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How to Identify Dangerous, Safe River Ice

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FAIRBANKS, Alaska — After mushing dogs on the Tanana River for 20 years, both for trapping and recreational purposes, Knut Kielland decided to figure out why the river freezes — or doesn't freeze — the way it does.

Over the course of four winters, Kielland, a researcher at the University of Alaska Fairbanks' Institute of Arctic Biology, solicited the help of other scientists, oral historians, and locals who live in villages along the river, to study changing ice conditions on the Tanana River.

"After running around on bum ice for 20 years, we decided to look at things a little more systematically, and that's what this project was all about," Kielland said.

During the winters of 2005-2007 and 2010-2013, groups of river travelers and scientists traveled to potentially hazardous places on the Tanana River near Fairbanks, Manley Hot Springs and Tanana to document ice conditions and/or measure air temperature, ice thickness and water temperature, depth and chemical composition. Specifically, Kielland and other scientists were interested in the dynamics of the river system and the influence of groundwater upwelling on ice

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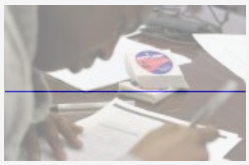

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conditions.

While Kielland and other researchers are still digesting the data they collected, to be presented later in the form of scientific papers, they did take the time to put together a booklet called, “On Dangerous Ice — Changing Ice Conditions on the Tanana River” that is available to the public.

10 Tips Extracted From “On Dangerous Ice”

1) Look out for frost on trees and rising steam as signs of open water ahead.

2) Ice crystals (commonly known as hoarfrost) in a crack may be caused by rising water vapor, which means that open water may exist beneath. This is often a sign of unstable ice conditions below.

3) Windblown silt on ice accelerates melting from the sun in the spring, which weakens the ice. This is common on the lower Tanana River.

4) The heat from warm groundwater can melt ice from below, causing open areas to form even in very cold weather.

5) Travel on existing trails may be safer, because packed snow is a poor insulator compared to undisturbed snow, allowing the ice under these packed areas to grow thicker over the course of a winter.

6) No matter how competent you are, it is always a good idea to travel with a partner. You may unexpectedly find yourself in an emergency situation where you need help.

7) Always test areas of questionable ice with an axe or a long pole. The pole also can be used to keep yourself from falling through the ice by creating a brace support across a hole. Hollow-sounding ice is not supported below by water or the river bed.

8) The sound of running water may indicate thin ice or areas of open water.

9) “Frost flowers” (ice crystals growing from the ice surface due to moisture) are frequently found on new ice or recently re-frozen overflow. On newly formed ice, frost flowers are warnings that the ice still may be thin and not strong enough to support the weight of a person or snowmachine.

10) Sandbars with steep cutbanks can be problematic on the downwind side where drifting snow accumulates. This deeper snow insulates the ice and can keep it from freezing thickly. Southern exposure may accelerate surface melting. Care needs to be taken when approaching or exiting sandbars due to these areas of potentially thin ice.

*** Image of father and children on ice via Shutterstock**

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