THE IMPORTANCE OF STREAMSIDE BUFFERS

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A Guide for Landowners and Land-Use Decision Makers

Rivers and streams are like the veins and arteries of our land. They nourish us, cleanse us, and carry away our wastes. Like the arteries in our bodies, our rivers must be kept clean and healthy in order for us to live healthy lives in a clean environment.

STREAMSIDE BUFFERS

PROTECTING OUR COMMUNITIES ECOLOGICALLY AND ECONOMICALLY

As we build our communities — with new homes and businesses, roads and factories, farms and playing fields — we sometimes change our landscape in ways that cause expensive problems in the future. These problems include pollution of streams and rivers, pollution which can lead to costly clean-up projects, often under government supervision. Meanwhile, the degraded river is no longer an asset to those who live near it or to the larger community.

It is far more economical to prevent harm to a river at the outset than to repair damage that has been done. Luckily, for rivers (and all bodies of water), there is an easy, low-cost, efficient way to prevent numerous problems: simply leave in place the natural plants that border the shoreline or banks. This band of vegetation, or buffer, is an important protection for the quality of the water, the beauty of the waterway, and the well being of the people, animals and plants that live on, near or in the river.

BUFFERS AND BENEFITS

What is a buffer? It is this band of protective vegetation along side a body of water. It is the land and plants next to a river or stream. The naturally occurring plants usually include trees, shrubs, and tall, coarse grasses. This stretch of vegetated land literally "buffers" the vulnerable riverbanks and the water itself from harmful materials flowing across the land after a rainfall or snow melt. The materials include eroded soil and pollutants in runoff water from parking lots, roads, malls, lawns, kennels, gardens, factories, stables, farms, junkyards, and other paved or clear-cut sites. This contaminated runoff is technically called non-point source pollution, because it does not come from a particular discharge point.

How does the buffer deal with these materials? Plant roots in the buffer hold the banks of the river in place, stabilizing the soil. Roots also absorb the water and some of the contaminants in it. The bodies of the plants (tree trunks, bushy shrubs, and tall grass) slow the rush of polluted runoff, allowing the water to seep into the ground, where it is filtered and cleaned. Plants and leaf litter catch eroded soil before it reaches the waterway.

But buffers are much more than passive barriers. They are green ribbons of life alongside our watercourses. Buffers are sometimes called "riparian bands" because they support riparian (riverside) life — all the plants and animals that live near or in the water. Buffers increase opportunities for us to enjoy a river, whether for boating, fishing, walking a streamside trail, or simply sitting on a rock and taking in the scene. In summer, buffer trees shade the water protecting the cool flows that trout and other fish need. What does it cost us to receive all these benefits? Usually, nothing. We just leave in place what nature has given us.

Unfortunately, our understanding of the importance of buffers is relatively new, and buffers are often needlessly damaged. Engineers bury buffers under roads; loggers cut to the water line; homeowners create lawns alongside streams.

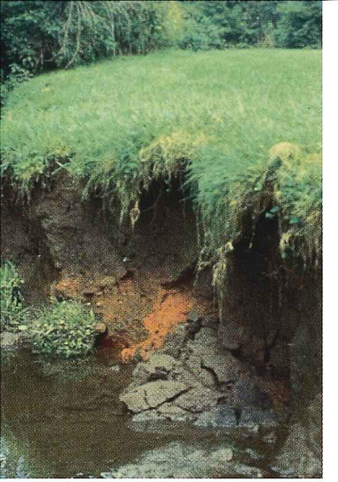
WHAT YOU CAN DO

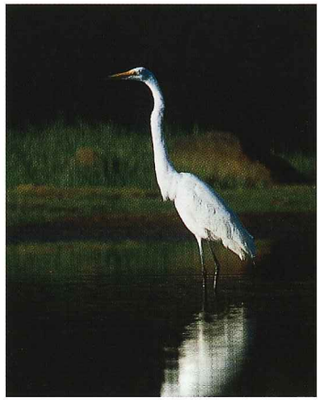
Landowners can make an enormous contribution to water quality by leaving or restoring a strip of native plants along their segment of shoreline. The width of the strip depends on your goals and needs, among other factors (see ahead). It can be several hundred feet or more. A 100-foot buffer will filter most pollutants. Even a 25-foot buffer will provide benefits.

FORM AND FUNCTION

All buffers protect water and habitat. Of course, some buffers function better than others. Generally, wider buffers work better, but they are not always possible. The appropriate size for a buffer depends on your needs and goals, the slope and character of the land near the river, what animals live in or near the river, the health of the river, local setback requirements, and more.

Most regulations focus on water quality, not wildlife. But there are many sources for guidance on what size buffers are needed to protect both habitat and water quality. These sources include local river and watershed groups and land trusts; local and state conservation agencies and organizations; and national river groups.





EROSION CONTROL

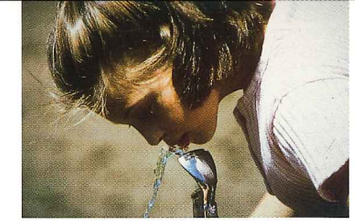
As rainwater flows down hills, it picks up and carries along any loose soil. This wearing away, or erosion, of soil is often accelerated by human activities, such as construction and farming, which expose the soil. Creating large lawns and paved areas speeds the flow of runoff water. Instead of seeping into the soil and recharging groundwater, the water rushes over the surface, with increased power to erode. Much of the eroded soil ends up clogging streams, ponds and rivers; destroying the habitat of fish and other animals; filling up harbors and bays; burying fish eggs and shellfish beds, and turning clean clear water muddy. A buffer of vegetation slows the flow of runoff water, and traps the soil. The plants' roots strengthen steep streambanks, holding the soil in place, keeping stream water clean, and maintaining stream channels.

HOMES FOR ANIMALS

Watching deer drink from a river, ducklings learning to swim, or herons stalking fish are wonderful experiences. Yet animals like these need the food and shelter that a native vegetated buffer provides. They also need space and migratory paths. Even small amphibians — frogs, salamanders, and turtles — may need to travel large distances for food or to breed. The wood frog, for example, has a natural range of more than 1,000 meters between upland homes and breeding pools. If you want a buffer that will truly protect animals, it must be more generous than what is needed for water quality or to meet most local setback rules. The buffer should be at least 250 feet, and form a continuous margin along the water. The wider the better, however. A buffer of a quarter mile or more will support a marvelous variety of wildlife and plants.

RIVER RECREATION

Hiking, camping, fishing, picnicking and paddling along rivers brings joy to many of us. Rivers and streams are most beautiful in their natural state, cascading over rocks, surrounded by woods and fields. A natural buffer increases the chance of observing wildlife, and provides shade in summer and a windbreak in winter. Rivers with bare banks have lost much of their natural variety, life, and beauty.



OUR ECONOMY

Healthy rivers and streams are essential to our economic well being. Clean water and opportunities for recreation are important to our quality of life. These features attract residents, tourists, and businesses. Many communities have struggled, at great cost, to clean up contaminated rivers. Maintaining a buffer of vegetation alongside the water is an easy and cost-effective means of limiting contamination.

SAVING FISH

Most of us sense that a river without fish is not a healthy river. Buffers help to save fish in many ways: By preserving water quality. By shading the water so that it remains cool and less apt to evaporate. By sheltering and providing nourishment for the insects that are essential to the food chain. And by creating hiding places under fallen trees and branches, where fish are secure and will breed. (Here neatness is not a virtue. Leave debris in streams and rivers. It not only provides shelter, but food. For example, bugs eat and breed on decaying leaves, and fish eat the bugs.) Fish need all these protections to thrive. And they themselves contribute to and serve the total ecosystem of the river. A continuous buffer of plants along the waterside is a critical element in preserving our fisheries.

PROTECTION FROM FLOODS

As rainstorms and snowmelts increase river flows, flooding may occur. Flood waters in a natural landscape normally are beneficial. The plants, wetlands and flood plains that naturally border a river act like a huge sponge, absorbing and storing water. The downstream flow is reduced. In dry seasons and droughts, this stored water is gradually released, replenishing groundwater, water in wells, and the flow in the river itself. Meanwhile the flood waters have deposited nutrients in the soil. But flood waters in a developed, clear-cut, paved environment can be devastating. Runoff rushes unimpeded over these surfaces, overfilling the river channel. Without vegetation on the banks, there is no sponge to absorb the flood waters, which are likely to flow right down main street. Later, when a drought comes, there is no stored water to replenish supplies. This is why rivers that flood their banks are also rivers that run dry.

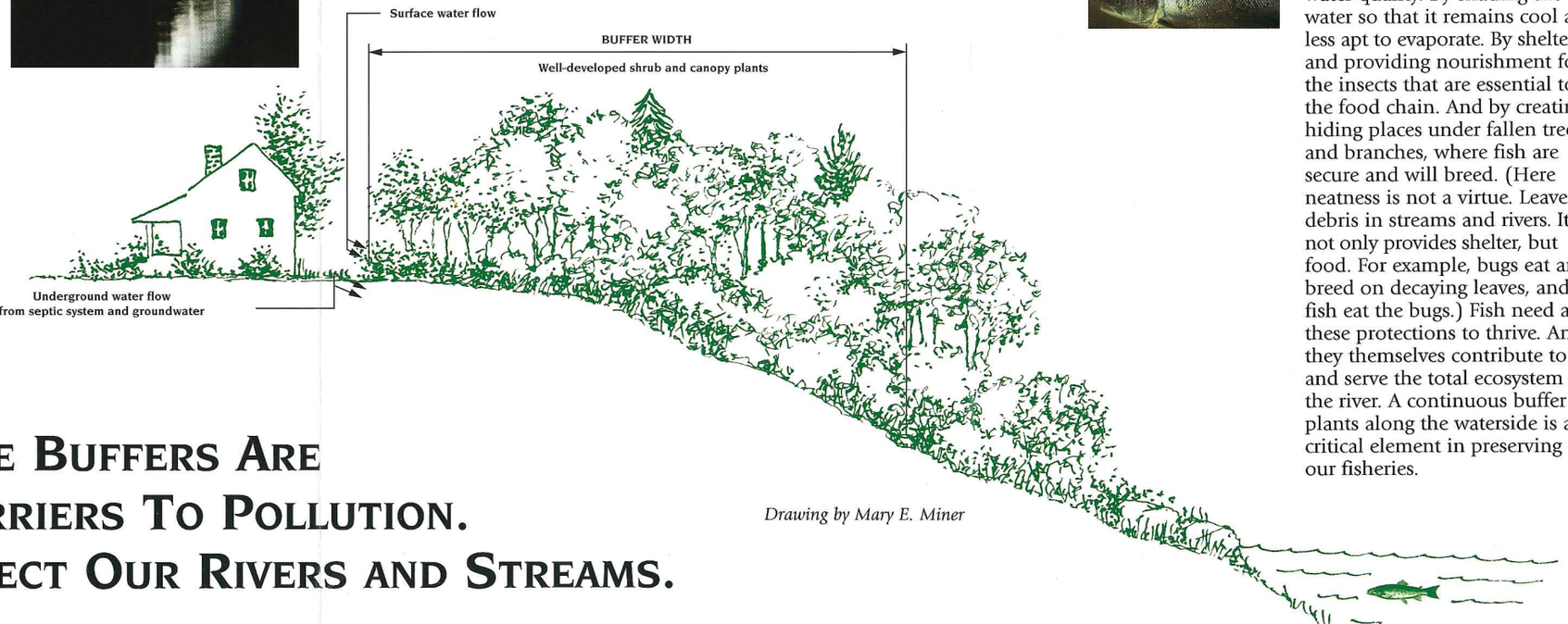
Preserving natural vegetation as a buffer helps to prevent floods, to limit flood damage, and to conserve water for dry seasons.

POLLUTION PREVENTION

Most rivers today are much cleaner than in the past. We have made great progress in controlling specific discharges from sewage plants, factories, and the like. Now most pollution entering our streams and rivers comes not from a particular point of discharge, but in the general downhill flow of water following a rainstorm or snow melt. This runoff is called "non-point source pollution." It may contain oil, gasoline, salt, sand, and variety of other chemicals and debris from roads and parking lots. Farms, suburban and urban residences, golf courses and playing fields contribute animal waste, pesticides, herbicides and large amounts of fertilizer (which can lead to algae blooms that use up oxygen in the water, leaving dead zones — such as the huge dead zone in Long Island Sound.)

To reduce this pollution, we need to adopt best management practices in using and developing our land, including reducing or eliminating pesticides and fertilizers from lawn maintenance and gardening. (Farming and gardening experts can explain how what is called "integrated pest management" can discourage plant-destroying critters while reducing human exposure to toxic pesticides.)

But in all circumstances, simple vegetated buffers will help to filter and absorb pollutants before they can flow into a storm drain, stream or river. A buffer is nature's cost-effective water filter, guarding the quality of our water and the health of our communities.



Drawing by Mary E. Miner

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