



EVERGREEN
COMMON GROUNDS

Bringing Nature to Our Cities

Common Grounds
Fact Sheet #4

Pond & Wetland Habitats

Ponds and wetlands may be some of the more challenging and expensive habitats to create, but even a small pond or wetland in your local community will help:

- provide habitat and food sources for local wildlife such as fish, birds, frogs, toads and insects;
- temporarily store, filter and clean run-off from precipitation;
- improve water quality by trapping sediment and uptaking chemicals from lawns and roads before it drains into nearby lakes and rivers; and
- reduce flooding by acting as a natural sponge to retain and slow water flowing to rivers.



As with any type of community naturalization project, check with your municipality to find out which permits or approvals are needed before beginning.

This fact sheet will help you construct a small pond or wetland to attract wildlife. It does not cover enhancing existing wetlands or creating or naturalizing stormwater management ponds. Large-scale wetland enhancement and construction work requires professional expertise to ensure that work will not cause flooding or degrade fish habitat.

WHAT IS A WETLAND?

Wetlands are areas that are seasonally or permanently covered by shallow water, or have a water table near the surface resulting in wet soils and the growth of water-tolerant plants. Some wetlands remain inundated year-round while others only hold water for brief periods during the spring.



This fact sheet is part of a series that provides community groups with practical hands-on information for naturalizing parks and other public spaces. The fact sheets are a companion to Evergreen's guidebook, *No Plot is Too Small: A Community's Guide to Restoring Public Landscapes*, which provides the tools to plan, implement and sustain a successful greening project.

The fact sheets in this series include:

1. *Tips and Techniques for the Naturalized Garden*
2. *Prairie and Meadow Communities*
3. *Woodland Communities*
4. *Pond and Wetland Habitats*
5. *Windbreaks, Corridors, Hedgerows and Living Fences*
6. *Community Gardening - Themes and Ideas*
7. *Designing Community Spaces*

Types of Natural Wetlands

Different types of naturally occurring wetlands are found in various regions across the country. Although your group may not be creating a natural wetland of this magnitude, you may want to visit a natural wetland in your area to see the types of plants growing there.

- Marshes are dominated by reeds, rushes, cattails, water lilies and similar herbaceous vegetation. They are periodically or permanently flooded and usually have open water areas.
- Swamps are wooded wetlands, dominated mostly by trees and/or shrubs. They are periodically or permanently flooded and often have no standing water in mid to late summer.
- Wet meadows are grassland areas with waterlogged soil. These areas are often flooded for short periods but do not have standing water in the growing season.
- Ephemeral wetlands are seasonal ponds that fill with spring meltwater or after a rain, but are dry by mid-summer.
- Bogs are acidic wetlands that are covered in sphagnum moss. The mosses buildup over time to form peat. Some bogs are also covered with low shrubs, sedges and other herbaceous vegetation that grow in acidic soils; examples include cranberry or blueberry bogs. Bogs do not have fluctuating water levels since there is little water exchange between surface runoff and infiltration to the water table.
- Fens are also peat accumulating wetlands, but they have alkaline soils due to the inflow of ground water from mineral soils. Fens are dominated by sedges, grasses, mosses, reeds and some low shrubs that thrive in an alkaline environment.
- Muskeg are frozen peatlands, found predominantly in areas where the ground remains frozen for most of the year.



Don Valley Brickworks Wetland Restoration, Toronto, Ontario
Photo by Catherine Goetz



Tips for Locating Your Pond or Wetland

- The best way to locate your pond or wetland is by observation. Take advantage of existing site drainage and water holding potential of the soil by noting the depression or ditch areas where melt-water and run-off collect and remain. If using a plastic liner, you can locate your pond or wetland in other areas, but keep in mind you will need to supply the water.
- Create your pond or wetland in an open location away from existing tree roots, buildings and foundations.
- Locate your pond close to an existing natural area, such as a ravine or existing wetland to encourage wildlife, and in particular amphibians. This will ensure that toads and frogs can enter and exit safely.
- Ponds and wetlands should be located away from direct sources of contamination such as run-off from compost and manure, septic tanks and lawns and fields treated with pesticides and fertilizers. Vegetation "buffer" strips will help to reduce erosion and help filter sediment, fertilizers and contaminants before entering the water.



Creating Your Pond or Wetland

Once you have determined the conditions of your site, you are ready to decide the type of pond or wetland that is most suitable. Is it a low-lying area that collects and holds water naturally, or will you need to use a liner to construct your pond or wetland?

Wet Ditches and Depressions

For existing wet areas like ditches and depressions all you may need to do is stop mowing and let naturally occurring wetland species begin to emerge and establish. Once the area becomes established you can add other native wetland species that will thrive in the area as well as upland species and begin to enlarge your mini-wetland ecosystem.



Peterborough Ecology Park, Peterborough, Ontario
Photo by Karen Rosborough

Constructed Ponds and Wetlands

You can create a pond or wetland even if you don't have a low-lying wet area by using a flexible polyvinyl chloride (PVC) liner available from most nurseries and garden centres.



Photo by Evergreen

Other Materials Needed

- 1) Rope to mark out the perimeter of your pond or wetland area
- 2) Shovels and levels to make sure the area is dug level
- 3) Rocks, flagstone, bricks or other materials to hold the liner in place
- 4) A source of water and a hose or buckets to fill up your pond or wetland
- 5) Native plants and other materials such as sand, loam, rocks and logs to create wildlife habitat

To figure out how large a piece of liner you will need, determine the maximum width, length and depth of your pond or wetland. Multiply the maximum depth by three. Then add this number to both the length and the width. This will give you enough liner to cover the area and be securely held down around the edges.



Design Considerations

Shape

- ✦ Crescent and oval shapes are the best, both for wildlife and for ease of maintenance. Odd angles and shapes should be avoided as they allow water to become stagnant in the corners, develop algae and become prone to mosquito problems.
- ✦ Incorporating a 10 to 18 centimetre deep shoreline or shelf adds more interest and wildlife habitat potential.
- ✦ Islands are a great way to add interest and create safe opportunities for wildlife to nest and feed.
- ✦ Several pools or lined areas can be placed side by side to create a larger wetland complex. Wildlife is often attracted by the surface area reflection even if the areas are separated.

Size

- ✦ The ideal size of a pond or wetland to attract wildlife is five metres long by four metres wide. The minimum size to attract wildlife is 0.5 metres long by 1.5 metres wide.
- ✦ To provide winter habitat your pond or wetland will need to be at least one metre at the deepest point to prevent it from completely freezing.



Codes and Safety Standards

Some municipalities may require fencing around ponds and have safety regulations for the size and depth of constructed ponds and wetlands. There are many design considerations that can be employed to address issues of safety.

- ✦ Create shallow ledges around the perimeter of the pond or wetland to reduce access to deeper water.
- ✦ Use large rocks and plantings as a barrier to deeper sections.
- ✦ Build bridges over the pond or wetland to provide access at a safe distance from the water.
- ✦ Construct fencing with safety, wildlife needs and aesthetics in mind. For instance, fences made of natural materials like cedar rails provide a physical barrier for the public but still allow for wildlife passage.
- ✦ Educating the community about safety around water is always key. Work with your municipality to develop an acceptable standard, if one doesn't exist already.
- ✦ Consult other communities or schools that have created ponds or wetlands for advice on how they dealt with safety. See the list of Example Projects on page 7, or check Evergreen's on-line project registry for other project insights at www.evergreen.ca.



Kawartha Heights Elementary School, Peterborough, Ontario
Photo by Karen Rosborough

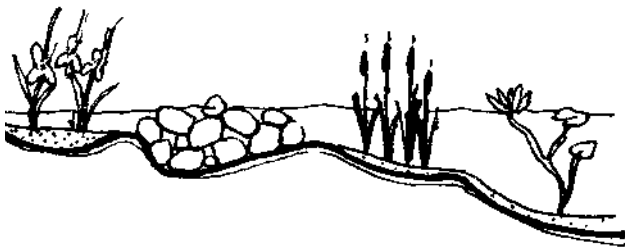


Broadacres Junior School, Etobicoke, Ontario
Photo by Debbie Morton

Selecting Plants

The plants you choose will vary based on your region, the size and depth of the pond or wetland, soil type, pH level and the amount of sunlight.

- ☛ Visit ponds and wetlands in your area to observe what naturally grows there.
- ☛ Research the size and growth rate of the species you have selected (using nursery catalogues or by asking an expert) to determine if they are suitable.
- ☛ If you have created a wetland that is only seasonally wet you will require species that have adapted to periods of wet and dry during the year.
- ☛ For smaller ponds, determine what species will grow in submerged pots.



Attracting Wildlife

Your pond or wetland may not attract wildlife right away. It takes up to four years for new ponds and wetlands to develop into good amphibian habitat with a source of nutrients for plants, tadpoles and other aquatic organisms. Amphibians are creatures of habit and may not be ready to re-locate. The closer your pond or wetland is to existing populations of amphibians, the more likely some will take up residence and breed in it. Once a few toads and frogs breed in your pond their offspring will return year after year. To help entice amphibians, remember:

- ☛ Different habitats can be created in pockets of the liner using sand, loam and rocks.
- ☛ Submerged aquatic plants are important egg laying sites and provide cover for frogs and tadpoles.
- ☛ Plants around the water's edge will provide cover for adults and emerging toadlets and froglets.
- ☛ A few rock piles and logs around the pond or wetland will provide shelter and refuge from predators.
- ☛ Amphibians also enjoy shady areas near the water where dew collects.
- ☛ Toads enjoy rocky retreats where they can burrow. Try building a toad abode using rocks, bricks or clay pots. Locate your toad abode over sandy soil and arrange the bricks or clay pots to form walls and a roof that is 10 centimetres high.



Maintenance

You will need to help your pond or wetland achieve nutrient balance until plants are well established. Excess nutrients will be taken up by aquatic plants, but algae are a natural component of wetlands that will form until a natural balance is reached. Algae provide most of the oxygen in your pond and are the most important food source for tadpoles. However, you may need to remove excess algae until plants are large enough to shade the pond and control algae growth. Never use algacides in your pond as they can harm aquatic organisms.



Anson S. Taylor Junior Public School, Toronto, Ontario
Photo by Robert Christie



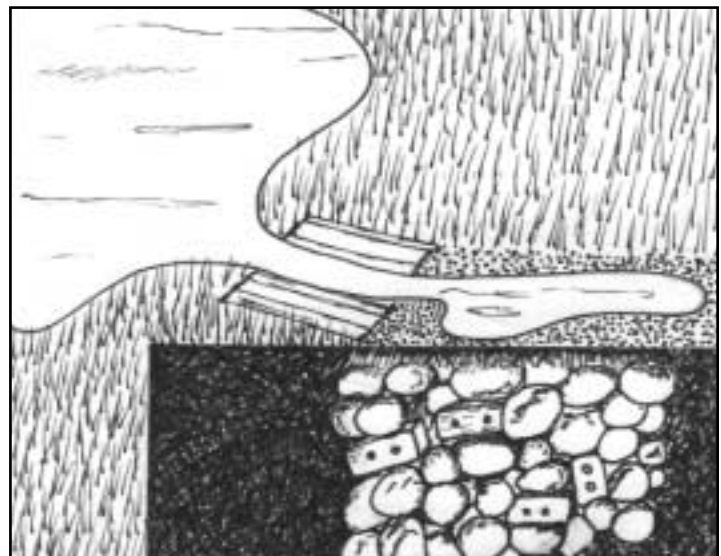
Anson S. Taylor Junior Public School, Toronto, Ontario
Photo by Robert Christie

Digging In!

Once you know what type and size of a wetland or pond you want and you have received the necessary approvals, you are ready to dig in.



- a) Mark your area with a rope or hose to achieve your desired shape.
- b) Dig out the shape. Ask local contractors for help with the use of a backhoe, if required.
- c) Determine where the extra topsoil that is not needed to fill around the edges should go. Do your plans include the creation of hills or other garden areas?
- d) Smooth out any rough spots before laying your liner. Use a layer of fine sand or old pieces of carpet, or felt underlay under the liner to protect it from being punctured on sharp rocks.
- e) Lay the liner over the whole area and carefully fit it into the corners and over any ledges or islands you may have created.
- f) Secure the edges with rocks, flagstone, bricks, logs or soil. Keep in mind the needs of wildlife species for shade, cover and nesting areas. Once the liner is in place, the bottom should be covered with two to 10 centimetres of washed sand topped with a layer of gravel. Aquatic vegetation can then be planted. Potted plants can be placed under water until there is enough sediment at the bottom to grow rooted plants.
- g) Fill in with water. If you are filling your pond with treated municipal water, let it stand one week before transferring plants. This will allow the chlorine, (which can damage plants and kill tadpoles,) time to dissipate.
- h) Plan for overflow. Choose an area beyond the edge of the pond or wetland where water can overflow and drain away. Install a French drain or channel by digging a hole approximately one metre (two to three feet) deep, loosening the soil at the bottom of the hole and filling the hole with stones or bricks. Cover the stones with a filter made of old carpet, fibre matting or a layer of turf turned upside down. Place topsoil over top. Or, create a bog area to the side filled with water-loving wildflowers and shrubs.



Cross-section of a French drain.



*Where to **gO** from here?*

Sources for this fact sheet

Environment Canada and Ontario Ministry of Natural Resources. *Working Around Wetlands? What You Should Know*. A pamphlet, 1997.

Federation of Ontario Naturalists. *Wetland Restoration and Rehabilitation*. A fact sheet. Date unknown.

Gosselin, Heather and Johnson, Bob. *The Urban Outback – Wetlands for Wildlife: A Guide to Wetland Restoration and Frog-friendly Backyards*. Toronto, Ontario: Metro Toronto Zoo's Adopt-a-Pond Wetland Conservation Programme, 1995.

U.S. Department of Agriculture, National Association of Conservation Districts and Wildlife Habitat Council. *Wetland*. Washington, D.C., April 1998.

Example projects

Anson S. Taylor Public School, Toronto, Ontario: (416) 396-6035

Kawartha Heights Elementary School, Peterborough, Ontario: (705) 742-7521

The Ecology Garden, Peterborough, Ontario — Peterborough Green-Up: (705) 745-3238

Organizations and Web sites

Regional

Naturescape British Columbia: www.hctf.ca/nature.htm

Ecology Action Centre, Dartmouth, Nova Scotia: www.chebucto.ns.ca/Environment/EAC

Adopt-a-Pond, Toronto, Ontario: www.torontozoo.com/adoptapond

National

Canadian Nature Federation, Ottawa, Ontario: www.cnf.ca

Ducks Unlimited Canada, Stonewall, Manitoba: www.ducks.ca

Wildlife Habitat Canada, Ottawa, Ontario: www.whc.org

Published by Evergreen

Evergreen is a national non-profit environmental organization with a mandate to bring nature to our cities through naturalization projects. Evergreen motivates people to create and sustain healthy, natural outdoor spaces and gives them practical working tools to be successful through its three core programs: **Learning Grounds** (transforming school grounds), **Common Grounds** (working on publicly accessible lands) and **Home Grounds** (for the home landscape). We believe that local stewardship creates vibrant neighbourhoods, a healthy natural environment and a sustainable society for all.

Evergreen's Common Grounds Program

Common Grounds brings land-use planners, landscape architects and community members together to restore public land. By supporting community greening initiatives, Common Grounds enriches ecological diversity, fosters healthy, sustainable communities and increases environmental awareness.

Part of the Tool Shed Series

The Tool Shed is an integrated collection of resources designed to inspire, educate and guide students, teachers, planners, community groups and individuals through all stages of a school, community or home naturalization project. The Tool Shed series includes guide books, instructional and inspirational videos, fact sheets, case studies, newsletters, research reports and an on-line registry. For the latest information on Evergreen's Tool Shed resources, check out our website at www.evergreen.ca.

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Illustrations: Adopt-a-Pond, Marilyn Pomer, Samara Newman

Printed in Canada on 100% post-consumer recycled paper.

Evergreen is funded by the generous support of individual Canadians, foundations, businesses and various government agencies. Major funding partners include:



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