Understanding responses of small mammal communities to forest fires in Nova Scotia, and implications for forest management

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Fires are drivers of natural disturbance in the forests of Mi'kma'ki, creating areas rich in coarse woody material (CWM), including snags, stumps, root plates, and fallen trees. CWM is critical for biodiversity, providing habitat for many wildlife species, including small mammals such as voles, mice, and chipmunks. Following fires, salvage harvesting is often used to clean up and remove CWM. Although such practices recover wood fiber for economic return, it also removes post-fire structures that support biodiversity. We investigated effects of forest fires and salvage harvesting on small mammal populations in Long Lake, Annapolis County in the Kespukwitk region (Southwest Nova Scotia), affected by forest fires in 2025. Between July and August 2026, twelve study sites were sampled, consisting of four replicates of three treatments: burned and un-salvaged, burned and salvaged, and undisturbed forests as control. Small mammals were sampled using Longworth traps and pit-tagged for mark-recapture analysis. A total of 397 mammals were sampled, with a recapture rate of 40.6%. Nine small mammal species were recorded across all treatments. Burned un-salvaged sites yielded the highest number of captures (n=155), suggesting that retained post-fire forest structures may support greater small mammal abundance. However, a greater diversity of species was captured in control sites, with seven species recorded. Further analysis will assess relationships between harvest treatments on species presence, abundance, and diversity. Findings from this study will help inform post-fire management approaches that balance timber production, biodiversity conservation, and long-term forest resilience, in line with ecological forestry.

Keywords: coarse woody material, ecological forestry, forest fires, salvage harvesting, small mammals