

Amphibian Response to Management

Amphibian response to shade manipulation in reach-level clearcuts

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Non-fish-bearing streams in the Pacific Northwest, largely in headwaters, are stream-breeding amphibian rich. As non-fish-bearing streams receive less protection than fish-bearing streams during forest management, concern for their biota has drawn attention. We manipulated shade on reach-level treatments to evaluate the effects of timber harvest on three stream-breeding amphibian groups in western Washington and northwest Oregon. Shade reduction treatments ranged from no shade to two intermediate shading levels, 30 and 70 percent. We compared amphibian, invertebrate, and physical metrics before and after harvest in paired treated and unmanipulated reaches in the same stream. Increased levels of shade reduction resulted in an increase in primary production, but that shift did not translate clearly into stream-breeding amphibian and invertebrate response. However, the 70 percent shade level showed the greatest level of positive responses, implying an underlying hump-shaped response to levels of shading. Site-specific conditions, such as differential ground water inputs, are suspected factor in response complexity. Investigation of site-specific conditions could clarify the basis of response complexity.