Low Stream Flows: Making Decisions in an Uncertain Climate

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Abstract

Water resource managers must make decisions regarding minimum instream flow requirements for rivers, despite many uncertainties. Two important uncertainties concern (1) estimates of usable fish habitat at different discharges, and (2) effects of climate change on future stream discharge. We examined the implications of these two uncertainties for the North Alouette River, British Columbia (BC). Using the British Columbia Instream Flow Methodology, which is an assessment method for water diversions needed by small-scale hydroelectric projects, We found that uncertainty in habitat preferences of rainbow trout (*Oncorhynchus mykiss*) fry generally dominated uncertainty in the results of the BCIFM when numerous transects were used. In contrast, for fewer than 15 transects, variation in physical habitat among sampled transects was the most important source of uncertainty. In addition, the increasing frequency of climate driven low-flow events suggests that operations of small-scale hydroelectric projects in BC may become more restricted in the future.