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Oregon Spotted Frog (*Rana pretiosa*) Movement and Demography at Dilman Meadow: Implications for Future Monitoring

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Abstract

From 2001 to 2005, we studied the demography and seasonal movement of Oregon spotted frogs (*Rana pretiosa*) translocated into created ponds in Dilman Meadow in central Oregon. Our objectives were to inform future monitoring and management at the site, and to elucidate poorly known aspects of the species' population ecology. Movement rates revealed complementary use of sites seasonally, with one small spring being preferred during winter that was rarely used during the rest of the year. Growth rates were significantly higher in ponds that were not used for breeding, and larger size resulted in significantly higher survival. When variation in survival by size was accounted for there was little variation among ponds in survival. Seasonal estimates of survival were lowest for males during the breeding/post-breeding redistribution period, suggesting a high cost of breeding for males. Overwintering survival for both genders was relatively high. Our study supports others in suggesting Oregon spotted frogs are specific in their overwintering habitat requirements, and that predator-free springs may be of particular value. We suggest that any future monitoring include measures of the rate of pond succession. Demographic monitoring should include metrics of both frog reproduction and survival: counts of egg masses at all ponds during spring, and capture-recapture study of survival in mid and late summer when capture rates are highest. Additional study of early life stages would be particularly useful to broaden our understanding of the species' ecology. Specifically, adding intensive capture and marking effort after larval transformation in fall would enable a full understanding of the annual life cycle. Complete study of the annual life cycle is needed to isolate the life stages and mechanisms through which Oregon spotted frogs are affected by stressors such as nonnative predators. Dilman Meadow, which lacks many hypothesized stressors, is an important reference for isolating the life stages most responsive to management elsewhere in the species' range.

