

EFFECTS OF WATER TEMPERATURE AND ANGLING ON MORTALITY OF SALMONIDS IN MONTANA STREAMS

James W. Boyd and Christopher S. Guy, Montana Cooperative Fishery Research Unit,
301 Lewis Hall, Montana State University, Bozeman, Montana 59717, boyd@montana.edu

Travis B. Horton, Montana Fish, Wildlife and Parks, 1420 East Sixth Ave., Helena, MT 59620,
thorton@montana.gov

Stephen A. Leathe, PPL Montana, 45 Basin Creek Road, Butte, MT 59701

Effects of catch-and-release angling on salmonid mortality during periods of elevated ($> 20^{\circ}\text{C}$) water temperatures are largely unknown. In addition, few field studies have quantified salmonid mortality associated with angling during varying times of diel temperature cycles. Thus, our objectives were to quantify post-release salmonid mortality during elevated summer water temperatures and cooler fall water temperatures, and quantify mortality from morning and evening angling events. Angling occurred on the Gallatin and Smith rivers. Anglers were allowed to use only fly-fishing gear and techniques, without any other restrictions. Angled fish were transported from the anglers to in-situ holding cages and monitored for 72 hr. Mean rainbow trout (*Oncorhynchus mykiss*) mortality during summer varied from 7 percent in the Gallatin River to 9 percent in the Smith River, whereas brown trout (*Salmo trutta*) mortality varied from 0 percent in the Gallatin River to 8 percent in the Smith River. Mountain whitefish (*Prosopium williamsoni*) mortality varied from 2 percent in the Gallatin River to 21 percent in the Smith River. No mortalities for any species occurred in either river during fall sampling. Rainbow trout ($n = 125$) and mountain whitefish ($n = 114$) mortality in the Smith River differed significantly between summer and fall angling events. Different diel water temperature cycles between rivers likely contributed to this difference. No significant differences were detected between morning and evening angling events during the summer in either river. Currently, it appears that mortality associated with catch and release angling during elevated water temperatures ($> 20^{\circ}\text{C}$) is relatively low for rainbow trout and brown trout.