The Effect of Human Activity on the Movement of the Idaho Giant Salamander in the Lochsa Drainage of Central Idaho

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Movement influences fundamental ecological and evolutionary processes including population persistence and gene flow. It is, however, relatively unknown how fragmentation of habitats by anthropogenic disturbances influences movement of stream organisms. We examined the relationship between presence of road culverts and movement patterns of a large stream salamander (*Dicamptogon aterrimus*), along two streams in the Lochsa River watershed of central Idaho. With this research, we tested whether road culverts affect frequency of movement. To determine movement patterns, we conducted a mark-recapture survey of 30-m reaches above and below road culverts and in reaches away from culverts during the summers of 2008 and 2009. Using a multi-strata model and Akaike's information criterion for model selection, we estimated survival and transition probabilities within and among stream reaches. We found that presence of road culverts does not effectively halt movement along the stream channel and, therefore, should not stop gene flow among local populations. It may, however, hinder important demographic contributions, but this is in need of further study. Additionally, frequency of movement between reaches separated by culverts varied significantly between the two streams indicating that D. aterrimus populations may each react differently to presence of road culverts. This research shows the need to understand variations in response of distinct populations of stream organisms to human disturbance for effective amphibian conservation practices to be implemented.