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# Identifying the determinants of windthrow damage in wildlife tree patches in the Boreal White and Black Spruce bio geoclimatic zone of northeastern British Columbia

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Leaving wildlife tree patches (WTPs) has become a common strategy employed to maintain biodiversity among managed forest ecosys tems in British Columbia. High levels of wind damage have been observed in many of these reserves owing to the increased wind loading afte r harvesting. The ensuing damage disrupts forest management plans and reduces the value of WTPs. The objective of this study was to ident ify the primary determinants of windthrow in WTPs in the boreal forest of northeastern British Columbia and to suggest management strategi es to minimize wind-related damage. Line transects oriented parallel and

perpendicular to prevailing and dominant winds across 13 WTP reserves were used to quantify wind-related damage and factors that m ay contribute to windthrow incidence. The occurrence of windthrow corresponded with the exposure of WTP edges to high velocity wind s; common, but lower-velocity winds resulted in little windthrow damage. Edaphic, site, and forest-stand factors appeared to have little influe nce on the incidence of windthrow in this study as compared to exposure to strong winds. The study suggests that forest managers can red uce the incidence of windthrow in WTPs in the boreal forests of northeastern British Columbia by:

(1) creating patches that are elliptically shaped with the long axis in the direction of the dominant winds;(2) reducing wind exposure of s usceptible edges; and (3) increasing the size of WTPs.

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