



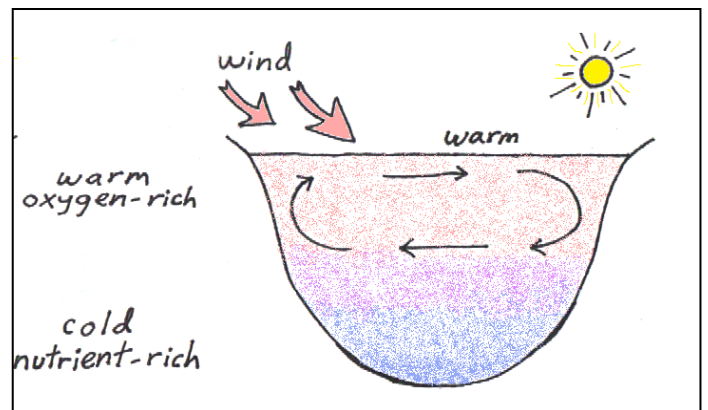
## Lakes in Summer



Have you noticed that when you swim down into the depths of some of New Hampshire's deeper lakes the water gets colder the deeper you go? If you have observed this phenomenon, then you have experienced summer lake stratification!

As the sun beats down on the surface of the lake in May through early August, the surface waters of the lake heat up. During mid-summer, if the lake is shallower than approximately 20 feet, the temperature of the water column from the top to the bottom of the lake will be approximately the same. This is because sunlight, which warms the water, can usually shine through the lake down to the bottom sediment, causing the water to reach its maximum temperature in late July or early August. In these relatively shallow lakes, wind currents mix the entire water column from top to bottom and nutrients and oxygen are evenly distributed throughout the water and the lake may support a warm water fishery.

In lakes deeper than approximately 20 feet, summer stratification usually occurs. Due to particles present in the water column and the physics of light, sunlight is not typically able to penetrate in deeper lakes past a maximum of approximately 30 to 40 feet. In these lakes, three thermal layers are usually formed during the summer. A cold, dense layer (hypolimnion) is found near the lake bottom, while a warm, less dense layer (epilimnion) is near the lake surface. Between the hypolimnion and epilimnion, a layer of water with rapidly changing temperature and density (metalimnion, but commonly referred as the 'thermocline') is found. Due to density differences between these three thermal layers, wind currents do not mix the entire water column, so vital nutrients and oxygen are not evenly distributed throughout the lake. As the summer continues and algae and plants fall down to the lake bottom and decompose, the oxygen



A "deep" lake stratified into three temperature layers during summer.

may become depleted in the hypolimnion which could cause problems for the cold water fishery that the lake may support.

Luckily, as the water temperature cools in early fall, the lake will experience a rejuvenation as 'fall turnover' occurs—once again, oxygen and nutrients will be evenly be distributed throughout the lake.

NH LAKES is the only statewide, member-supported nonprofit organization working to keep New Hampshire's lakes clean and healthy, now and in the future. The organization works with partners, promotes clean water policies and responsible use, and inspires the public to care for our lakes. For information, visit [www.nhlakes.org](http://www.nhlakes.org), email [info@nhlakes.org](mailto:info@nhlakes.org), or call 603.226.0299.

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