Arctic Grayling Emergence and Development in Odell Creek, Red Rock Lakes National Wildlife Refuge, Montana

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Red Rock Lakes National Wildlife Refuge in southwest Montana supports the last endemic population of adfluvial Arctic grayling (*Thymallus arcticus*) in the contiguous United States. The population has been declining for the last several decades and there is concern about its persistence on the Refuge. The goal of this study was to understand how Odell Creek is contributing to the maintenance of this critical population by investigating its use as a spawning stream and rearing ground for grayling fry as well as inventorying overall habitat. Surveys were conducted in 2006 and 2007 to determine the timing of spawning and emergence, to track fry movement in the creek and to make determinations about fry habitat selection. In 2006, 1868 fry were observed throughout the survey period with fry showing apparent movement downstream. During the same period in 2007 only 311 fry were observed. The majority were concentrated at the creek mouth. An a priori suite of models determined that there was little correlation between fry abundance and habitat. The most important parameter for fry abundance in 2006 was water velocity. Fry >30 mm were rarely observed; at this life stage they have improved swimming ability and are able to select different habitat types. Odell Creek's habitat was surveyed and determined to be a suitable grayling stream. The difference in fry abundance between years appears attributable to timing and intensity of

spring runoff which affects spawning and incubation periods. This indicated the importance of climate as a factor affecting this population.