

PREDICTING CUTTHROAT TROUT ABUNDANCE IN HIGH-ELEVATION STREAMS: REVISITING A MODEL OF TRANSLOCATION SUCCESS^{AFS}

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Assessing viability of stream populations of cutthroat trout and identifying streams suitable for establishing populations are priorities in the U.S. central Rocky Mountains. We reevaluated a model of translocation success developed for cutthroat trout by examining the relation between electrofishing-based abundance estimates ($n = 31$) and mean July water temperature, pool bankfull width, counts of deep pools, and occupied stream length. The preferred model was $\sqrt{(\text{population size})} = 0.00508 (\text{stream length, in m}) + 5.148$ ($R_a^2 = 0.81$; $P < 0.001$). An independently developed model based on visual counts broadly supported this finding. Additional habitat coupled with increased habitat complexity may account for the abundance-stream length relation because abundance lacked a consistent longitudinal trend within streams. Model-derived estimates and prediction intervals imply that many Rocky Mountain populations of cutthroat trout fail to meet thresholds associated with reduced risk of extinction. We believe that this model can reduce uncertainty about projected population sizes when selecting streams for reintroductions of cutthroat trout or evaluating unsampled streams.