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Aeration Program Manager
651-259-5087



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AERATING LAKES

To Reduce Fish Winterkill

Winter aeration can be effective in preventing the winterkill of fish in certain lakes.

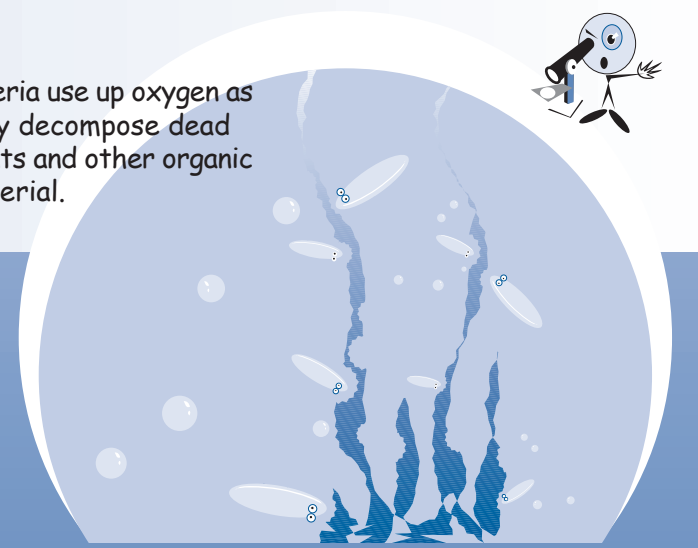
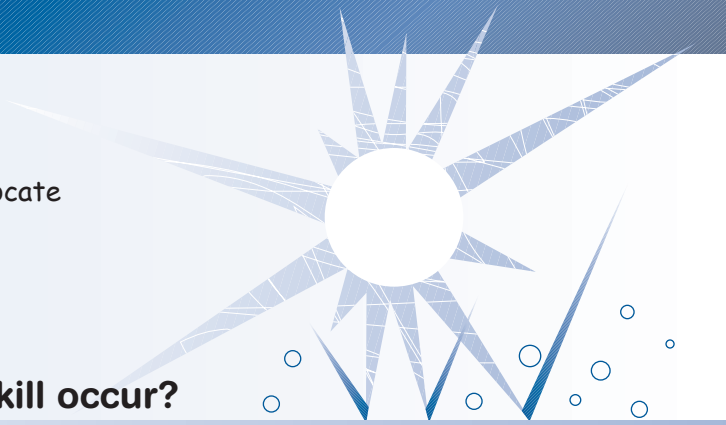
What is winterkill?
A condition where fish suffocate when the amount of oxygen under the ice is too low.

Why does winterkill occur?
Ice prevents air exchange at the water's surface.

A blanket of snow over the ice blocks light from reaching underwater plants, so they cannot produce oxygen through photosynthesis.

Bacteria use up oxygen as they decompose dead plants and other organic material.

It can take 3-4 years for a lake's fish population to recover from winterkill. Aeration systems can reduce the effects of winterkill, and provide fishing opportunities that might not otherwise exist.



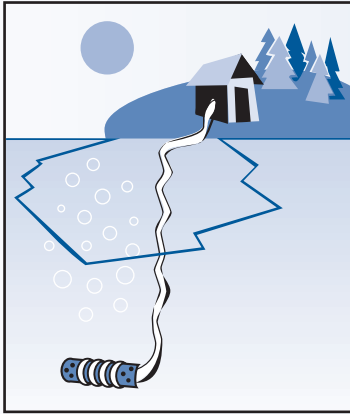
How do aeration systems work?

Aeration Systems

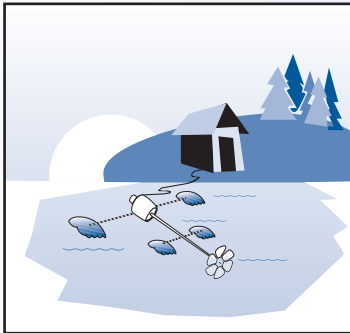
- Keep an area free from ice
- Allow oxygen from the air to mix with the open water

There are 2 popular types of aeration systems in use today. One is called a sub-surface unit or "bubbler."

Bubblers force air through a hose to a diffuser located near the bottom of the lake, creating air bubbles. The air bubbles cause upward currents that bring the warmer water up from the bottom of the lake and melt the ice.



"Bubbler" System



"Surface Agitator" System

The other is generally referred to as a surface agitator. Surface agitators float on the water and contain a propeller (like on a boat motor) or a sprayer that sprays water onto the ice. The propeller or sprayer creates a current that circulates the water to keep the ice open.



Aeration Concerns

Open water and thin ice are safety hazards. Aeration can increase the risk of drowning accidents. Aeration sites must be marked as prescribed by law, warning people of thin ice.

Impacts on Wildlife and Fish

Water kept open by aeration may keep waterfowl in an area that has limited food resources, causing them to be in poor egg-laying condition in the spring. It can also lead to changes in migration patterns and routes.



Aeration may increase fishing pressure in traditional waterfowl areas, disturbing the waterfowl. This may affect their physical condition or cause them to abandon the location.

If an aeration system is turned on too late in the winter, it may not have the desired effect. Water with the most oxygen is located directly under the ice and less oxygenated water is layered beneath it. Later in the winter, it is more likely that the oxygen is already critically low beneath the ice. Mixing it with the lower oxygen layer will reduce the oxygen further, killing game fish.

Since bullheads and carp are less sensitive to low oxygen levels than game fish, they may survive the experience. Then they will be the only fish to populate the lake next spring.

Letting Nature Run Its Course

Sometimes it is best not to aerate a lake. Winterkill can reduce the number of less desirable fish, such as black bullheads and carp.

Large numbers of carp and black bullheads can root up plants and stir up sediment and nutrients from the lake bottom. Reduction of these species through winterkill can increase the water quality and improve habitat for other fish and waterfowl.

Winterkill can reduce fish numbers and make it possible for surviving fish to grow faster and sometimes larger.

Best Candidates for Lake Aeration

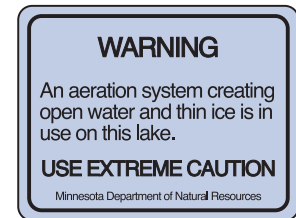
- Have a history of winterkill
- Have few or no wildlife concerns
- Can support the desired fish

DNR Responsibilities

Most aeration systems are purchased, installed and run by local conservation clubs and local units of government. These permittees consult with local DNR Fisheries Managers to help decide what type of system would work best and where they should go. The DNR also monitors the sites for compliance with safety requirements.

Permittee Responsibilities

- Work with DNR Fisheries personnel and County Sheriff
- Acquire a permit from the DNR
- Provide proof of liability insurance
- Attend aeration workshops when offered
- Publish 2 notices in local newspapers
- Place warning signs at access sites and thin ice signs around open water as prescribed by law



- Install and operate the aeration system
- Supply and pay for electricity to the site
- Notify DNR Fisheries Area or Regional office when aerators will be working

- Monitor and maintain signs and equipment

To learn more, speak with the DNR personnel nearest you. They're listed on the back of this brochure.