

Lake Ice

Every winter ice forms to create a solid surface on the lake and every spring the ice that allowed man to walk on water recedes to the center of the lake once again exposing a plastid surface.

What seems like a harmless seasonal ritual can create devastation under the right conditions. Many areas of Wisconsin including Twin Lakes received a dose of this destruction called ice impact or ice damage from the winter of 2002.

Shoreline damage from ice occurs under two conditions. One, the expanding sheet of ice that covers the surface places an exorbitant amount of pressure on the bank (transition between land and water). Two, sheets of ice during meltdown can crash into the shoreline. Let's discuss this idea of pressure first. After the lake has completely iced over, several dynamic events take place. When the sun shines on the surface of the ice, it expands as any material does in the presence of heat. Once the ice cools it begins to contract but it is not strong enough to support its own weight. Cracks form to release the tension that builds between ice frozen to the shore and ice contracting the center of the lake. These cracks then fill with water that in turn freezes sealing the expansion joint just created. Long periods of fluctuating temperatures and little snow cover (to insulate the ice from the sun) can result in shoreline berms called ice ridges or ramparts. In extreme cases the pressure on the bank can become so great that homes are separated from their foundations.

The second type of damage, ice running into the shoreline, occurs more frequently along stream banks due to a consistent current. Although currents in lakes tend to be quite weak, wind force on the surface can move chunks of ice readily. Most of this type of damage occurs on the leeward side of the lake in the form of ridges. Ice can also scrape shorelines on its way to one side of the lake. The end result is sudden erosion; the existing bank is carried away and a new, usually unstable bank remains.

There are several ways to protect your property from natural damage, it's called shoreline protection. Many techniques exist; they range from the preferred naturalizing of the bank to hard armoring of the bank with boulder walls and carefully placed rock. Look to your local DNR and Conservation landscapers for help in determining which technique is most appropriate for your site. Also, look to next month's article on shoreline protection for different techniques.

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