

## The effects of flow regulation on dynamic winter ice processes



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**Rationale:** *River ice processes are an important aspect of winter stream habitat. The formation, melting, and movements of ice on regulated rivers are significantly impacted by the sudden changes in flow caused reservoir operation. Recent studies suggest that in steep, mountainous streams, these processes are strongly affected by the formation and release of anchor ice, a phenomenon not yet well understood.*

**Description:** *Our study river, the Kananaskis River, is a regulated stream with a hydro-peaking regime located in the southern Rocky Mountains of Alberta. A variety of automated instruments have been deployed to monitor stream and ice conditions over the winter including: time-lapse cameras, temperature sensors, water level sensors, and dissolved oxygen loggers. In addition, we have directly observed ice as it forms and releases, taken samples of ice formations, and have measured discharge and flow velocity during open water and ice-affected conditions.*

**Outcomes:** *This study aims to gain a better understanding of the way in which flow regulation affects the evolution of winter ice cover on steep streams. This will help to characterize the effects a regulated winter environment have on the productive capacity of small streams.*

**Benefits from this research:** *A better understanding of how flow regulation affects physical winter habitats can provide the basis for improved and sustainable reservoir operation policies.*



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