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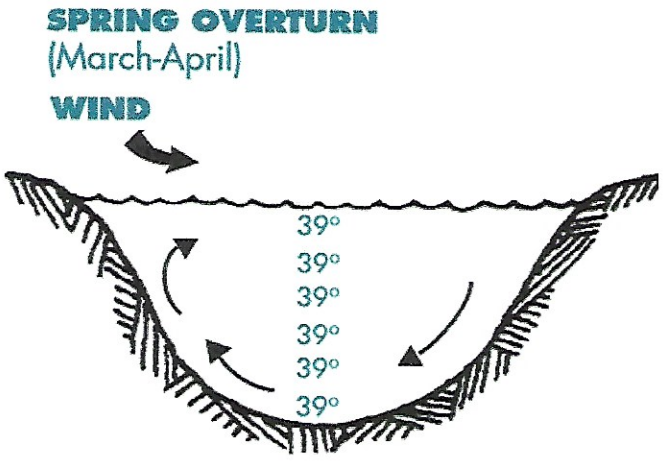
Turnover (not the yummy blueberry kind)

It's nearly the end of winter in Wisconsin. Solid sheets of ice still cover lakes like tectonic plates floating on molten Earth. They separate dark, isolated, watery worlds from a bright, crystalline world above, where cold-blooded animals have either retreated south, burrowed far away from the cold, or produced antifreeze compounds in their blood to avoid freezing to death. Beneath that ice, a lake remains alive and is preparing for a new open-water season. Water temperature is warmest near the bottom (about 39 degrees F), and coldest just underneath the ice sheet (about 32 degrees F).

As the days lengthen, the warm, spring sun eats away at the ice, turning it an ominous dark color that signals the end of the ice fishing season. Lake life near the bottom anxiously waits for what limnologists call "turnover". It happens when the ice melts, the water temperature becomes roughly equal from top to bottom, and a strong wind creates circulation in the lake, sending oxygen-rich water to the bottom, and nutrient-rich water to the top. This circulation can continue for up to a few weeks, depending on weather conditions. The lake then stratifies, or separates into two layers, and these layers usually stay separated until another *delicious* turnover happens in fall.



This illustration shows the uniform temperature of a lake's water in early spring, as turnover is occurring. From *Understanding Lake Data* by Shaw et al. 2002

Many aquatic plants remain green all winter long and provide refuge for fish and other aquatic creatures, as shown in this January photo from a northern Wisconsin lake.