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THE RELATIONSHIP BETWEEN HABITAT CHARACTERISTICS AND DEMOGRAPHIC PERFORMANCE OF NORTHERN SPOTTED OWLS IN SOUTHERN OREGON

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Abstract. We used data from Northern Spotted Owl (*Strix occidentalis caurina*) territories to model the effects of habitat (particularly intermediate-aged forest stand types), climate, and nonhabitat covariates (i.e., age, sex) on owl reproductive rate and apparent survival in southwestern Oregon. Our best model for reproductive rate included an interaction between a cyclic, annual time trend and male breeding experience, with higher reproductive rates in even years compared to odd, particularly for males with previous breeding experience. Reproductive rate was also negatively related to the amount of winter precipitation and positively related to the proportion of old-growth forest near the owl territory center. Apparent survival was not associated with age, sex, climate or any of the intermediate-aged forest types, but was positively associated with the proportion of older forest near the territory center in a pseudothreshold pattern. The quadratic structure of the proportion of nonhabitat farther from the nest or primary roost site was also part of our best survival model. Survival decreased dramatically when the amount of nonhabitat exceeded ~50%. Habitat fitness potential estimates ($\hat{\lambda}_h$) for 97 owl territories ranged from 0.29–1.09, with a mean of 0.86 ± 0.02. Owl territories with habitat fitness potentials <1.0 were generally characterized by <40%–50% old forest habitat near the territory center. Our results indicate that both apparent survival and reproductive rate are positively associated with older forest types close to the nest or primary roost site. We found no support for either a positive or negative direct effect of intermediate-aged forests on either survival or reproductive rate.

Key words: *demography, habitat, Northern Spotted Owl, Oregon, reproductive success,* Strix occidentalis caurina*, survival rates.*