

## Managing Small Ponds Strategies for Small Pond Owners

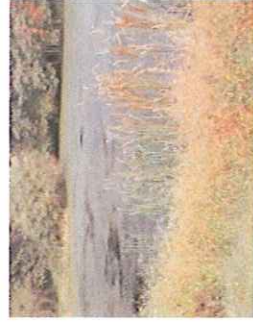
Within Chester County an estimated 3,000 ponds dot the landscape ranging in functions from recreational fishing to water supplies for livestock to stormwater management to aesthetic enhancement. A recent collaborative study led by West Chester University described some of the principal factors that affect the health of the ponds within the County and outlined some techniques to assist owners in managing their *Management* (Fairchild and Velinsky, 2004).

Maintaining a healthy pond is challenging as it contains a complex aquatic ecosystem that can be imbalanced by livestock, waterfowl, or runoff from surrounding lands. Ponds in Chester County have been built to fill a range of purposes and are valued in different ways by their owners. Typically about two acres or less in size, ponds vary in size and shape, and occur within watersheds of varying size, land use and topography. Not surprisingly, there is no single management "recipe." Instead, pond owners need to become knowledgeable about the pond ecosystem and the range of management options available.

### Preliminary assessment and monitoring

A useful first step before considering any form of pond management is the acquisition of available data concerning the watershed that drains to the pond. Understanding the land uses of areas that contribute runoff to the pond provide greater awareness of potential impacts to the pond. Aerial photographs and topographic maps needed to delineate watershed boundaries and categorize land use within the watershed are available from the Chester County Planning Commission.

Owners with the interest and ability should develop a simple monitoring program to record seasonal and yearly trends in water quality and in the occurrence of particular plant and animal species. Some equipment can be built at home and several companies sell testing kits appropriate for pond owner use. Even limited information can lead to a much clearer perception of what to do when the pond begins to "act differently."



Owners of ponds should develop a simple monitoring program to record water quality trends.

## Pond Management Resources

While managing a pond can seem like a daunting task, there are numerous resources and pond management professionals that can provide guidance to property owners and managers.

- Copies of the report *Ecologically Based Small Pond Management*, (G. W. Fairchild and D. Velinsky, 2004, West Chester University, West Chester, PA) are available from the Chester County Water Resources Authority.
- Penn State Cooperative Extension and Pennsylvania Fish and Boat Commission jointly maintain a very complete Web site with access to publications on a wide range of pond management topics ([www.sfr.cas.psu.edu/water/pond/%20management.htm](http://www.sfr.cas.psu.edu/water/pond/%20management.htm)).
- Contact the North American Lake Management Society ([www.nalms.org](http://www.nalms.org)) and Pennsylvania Lake Management Society ([www.palakes.org](http://www.palakes.org)) to find out about their publications, upcoming meetings and professional consultants.
- The U.S. Department of Agriculture (USDA) Wildlife Services in Pennsylvania provides both advice and contract services for goose management ([www.aphis.usda.gov/ws/pdf/pennsylvania.pdf](http://www.aphis.usda.gov/ws/pdf/pennsylvania.pdf)).
- USDA Natural Resources Conservation Service has numerous resources on pond, wetland, water resources, and riparian buffer management ([www.nrcs.usda.gov](http://www.nrcs.usda.gov)).

### Acknowledgements:

The information presented in this brochure was summarized from *Ecologically Based Small Pond Management*, prepared by G. Winfield Fairchild, Department of Biology, West Chester University, with assistance from David Velinsky, Academy of Natural Sciences of Philadelphia. (2004)



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# Managing Small Ponds

## Strategies for Small Pond Owners

### Maintain dams and standpipes

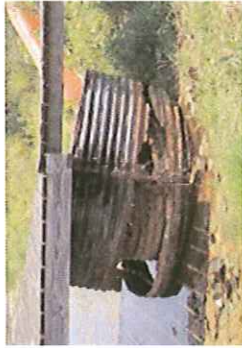
Water levels in most ponds in Chester County are controlled by standpipes. A frequently encountered problem in older ponds is corrosion of the standpipe, often leading to persistently low water levels and erosion of exposed bank sediments. A small expenditure in fixing an old standpipe can delay the much larger expense of dredging eroded sediments from the pond basin. If a standpipe needs repair, the addition of a bottom withdrawal valve should be considered.

When water levels are controlled by an earthen dam, inspection and any needed maintenance of the dam should be, at a minimum, an annual event. Unlike most of the shoreline (discussed below), the dam should be maintained as mowed grass. Trees and shrubs are best kept off of the earthen dam embankment as the root systems will weaken the strength of the dam and its ability to hold the water in the pond. Any damage caused by burrowing animals should be repaired for the same reason.

### Discourage Canada geese

Since they first became established in Pennsylvania in the 1930s, resident Giant Canada geese have undergone rapid increases in population size. Giant Canada geese differ from migratory Canada geese in size (they are nearly 50 percent heavier) and in their year-round residency. They have been identified as a major problem by landowners because of the damage caused by their feeding on lawns, and by the abundance of feces and feathers often produced. A particular problem to pond management is the excessive quantities of nutrients in the form of goose feces.

A fertilized lawn, providing high-quality grazing and directly abutting a pond that provides refuge from predators, is a habitat highly preferred by Canada geese. Riparian buffer strips of natural vegetation, especially bushes, can greatly lessen the attractiveness of a pond by physically impeding movement from land to water and providing the threat of harboring potential predators. Trees surrounding smaller ponds also make landings and take-offs more difficult.



*Standpipes, which control the water level in most ponds, frequently corrode as shown in this photograph. Delaying replacement could result in a more costly expense to the owner of the pond. (Fairchild and Velinsky, 2004)*

### Protect the shoreline

The shoreline is the interface between terrestrial inputs and in-pond processes, and its protection is a major component of pond protection. Protection of the shoreline from erosion is needed to reduce the suspended particles and nutrients from entering the water column.

Establishing riparian buffer strips of vegetation along the shoreline to replace mowed lawn (currently the predominant riparian land use in Chester County) may be the most important strategy to improve pond water quality. A riparian buffer zone of natural meadow, shrubs or trees improves sediment and nutrient retention, enhances wildlife habitat and discourages Canada geese. The property manager at a farm in East Bradford Township recently replaced two acres of mowed grass with wildflower meadows. The initial cost of \$1,400 for seeding was recouped within approximately one year by reduced mowing expenses, and the profusion of wildflowers enhanced the setting.

### Create an integrated pond management plan

The first step in developing a pond management plan is to generate a "mission statement," designed as a list describing the intended services or resources provided by the pond. These may be the purposes for which the pond was created, or perhaps its currently desired uses. Such services might include aesthetics (e.g., a visually pleasing addition to the view from the porch), recreation (e.g., fishing, swimming), water supply (e.g., for livestock or plants), or wildlife habitat. Then create a second list of actual uses of the pond. The difference between the two lists forms the basis for pond management, to achieve desired but currently unavailable services.

The next step is to become knowledgeable, with respect to both the pond itself and pond management in general. The third step is financial. It involves placing a monetary value on the services provided by the pond, and inquiring about the cost of particular management options.

Once an economically viable, tentative management plan has been created, it is important to review the individual components in terms of how they affect the pond as a whole. Elements of an integrated plan should not be "at odds" (for example, removing aquatic plants may be incompatible with producing larger fish).

Finally, pond restoration measures should be accompanied by monitoring to evaluate their success. Pond management successes and failures lead to improved knowledge of "how the pond works."



*At Covey's Farm, in East Bradford Township, wildflower plantings on the far shore have served to reduce sediment and nutrient inputs while providing an aesthetically pleasing setting. (Fairchild and Velinsky, 2004)*



*Riparian buffer strips of vegetation along a shoreline is key to protecting the pond from the intrusion of Canada geese.*