

ASSESSMENT OF TRIBUTARY POTENTIAL FOR WILD RAINBOW TROUT RECRUITMENT IN HEBGEN RESERVOIR, MONTANA^{AFS}

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Conversion of trout stocking to self-sustaining wild trout populations has been a cornerstone of fisheries management in Montana rivers for the past 30 years. However, trout fisheries in Montana reservoirs are almost entirely maintained by stocking hatchery fish. An exception is Hebgen Reservoir, where wild rainbow trout (*Oncorhynchus mykiss*) were established in 1979, with annual supplementation of hatchery-reared rainbow trout. Continued, unexpectedly low catch rates of rainbow trout led to the objective of this study to assess tributary recruitment of wild rainbow trout and identify potential limiting factors. A combination of redd surveys, adult and fry trapping, and measurement of spawning and rearing habitat and water temperature, was used to assess spawning use and habitat characteristics of 11 tributaries in 2002 and 2003. A total of 5642 redds were counted, suggesting numbers of spawners was not limiting. However, most spawning production (80%) was confined to two of the 11 tributaries (Duck Creek and S.Fork of the Madison River). Redd density was associated with available spawning habitat (percent spawning gravels) and rearing habitat (percent pools and ponds). Mean daily water temperature, from May through July, varied widely among tributaries (5.6 to 16.5 °C) while most spawning production (90%) was associated with temperatures from 8.5 to 13 °C. Downstream trapping indicated that production of age-1+ juvenile trout may contribute significantly more to juvenile recruitment to the reservoir than previously thought. The apparent high juvenile recruitment to the reservoir suggests that conditions within the reservoir may be more likely limiting the numbers of adult wild trout recruiting to the fishery.