Influence Of Water Temperature And Competition On Growth And Survival Of Westslope Cutthroat Trout, *Oncorhynchus Clarki Lewisi* AFS

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Historically, westslope cutthroat trout (*Oncorhynchus clarki lewisi*) ranged widely over western Montana, Idaho, and portions of eastern Washington and Oregon. Like many cutthroat and other native trout, westslope cutthroat trout now persist in only a small portion of their native range, and are listed as a "species of special concern" in Montana. Leading causes for their decline are habitat degradation and displacement by nonnative rainbow trout (*Oncorhynchus mykiss*), and brook trout (*Salvelinus fontinalis*). Many remaining populations are isolated in cold, headwater portions of streams that westslope cutthroat trout previously occupied entirely. Water temperature may play a critical role in segregating westslope cutthroat trout because it significantly influences the distribution, growth, and survival of salmonids. In addition, increased water temperature is thought to favor non-natives in many cases, yet the effect of temperature on competition between westslope cutthroat trout and non-natives is unknown. Furthermore, hybridization between westslope cutthroat trout and nonnative rainbow trout has resulted in a decline in populations of genetically pure westslopes. However, little is known about the thermal requirements of westslope cutthroat trout and of westslope cutthroat x rainbow trout hybrids, which now occur widely across the historical range of pure westslope cutthroat trout. This laboratory study aims at testing how temperature affects the vital processes of growth and survival of westslope cutthroat trout. This study will use a laboratory design that allows simultaneous assessment of fish growth and survival under different thermal regimes over long time periods. This study will compare the thermal requirements of westslope cutthroat trout, rainbow trout, brook trout, and westslope cutthroat x rainbow trout hybrids. With increased global warming, warmer water temperature in streams may constitute a major problem for native, cold-water species such as westslope cutthroat trout. Understanding the effect of water temperature on this unique trout will help guide protection and restoration efforts in the future.