Rocks to Riverscapes: Factors Influencing Rocky Mountain Tailed Frog Tadpole Abundance at Multiple Spatial Scale

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The ecology of stream organisms can vary with ontogeny, spatial scale, and network context, especially if the species' range encompasses strong biogeoclimatic gradients. The goal of my study was to evaluate the influence of abiotic and biotic factors on Rocky Mountain tailed frog (*Ascaphus montanus*) tadpole densities across a nested hierarchy of spatial scales in two large, biogeoclimatically distinct stream networks. Specifically, my objectives were to use the Akaike's information criterion (AIC) modeling approach to (1) examine habitat relationships at the microhabitat, reach, and sub-basin scales, (2) examine the importance of periphyton (food) and predation (fish) versus abiotic models for explaining tadpole abundance at the microhabitat and reach scales respectively, (3) evaluate the differences observed in tadpole ecology between the two different stream networks based on the model outputs, and (4) determine whether habitat relationships change for older tadpole age classes. I conducted my surveys in western Montana and northern Idaho. To detect patterns across a hierarchy of spatial scales, I stratified each network into basins, reaches, and channel units, and randomly sampled a minimum of 240 channel units in each, from headwaters to the largest stream order occupied by tadpoles. Tadpoles were relatively abundant and ubiquitous in both stream networks. The lowest ranking, best fitting, AIC model

(abiotic and biotic) for tadpole densities differed between the age classes, across each scale, and between the two stream networks. My findings illustrate the potential problems with the typical habitat modeling and "one size fits all" approach to managing sensitive stream taxa.