

What Makes Mountain Pine Beetle a Tricky Pest?

Optimal Harvest when Facing Beetle Attack in a Mixed Species Forest

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The pine forests of British Columbia are under attack by native mountain pine beetle. The public landowner is interested in protecting future timber supply, while salvaging dead and dying pine and maximizing revenue. We examine two overlooked issues related to harvesting strategies: (i) the variability and timing of beetle attack, and (ii) the variability of pine inventory in each stand. Our objective is to maximize the net value of the timber portfolio at the end of a 20-year horizon under harvest and product flow constraints imposed by the public resource owner to insure sector stability, and especially a stable supply of feedstock (bushchips) for bio-energy production. The optimal short-run response is to increase harvests over the non-beetle baseline in order to reclaim stands that would otherwise have a negative future value. No scenario yields net returns exceeding those of the baseline, because the harvest of low value bushchips must be subsidized by the harvest of timber that can be converted into lumber. Longer shelf life does provide significantly higher net returns as more timber can then be converted to lumber, but returns remain below the baseline. Clearly, the government has a difficult management problem that requires balancing of immediate returns and reduced risks with sector stability objectives.

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