

# BC

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# Forest

## PROFESSIONAL

### Feature

Mountain Pine Beetle:  
Looking Forward

**Introducing Bill 30:**  
*the Forest Resource Act*

### Journal Watch

Defining our Future Forests



# SPECIAL FEATURE

ExpoFor 2008



## Research Snapshots

### Provincially Funded Mountain Pine Beetle Research

**M**ORE THAN HALF OF THE PINE TREES IN BRITISH Columbia's Interior forests are crawling under their bark, alive with a veritable sea of beetle larvae who have industriously consumed more than thirteen million hectares of Interior pine forests since the outbreak began in the late 1990s. Given this enormous impact on forests and forest-dependent communities, it is not surprising that British Columbia has seen huge research investment on this topic, both from federal and provincial funding sources. Since 2004, the province's Forest Investment Account – Forest Sciences Program (FIA-FSP) has funded more than 100 projects on research related directly or indirectly to the beetle outbreak. About two-thirds of these projects are on topics related to timber growth and value—how to salvage and regenerate forests in these areas after the attack. The other projects look at issues of sustainability—how to maintain biodiversity, resilient ecosystems and vibrant interior communities in the wake of the devastating outbreak. In this article, we highlight four of the completed FIA-FSP projects on mountain pine beetle which threatens to consume most of BC's pine-dominated forests by the year 2020.

#### Re-evaluating MPB Attack Facts

Although mountain pine beetles generally prefer older pine trees, beetle attack in young pine is now common. Being able to assess the level of attack in these trees is obviously important for predicting future impacts of the beetle on timber supply. Chris Hawkins from the University of Northern British Columbia has spent the last three years gathering data on this topic in over 400 stands in the Prince George Timber Supply Area (TSA). Forecasting attack levels in young trees is particularly salient to this TSA, where the projected 75% drop in the allowable annual cut (AAC) post-beetle was calculated on the assumption that there is no beetle attack in stands younger than 60 years old (age classes 1, 2 and 3) and only 50% attack in age class 4 (60-80 years old). Unfortunately, Hawkins' research refutes these estimates, showing significant attack levels in pine leading stands of age classes 1 through 3 and attack rates in age class 4 stands at closer to 80%. Remeasurements of these young stands in subsequent years showed that the attack rates are increasing, clearly illustrating that the beetle is more successful in young stands than previously thought. These results have significant implications for calculating the mid-term timber supply fall down, which is likely to be higher than predicted initially by the chief forester. Hawkins is also looking at stocking levels in these young stands post-beetle attack, to prioritize stands which are not well stocked for restoration work after the beetle has worked its way through the TSA. In modelling release of these stands, this work is showing that many of these stands will still contribute, albeit at a lower rate, to the mid-term timber supply, through ingrowth from the residual tree layer. For more information, go to <http://www.for.gov.bc.ca/hcp/fia/searchreports.htm> and search for project M065002.

#### Regenerating Stands After Attack

After the beetle moves through a stand, underplanting to accelerate re-establishment of a new forest is an obvious option—but how well do seedlings survive under beetle-killed pine snags? David Coates, RPF, and Erin Hall set out to investigate this question in their FIA-FSP funded research project. By incorporating a robust snag dynamics submodel into SORTIE-ND (an individual tree, spatially explicit model of stand dynamics), they found that pine snags killed by the beetle block considerable light for at least 10 years after their death, resulting in understory light levels that are too low for the survival of regenerating pine seedlings. By contrast, regenerating spruce seedlings were often able to survive, but the resulting yield after 100 years was moderate and varied. Their results suggest that delaying planting a few years after the initial MPB attack would result in much higher plantation survival and subsequent volume development. However, they also note that deciding to delay underplanting should be balanced against the increased safety hazards posed by snags and the increased levels of brush and other competing natural regeneration that will also take advantage of the improved light conditions. For more information: see <http://www.for.gov.bc.ca/hfd/library/FIA/2005/FIA2005MR150b.pdf>.



David Coates photo

## Impacts of Salvage on Biodiversity

While harvesting beetle-killed wood remains a priority for most forestry operations, what are the impacts of this drive to salvage on biodiversity? Tom Sullivan from UBC has been studying this question in high-elevation lodgepole pine forests that were attacked by mountain pine beetle thirty years ago. The study compares the abundance of five mammal species associated with old forests—masked shrew, red-backed vole, northern flying squirrel, red squirrel and mule deer—in these regenerating stands. It also compares the structures of regenerating stands with those of unharvested areas, to see if leaving trees behind during salvage operations accelerates a return to old-forest conditions. As the project is just wrapping up, specific results on how leaving trees is beneficial to these mammals will be available soon through the FIA-FSP website. In the meantime, Sullivan states that “so far, the message is clear: leaving trees in cutblocks improves the situation for species that depend on older forest conditions for their lifecycles.” For more information, go to <http://www.for.gov.bc.ca/hcp/fia/searchreports.htm> and search for project Y072008.

## Support Tools

To help forest managers make decisions about how to deal with large swaths of beetle-killed forest and balance the drive to salvage with ecological and social factors, several FIA-FSP funded projects have focused on developing decision support tools. In one of these projects, Bruce Larson, RPF, from the University of British Columbia worked with colleagues Kirsten Campbell (TerraTree Forestry) and Rasmus Astrup (then with the Bulkley Valley Centre for Natural Resources Research and Management) to develop a tool for quickly and simply presenting the complex consequences of major post-beetle attack management decisions, including the implications of clearcutting and planting, salvage logging with no planting, removing dead pine only, or ‘doing nothing,’ on both future forest conditions and the associated economic, environmental, and social values of the resulting forest. Run from excel spreadsheets using probabilities derived from the SORTIE growth and yield model, the application can be downloaded by any forest manager and run from any desktop computer. A report describing the model, a user’s guide, and a downloadable version are available at the Ministry of Forests and Range website: <http://www.for.gov.bc.ca/hcp/fia/searchreports.htm>.

The FIA-FSP funds applied research and the extension of forest science results to meet the information needs and priorities of those who plan and manage British Columbia’s public forests. In total, the FIA-FSP has invested more than \$3.7 million from federal and provincial funding sources on projects directly related to the mountain pine beetle, with an additional \$4.3 million spent on projects that are relevant, but not directly related, to the outbreak. The FIA-FSP has also invested in extension related to MPB through the Provincial Forest Extension Program, delivered by FORREX Research Extension Partnership ([www.forrex.org](http://www.forrex.org)). Of the over 100 projects that are relevant to the beetle, 48 were directly funded under the FIA-FSP call for MPB-related research in 2005/06 and 2006/07. For more information on the research program, see [www.fia-fsp.ca](http://www.fia-fsp.ca). Completed project reports are found at <http://www.for.gov.bc.ca/hcp/fia/searchreports.htm>.

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