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Abstract

The impact of treatment on mountain pine beetle infestation rates

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The spatial extent of the current mountain pine beetle epidemic in western Canada has highlighted the need to understand the efficacy of treatment strategies. We investigate the effect of five direct-control treatments applied in central British Columbia during a mountain pine beetle epidemic. Using point data from GPS helicopter surveys and kernel density estimators, efficacy was explored through comparisons of infestation intensities at treated locations to randomly selected untreated sites. Small patch and block harvesting treatments showed the clearest signs of reducing infestation intensity; the effects of the fell and burn, monosodium methanearsonate, and pheromone-baited tree treatments were less clear. Through this work, five management guidelines were developed: (1) aggressive treatments can be effective when beetle populations are moderate, although still epidemic; (2) single-tree treatments are only effective when infestation intensities are low or moderate in both the treatment area and surrounding regions; (3) singletree treatments are the most effective when treatments are intensively applied; (4) overall, the more infested trees removed during treatment, the greater the reduction in infestation intensity; and (5) when it is possible to reduce the infestation levels to 2.5 or fewer infested trees per hectare, treatments can be effectively applied.

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