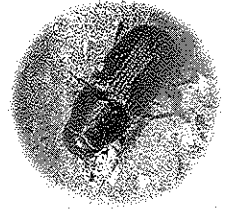


Mountain pine beetle projections: answering questions or making moonshine?



By Marvin Eng, RPBio

How bad is it? How bad will it get? What can be done? What will it mean? These are questions about the current mountain pine beetle outbreak that I struggle with on a daily basis. They are impossible to answer with certainty and extremely difficult to answer in a generally applicable way. The answer almost always depends, to some extent, on the point of view of the questioner.

I lead a research project aimed at projecting the future extent of the current mountain pine beetle outbreak. The project is funded by the federal government's Mountain Pine Beetle Initiative and involves a team including scientists from the Pacific Forestry Centre, provincial government staff and consultants. We developed a model that produces a spatially explicit, provincial-scale projection of the amount of pine that will be killed. The model also provides a spatially explicit projection of our management response to the outbreak with respect to beetle management strategies and salvage operations.

Our input data shows that this outbreak is already an order of magnitude larger than the outbreak that occurred on the Chilcotin Plateau in the early 1980s. We estimate that the current outbreak has affected some seven to 8.5 million hectares and has killed more than 250 million cubic metres of merchantable timber. Our model projects that the outbreak will peak in severity during the

summer of 2006 when it may kill more than 90 million cubic metres of merchantable timber. We also project that during 2006 we will harvest more than 14 million cubic metres of live pine as a "by-catch" of our efforts to control the outbreak and salvage dead timber. By the end of 2006 approximately 40 per cent of the susceptible

pine will have been killed or harvested. Over the next six or seven years another 40 per cent may be killed or harvested.

Our model projects a worst-case scenario; that is, how long will it take to get as bad as it possibly can get. There is no infestation stopping mechanism in our model. We run the model for 20 years and at that time it projects that virtually all of the susceptible, merchantable pine volume will be killed or harvested. By 2013, when approximately 80 per cent of the pine is expected to be killed, the rate of increase in the

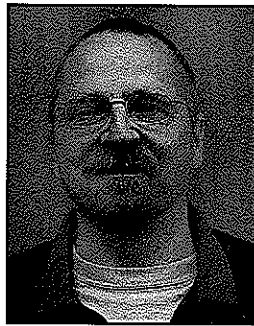
amount killed will slow dramatically. This infestation is unprecedented in size and effect. We have no way of knowing when it will actually end. We are confident—given the current state of the infestation, its behaviour over the last six years (for which we have data) and the susceptibility and spatial arrangement of the remaining host—that a significant proportion of the merchantable pine will be killed.

A principal goal of the research was to provide some possible projections of the growth of the beetle infestation. However,

we were as interested in examining the management response. Forest managers are engaged in an aggressive attempt to slow the outbreak. We model their management strategy, known as "leading edge attack" at a provincial scale given our current understanding of beetle biology and the observed behaviour of this outbreak. We find no evidence, virtually anywhere in the province, that attempts to control the outbreak either slows its spread or has any positive outcome with respect to the amount of live pine left on the landscape when the outbreak subsides. The leading edge attack strategy may have had some success controlling previous outbreaks, but the unprecedented size and aggressive nature of this outbreak appears to render it ineffective. However, there are hypotheses about beetle biology involving mechanisms that could slow or stop the outbreak, particularly at its periphery. If these hypotheses are correct, some efforts at beetle control at the periphery of the outbreak may be warranted. Naturally, we would encourage you to read our report for a detailed discussion of assumptions and conclusions about beetle management (www.for.gov.bc.ca/hre/bcmapb).

All of this begs the question: "What should be done?" I have strong opinions on the subject. However, it is our collective responsibility to engage in a discussion about how to weigh and balance the astoundingly complex set of social, economic and environmental variables involved. Projections of the future can provide valuable information to inform that discussion. Nonetheless, we should keep in mind the words of prominent American newspaper editor and political commentator, H.L. Mencken: "We are here, it is now. Further than that, all human knowledge is moonshine."

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