

## PRELIMINARY MODEL OF FIRE EFFECTS ON LYNX AND MARTEN ABUNDANCE

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*Abstract:* Trappers and wildlife managers concerned about the effect of wildfire on furbearer populations in the taiga need an objective and consistent framework within which to evaluate the likely effects of fire on furbearer abundance. We know of no existing model that attempts to predict the effect of fire on furbearer abundance. We present a preliminary model for lynx (*Lynx canadensis*) and marten (*Martes americana*) that allows ranking of ecological units (100-1000 km<sup>2</sup>) with respect to how rapidly units might regenerate to each post-fire sere (moss-herb, shrub-sapling, dense tree, mature forest) and how rapidly recolonization by furbearers might occur in black spruce taiga. Units are scored as the mean rank of likelihood (1 = low, 2 = moderate, 3 = high) that a given criterion will have a *negative* influence on rates of post-fire succession and recolonization by furbearers. Model components (each having several criteria) initially include furbearer and prey density, trapping effort, fire history of unit, existing vegetation (species and structure), soil type, soil moisture (includes fire weather indicators), and duration of local growing season. Inputs may come from on-site inventories or best guesses based on qualitative knowledge or data from other sites. We propose model development as an on-going process by which managers and researchers can better work together in understanding the complexity of predicting fire effects and testing assumptions of model components. The user's guide includes a literature review covering all criteria to facilitate understanding of components and constructive criticism of assumptions. The user's guide also lists several caveats when considering fire suppression or prescribed fire as a tool for influencing furbearer abundance in the taiga. Given the lack of understanding about specific responses by furbearers to fire, we recommend that the model be used initially to select treatment sites so experiments in fire management can allow true "fire effects" to be documented. As specific knowledge on fire effects becomes available, a revised model could be part of a decision process in which furbearers are one of several resources used in designating zones of suppression activity.

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