

## Best Management Practices for Your Small Pond



Do you picture your pond as a restful haven for frogs, dragonflies, and some fish for your children to catch for fun? Many pond-owners find that the reality of pond ownership is much different. The Division of Fish and Wildlife responds to numerous complaints every year from owners whose pond has turned from an attractive asset into an eyesore. In many cases, some upfront knowledge and Best Management Practices could have prevented or alleviated the problems.

What are Best Management Practices? They are routine maintenance and management activities on the land surrounding a small pond that extend the life of a pond. A pond begins to age as soon as it is dug or developed. Slowly over time, sediment and organic materials (leaves, grass clippings, goose droppings, fertilizer run-off) build up in the pond. Sediment begins to fill in the pond while the flow of nutrients, commonly attached to silt particles, encourages the growth of algae. As the pond gets shallower, rooted plants begin to grow. These plants tend to collect more sediment and the process speeds up. Over the period of a hundred years or more, the pond becomes a wetland or bog and finally reverts to dry land. Human activities around any waterway affect this entire process. Paving of land so more

rainfall ends up in the nearest waterway, application of fertilizers, and mowing to the water's edge are all ways that our activities accelerate the pond aging process. Therefore, there are ways to slow down the process. Any management practice that slows the flow of surface water with its accompanying silt and nutrients lengthens the life of a pond.

### Riparian Buffers

The single, most valuable management practice, before your pond begins to show signs of over-abundant nutrients, is the development of an unmowed, vegetated buffer strip around the pond. This is an area 15-20-foot wide area surrounding a pond that is left unmowed or mowed only once or twice a year so that grasses and plants grow knee-high. This vegetation serves to slow the flow of surface water into the pond allowing much of the silt and nutrients to drop out before they reach the pond. This unmowed area, called a *riparian* [meaning *situated along the bank*] buffer, may be enhanced by planting wildflowers and seasonal grasses to make the area attractive to butterflies, hummingbirds, dragonflies, and ground-nesting birds. A list of some native grasses and wildflowers that serve this purpose and provide an attractive planting is available in Table 1.

### Prevention is easier than a cure

If your pond often has a heavy coverage of algae, this indicates that nutrients have already become a problem. The best management practices will help limit additional nutrient input, but some type of weed control may be desired. There are two types of algae control: mechanical or chemical.

Mechanical control is the physical removal of algae mats using rakes or fencing materials to skim the pond surface. This is physically demanding but has the advantage of removing some of the nitrates and phosphates that are incorporated in the plant material. For some species, there may be no other, inexpensive alternative.

Chemical control means the use of herbicides. Herbicides to control algae are called algaecides and do not kill rooted plants in most cases. The application of algaecides approved for ponds with fish populations usually causes a rapid decrease

in the algal material, but control is short-lived as decomposition makes the nutrients readily available for re-growth of algae or other plants. A fish kill can result if a large amount of plant material is treated at one time and decomposes using up the supply of dissolved oxygen in a pond. Additionally, there are several algaecides and it is necessary to identify which species of algae is present before determining the best algaecide. Too frequent use of copper-containing algaecides can result in toxic conditions for fish and aquatic invertebrates. It is important not to exceed label dosages and to be cautious about repetitive applications to avoid a toxic build-up of copper in a pond. For further information, read, "Controlling Algae in Delaware Ponds".

Placing some trees and shrubs around the pond, but not on an embankment, will help to absorb nutrients, may help to stabilize the bank, and also provide shading of the water. Many species of noxious algae are encouraged to grow when water temperatures increase. By maintaining lower water temperatures through shading, the incidence of algae is lowered. However, landscape plants and trees should not be placed on any easements around the pond.

Rooted aquatic plants may also be present in a pond. It is better to have rooted aquatics that compete with algae for nutrients and provide shading of the water. They also provide some fish habitat. The use of native species is recommended, because they will tend not to "take over" a pond as some exotic species can do. A brochure entitled, "Go Native with your water garden" lists some of the species that can be planted at various depths within a pond. If you do have rooted aquatic plants exhibiting abundant growth, the species must be identified prior to recommendations for any control measures. Contact the Division at 302-653-2887 for assistance.

Biological control of some plant species and a few algal species may be possible through the stocking of grass carp. This is an Asian species of fish that feeds on some types of vegetation. For further information, including a list of plants that the fish eat, review the "Grass Carp Briefing Report" and the Grass Carp Policy".

## Resident Waterfowl

Many pond-owners report problems with resident populations of Canada geese. These birds can be attractive, but can cause a host of problems. Their droppings leave unsightly and slippery spots on grassy areas or walkways around a pond. They also increase the amount of nutrients in the pond by runoff of the droppings or the direct deposit into the water encouraging the growth of algae. Geese and clear, clean water do not mix. A couple of ducks are not cause for alarm, but a flock of Canada geese can adversely impact any pond.

Geese also fly to other areas to feed and have been responsible in several instances for transporting non-native plant species, such as hydrilla, into a pond. This is a very invasive species that can grow at depths up to 12 feet and reach the surface by late summer.

The presence of an unmowed buffer strip around a pond perimeter will discourage geese from frequenting the pond in addition to trapping nutrients from storm events. Geese are uncomfortable walking through high grass because they can't see predators. To prevent geese from flying into a pond that they have become accustomed to using, it may be necessary to construct a grid (20 feet apart) of wire or line about five feet above the water's surface. There are also chemicals that can be sprayed on plants to discourage geese from feeding on them, but these must be reapplied following every rain.

## Mosquitoes

Some pond-owners are concerned about producing mosquitoes in a small pond. The best way to prevent mosquitoes in any small pond is to stock fish. Mosquitofish and bull minnow are small fish (less than 3 inches) that can live in most ponds where there is sufficient water depth to hold them over the winter. A deeper area within a pond of three feet is generally adequate. If the maximum depth is six feet or more and the pond exceeds ¼ acre (105 X 105 ft), largemouth bass and bluegill can be stocked.

## **Stormwater Management Basins**

Stormwater basins are specialized ponds designed to collect water from areas such as developments and businesses which have a lot of paved surfaces (roads and driveways). Since July 1991, stormwater management has been required as an integral part of any site design so all development projects must include provisions for the management of runoff. Retention ponds or stormwater basins are one common method of managing stormwater runoff. These basins collect runoff following rain events and store the water temporarily allowing the silt and nutrients to drop out in the pond, so the runoff enters public waterways in a much cleaner condition. Most residential stormwater retention basins are constructed by the developer and later transferred to the homeowner's maintenance association. The association is then responsible for the upkeep and maintenance of these basins.

It is important that all residents understand the function of a retention basin and the community's responsibility to maximize the pond's useable life. Any effort to minimize the flow of silt, nutrients (from lawn fertilizers, leaf litter, pet waste, etc) and hazardous materials such as oil, grease, and pesticides will help extend the life of most stormwater retention basins. Individual residents can do their part by using fertilizers sparingly, picking up pet waste, composting yard debris, and washing cars on the grass instead of the street. All septic systems should be functioning properly and bare soil should be planted or mulched.

These ponds usually do not provide a dependable source of fishing. They do not serve as reflecting pools or as ornamental water gardens. However, they can function as designed without becoming a community eyesore. The type of care and maintenance will determine if the pond will be an attractive addition to the community or a malodorous algae collector responsible for residents complaints to their association. Further information on the maintenance of stormwater retention basins may be obtained from the Division of Soil and Water Conservation (302-739-9921).



Table 1. Plant list for vegetated buffer strip around ponds.

**Well drained sites**

| Species        | Scientific Name       | Full | Sun  |       | Ht (ft) | Color        | Flowering month | Attracts     |             | Seeds* | Plants* |
|----------------|-----------------------|------|------|-------|---------|--------------|-----------------|--------------|-------------|--------|---------|
|                |                       |      | Part | Shade |         |              |                 | Hummingbirds | Butterflies |        |         |
| Columbine      | Aquilegia canadensis  | X    | X    | X     | 1 - 2   | red/yellow   | Ap-Jn           | X            |             | 1,5    | L,1,5   |
| Butterfly weed | Asclepias tuberosa    | X    |      |       | 1 - 3   | orange       | Jn-Spt          |              | X           | 1,2,5  | L,1,5   |
| Aster          | Aster novae-angliae   | X    | X    | X     | 2 - 4   | purple       | Spt-Oct         |              | X           | 1,2    | 1       |
| Partridge pea  | Cassia fasciculata    | X    |      |       | 2 - 3   | yellow       | Jl-Spt          |              | X           | 1,3,5  | 1       |
| Joe-pye weed   | Eupatorium fistulosum | X    | X    |       | 4 - 8   | purple       | Jl-Spt          |              | X           | 1      | L,1     |
| Bee balm       | Monarda fistulosa     | X    | X    |       | 3 - 5   | red/lavender | Jn-Aug          |              | X           | 5      | L,1     |
| Br eye Susan   | Rudbeckia hirta       | X    | X    |       | 3 - 5   | yellow/brn   | Jn-Aug          |              | X           | 1,2    | L,1     |
| Golden rod     | Solidago rugosa       | X    |      |       | 3 - 5   | yellow       | Spt-Oct         |              | X           |        | 1       |

**Moist sites**

|                 |                     |   |   |   |       |      |        |   |   |       |   |
|-----------------|---------------------|---|---|---|-------|------|--------|---|---|-------|---|
| Swamp milkweed  | Asclepias incarnata | X | X |   | 3 - 5 | pink | Jl-Spt |   | X | 1,2,3 |   |
| Blazing star    | Liatris spicata     | X |   |   | 2 - 3 | pink | Jl-Spt | X | X | 2     |   |
| Cardinal flower | Lobelia cardinalis  | X | X | X | 2 - 4 | red  | Jn-Aug | X | X | 5     | L |

**Grass**

|                 |                         |   |   |   |       |  |  |  |  |       |  |
|-----------------|-------------------------|---|---|---|-------|--|--|--|--|-------|--|
| Little bluestem | Schizachyrium scoparium | X | X | X | 1 - 3 |  |  |  |  | 2,4,5 |  |
|-----------------|-------------------------|---|---|---|-------|--|--|--|--|-------|--|

Planting: Best success is achieved when planting occurs between May 15 and June 15. Grass should be planted at 8 lbs seed/acre. Wildflowers can be mixed and planted at ½ lb. seed per acre.

**Supplier Key\*:**

L indicates available from local nursery suppliers  
 2 Stock Seed Company (Murdock, NE) 402-867-3771  
 4 Ernst Seed Company 1-800-873-3321

1 Shooting Star Nursery (Frankfort, KY) 502-223-1679  
 3 Sharp Bros. Seed Company (Healy, KA) 1-800-462-8483  
 5 Native Seed Company 1-800-728-4043