It's Rough to Have Ridges – Living with Ice Ridges on Your Shoreline

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If you've ever heard the heart-stopping sound of lake ice cracking under your feet, then you have firsthand knowledge of the tremendous power contained in that sheet of ice. What you are hearing (and feeling) when the ice cracks and snaps on cold nights, is the ice contracting in response to cooling air temperatures. The opposite situation causes ice ridges to form – warmer air temperatures cause the whole ice sheet to expand with great force, pushing against the shoreline. Added to this are the impacts of wind moving ice around as lakes thaw. In some cases, such as along hard rocky shorelines, we get to enjoy beautiful pressure ridges in the ice, but quite often the result is a newly formed earth mound or ice ridge pushed up against the shore. Most ice ridge impacts usually occur in years with repeated temperature fluctuations and little insulation from snow.

Although property owners may be unhappy about this natural process, it is not something we can prevent. In fact, these natural ridges can be beneficial to the lake by collecting nutrients and sediments on the shoreward side of the ridge, preventing them from reaching the lake and harming water quality. In natural situations, plants thrive in these fertile ice ridge areas, helping stabilize the shoreline and creating habitat for birds and wildlife.

The easiest approach to avoiding ice ridge problems is to minimize disturbance of the natural vegetation along your shoreline and to keep your personal property out of harm's way. This is one reason why shoreland regulations include "setbacks" restricting development near the shore.

Unfortunately, many of us are living with already disturbed shoreline where ice ridge damage has caused significant problems. If your shoreline fits this description, what alternatives do you have? Note: As you consider alternatives remember that it is best to check with your local Minnesota Department of Natural Resources (MN DNR) Area Hydrologist and county Soil and Water Conservation District (go to www.shorelandmanagement.org/contact/index.html for contact information). They can give you advice, and provide information if permits are required for some activities.

Sometimes the solution is as simple as replanting shoreline vegetation or building a ramp over the ice ridge. More intensive (and expensive) solutions involve trying to over-power the force of the ice by installing rock rip-rap or an engineered retaining wall or similar structure. Both rip-rap and retaining walls are expensive alternatives that require ongoing repair and maintenance, and are most effective if professionally designed. Permits are required for many rip-rap projects and all retaining walls. Engineered solutions are discouraged by the MN DNR

but allowed in extreme cases. As with any big investment, it pays to do it right the first time, so take the time to check on permit requirements and consult with the experts. The fact sheets and Web pages listed in the boxed area will give you a place to start.

Remember – the cheapest, most natural and sustainable, and most effective solution is to accept ice ridges as part of a natural shoreline, retain or plant native vegetation, and enjoy those amazing winter nights of cracking ice. ■

A MN DNR printable fact sheet on ice ridges: http://files.dnr.state.mn.us/publications/waters/shoreline_alterations_ice_ridges.pdf.

More information on ice ridges and MN DNR permit requirements: http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/ice_ridges.html

A MN DNR printable fact sheet on rock rip-rap: http://files.dnr.state.mn.us/publications/waters/shoreline_alterations_riprap.pdf