

LOCAL AND LANDSCAPE-SCALE INFLUENCES ON THE OCCURRENCE AND DENSITY OF THE IDAHO GIANT SALAMANDER

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Species distribution and abundance depend on a balance between large-scale, landscape processes and small-scale, local processes. To successfully manage populations in regions with anthropogenic disturbances and habitat fragmentation, an understanding of important processes at each spatial scale is important. We use a model selection approach to identify the appropriate spatial scale to manage a stream salamander species Idaho giant salamander (*Dicamptodon atterimus*) in the Lochsa River subbasin, Idaho. We use data from field surveys to compare evidence of support for landscape and local-scale models that explain salamander patch occurrence and relative density data. Landscape-scale models include covariates that reflect assumptions of metapopulation theory, while local-scale models include covariates that reflect patch quality. Our results suggest that landscape-scale processes are important controls on salamander occupancy. Specifically, we found that probability of salamander

occurrence was greatest in roadless drainages and lowest in isolated stream network. In addition, we found that the relative density of Idaho giant salamander was greatest in stream with a high proportion of embedded substrate and fine sediment. These results suggest that giant salamander patches are spatially structured within stream networks and that *D. atterimus* has broad habitat requirements within a patch. We suggest that management efforts focus on protecting roadless areas and restoring stream connectivity in human-impacted areas, rather than on improving habitat quality within a stream.