Selective Electrofishing Removal Strategies For Non-Native Brook Trout To Facilitate Persistence Of Native Cutthroat Trout[AFS]

D. P. Peterson, USDI Fish and Wildlife Service. 110 North Park, Suite 320, Helena, MT 59601, doug_peterson@fws.gov

K.D. Fausch, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523

Inland cutthroat trout presently occupy a fraction of their historic ranges, and existing populations are often found as isolates in small headwater streams. Displacement by non-native brook trout is among the greatest threats to existing populations. Cutthroat trout restoration projects often utilize electrofishing to suppress brook trout, but these operations are labor intensive and costly. Information on the effectiveness of different removal electrofishing scenarios would help managers prioritize restoration efforts given limited resources. To address this, we constructed matrix population models for Colorado River cutthroat trout and brook trout using demographic data from a field experiment whereby we modeled survival of juvenile (ages-0 and -1) cutthroat trout as a function of brook trout density. Population responses to brook trout suppression were modeled as a function of electrofishing effort, defined by the number of visits over 50 yrs, the temporal distribution of those visits and the number of passes per visit. Stochastic simulations suggested an increased probability of cutthroat trout persistence with increasing electrofi hing effort. However for a given effort level, persistence was strongly affected by the temporal distribution of visits. Model scenarios with three years of consecutive brook trout suppression repeated at regular intervals provided the greatest benefits to cutthroat trout by providing the periodic infusion of a strong cohort into the population. Model results may inform managers as they prioritize efforts to sustain existing cutthroat trout populations where complete brook trout eradication and/or isolation of cutthroat trout is not feasible.