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Quantifying Stand Targets for Silvicultural Prevention of Crown Fires

Authors: Keyes C.R.; O'Hara K.L.

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Abstract:

Forest managers are expressing a growing interest in proactively reducing susceptibility to crown fires, but the quantitative basis for defining specific stand targets and prescribing silvicultural regimes for this objective is lacking. A procedure is presented for creating resistant stand structures that exploits the relationship between crown fire development and characteristics of stand structure. The BEHAVE surface fire model was integrated with modified versions of the Van Wagner crown ignition and crown fire spread equations in order to quantify structural targets for mitigative silvicultural practices. The procedure tolerates an array of input data types for weather, site, and surface fuel variables so that hazard-reducing guidelines are tailored to specific site and stand conditions. Suggested strategies for achieving crown fire-resistant stand targets include pruning, low thinning, and surface fuel management. West. J. Appl. For. 17(2):101–109.

Keywords: [Fire models](#); [fuel-reduction recommendations](#); [fire surrogates](#); [crown fires](#); [fire hazard](#); [environmental management](#); [forest](#); [forest management](#); [forest resources](#); [forestry](#); [forestry research](#); [forestry science](#); [natural resources](#); [natural resource management](#)

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Affiliations: 1: Division of Forest Science, 145 Mulford Hall University of California, Berkeley, CA, 94720-3114

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