

BIOLOGICAL SCIENCES – TERRESTRIAL

BEAVER EFFECTS ON WATERSHED STRUCTURE AND GENE FLOW FOR COLUMBIA SPOTTED FROG POPULATIONS IN SOUTHWESTERN MONTANA^{TWS}

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Beaver have long been recognized as animals with a unique ability to strongly alter their environment. In southwestern Montana, historical pressure on beaver populations has altered the hydrology of many watersheds. At the same time, amphibian populations that depend on lentic habitat might be declining. Whereas multiple factors are clearly behind these declines, habitat fragmentation due to the loss of beaver-created habitat may be one of them. Although research has shown a link between diversity of aquatic fauna and beaver activity, a landscape comparison of population connectivity for a species using beaver-created habitat has not been attempted. This study contrasts watersheds with and without beavers to investigate possible differences in habitat composition and configuration for pond breeding amphibians. We queried a database consisting of hundreds of randomly selected watersheds developed for monitoring lentic amphibian distribution to examine the type, number, and distances between water bodies serving as potential breeding sites for Columbia spotted frogs. To test the relative importance of beaver-created lentic habitat for gene flow within and between populations of Columbia spotted frogs, we selected three pairs (beaver and non beaver) of watersheds, and genetic and habitat data from all known breeding sites were collected. Individual samples were analyzed at six microsatellite loci and estimates of population connectivity were inferred based on the number of shared alleles.