Use of Remote-site Incubators to Reestablish Lacustrine Arctic Grayling Spawning Stocks[AFS]

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The lacustrine Arctic grayling (*Thymallus arcticus*) that inhabit the Upper and Lower Red Rock Lakes, in the upper Centennial Valley of southwest Montana, spawn exclusively in the lakes' tributaries. Both the distribution and number of those spawning stocks declined substantially during the previous century. Our main objective was to evaluate the use of remote-site incubators (RSIs) to produce Arctic grayling fry of wild parentage. The five streams adjacent to which RSI sites were established were either present-day or historical Arctic grayling spawning habitats. Native, adult Arctic grayling caught from nearby Red Rock Creek were artificially spawned, and their fertilized eggs were placed in 12 RSIs in 2000, 8 in 2001, and 10 in 2002. Estimated percent fry emergence for individual RSIs ranged between 0.0 percent and 94.5 percent (mean, 44.8%). Multiple-group logistic regression revealed that most of the variation in percent emergence was explained by models that had year and RSI site as predictors. Mean percent emergence in 2000 (73.4% ± 15.1% [i.e., the 95% CI]) was larger than those in 2001 and 2002 (pooled mean, 26.5% ± 11.9%), which did not differ. Among RSI sites, mean percent emergence at East Elk Springs Creek (69.8% ± 22.2%) was larger than the mean of the pooled data for the other sites (35.3% ± 13.5%), whose means did not differ among themselves. In 2002, Arctic grayling were observed spawning in Elk Springs Creek, downstream from 2 RSI sites, where such spawning was last reported in the late 1960s. We believe the Arctic grayling observed spawning in 2002 were produced in the RSIs in 2000. Additional indications of Arctic grayling spawning in this and other study streams will be sought in 2003. We conclude that RSIs may be a useful tool in our attempts to reestablish Arctic grayling spawning stocks in the Red Rock Lakes area.