

Pond Habitat Assessment

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[Assess Your Pond - Measure temp, depth, volume and water quality](#)



Temperature

Coldwater ponds have a summer maximum of less than 74° F, while warmwater ponds reach temperatures above 74° F during the summer months. Due to cooler temperatures, coldwater ponds which can sustain various trout species.



Water temperature is determined both by the water source and geographical location of the pond. Potential water sources for a pond include surface runoff, streams, springs, and wells. Cold water temperatures in New York ponds are usually maintained by groundwater inputs from underground springs. Groundwater usually maintains much colder temperatures during the summer than surface water sources - such as runoff and streams - which are heated by the sun's radiation and warm summer air. Warmwater ponds are usually isolated from groundwater sources, and are found throughout the state. Only a few locations at high elevations in the Adirondacks and Catskills are cool enough during the summer such that cold water temperatures are maintained without groundwater inputs. Ponds fed entirely by runoff usually are too warm for trout survival during summer. Coldwater ponds often have low growth of sunfish, and reduced spawning activity.

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Water Quality



Nutrients are important to maintain production within ponds however, too many nutrients are not a good thing. Phosphorus and nitrogen are familiar nutrients that we use to fertilize gardens and house plants. These nutrients also enrich the growth of aquatic vegetation such as algae and rooted pond vegetation, thereby controlling pond productivity. Most New York ponds have enough available nutrients to support fish production, and a

more common problem is the presence of excessive nutrient levels. Watershed land uses influence nutrient levels and water quality. Runoff from cropland can increase the amount of sediment reaching the pond and may cause excessive turbidity. Runoff may also contain potentially toxic agricultural chemicals, and runoff from pastures and livestock holding areas is rich in nutrients from animal wastes. Residential, urban, and industrial runoff may contain substances (such as chemicals, oils, and sediment from construction activities) that can adversely affect a pond's water quality.

Oxygen levels can limit fish survival and production.

Oxygen levels are another important aspect of pond water quality. High nutrient levels that produce algae blooms eventually result in decaying vegetation that use up available dissolved oxygen. [Fish kills](#) often result from a lack of oxygen or, under extreme circumstances, the presence of toxic algae. During hot weather most ponds have a layer of water near the bottom that contains little or no dissolved oxygen. When high winds or cold rain cause this water to mix with the upper pond water, oxygen levels often drop to levels that can kill fish.

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Water Clarity

Prolonged turbid or muddy water due to suspended materials or dense algal growth can inhibit light penetration, reduce oxygen levels, and make it difficult for fish and other living things to survive. Muddy water can be expected for at least a bit of time during spring runoff and turnover and in recently constructed ponds. In most cases suspended materials will settle naturally after awhile. The first step to reducing water turbidity that doesn't naturally right itself is to eliminate sediment sources such as runoff from non-vegetated areas. Foraging fish such as carp and bullheads can also contribute to increased water turbidity. In some instances, water chemistry characteristics prevent suspended materials from naturally settling. In these cases, chemical treatments can be applied to facilitate the process. As with all chemical applications, these



Secchi disk in murky water



Plankton net in clear water

management actions require cooperation with a licensed chemical applicator. The North Carolina State Cooperative Extension Service recommends the following treatment options in their online [Pond Management Guide](#):

*Apply 300 to 500 pounds of gypsum (land plaster) per surface acre. The gypsum should be finely ground and spread over the pond's surface.

*Spread 7 to 10 bales of hay and 40 pounds of superphosphate per acre over the surface of the pond. Do not use this treatment during the summer months because of the danger of depleting the oxygen.

*Apply 100 pounds of cottonseed meal and 40 pounds of superphosphate per surface acre. Do not use this treatment during the summer months because of the danger of depleting the oxygen.

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Depth

Ponds are usually constructed with depths between 6 and 8 feet, and with a maximum depth not greater than 10 to 12 feet. Natural ponds can be found with a wide variety of depths. An average depth of less than 6 feet greatly increases the probability of aquatic vegetation becoming established in the pond, and depths greater than 12 feet are not necessary for good fish production. Steep pond slopes help prevent the growth of nuisance aquatic vegetation, which can also become an important feature of the pond habitat.