

# RELATIVE SPATIAL DISTRIBUTIONS AND HABITAT USE PATTERNS OF SYMPATRIC MOOSE AND WHITE-TAILED DEER IN VOYAGEURS NATIONAL PARK, MINNESOTA

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**ABSTRACT:** We examined the distribution and home range characteristics of moose (*Alces alces*) and white-tailed deer (*Odocoileus virginianus*) at Voyageurs National Park, Minnesota. Pellet count transects revealed low densities of moose and higher densities of white-tailed deer, and provided evidence of partial spatial segregation between moose and white-tailed deer possibly due to habitat heterogeneity. There was limited interspecific overlap in the relatively large annual home ranges of radio-collared moose and white-tailed deer. Both moose and white-tailed deer exhibited significant selection for spruce (*Picea* spp.) and balsam fir (*Abies balsamea*) vegetation types at the home range scale. White-tailed deer significantly selected a 12-20 m canopy height over all others while moose significantly selected 5-11 m and 21-30 m canopy heights over the 12-20 m canopy height. Moose significantly selected open/discontinuous canopy cover and white-tailed deer selected both closed/continuous and open/discontinuous canopy covers over dispersed/sparse canopy cover. Differential habitat selection between moose and white-tailed deer at Voyageurs National Park might be related to the differences between these species' abilities to cope with a northern mid-continental climate. Spatial segregation between moose and white-tailed deer at Voyageurs National Park may allow moose to persist despite the presence of meningeal worm (*Parelaphostrongylus tenuis*) in white-tailed deer.

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Moose inhabit a circumpolar region of northern boreal forests dominated by spruce (*Picea* spp.), pine (*Pinus* spp.), and fir (*Abies* spp.). The range of moose in North America has expanded since 1955 (Peterson 1955) while numbers throughout the range increased from approximately 940,000 to 975,000 between 1960 and 1990 (Karns

1998). Moose numbers in Minnesota increased eight fold from approximately 1,500 animals in 1960 to 12,000 in 1990 (Karns 1998). Numbers of moose in northern Minnesota may have peaked prior to the 1990 estimates as moose abundance in adjacent Ontario started to decline in the mid-1980s (Thompson and Euler 1987). Moose at

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