Pond Troubleshooting

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Pond Management Fact Sheet

This fact sheet will guide you, the small pond owner, through an outline of several common pond problems. We will also offer some alternatives that you might try to alleviate pond problems.

Muddy Water

Muddy water can cause several problems for the small pond owner. In addition to reducing the beauty of the pond, silting of gravel beds after spawning can cause mortality of fish eggs and damage aquatic insect larvae. Silt may also clog the gills of fish, reduce light penetration and make it difficult for plants to survive. This can reduce oxygen production and further harm fish populations. Soil type, erosion, and animal or human activity can all contribute to muddy water problems.

Soil Type

Very small soil particles, like clay, can become suspended in the water during construction of a pond. If these are primarily clay-sized particles, the soil may not settle out. Applying gypsum, powdered alum, slaked lime, organic material or other non-hazardous material may help clear the water. To be effective, enough material should be applied so that your hand can be seen at 12 inches below the surface one week after application. Here are the rates for the most common additives:

Gypsum: 12 pounds per 1000 cubic feet of water, or 525 pounds per acre-foot of water.

- Agricultural or slaked lime: 2,000 pounds per acre.
- Powdered alum: 50 pounds per acre-foot.

Erosion

Soil disturbance in the pond's watershed from agricultural, home garden, forestry or construction activities can cause soil erosion into the pond. Also, bare banks and weedless shallow areas are susceptible to erosion. Establishment of weeds in the shallow end of the pond can reduce erosion by wave action, and pondside plantings will help stabilize pond banks. Best Management Practices (BMPS) applied to land in the watershed can reduce erosion from agriculture and forestry practices.

Animal or Human Activity

Livestock who have access to the pond will trample shoreline vegetation and wade into the water, stirring up sediment. To protect water quality, livestock can be fenced out of the pond. Water can be supplied to livestock with a pasture pump or a gravity water pipe system. If a water system is not practical, a section of the bank can be graveled to reduce erosion.

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Aquatic Weeds

Nutrient-rich water, relatively high water temperature, and shallow depth characterize many ponds. These conditions encourage excessive plant growth of both desirable and undesirable algae and submerged weeds. Refer to bulletin #2375, *Managing Aquatic Plants in Ponds*, for details on coping with algae and weeds.

Fish Kills

Predation, Disease and Parasites

Some wildlife will prey on fish. Common fish-eating birds include heron and kingfishers. However, seldom will the small number of fish taken by birds or other wildlife be harmful to the total population of fish in your pond. In addition, many pond owners enjoy the sight of wildlife using their pond.

Fish are affected by a wide variety of diseases and parasites. However, parasitism and disease are usually not much of a problem in the private small pond as long as water quality is good and overpopulation is prevented. They are a greater problem where fish are crowded, as in hatcheries and commercial operations.

Most diseases and parasites are not harmful to humans, especially if the fish flesh is properly cooked before being eaten.

Winter Kills

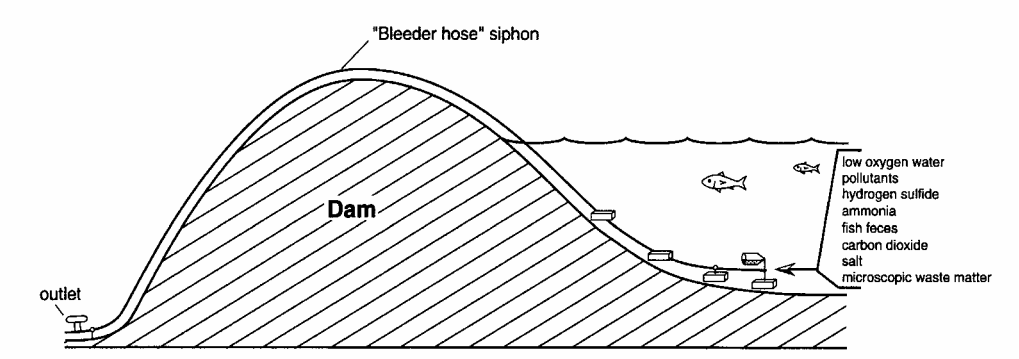
Snow cover on the ice limits the oxygen production by plants. Over the winter, there is a steady decline in oxygen due to the decay of organic matter and respiration by bacteria and other organisms. Shallow ponds are most susceptible to winter kill. Suggested minimum depth of water for ponds in Maine is six to seven feet if fish will overwinter in the pond.

Controlling aquatic vegetation (see bulletin #2375, *Managing Aquatic Plants in Ponds*) and reducing the amount of livestock or other wastes entering the pond will help reduce decomposition and respiration and will help prevent winter kill. If you believe that your pond is susceptible to winter kill, there are a few steps you can take. These actions include: removing snow from the ice so that plants will receive enough light to photosynthesize; using an aeration device; and installing a water circulator to keep an area free of ice.

Summer Kills

Massive fish mortality may be observed during the summer and may be the result of excessive vegetation. Nutrient runoff into your pond can trigger an explosion of plants, especially algae. Periodic die-off of this dense vegetation can occur during the summer. Oxygen is consumed by bacteria as they decompose the dead plants, and can lead to large fish kills. Usually, large fish are the first to be affected; frogs, turtles and other air-breathing animals will not be affected.

Summer kills can be prevented by keeping aquatic vegetation from becoming too abundant. (For more information, see bulletin #2375, *Managing Aquatic Plants in Ponds*.) Excess nutrients should also be prevented from entering the pond. This will help prevent heavy algae blooms. An aeration device or “bleeder hose” may also help prevent fish kills.



The installation of a “bleeder hose” can improve water quality and decrease the chance of summer kills and winter kills. A bleeder hose is a simple and economical method of removing the bottom water, which is effective in reducing the build up of nutrients, hydrogen sulfide, carbon dioxide, ammonia, silt, microscopic waste matter, fish feces and other toxic chemicals, and low oxygen water.

Improper Use of Pesticides

Most herbicides used today have a very low toxicity to fish. Many insecticides are short-lived, especially when exposed to water, and are usually broken down and non-toxic by the time they get into ponds. But problems can occur when someone carelessly sprays a pond while applying a pesticide to a lawn, garden or field near a pond, or when heavy rains wash pesticide-loaded silt into a pond immediately following application.

The pattern of mortality with chemical misuse may include small fish dying sooner than large fish. All species of vertebrates, including turtles and frogs, can be affected.

Use caution when applying pesticides in your pond’s watershed. Never rinse out a sprayer tank in your pond. Also, be careful that other household and automotive chemicals are not dumped on the ground. Waste oil, battery acid, radiator fluid and other household toxic materials will contaminate ground water and will leach into your pond. Dispose of these materials properly.

Leaking Ponds

A leaking pond can be a serious problem for a pond owner. However, sometimes it can be difficult to determine if your pond is leaking. For example, it is normal for new ponds to leak to some degree. As the pond ages, this leaking should subside. Also, evaporation during the hottest part of the summer can be expected to remove one-half an inch of water per day. To determine if your pond is leaking, measure the water level in your pond over several days with a marked stick. For the most accurate measurements, this should be done during a period of cold or very humid weather when evaporation is low. If you believe that your pond is losing too much water to evaporation, you can plant trees and shrubs near the pond to provide shade and reduce water temperature in the shallow areas. Remember, never plant trees on the dam of a pond.

Leaks in ponds can be caused by

- permeable sand, gravel or fractured rock layers (present throughout the basin or exposed during construction);
- improper bonding of embankment; and
- increased water pressure on porous areas.

Although techniques are available to seal leaky ponds, they are expensive and require considerable work. These techniques include: addition of soil layers, bentonite clay applied to bottom of basin, trampling of basin, gleization (organic matter used for sealing), plastic liners or resinous polymers.

Wildlife Damage to Pond Banks

Muskrat can damage ponds by burrowing into dams and banks to make dens. Den openings are about four to six inches in diameter. Beaver can burrow into the dams and banks, cut trees and plug outlet tubes. Bank dens are 12 to 18 inches in diameter.

Nuisance wildlife can be trapped and removed from the area. Contact the Maine Department of Inland Fisheries and Wildlife at (207) 287-3371 for information on trapping or a list of trappers who remove nuisance animals.

Health Concerns

Fecal Contamination

Human, livestock and wildlife fecal contamination may be a problem in some ponds. A failing septic system or runoff from a livestock operation can contaminate your pond. Also, bacteria thrive in the droppings of ducks and geese. If you plan on swimming in your pond, you should have no more than one pair of ducks or geese per acre of pond.

Swimmer’s Itch

Larval stages of certain nematode worms can cause a rash by penetrating a person's skin. Because full penetration of the worm through a person's skin does not occur until one leaves the water, the easiest method to prevent excessive skin irritation is by rubbing one's body with a coarse towel before drying off completely. This effectively crushes the organism before it has gone completely through the skin. A shower immediately after emerging from the water is also helpful.

The adult worms are parasitic and live within some birds and mammals. Some snails act as an intermediate host. Chemical treatments have been effective; however, the aquatic environment is affected by disrupting the food chain of some fish, and some fish may be killed by a direct toxic effect. Sunfish will prey on snails, and are also effective in controlling swimmer's itch.

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