

INTRODUCTION

THE BENEFITS OF BUFFERS

In years gone by, the naturally scrubby areas alongside streams or other water bodies were often dismissed as wasted, unproductive land.

These days we understand much more about these buffer strips and the greater riparian zone of which they are a part. Many landowners are now establishing, enhancing or retaining buffer areas with the care usually reserved for cropland and livestock.

Around Ontario, crop producers have established buffer strips to protect water from runoff. Beef and dairy producers have fenced cattle out of heavily grazed lands alongside streams and other water bodies. Local fish and wildlife conservation groups have volunteered time and resources to plant trees and make other habitat improvements in buffer areas on private land. And all levels of governments have collaborated with farm and environmental groups to help establish buffer strips in rural Ontario.

The reasons are many. Properly functioning buffer strips and healthy riparian zones:

- ▶ act as living filters, trapping and treating sediments and other materials from upland activities
- ▶ stabilize streambanks, helping to prevent erosion
- ▶ increase soil's water-holding capacity, reducing the impacts of flooding and drought
- ▶ provide fish and wildlife habitat through added shade, cleaner and cooler water, and greater plant diversity
- ▶ decrease costs associated with drain cleanouts
- ▶ decrease the occurrence of water-related health issues (such as foot rot) in livestock.

Need some help with terminology?

- ▶ a **BUFFER STRIP** is a strip of vegetation – usually a mix of trees, shrubs and grasses – planted alongside natural areas (e.g., watercourses), to protect them from surrounding land uses
- ▶ a **RIPARIAN ZONE** has no definite boundaries, but is the larger transitional area between water surface and uplands
 - ▷ immediately adjacent to water bodies, it includes streambanks, plant and animal communities, and the floodplain
 - ▷ under natural conditions, riparian vegetation is usually quite diverse and water-loving plants are more abundant than in upland areas
 - ▷ for an illustration, please see page 8.

We all share responsibility for the protection of natural resources – particularly water, the very essence of life. Farmers have a good track record of environmental protection and we must continue to do our part.

This BMP book will be helpful to anyone considering how best to protect water that moves through their farm. I encourage any farmer with surface water on their farm to look at their situation with an eye to protecting water

quality. In particular, any beef farmer with surface water on their farm should assess their own situation and determine what best management practices they need to incorporate to ensure minimal impact on water quality and to demonstrate due diligence on their part.

Rod Wooddisse, Wellington County Beef Producer
and President of Ontario Cattlemen's Association



Well-planned, healthy buffers demonstrate a landowner's due diligence and civic-mindedness.



Some buffers may need additional measures such as fencing to protect the riparian area and comply with legislation.



Buffers come in all shapes and sizes. Narrow buffers protect banks and keep management activities away from surface waters.



Wide buffers with complex designs perform more functions than narrow buffers.

Healthy buffer strips and riparian zones also give strong testimony to a landowner's due diligence and civic-mindedness. Unprotected water bodies and damaged streambanks suggest otherwise, and may even be in violation of legislation.

For more information about potential benefits, please see the next chapter.

Buffer strips come in many forms. Narrow, simple buffer strips protect banks and shorelines from the stresses of vehicle traffic and erosion. Wider, complex buffers offer more of the benefits mentioned earlier. But wider and more complex is not always possible. The right buffer strip is one that can perform the desired function and one that's appropriate for local site conditions.

BUFFERS CAN'T DO IT ALL

Buffer strips are not complete solutions by themselves. They are literally the **last line of defence** before land meets water. You'll get the best results if you approach buffer strip management in the context of a comprehensive environmental farm plan.

By integrating your work on buffers with other soil and water best management practices ("BMPs"), you'll see significant long-term improvements to soil, water, air, plant and habitat quality. You can also profit by way of forage and tree crops and property beautification. This book will show you how.

Field buffer strips are one part of a cropland soil and water conservation system.



A best management practice or BMP is a proven, practical, productive and affordable approach to conserving soil, water and other natural resources.



Fish and wildlife also benefit from riparian buffer strips, which offer more complex ecosystems. These systems provide habitat and improve the aquatic communities they protect.



Use cropland buffer strips in concert with other BMPs. Read on for help with developing an integrated approach.



Livestock access to riparian areas should be closely managed. With outdoor confinement areas (more than 1 nutrient unit or NU per acre per year) or exercise yards, livestock should be kept out entirely.

If you have areas with extensive grazing (less than 1 NU per acre per year), assess the impact of livestock on the riparian area and look for opportunities for improvements. In some cases, win-win scenarios can be developed.



It may be that livestock can have some access, while impact is minimized. Switching to rotational grazing, establishing a forage-pasture buffer, and delaying grazing until mid-summer (when lands near water are drier and less likely to be disturbed) will reduce livestock's impact on riparian areas.

As stated in the *Ontario Environmental Farm Plan (1996)*, grazing is either:

- extensive/low-density – livestock grazing will result in less than 1 NU per acre per year
- or
- intensive/high-density – livestock grazing will result in an average of more than 1 NU per acre per year. (A grazier may have more than 1 NU/ac/yr for a given period, provided the average does not exceed 1 NU/ac/yr.)

USING THIS BOOK

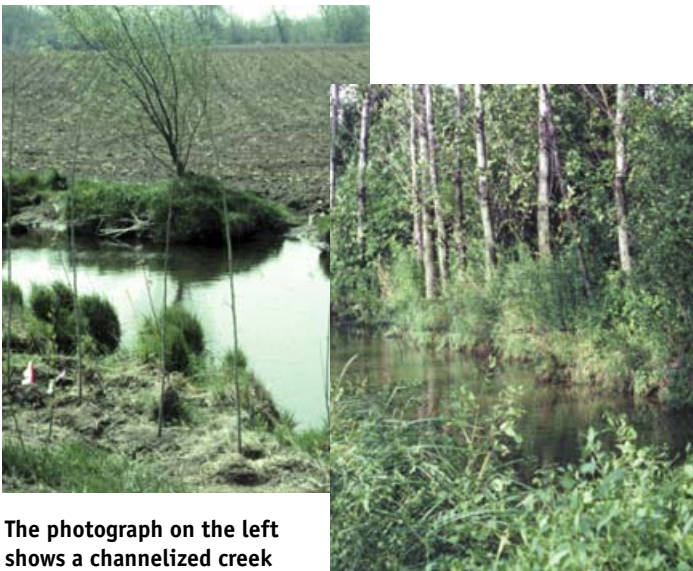
Buffer Strips has been created with the needs of farm operators and other rural landowners in mind. In subsequent chapters, we'll:

- ▶ explore the functions and roles of buffer strips and riparian zones adjacent to flowing water, wetlands, ponds and lakes
- ▶ distinguish between healthy and unhealthy buffer strips and riparian zones to help you assess your site
- ▶ show how to establish and maintain buffer strips
- ▶ identify potential agricultural impacts on these areas
- ▶ look at a range of BMPs to consider as part of a comprehensive plan to reduce impacts on surface water.

There are several other related titles in the Best Management Practices series. Look to them for more detailed information on cropland conservation, nutrient management, fish and wildlife habitat management, water management, and much more. Sources for additional information appear on the back cover.



Natural riparian areas are important and they must be protected. The riparian area bordering this watercourse would benefit greatly from a more substantial buffer strip.



The photograph on the left shows a channelized creek (Washington Creek in Oxford County) before the establishment of a treed buffer strip. Note the areas of cropland runoff and bank erosion. The photograph on the right is the same site 12 years after planting. This portion of Washington Creek has been transformed from degraded to prime cool-water habitat.



Neglected riparian areas can be interpreted by neighbours to mean that the landowner's right to make money is more important than everyone's right to enjoy a public resource.

There's also a partial list of relevant legislation on page 140. When it comes to working around water, i.e., fish habitat, the federal *Fisheries Act* is of particular significance, and you should familiarize yourself with it. Please read a summary of its relevant sections provided in the following textbox.

Also, occasionally you'll see this symbol  in these pages. This is a cautionary reminder that a recommended practice may violate the *Fisheries Act*.

When it comes to protecting surface water on your property, always be proactive. Where there's a problem, taking no corrective action leaves you vulnerable to punitive measures. Evidence of improvement efforts, on the other hand, puts you in a more favourable light.

SPOTLIGHT ON THE *FISHERIES ACT*

The *Fisheries Act* has been a federal statute of Canada since 1868. The Department of Fisheries and Oceans and Environment Canada jointly administer the Act.

The Department of Fisheries and Oceans has primary responsibility for the *Fisheries Act* and is responsible for administering the habitat provisions. Subsection 35(1) of the Act is a straightforward prohibition. It states that “no person shall carry on any work or undertakings that results in the harmful alteration, disruption or destruction of fish habitat.” Subsection 35(2) qualifies that prohibition and allows for the alteration, disruption or destruction of fish habitat if it is authorized by the Minister or a delegate.

Environment Canada administers subsection 36(3) of the Act, commonly called the pollution prevention provisions. The subsection states that “no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.” The only way a deposit

can be authorized is through the creation of a regulation under the Act.

- **deposit** – any discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing (ref. Ss34(1)(e))
- **deleterious substance** – as applicable to livestock operations, means any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man or fish that frequent that water (ref. Ss34(1)(a))
- **water frequented by fish** – means Canadian fisheries, which essentially is water, which, at some time, has fish in it (ref. Ss34(1)(e))
- **fish habitat** – spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly to carry out their life processes (ref. Ss34(1)(e))

WHY IS LIVESTOCK ACCESS A CONCERN?

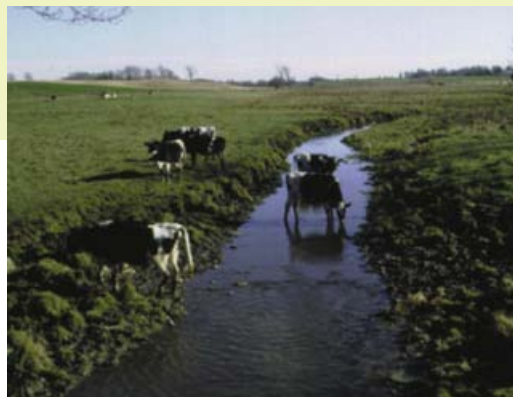
One of the concerns with allowing livestock access to watercourses is the potential for manure to be deposited in a stream. Manure is a deleterious substance. The high levels of nutrients in manure can poison fish and cause excessive plant and algae growth, which upon decay can reduce oxygen levels to levels that cannot sustain fish. Livestock access to watercourses can also result in physical impacts to fish habitat at the crossing site.

HOW CAN YOU ENSURE THAT YOU COMPLY WITH THE *FISHERIES ACT*?

The short answer is: use “all due diligence.” The defence of due diligence or “reasonable care” is used in a court of law for most regulatory offences, including subsection 36(3). The defence of due diligence is available to anyone to show that they did everything reasonably within their power to prevent the offence from occurring. A lack of due diligence could include: failure to take remedial steps regarding a potential problem, failure to control discharges to the maximum extent possible, failure to act quickly to correct a problem, and failure to follow standard practices that are recognized by industry associations (e.g., the Ontario Cattlemen’s Association) and comply with the *Fisheries Act*.

The best approach, however, is to be proactive. Do everything you can to prevent a deposit of manure, sediment, etc. to avoid causing a complaint or an offence.

In this before-and-after buffer strip story, an intensively grazed pasture along a creek (Hall’s Creek in Oxford County) was taken out of grazing production and planted to grasses, trees and shrubs. By taking this course of action, the landowner ensured that livestock were no longer contributing deleterious substances to fish habitat.



ASK YOURSELF:

- ▶ Do my livestock have access to water frequented by fish? A *Fisheries Act* violation may exist wherever animals are able to deposit manure in a watercourse.
- ▶ Have I, in some manner, discouraged my livestock from accessing streams, rivers and lakes?
- ▶ Have I provided an alternative water source for my livestock?
- ▶ Have I constructed stream crossings that prevent animals and manure from contacting the water where livestock frequently cross watercourses?
- ▶ Are manure piles located so that they will not provide a source of contamination to nearby waters?
- ▶ Is contaminated runoff (deleterious substances of any kind) captured and controlled so that it cannot enter water frequent by fish?
- ▶ Where work in and around watercourses is required, have I obtained the necessary approvals?

For a complete copy of the *Fisheries Act*, go to: <http://laws.justice.gc.ca/en/F-14/index.html>