly at a different altitude

How do you know what is the endemic level of kill?

- We assume it is any kill <1% of the mature pine volume. This is probably better termed “incipient” infestation levels.

A fundamental problem with sensitivity analysis is that how sensitive the model to a particular parameter depends on how much the parameter is varied.

High site index might be correlated with other factors. Generally, high site index values are correlated with high infestation rates.

Site index is usually gathered for the leading species. IF pine is not the leading species then the site index value does not necessarily reflect the pine productivity.

Is climate more than just growing degree days?

- Yes. The climatic suitability model that is being refined by Allan Carroll at CFS is quite complex and contains a variety of parameters about winter and summer climate.

Model Complexity

The PFC (Carbon Budget) model indicates the some areas infestation will subside in severity and then increase again in the future. Why doesn’t yours?

- The Carbon Budget model used and infestation progression model based on expert opinion and they suggested a “return interval” for MPB outbreaks of about 20 years. We model the current outbreak only and assume that it will follow a course based on its observed behaviour over the last 6 years. That will result in most of the mature pine being killed. If that is the case there will be little or nothing left for a new infestation 20 years after this one collapsed.

The harder you hit it now the greater the penalty on supply at a later time.

If you respect those VQOs and IRM then you will have a drop in harvested volume.

Does dead pine satisfy the VQO requirements?

- That is an important question for land use planners. It has not been answered yet.

The drop in harvested volume occurs after the main peak in volume killed.

Can’t you try scenarios other than double the AAC, like increase by 25%.

- We could but we are not doing sensitivity analysis on the AAC, we are simply trying to examine the implications of increasing the cut on other indicators.

Dawson Creek does not need an increase in AAC to contain the outbreak.

You have between 2010 and 2015 to find a good way to deal with chips.

The logging model is only a sawlog model –chips are not a priority –they are residue.

You can't separate the chip industry, it is tied to sawlog.

An efficient method is to tell some licencees to harvest sawlog and some licencees to harvest for chips.

There might be use for chips in biofuel for carbon credits.