River ice observations on small regulated and unregulated streams in Newfoundland, New Brunswick, and Alberta, Canada

Jennifer Nafziger\*, Janelle Morley, Stefan Emmer, Faye Hicks and Mark Loewen  
Department of Civil and Environmental Engineering, University of Alberta  
\*jnafzige@ualberta.ca

Abstract

Winter conditions can have significant negative effects on fish living in rivers. Regulated environments may mitigate or aggravate the negative effects that winter conditions have on fish survival. The presence of river ice, combined with water level regulation by hydroelectric generating stations, creates a poorly understood and complicated physical habitat for juvenile fish and eggs. River ice conditions were observed on eight regulated and unregulated streams: four in Newfoundland (winter 2010-2011), three in New Brunswick (winter 2011-2012), and one in Alberta (winter 2011-2012). Winter ice conditions were observed using remote cameras on all streams while water levels, water temperatures, and dissolved oxygen content were observed at select sites. This presentation will discuss data observed thus far and outline data collection activities for this current winter. The principal aim of this project is to broadly characterize and quantify aspects of the winter regime of regulated streams so as to identify those environmental stressors that directly influence fish habitats and their productive capacity, and to distinguish how those stressors may vary in regulated versus unregulated systems in different regions across Canada.