

# Fish Kills

## What are "fish kills"

Fish kills are the mass death of the fish population in any given body of water. Before they die, distressed fish appear at the surface, usually acting in a nervous or excited manner. Sometimes, fish will be seen coming to the surface and gulping air in an attempt to acquire the necessary oxygen needed to survive.

## Can fish kills occur anytime?

Yes. However, fish kills occur most frequently during the summer and fall when water temperatures are the highest and dissolved oxygen levels are the lowest.

## Do decayed fish have any effect on the lake?

Yes. The dead fish, if not removed, are eaten by other fish, waterfowl, turtles and other forms of wildlife, while the remainder decays. The overall effect serves to balance the fertility of the water by returning the necessary minerals that are required for a future balanced fish population. However, too many decaying fish at one time contributes to nutrient enrichment that can later result in algae blooms.

## What can I do to prevent fish kills from happening?

- Most fish kills can be prevented by maintaining good water quality.
- Careful watershed management including reduced fertilizer and pesticide applications,
- Installation of lake aeration systems is an important step toward preventing future fish kills.

## Fish die as a result of a wide variety of natural and unnatural causes.

They may die of old age, starvation, body injury, predation, stress, suffocation, water pollution, diseases, parasites, toxic algae, severe cold weather or other reasons.

**A few dead fish floating on the surface of a pond or lake is not necessarily cause for alarm.** However, when large numbers of fish of all sizes are found dead and dying, there is cause for concern. It is important to determine the causes of a fish kill to determine if future kills are preventable and to suggest the best protocol for prevention.



**Low dissolved oxygen (D.O.) levels are the most common cause of fish kills.** The amount of oxygen in a body of water will vary with water temperature, degree and type of bottom muck, algae and aquatic plant densities, and amount of sunlight. As water temperatures increase, water "holds" less oxygen. But unfortunately, as water warms, oxygen levels decline, while fish, bacteria, algae and other aquatic life forms become more active and require yet more oxygen.

**Aquatic plants are generally considered beneficial to bodies of water.** They produce oxygen through the process of photosynthesis. As the amount of sunlight decreases, however, plants use more oxygen than they produce. At night, and during periods of low light, vegetation actually competes with fish for oxygen. Decomposing vegetation and mucky bottoms also consume oxygen, making less available to fish.

**Fish swimming near the surface of the water and appearing to be gulping for air, indicate a low oxygen problem.** A quick response can be the difference between losing or saving the fish in your pond or lake. It is important to recognize that repeated kills may necessitate the installation of an inexpensive aeration system that will help maintain consistent D.O. levels and improve overall water quality and fisheries.

**During the wet seasons, stormwater runoff can lead to fish kills.** Heavy rains can wash large amounts of organic material, nutrients and fertilizers into lakes, depressing oxygen levels and accelerating plant growth that can lead to further oxygen depletion. Proper watershed management includes diverting or eliminating the sources of organic material and excessive nutrients (phosphorus and nitrogen) so they do not threaten fish life in lakes.

**Chemicals, including herbicides and pesticides, entering a lake can lead directly to fish kills.** Ammonia, which comes from animal wastes, is highly toxic to fish. Toxic chemicals usually affect all species and all sizes of fish.

**Early spring can be a dangerous time for fish.** As water temperatures rise, populations of disease-causing organisms, such as bacteria and parasites, increase. These organisms can infest fish weakened by spawning activities and the stresses of winter and, if abundant, may kill them. Diseases in lakes seldom kill all the fish and are likely to affect only one or two species.

**Turnover occurs in the fall when surface water mixes with water near the bottom.** Bottom water may contain little or no oxygen. Carbon dioxide and hydrogen sulfide gasses that are potentially lethal to fish can build up in the lake's deepest water and are quickly circulated throughout the lake during turnover. However, if strong winds, cold rains or rapid temperature changes accelerate the turnover process, fish can die as a result of suddenly being exposed to low quality water.

## Oxygen related fish kills can be prevented.

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