

Just good enough: colonization of juvenile lodgepole pine stands by North American red squirrels

Eric STROMGREN¹ and Karl LARSEN²

¹University of Victoria, Victoria, British Columbia, Canada (estromgren@tru.ca) ²Thompson Rivers University, Kamloops, British Columbia, Canada (klarsen@tru.ca)

Methods:

Large scale insect-mortality to pine trees has occurred across landscapes in western Canada, causing a drastic shift in the age-distribution of forest stands. More specifically, as young forest stands replace beetle-killed stands, mature stands are (or will become) increasingly rare. To this end, we investigated the colonization of young stands by a mature-forest dependant species, the North American red squirrel (*Tamiasciurus hudsonicus*) in a landscape composed of a mosaic of mature and young (<25 yr old) forest stands. Concurrently, we documented declines in an early seral specialist, the northwestern chipmunk (*Tamias amoenus*). Our goals were to (a) document when young stands begin functioning as ecologically mature forests, (b) identify structural components necessary for the transition from ecologically young to mature, (c) identify critical habitat features for mature-forest species colonizing young stands, and (d) evaluate whether current forest management guidelines are capable of conserving mature forest dependant species in landscapes composed primarily of young forests.

Results:

Data collected using a combination of track tunnel indices, livetrapping, and radio-telemetry across 18 developing forest stands indicate that increasing abundance of red squirrels, and concurrent declines in chipmunk abundance, are correlated to shifts in stand structure occurring 10 – 20 years post-harvest (stand heights 4 – 6 m). Our analysis of stand structure also indicates that red squirrels respond to development of the dominant canopy and that colonization sites were linked to the existence of residual structure (patches of more mature forest); chipmunks responded to both overstory and understory development.

Discussion:

Current forest management guidelines protect mature forests only until adjacent harvested stands reach 3 m height. Our results suggest that these guidelines will be insufficient to maintain the ecological function of landscapes transitioning to dominance by young forests. As mountain pine beetles spread through the boreal forest, forest management strategies may need to be updated in light of these results, in order to ensure conservation of mature forest dependant species in landscapes transitioning to dominance by young forests.