

PISCICIDE DRIP STATION PLACEMENT EFFICIENCY

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Eradication of nonnative fish using piscicides is a common restoration and conservation tool for native salmonids in the state of Montana. Piscicide drip stations are commonly placed at locations that are most convenient for access by the piscicide applicator. Little guidance exists on the most effective drip station placement in different channel types, e.g., straight, meander, and riffle, and within a stream cross-section, i.e., edge and center. Placement may affect mixing distance and therefore application efficiency. We compared mixing distance between locations in a channel cross-section and among different channel types. Because

direct measurement of piscicide concentration in the field is impossible, sodium chloride (salt, NaCl) was used as a tracer. NaCl solution was applied at the center or the edge of three channel types. Conductivity was measured at stream cross sections downstream from the application site at 10 regularly spaced intervals. Measurements formed a grid that identified the plume of the simulated piscicide and its mixing rate. The simulated piscicide was considered evenly mixed through the stream when the variation among measurements within a cross-section was < 1 percent. ANOVA was used to compare mixing distances between application location and among channel types. Significant differences existed in mixing distances between edge and center applications when variation in discharge volume was accounted for. Piscicides should be applied to the center of a stream channel to minimize mixing distance.