

LENTIC HABITAT PATTERNS AND THE POPULATION STRUCTURE OF COLUMBIA SPOTTED FROGS IN SOUTHWESTERN MONTANA

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Beaver have long been recognized as animals with a unique ability to strongly alter their environment. historic pressure on beaver populations has altered the hydrology of many watersheds in southwestern Montana. At the same time amphibian populations dependent on lentic habitat in similar ecotypes are known or thought to be declining. While there are clearly multiple factors behind these declines, habitat fragmentation due to the loss of beaver-created habitat may be one of them. This study contrasts watersheds with and without beavers to investigate possible differences in habitat composition and configuration for pond-breeding amphibians. A database consisting of hundreds of randomly selected watersheds developed for monitoring lentic amphibian distribution was queried to examine the type, number, and distances between water bodies serving as potential breeding sites for Columbia spotted frogs (CSF). Beaver watersheds showed an increased number of lentic sites, CSF breeding sites, and surprisingly, an increased distance between CSF breeding sites. Three pairs of watersheds (beaver and non-beaver) were selected and tissue samples from all known CSF breeding sites were collected to examine differences in population structure. Individual samples were analyzed at eight microsatellite loci and estimates of mean population relatedness and genetic variation were inferred based on allele frequencies and heterozygosity. Levels of genetic variation within and between populations varied widely. Correlations between genetic variation and landscape composition and configuration were investigated.