

When You Find a Fish Kill



The sight of up to hundreds of dead and dying fish along the shores of your favorite pond or lake can be distressing and often lead to concerns about pollution. Fish do act as the "canary in the coal mine", so it's natural that someone would think a fish kill was the result of pollution. But in fact, the exact opposite is true. The vast majority of the fish kills reported turn out to be natural events.

Natural fish kills are generally the result of low dissolved oxygen levels (anoxia), spawning stress or fish diseases. Dissolved oxygen depletion is one of the most common causes of natural fish kills. This can be the case at anytime of the year but generally occurs during severe winters or late spring/early summer.

Winter Fish Kills

During the winter, thick ice and heavy snow cover can result in low dissolved oxygen levels in ponds. Increasing ice and snow packs limit light penetration through the water column, altering chemical and biological processes such as photosynthesis and the decomposition of organic matter (dead plants). These conditions can frequently result in a winter fish kill. Shallow, weedy ponds of 25-30 feet in depth are particularly vulnerable. MassWildlife fisheries biologists routinely find low dissolved oxygen levels in ponds statewide during these kinds of conditions. Reports of strong "rotten egg" odors are generally the first clue that a waterbody is experiencing anoxia. The odor is hydrogen sulfide gas which is a natural by-product occurring in lakes and ponds with low amounts of dissolved oxygen. This condition is natural and rarely the result of pollution such as illegal dumping, sewage or a chemical spill. Oxygen levels become fully restored when the ice melts in the spring. It is at this point that winter fish kills often become visible to the public in the form of dead fish on the bottom of the pond or floating at the surface.

Spring/Summer Fish Kills

Conversely, in the spring and summer, as water temperature increases over time, the water simply cannot hold as much oxygen as when it was cold. During the long hot days of summer, oxygen levels in shallow, weedy ponds can further decline as aquatic plants consume oxygen at night resulting in low oxygen levels in the early hours of the morning. This situation can become critical if the levels fall below that required for fish to survive which is approximately 4-5 parts/million. In addition to the depressed oxygen conditions, late spring and early summer are when most warmwater fish species, such as sunfish (bluegill, pumpkinseed, largemouth bass etc.), begin to spawn. At this time, large numbers of these species crowd into the shallow waters along the shore vying for the best spawning sites. These densely crowded areas are susceptible to disease outbreaks especially as water temperatures increase. The result is an unavoidable natural fish kill, usually consisting of one or two species of fish. Nothing can be done to prevent this; it is a natural occurrence and does not pose a public health risk.

MassWildlife's Response to Fish Kills

So how does MassWildlife know if a reported fish kill is a natural event or the result of pollution? As the lead agency in determining fish kill response, a Division fisheries biologist will review each call and through a series of questions, make a determination on whether the kill is natural or requires a site investigation. Generally, pollution impacts all kinds of aquatic life, therefore the most important piece of evidence for the biologists is knowing the number of fish species associated with the fish kill. Fish kills in which only one or two species are involved are almost always a natural event.



When it is likely a fish kill is due to pollution, MassWildlife notifies the appropriate state agency which takes the lead on a formal investigation including analysis of water and fish samples to determine the source of pollution. MassWildlife provides the investigating agency with technical assistance by identifying the kinds and numbers of fish involved. MassWildlife maintains a 40+ year database which helps track waters with a history of natural kills.

Reporting Fish Kills

To report a fish kill Monday through Friday between 8:00 am and 4:30 PM, contact Richard Hartley at 508/389-6330. After normal business hours or on holidays and weekends, contact the [Environmental Police](#) Radio Room at 1-800-632-8075. Between the 1st week of April through the 1st week of October, fish kills can also be reported via the MassWildlife's Fish Kill Response pager at (508) 722-9811.