



The Economics of Mountain Pine Beetle Range Expansion and Control

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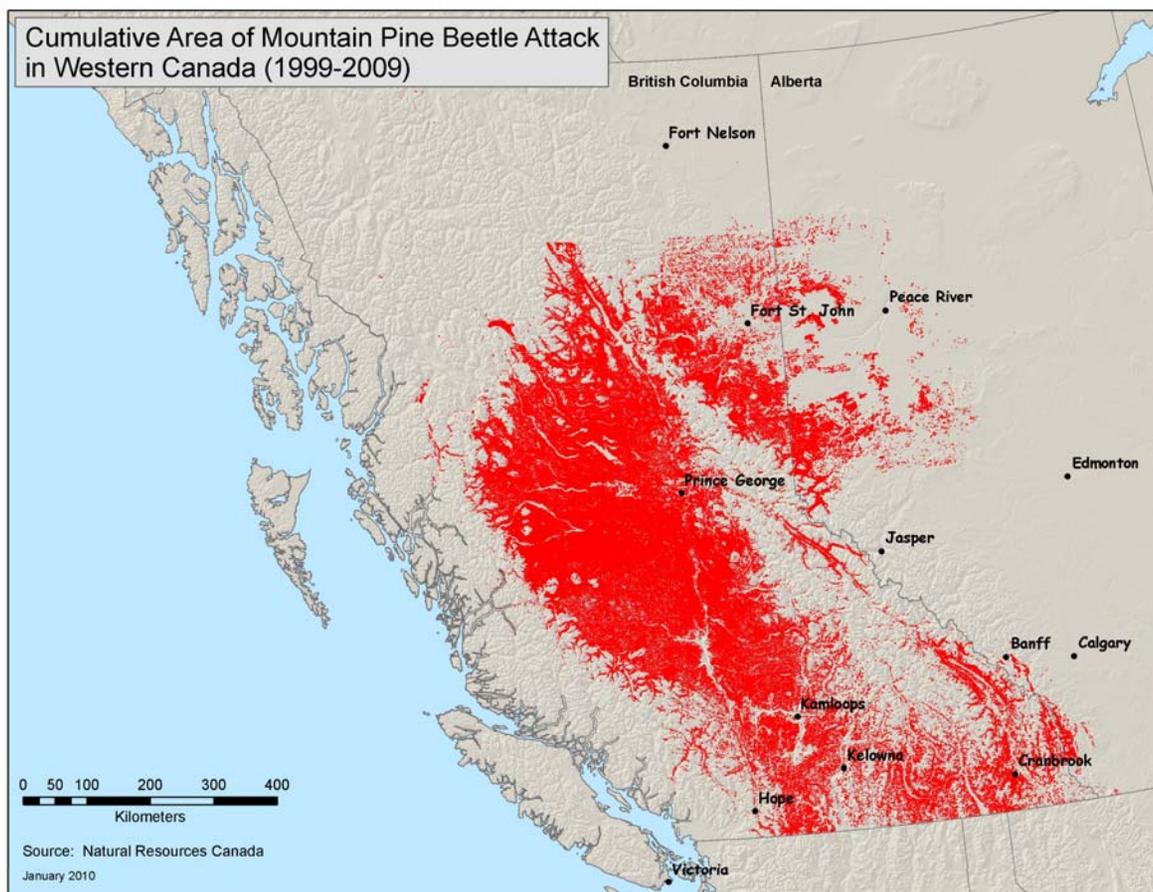
Outline:

1. Overview of the MPB issue.
2. What is at stake if MPB spreads eastward?
3. Controlling the MPB risk.
4. How do we determine the costs of an outbreak, and the benefits of slowing or preventing one?
5. Summary and conclusions.



Overview of the MPB Issue

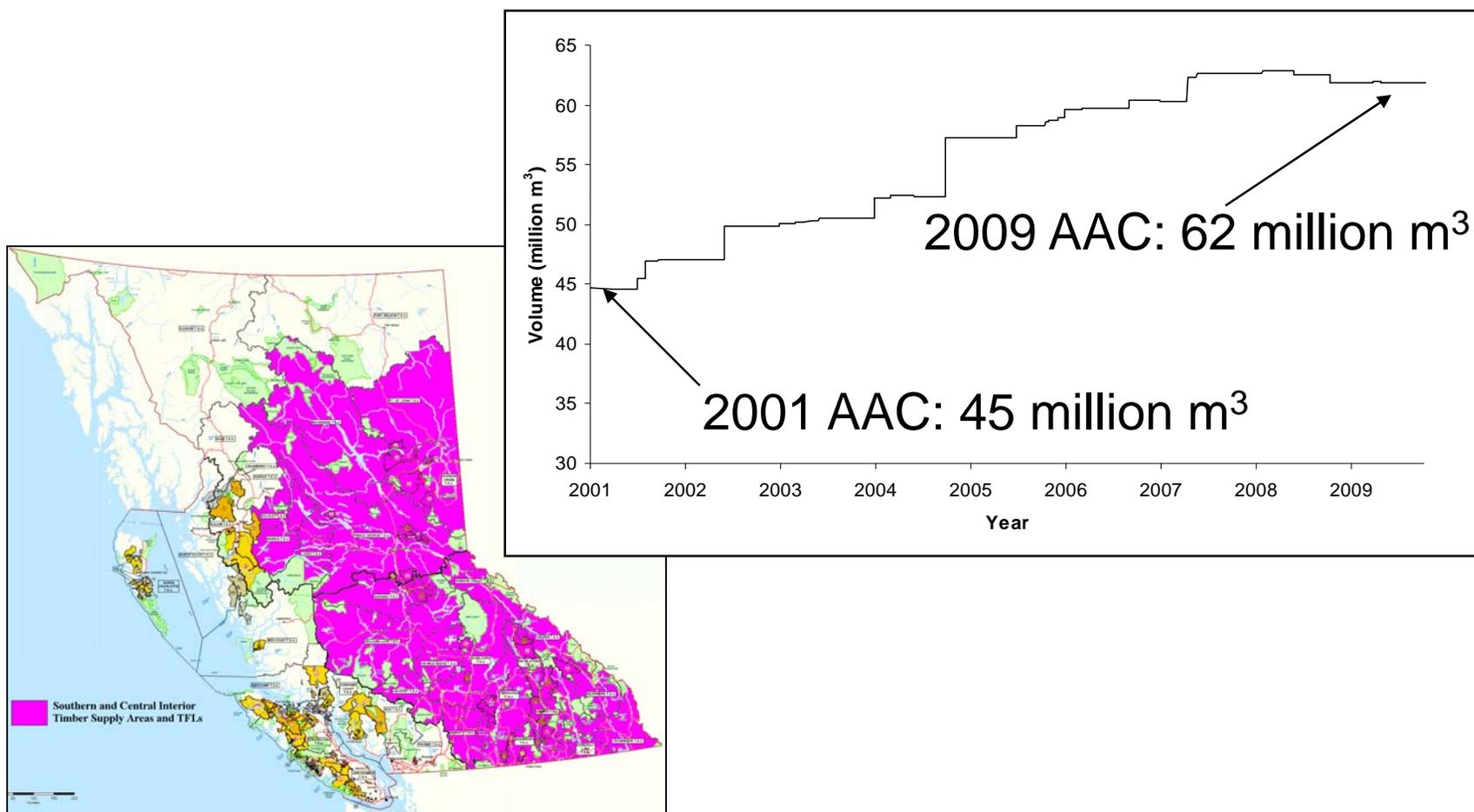
- As of 2008, MPB has affected 620 million cubic metres of timber in BC (includes green, red and grey-attack).
- By the end of the outbreak, 70% of BC's mature pine inventory is expected to have been killed.
- Salvaging is being used to capture economic values before decay sets in, and to help re-establish stands for future timber supplies.





Overview of the MPB Issue

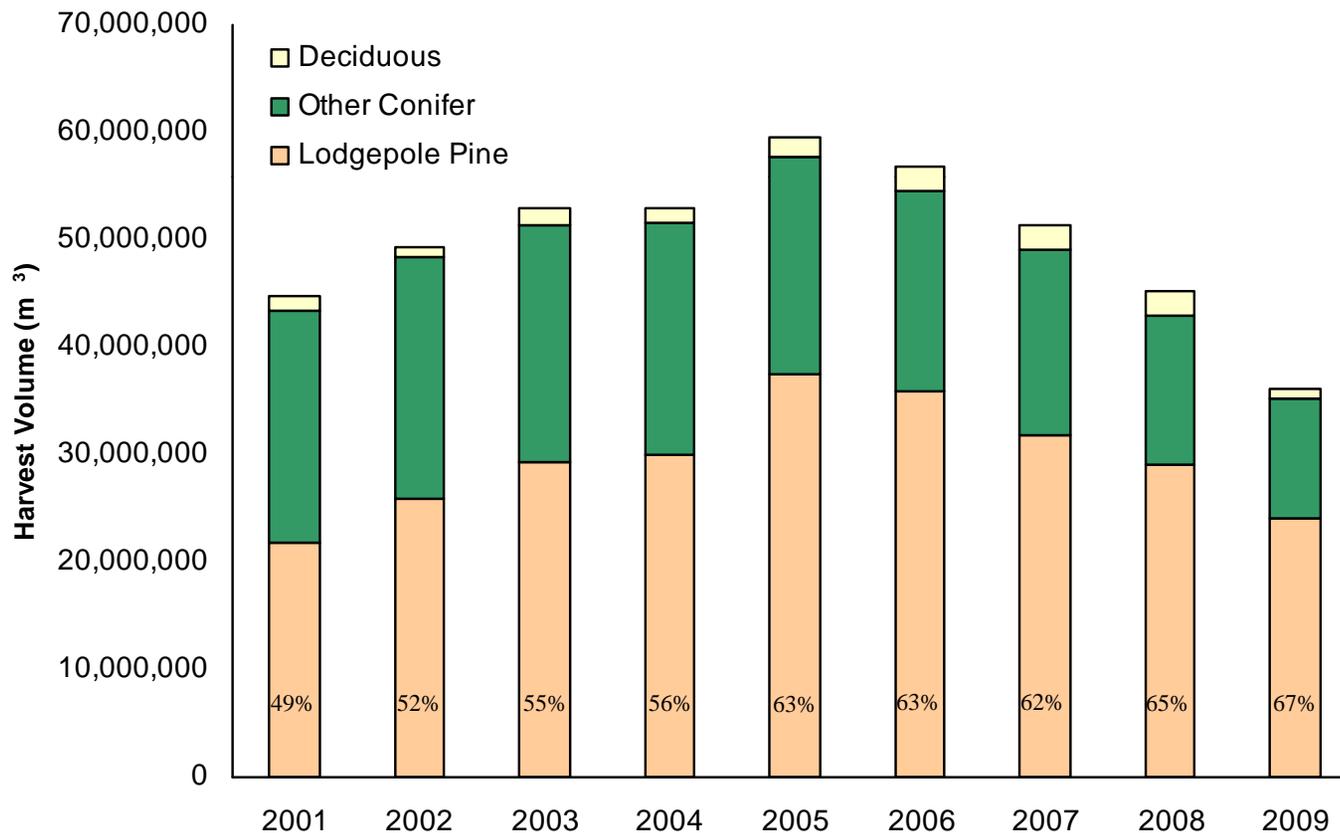
AACs in the affected region have risen steadily since 2001:





Overview of the MPB Issue

The emphasis on pine harvesting has also grown, though market conditions are now constraining the total amount harvested.



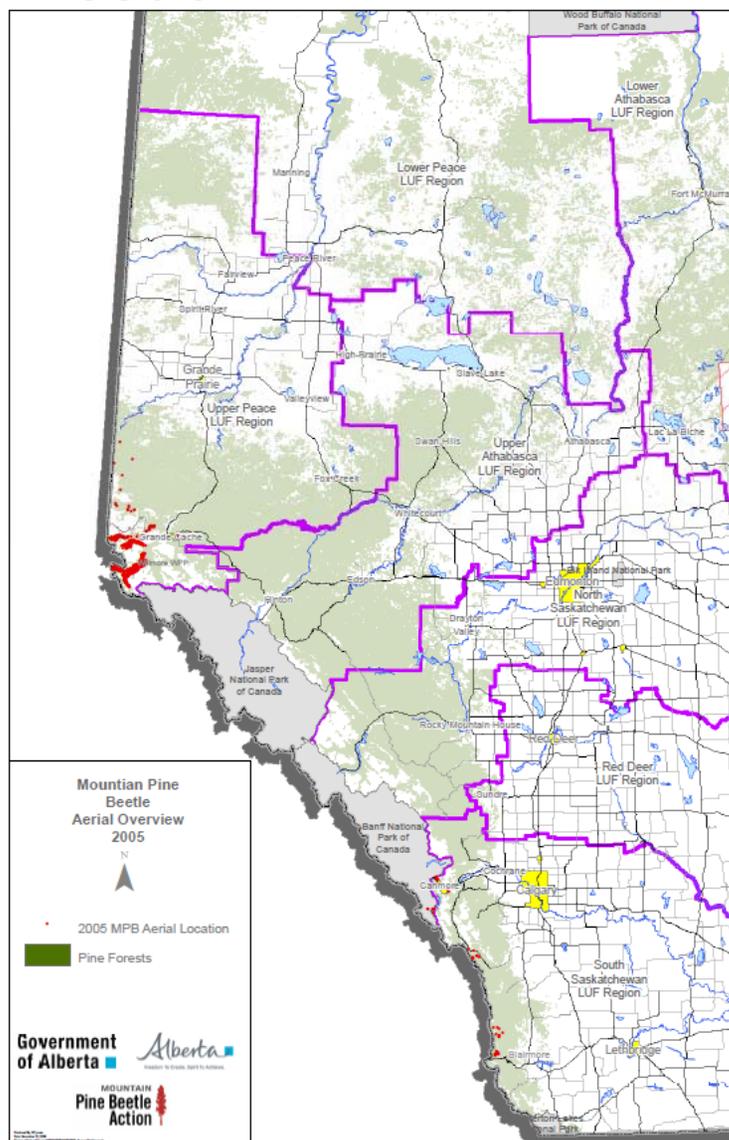
← Pine harvest as a proportion of total harvesting



Overview of the MPB Issue

While the infestation is beginning to decline across much of BC, there is a great deal of concern over its more recent spread into north-east BC and AB.

2005

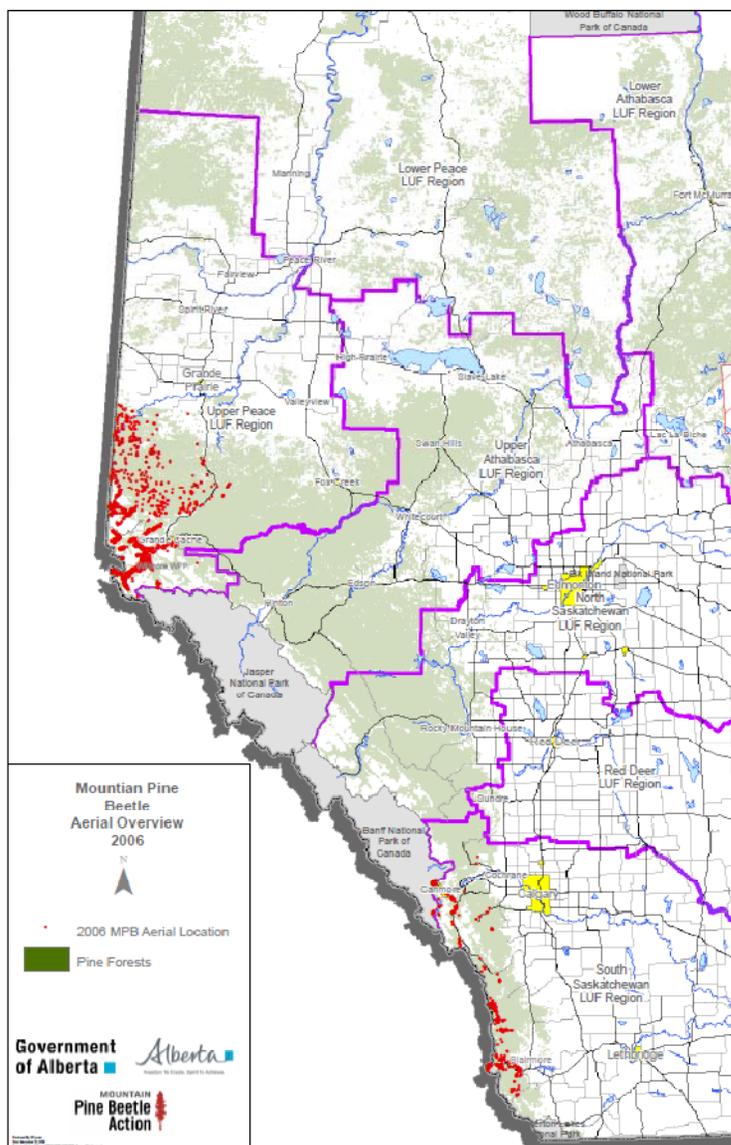




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2006

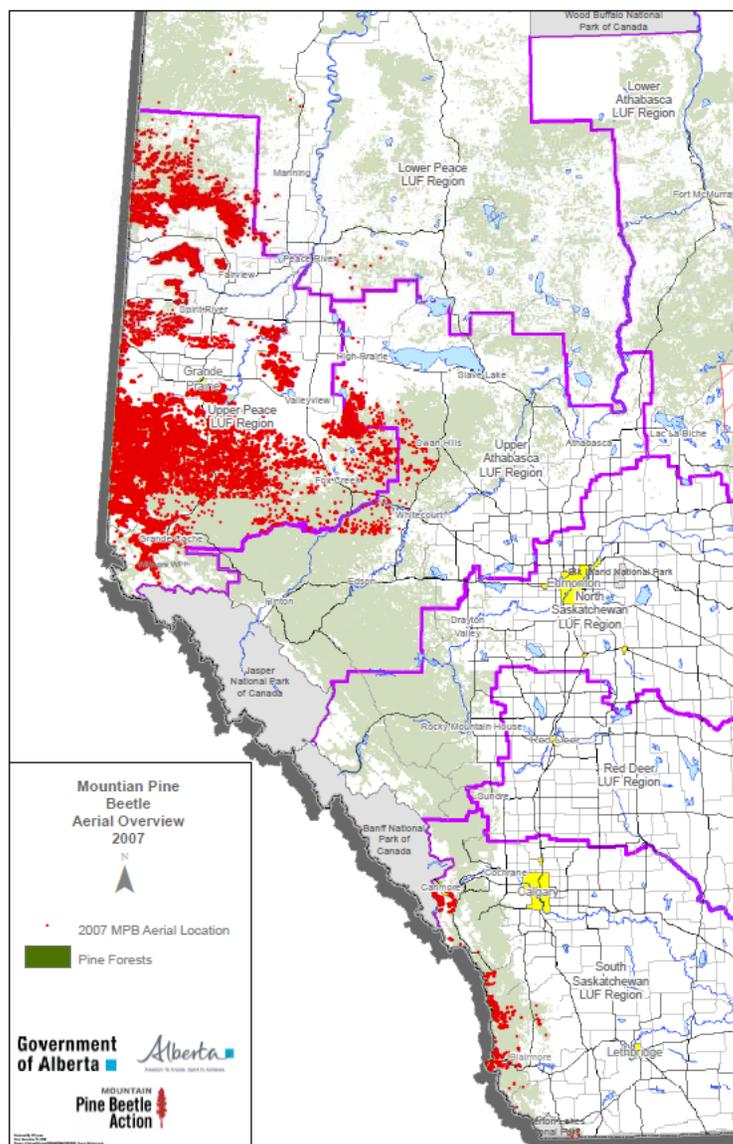




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2007

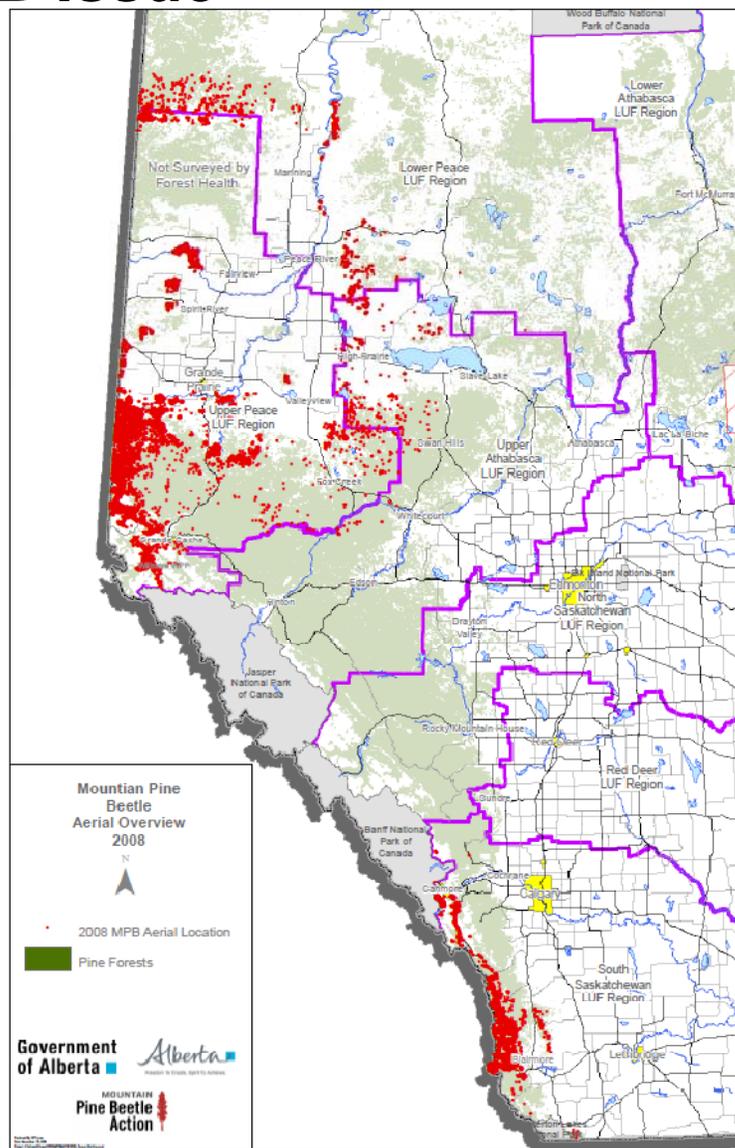




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2008

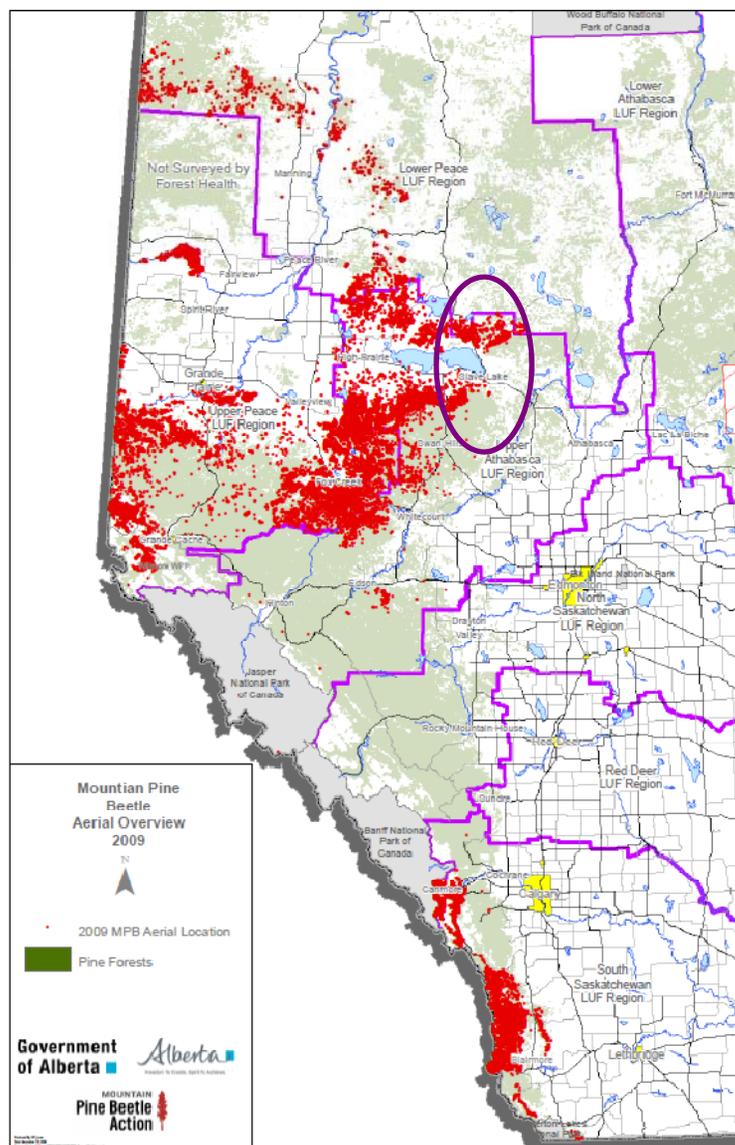




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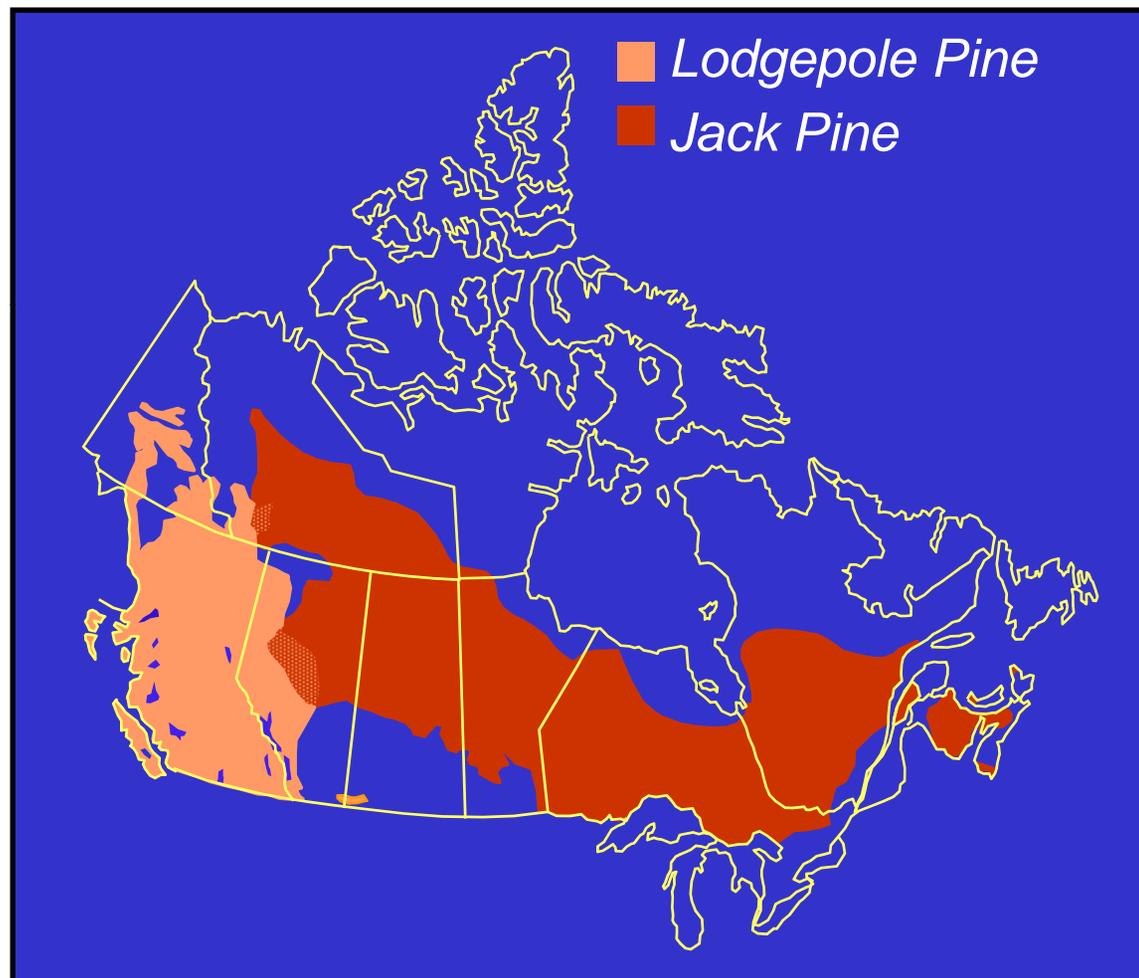
2009





Overview of the MPB Issue in BC

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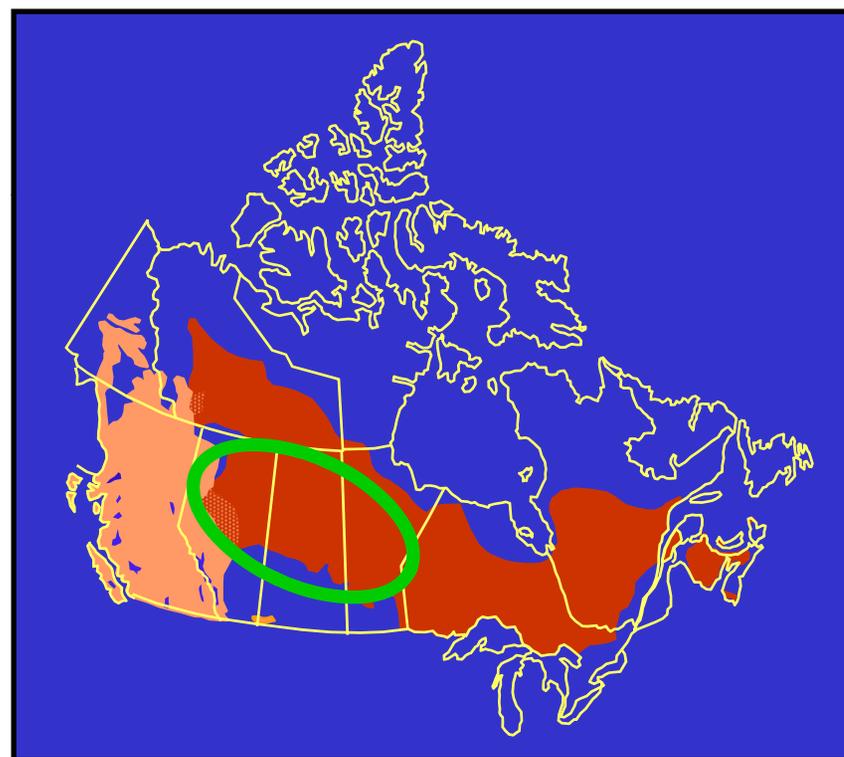


What is at stake if MPB continues spreading?

The prairie provinces collectively harvest 25-30 million m³ per year, roughly 30% of which is pine.

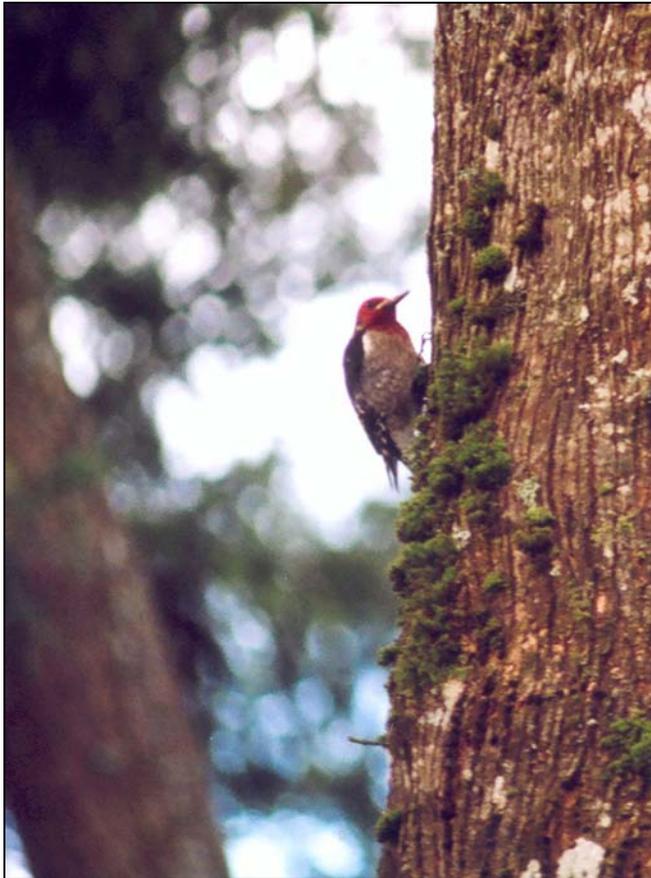
This harvesting delivers tens of millions in stumpage revenues to provincial governments.

Forestry and forest product manufacturing in these provinces directly supports some 30,000 jobs.





What is at stake if MPB continues spreading?



Forests support other important economic activity such as commercial recreation, and the production of a wide range of non-timber forest products, ecosystem services and non-commercial benefits.





What is at stake if MPB continues spreading?

- Hydrological impacts may occur where mortality is severe.
- Woodland caribou habitat may be degraded.
- Commercial trapping species may be impacted.
- Carbon stocks may decline.
- Recreation or other human activities may be limited by the hazards posed dead pine or changes to aesthetics.
- There will be costs to dispose of dead pine where hazards are unacceptable.
- Salvage harvesting may also compromise some values, or may lead to controversy and conflict among stakeholders.



What is at stake if MPB continues spreading?

Fire risk is another important impact, especially at the wildland-urban interface.





Controlling the MPB threat

“Direct control” involves removing beetles from infested stands through conventional harvesting, or through sanitation treatments that remove or destroy individual or small groups of infested trees.





Controlling the MPB threat

“Indirect control” is another approach, which involves reducing the susceptibility of forested landscapes to MPB through harvesting or prescribed fire.

The Government of Alberta is aiming to reduce the amount of at-risk pine by 75 per cent over the next 20 years.

This is a long-term, preventative strategy.





How do we estimate the costs of an outbreak, and the benefits of slowing or preventing one?

Multiplying the cumulative volume of timber killed by a price/m³ is sometimes done, but this ignores the complexities of forest-level timber flows and outbreak timing.

A better approach is to use forest-level models to compare scenarios and estimate changes to timber revenues and other forest attributes.

This allows for the inclusion of factors such as:

- Salvaging and stand recovery
- Capacity of non-pine stocks to sustain harvesting
- Harvest scheduling inefficiencies



Other factors that will influence MPB costs include:

MPB management costs (e.g., monitoring, control, hazard abatement)

Other MPB policies, such as transportation restrictions

Increased tree-to-truck costs and processing costs

Forest Product Markets, e.g.:

- Will a harvest “surge” weaken log prices? ¹
- Will weak markets or industry capacity constrain salvage harvesting, increasing non-recoverable losses?
- What is the cost of future timber supply reductions?





Conclusions:

- The consensus among MPB experts is that risks to the boreal from MPB range expansion are significant.
- As a consequence, efforts are being made to control MPB in NE BC and Alberta.
- Economists can help define what is at stake, but forest-level models are required to produce meaningful estimates of the costs of an outbreak and the benefits of control.
- These models take time to develop and are sensitive to a wide range of assumptions, but they can help guide the efficient allocation of control resources.