

Streamside Landowner Guide

Background:

This online guide was created as a result of interviews conducted with 24 streamside landowners in two urbanizing watersheds in central Ohio. The purpose of this research was to identify decisions streamside landowners make regarding stream health and what influences their decisions. This reported decision process was then compared with what experts believe to be the key influences on streamside landowner property management decisions. One of the key findings was that while streamside landowners had a clear understanding of what can damage streams in urban areas (e.g., sediment and bacteria) they were less clear as to why healthy streams were important and what they should look like. Another key finding of this study was that experts in water management and related fields (e.g., scientists, agency professionals) do not seem to be aware of the time and effort streamside landowners are expending to care for and maintain their properties.

Purpose:

The purpose of the site is to help streamside landowners understand how to better manage the property in and around a stream to achieve their goals (e.g., maintain neat and well drained property) and protect stream quality.

Format:

We divided the site into three guides based on type of landowner: suburban, rural residential, and agricultural. Under each type we list a series of objectives that these particular streamside landowners stated as being important to them in our study (e.g., protecting human health). Under each of these objectives is a series of practices streamside landowners can take to achieve this objective and maintain and/or promote stream health.

How do I recognize a healthy stream?



Figure 1 - Source: Ohio NEMO Program

1. A healthy stream has riffles, runs and pools.

Often times when you think of a healthy stream what comes to mind is one that is clear and fast flowing. These shallow areas are called riffles, and are just one important feature of a healthy stream. Healthy streams are dynamic (e.g., constantly adjusting to their surroundings) and should have a variety of features, not just clear and fast flowing water. Slightly deeper, straighter areas, known as runs, are where

water is moving a bit slower and even deeper areas typically found where the stream bends, known as pools, are where water barely looks like it is flowing and the stream bottom may look a little muddier.

Riffles and runs help flush out sediments and facilitate the breakdown of nutrients that get into the stream. Pools, on the other hand, help trap sediments and nutrients so they do not get transported downstream too quickly. This continuous sequence of riffle, run, and pool features are needed to support a healthy stream by balancing the movement of sediments and nutrients as water flows downstream.

Additionally, each feature provides a different type of habitat enabling a variety of fish and insects to live in the stream and allowing different functions to occur that are needed for stream health (e.g., breakdown of leaf litter occurs in the slower moving shallower pools).

2. A healthy stream has minimal algae growth.



Figure 2- Source: Arkansas Stream*A*Syst

3. A healthy stream will return to its normal condition shortly after the storm.

If the stream stays muddy for a long period of time before or after a storm, there may be a sediment or erosion problem.

A vegetative/riparian buffer on a streambank and out for a distance in the associated floodplain area, is good for water quality, wildlife and prevention of streambank erosion.



Figure 3 - Source: Arkansas Stream*A*Syst

A mixture of trees, shrubs, vines, and grasses is most often the best type of streambank vegetation

4. A healthy stream includes a stream buffer with a mixture of shrubs, vines, and grasses.

The land next the stream that is often called the streambank, riparian area, or floodplain. We often say that a floodplain is “connected” to a stream and they work together to maintain stability and water quality. A healthy floodplain is important because it protects the stream from activities that

occur on the land; it helps the stream move sediments and breakdown nutrients; it slows down and absorbs excess water on the land, which helps protect property owners from floods; and it provides habitat for a variety animals such as birds, salamanders, and frogs.

Vegetation can include trees, shrubs, or native grasses and can be well-landscaped or more natural-looking. Vegetation helps prevent streambank erosion by slowing down flood waters and by providing roots that keep the soil of the streambank in place. A streambank that erodes by an inch annually is most often not a problem, but a streambank that erodes by several inches to several feet per year is a serious problem that threatens water quality, wildlife habitat, and property value, and is usually very costly to fix. Additionally, a well-vegetated floodplain that is functioning properly and “connected” to the stream should actually help clear out or even prevent log jams in the stream by providing a place next to the stream for flood waters to carry and deposit the fallen trees.



Figure 4 – An unhealthy stream that is disconnected from its floodplain. Source: Ohio NEMO Program

A floodplain that becomes “disconnected” from the stream does not protect the stream and can cause problems for landowners. Floodplains can become disconnected from streams when too much water gets into the stream too quickly for it to adjust itself.

The single most important thing a landowner can do to have a healthy functioning floodplain and prevent disconnection from the stream is to grow vegetation on the floodplain.



Figure 5 - Source: Ohio Watershed Network, OSU Extension

A healthy vegetated floodplain that is connected to a stream protects the stream from landscape activities, slows down flood waters, and prevents sediment and nutrients from going downstream.

The second most important thing a landowner can do to prevent erosion, increase property value, and improve water quality is to think of and manage the floodplain as the area where the stream rules. This area should be the place on your property where the stream can flood and move around as much as it needs to in response to changing landscape or weather conditions (e.g., the building of a new subdivision or a large storm event). Managing the floodplain in this way will protect the rest of your property and your neighbors’ properties from flood damage and will

improve the overall health of the stream.

In summary healthy streams have:

- Connection to a floodplain
- Trees, shrubs and grasses on the floodplain
- A variety of features such as riffles, runs, and pools
- A variety of insects and fish as well as salamanders and frogs
- Minimal algae growth, minimal streambank erosion, minimal sediments
- Room to adjust to changing landscape or climate conditions
- Room to flood

Streambanks with trees, shrubs, and grasses are important because they:

- Improve water quality through pollutant filtration and stream shading (cooling of water).
- Absorb runoff water and reduce downstream flooding.
- Stabilize streambanks and prevent or reduce streambank erosion.
- Provide wildlife habitat (cover and food sources).
- Increase property value.
- Increase tax credit value.
- Increase timber value.
- Increase recreational value (swimming, fishing, etc.).

Where Do I Go to Get More Information?

Many individuals we spoke with think there is a single state agency responsible for stream health (most likely the Ohio Department of Natural Resources), but that is only part of the story. There are actually a number of local, state, and federal agencies with responsibilities affecting stream health.

The Ohio Natural Resources Conservation Service (NRCS) assists private landowners with conserving their soil, water, and other natural resources by providing technical expertise and cost-share programs. <http://www.oh.nrcs.usda.gov/>

The Ohio Department of Natural Resources (ODNR) Division of Soil and Water Resources and Division of Wildlife provide leadership and services to conserve, protect, and enhance wildlife, soil, water, and land resources. <http://www.dnr.state.oh.us/tabid/21817/Default.aspx>

The Ohio Environmental Protection Agency's Division of Surface water ensures compliance with the federal Clean Water Act, works to increase the number of water bodies that can safely be used for swimming and fishing, issues permits to regulate wastewater treatment plants, factories and storm water to reduce the impact of pollutants, develops comprehensive watershed plans aimed at improving polluted streams, and collects data on streams, lakes and wetlands,

including fish, aquatic insects and plants, to determine the health of Ohio's surface waters.
<http://www.epa.state.oh.us/Default.aspx?alias=www.epa.state.oh.us/dsw>

The Ohio Federation of Soil and Water Districts, which is affiliated with the Ohio Department of Natural Resources, has a district office in each county and provides assistance to urban and agricultural land users, specializing in soil erosion prevention and water management.
<http://ofswcd.org/index.html>

The Ohio State University Extension's Ohio NEMO Program <http://nemo.osu.edu> and Natural Resources Educators <http://ohiowatersheds.osu.edu> provide non-regulatory, research-based information to landowners, county and municipal officials, engineers and consultants, and others involved in community planning efforts on the relationship between land use and the health of natural resources. Each landowner also has important responsibilities in terms of knowing how to protect stream health and not making changes to the stream that may negatively impact their neighbors downstream.