

Fish Habitat & CONSTRUCTING PONDS

FACT
SHEET

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Building a pond is a major undertaking that may require one or more permits or approvals from various agencies. Before you begin, visit existing ponds and talk to experienced contractors or consultants to help you decide how to proceed. Make sure you understand the effects your pond may have on natural watercourses and familiarize yourself with the best practices listed in this fact sheet.

Depending on local soil types and the type of pond you build, ponds may trap silt and other sediments moving downstream. This can lead to excessive amounts of sediment settling in your pond in just a few years and can be costly to remove. Additional approvals for pond clean-outs may also be required.

Be aware of the Fisheries Act and other legislation

The federal *Fisheries Act* provides for the protection of fish habitat. Under the *Fisheries Act*, no one may carry out any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat (HADD), unless this HADD has been authorized by the Minister of Fisheries and Oceans Canada. The Act also states that no one is permitted to deposit a deleterious (harmful) substance into water containing fish. Violations to the *Fisheries Act* can result in substantial fines, and/or the risk of imprisonment. If found guilty, then the violator may also be required to cover the costs of restoring the habitat at the site and/or be required to fulfill other court ordered remedies. Other legislation that may also be relevant to your pond is outlined in the introductory Fact Sheet: *Working Around Water? What you should know about Fish Habitat.*

Types of Ponds

The type of pond you are planning to build can greatly influence which agency to contact for approvals or permits. Three main types of ponds are described below.

On-line ponds

An on-line pond is built by digging-out or dredging an area within an existing watercourse or by damming a watercourse. On-line ponds are generally not approved as they alter the natural flow characteristics and channel stability of the watercourse, causing harm to fish and fish habitat. Some of the effects on-line ponds can have on natural watercourses are:



- ❖ **Temperature:** On-line ponds cause water temperature to increase, sometimes beyond levels tolerable to resident fish species.
- ❖ **Water quality:** The retention of large volumes of standing water causes changes to the quality of water in the pond and downstream. The slow moving water may cause reduced dissolved oxygen levels and other water quality problems harmful to fish.
- ❖ **Sediment deposition:** Holding back water in a pond causes suspended sediment to settle on the bottom of the pond. This can result in a continuous build-up that may require frequent clean-out.
- ❖ **Barriers to fish migration:** Any dam built to create a pond becomes a barrier to fish that are migrating up or downstream.

Bypass ponds

Bypass ponds are created by diverting some of the flow from a natural watercourse into an adjacent pond. The outlet of this type of pond usually returns water to a natural watercourse.

Bypass ponds are generally less harmful to fish and fish habitat than on-line ponds. However, they are also prone to dissolved oxygen and water quality problems, increases in water temperature, and sediment accumulation problems.

Proposals for bypass ponds on coldwater streams are generally not approved due to the potential that downstream water temperatures may increase beyond levels that coldwater fish need to survive (see the contact information on the next page for examples).

Depending on factors such as pond size, a bypass pond on a warmwater stream may be

approved as it could improve fish habitat by creating spawning, feeding and nursery areas for warmwater species (see the contact information on the next page for examples).

Isolated ponds

Isolated ponds are built by excavating basins where water will collect yet are completely separated from any other waterbody, and have no inlet or outlet channels. This type of pond has little or no effect on fish and fish habitat when completely separated from any other waterbody.

Isolated ponds should be designed so that groundwater sources for near-by watercourses are not adversely affected.

If you are thinking of building a pond that can support fish, here are some factors to consider:

- ❖ **The site:** Locate your isolated pond outside the floodplain of natural watercourses and in a well-vegetated area with stable slopes and suitable contours. Surrounding trees and shrubs will reduce erosion, provide shade and help to maintain water quality.
- ❖ **Water source:** The water supply for an isolated pond should be sufficient to fill the pond and maintain a constant water level year-round. Groundwater is a good source of water for a pond provided that its flow to nearby watercourses is not disrupted. Before using groundwater for the purpose of supporting aquatic life, you should have the water analyzed to ensure its suitability.

Surface run-off water is usually a poor source of water for ponds that support fish, as it may

contain silt, chemical residues, disease agents (e.g. coliform bacteria), or excessive nutrients. In addition, ponds that depend on surface water may have temperature variations too great to support fish.

Contacts and approvals

If your project involves constructing a pond, the table will help you to determine which agency you should contact. In some instances, you may have to contact more than one agency. Keep in mind that approval from one government agency does not guarantee that you will be able to obtain approval from another agency. Remember you must obtain approvals before starting work. Early consultation can save you from designing a pond that will not be approved.

Information you will need to submit

When seeking approvals or permits, you will need to submit the following information:

- ❖ Your name, address, telephone number, and if available, a fax number and e-mail address
- ❖ Location of the work site including the lot and concession numbers, county, township, municipality, and if known, the latitude and longitude
- ❖ Proof of ownership for each of the properties where the work will be done and the most recent legal survey(s)
- ❖ Detailed description of the work site including a signed and dated map or sketch with dimensions indicating the location of existing buildings, property lines, the location of the proposed pond, any watercourses flowing in or out of the pond and the distances to the average annual high-water mark
- ❖ Plan view (top down) sketch or drawing of the proposed pond showing dimensions and the distances to the average annual high-water mark of any nearby watercourses
- ❖ Cross-sectional (side view) drawing (with dimensions) showing the existing and proposed depths

- ❖ Description of how and where the dredged or excavated material will be stabilized and/or disposed
- ❖ Description of any measures used to avoid harmful impacts to fish and fish habitat during the pond construction, if applicable
- ❖ Information you have about fish that may use the site
- ❖ Timing of the pond construction
- ❖ List of heavy equipment to be used
- ❖ Photographs of the work site during ice-free conditions
- ❖ Description of any proposed use of explosives
- ❖ Other agencies contacted.

A site visit by agency staff may be necessary before your proposal can be approved.

Best practices

The following practices are intended to prevent or minimize any potential impact to fish and fish habitat that could result from your project.

Control of silt and sediment

During the construction of a pond, run-off must be controlled so that silt and sediment is not deposited in a nearby watercourse. Some forethought is required to decide what sediment and erosion control measures may be required to be in place before construction begins.

Control of aquatic vegetation

Nutrients in surface run-off can cause excessive growth of algae and aquatic plants. This often interferes with the intended use of the pond. Planting trees, shrubs and grasses around a pond will act as a buffer to help trap and absorb nutrients that would otherwise enter the water. Trees and shrubs also provide shade, keeping the pond cooler and reducing aquatic plant and algal growth.

Maintenance

Structures used to create ponds must be checked and maintained on a regular basis. Some of these structures include:

- stop logs (structures within the dam, used to stop water and control its depth)
- trash racks (devices to protect dams from instream debris)
- fish barriers (devices needed to prevent stocked fish from escaping)
- emergency spillways (additional water outlets for heavy rain conditions)
- fishways (devices that allow migration of fish)

Bottom draw

If the pond has an outlet to a natural watercourse, an outlet device that draws cooler water from the bottom is better for fish than an outlet device that draws warmer water from the top of the pond.

Multiple ponds

The effect of a number of ponds in the same watershed can have cumulative impacts on fish habitat. Agency staff will consider the effects of your pond in relation to the number of existing ponds in your watershed when reviewing your project proposal.

Water depth

Ponds used to keep fish year-round should be deep enough to provide over-wintering habitat. Ponds that are built too shallow will be more susceptible to excessive aquatic plant growth in the summer and low dissolved oxygen in the winter.

Working together to protect fish habitat

Help maintain the quality and quantity of fish habitat in our lakes and streams. For more detailed advice on how to construct or modify a pond, contact your local agency staff directly.

Contact information

Contact information – Ontario

If the pond proposal . . .

- is an on-line or bypass pond or is in a provincially significant wetland or involves working within a flood plain
- is an isolated pond that will not disrupt groundwater supplies to any watercourse
- involves the use of explosives in or near an existing waterbody

Examples of fish species for different waterbody temperatures:

Cold waters
Warm waters

Your first contact should be . . .

- Your local Conservation Authority (CA) and Ontario Ministry of Natural Resources (OMNR) office
Where there is no designated CA, contact your local OMNR office
- Approval may be required from your local CA if the pond is to be within the flood plain or fill regulated area
Contact your local CA for more information
- Fisheries and Oceans Canada - Ontario - Great Lakes Area

- trout
- bass, pumpkin seeds, bluegills, catfish and minnows

www.dfo-mpo.gc.ca/canwaters-eauxcan

Canada

Cette publication est également disponible en français.

Working together to protect and conserve Ontario's aquatic resources