
CHANGES IN NEST DENSITY AND DAILY NEST SURVIVAL OF TWO WOODPECKER SPECIES IN RELATION TO A MOUNTAIN PINE BEETLE EPIDEMIC

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The Mountain pine beetle (*Dendrotonus ponderosae*) is a bark beetle native to western North America capable of large-scale population eruptions, resulting in high tree (*Pinus* spp.) mortality that alters resource availability to wildlife, particularly snag-associated species. Many woodpecker species rely on conifer snags for nesting and foraging substrate. We studied nesting survival of two woodpecker species in relation to a recent mountain pine beetle outbreak in western Montana. American three-toed woodpecker (*Picoides dorsalis*) is a bark-drilling specialist that feeds on beetle larvae and frequently nests in conifer snags, whereas red-naped sapsucker (*Sphyrapicus nuchalis*) specializes on consuming sap of live trees and rarely nests in conifer snags. Based on *a priori* hypotheses we modeled daily nest survival (DSR) as a function of biotic (nest height) and temporal (beetle period [before and after outbreak], date trend, and a quadratic date trend) factors using seven competing models. Results for both species showed high model uncertainty and the constant DSR model was the most parsimonious model. These results did not support our predictions about beetle period or nest height affecting DSR, although DSR was lower during pre-outbreak (0.985, 95% CL [0.965, 0.995]) versus post-outbreak (0.993, 95% CL [0.981, 0.997]) for American three-toed woodpecker. Future analyses will investigate the effects of other covariates such as snag density, daily temperature, and precipitation on DSR. Our results will inform management activities for post-beetle forests that will help maintain habitat of disturbance specialist species.