Cooperative Extension Service

IP-73

Living Along a Kentucky Stream

Few things are as peaceful as a quiet stream wandering through woods and fields. Its gentle, sparkling energy mesmerizes. . .invites exploration. . .evokes memories. It's a haven for a wide variety of aquatic creatures and a source of water and food for a multitude of wildlife visitors.

LIVING ALONG A KENTUCKY STREAM

Streams are a part of our rich natural legacy. That's why it's important to protect, improve, and preserve them for generations to come.

If you have a stream in your yard, you have a special responsibility. What you do or don't do on your part of the stream affects you and those who live downstream from you.

When you fulfill that responsibility, you get something in return. You have the opportunity to:

- Increase your land value.
- Reduce problems such as erosion along your stream.
- Improve water quality.
- Improve wildlife habitat.

Fayette Co./Tom Barnes

There's a simple way to look at your responsibility and the opportunities it brings. We call it stream stewardship. That's what this brochure is about—helping you understand stream stewardship and providing you with simple, inexpensive techniques to make it part of your everyday life.

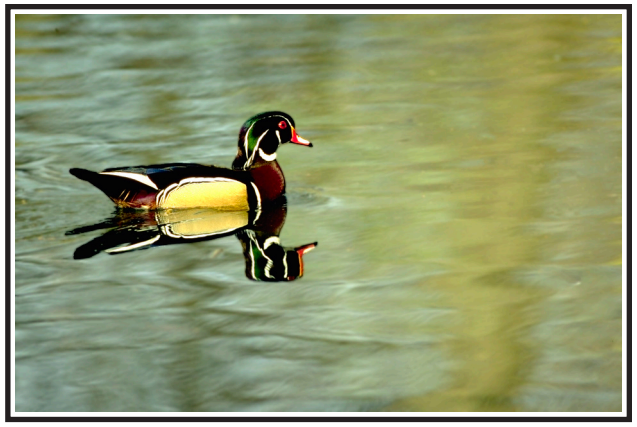
Tiger swallowtail/Tom Barnes

HOW DOES MAINTAINING OR IMPROVING A STREAM INCREASE PROPERTY VALUE?

- The closer a property is to a natural area, the higher its value.
- Natural areas reduce the incidence and severity of flooding and erosion.
- Protection of natural areas promotes the overall livability and vitality of communities.

Source: *Natural Areas: Protecting a Vital Community Asset*. Author: Laurie Allmann, Minnesota Department of Natural Resources.

Stream Stewardship



Wood duck/Tom Barnes

What Is Stream Stewardship?

Stream stewardship is the idea that all of us are responsible for and benefit from the sensible use of streams that flow through our property and make up our watershed.

This shared responsibility includes understanding:

- How streams work and change over time.
- Potential threats that can affect the health of a stream.
- Personal actions that can reduce or eliminate those threats.

"Water, which so many townspeople never think about, having an obedient spring in the kitchen, is really among the most fragile of life's necessities."

– H.V. Morton, *The Waters of Rome*

Who's Responsible for What?

Every stream has three basic components:

- The water flowing in it.
- The land beneath and around it.
- The plant and animal life the stream supports.

Individuals own the **land** that forms the stream channel on their property. The **water** in the stream is considered a "public good" and is owned by the state. This means property owners can use the water—*but not in ways that infringe on the rights of others!*

Northern leopard frog/Mark Gumbert

What many property owners should realize is that using water properly also depends on how they use their land. If, for example, you decide to remove large natural materials such as boulders, build artificial streambanks, or fill in a ravine or depression, your land alterations can negatively affect:

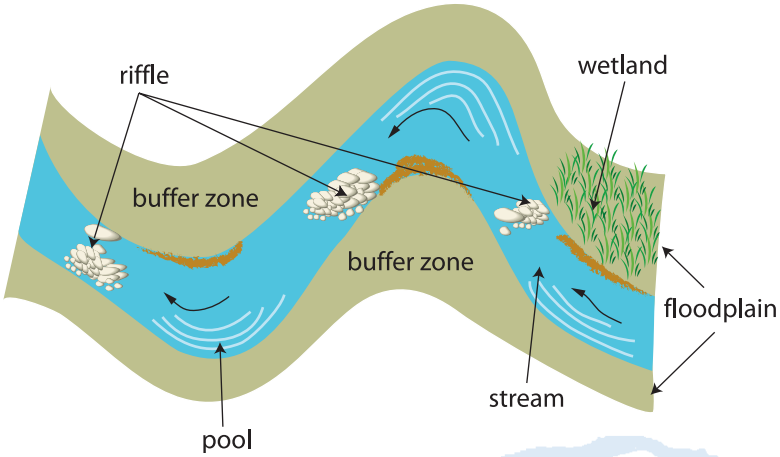
- How the streamwater flows.
- What the water contains, such as sediment and other pollutants.
- Whether its inhabitants are healthy or can even exist.
- The value of the very property you've tried to protect and improve.

Madison Co./Mark Gumbert

What Are the Components of a Stream?

Streams are dynamic systems, which means they have many components that constantly change over time.

In Kentucky, many of the streams have alternately spaced, deep and shallow areas called pools and riffles. **Pools** are deep areas that contain fine materials such as sand. They make the perfect homes for fish. **Riffles** are shallow areas with larger materials such as cobbles and boulders. They are the ideal spawning grounds for fish.



Another important component is the **floodplain**. The floodplain, which includes the land along the stream's channel that is periodically covered by water, is essential for containing excess stormwater, reducing streambank erosion, and filtering the amount of sediment, bacteria, and nutrients in stormwater. Pockets of water in these areas are important breeding sites for amphibians such as frogs.

Buffer zones are likewise important. These are strips of vegetation along the banks that separate the body of water from developed areas, such as lawns, buildings, and driveways. This layer of vegetation provides nesting sites for a variety of birds, turtles, and small mammals.

Streams can also have nearby **wetlands**. Wetlands are transitional areas between upland and deep water aquatic systems. They act as a filter, removing materials from stormwater runoff before the runoff reaches the stream.

What Makes Up a Healthy Stream?

- A meandering, winding, S-shaped curve across the land, as shown in the photo at right.
- Open, unobstructed access to floodplains.
- A vegetated buffer zone on the streambanks.
- A variety of plants and animals living in and near the stream.

Interagency Streams Restoration Working Group

What Happens When a Stream "UN-Meanders"?

When we eliminate the natural meanders in streams and attempt to contain the stream in a straight line, the effects are dramatic. These "channelized" streams can have negative effects because:

- The energy of moving water is trapped within the stream channel, increasing streambank erosion.
- Streams can no longer access their natural floodplain, and downstream neighbors are at a greater risk of flooding.
- Upstream channels can suffer from increased upstream erosion.

Maintaining a Healthy Stream

Six Simple Solutions to Help You Preserve or Improve Your Stream's Health

1. *Do* plant in your buffer zone.
2. *Do* keep onsite wastewater treatment systems (septic systems) in good working order.
3. *Do* help nature by removing trash from streams.
4. *Don't* change the path of your stream.
5. *Don't* mow in the buffer zone.
6. *Don't* dump anything in the stream.

1. *Do* Plant in Your Buffer Zone

Buttonbush/Tom Barnes

Problem:

Streambanks with no woody vegetation in the buffer zone are not as effective in the erosion battle.

Simple Solution:

One of the easiest methods of stabilizing streambanks is planting trees, shrubs, and deep-rooted grasses in the buffer zone.

The shrubs, trees, and deep-rooted grasses listed below are native plants. Native plants are important in the landscape because they provide natural food and shelter to wildlife and help maintain a balanced ecosystem.

Silky dogwood/Tom Barnes

The following trees, shrubs, and deep-rooted grasses form dense, fibrous root systems that help hold soil in place:

Shrubs

Common Name	Scientific Name
Buttonbush	*Cephalanthus occidentalis*
Red chokeberry	*Aronia arbutifolia*
American elderberry	*Sambucus canadensis*
Rough-leaf dogwood	*Cornus racemosa*
Silky dogwood	*Cornus amomum*
Deciduous holly	*Ilex decidua*
Spicebush	*Lindera benzoin*

Trees

Common Name	Scientific Name
Black willow	*Salix nigra*
Box elder	*Acer negundo*
River birch	*Betula nigra*
Cottonwood	*Populus deltoides*
Shellbark hickory	*Carya laciniosa*
Red maple	*Acer rubrum*
Bur oak (and other oaks)	*Quercus macrocarpa*
Pecan	*Carya illinoinensis*

Native Grasses

Common Name	Scientific Name
Switchgrass	*Panicum virgatum*
Eastern gamagrass	*Tripsacum dactyloides*
Deertongue grass	*Dichanthelium clandestinum*
Big bluestem	*Andropogon gerardii*
River oats	*Chasmanthium latifolium*
Fowl mannagrass	*Glyceria striata*

Frequently Asked Questions About Improving Buffer Zones

What About Cuttings?

Some woody species can be propagated by cuttings. Willow and cottonwood are easily started from cuttings. Dormant cuttings are usually one to three feet in length and about one-half inch in diameter. They are inexpensive. Check with local nurseries and your local Conservation District office for sources of cuttings.

When Do I Plant?

In Kentucky, the best time to plant trees and shrubs is either in late fall or early spring.

How Do I Plant?

Landscapers, county Extension agents, and Conservation District personnel can give you planting information. *See the list of related publications on the last page for more information.*

Hart Co./Tom Barnes

"We all live downstream." – Anonymous

2. *Do* Keep Onsite Wastewater Treatment Systems in Good Condition

Problem:

Any part of your septic system can become damaged or simply wear out over time. And any plumbing that's not working properly is a source of pollution.

Simple Solutions:

- Make sure you have the right on-site wastewater treatment system for your soil type. *Your local health department can offer assistance.*
- Have your system checked and pumped every three to five years.
- Reduce or eliminate the amount of bleach, chemicals, oil, and grease that you wash down the drain. Dispose of these materials properly. For more information on proper disposal, contact your county Extension agent.
- Do not flush additives such as yeast into your system. These products may hurt your system in the long run and do not eliminate the need for routine pumping.

3. *Do* Help Nature by Removing Trash From Streams

Problem:

Trash is unsightly, unsanitary, and unsafe for you, your family, and wildlife.

Simple Solutions:

- Educate all family members not to litter.
- Regularly remove old tires and other garbage from the water and streambanks. Make sure you wear footwear and gloves to prevent cuts and injuries.
- Be part of Kentucky's Commonwealth Clean-Up/River Sweep each spring. Contact your local solid waste coordinator or county Extension office for more information.

4. *Don't* Change the Path of Your Stream

Ohio Department of Natural Resources, Division of Soil & Water Conservation

Problem:

Although it might be tempting to rearrange what nature designed, it's simply not a good idea. When you remove rocks or gravel from your stream, you're destroying the homes of the fish and animals that live there!

Even purposefully using concrete or rocks to build artificial walls to shore up the banks or change the direction of the water flow leads to problems, not solutions. If not designed and installed properly, these structures can damage the land and waterway. Haphazardly dumping concrete and rocks in your stream accelerates streambank erosion.

Simple Solutions:

- Let nature take its course.
- Consult your local Conservation District, Kentucky Division of Water (KDOW), or the U.S. Army Corps of Engineers before you decide to rearrange the stream.
- Use the Kentucky Division of Water's *Stream Management Guidelines* to determine when and how to remove stream obstructions.

5. *Don't* Mow in the Buffer Zone

Problem:

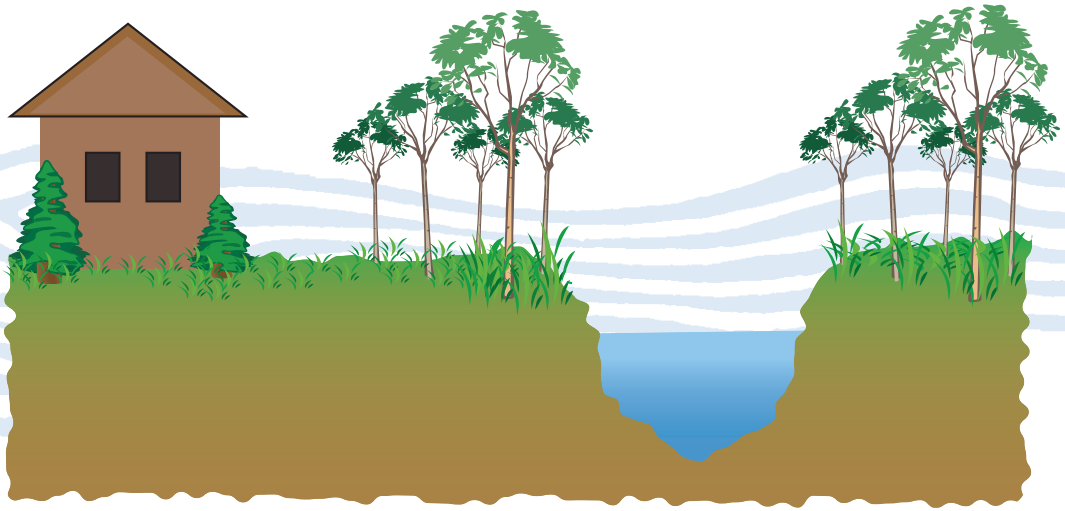
If you mow right to the edge of your stream, you could be creating a disaster. If you eliminate a buffer zone's natural plants and bushes, you also lose the root systems that hold the soil in place. The result: the banks erode faster, they destabilize, and they crumble and cave in. Just think of all that valuable land washing away!

Simple Solutions:

- Keep your stream's buffer zones mower free.
- If your buffer zones are healthy, maintain them.
- If your buffer zones are degrading, improve them by planting woody vegetation and by not mowing.

What a Healthy Buffer Zone Does:

- Stabilizes streambanks.
- Reduces erosion.
- Provides wildlife habitat.
- Increases beauty.
- Reduces sediment and chemicals from rainwater runoff.
- Provides shade to keep stream water cooler for healthy plants and animals and less algae growth.



"The health of our waters is the principal measure of how we live on the land."

—Luna Leopold

Degraded buffer zone/Mark Gumbert

Healthy buffer zone/Mark Gumbert

Healthy buffer zones have trees, shrubs, and grasses that form a transitional zone between the streambank and an upland area.

- For existing urban yards, a 10-foot buffer zone is essential.
- For mid-sized streams in larger yards, a 25-foot buffer zone is recommended.
- For large streams, a 150-foot buffer zone is ideal.

6. *Don't* Dump Anything in the Stream

Problem:

When it comes to stream dumping, even organic waste doesn't "cut it."

Yard waste (grass, leaves, etc.) is the second-largest type of all discarded trash. When these materials are put into the stream cycle, they begin to decompose and eliminate life-giving oxygen in the water. As a result, these streams become unsightly and emit a foul odor.

Powell Co./Mark Gumbert

Few property owners think it's acceptable to dump tires, machine parts, plastics, and other unnatural trash into our waterways. But many still believe it's okay to deposit "organic" material such as leaves and grass onto a streambank or into the stream itself.

If properly composted, organic waste can be a wonderful additive for lawns and gardens, but it can have a negative impact if deposited into a stream.

Simple Solutions:

Stream-smart lawn maintenance does make a difference.

Compost bin/Candace Harker

- Learn to compost. It's nature's way of turning leaves, grass clippings, and vegetable scraps into a soil conditioner. It's easy and can be a relatively quick process. Just remember: don't compost near your stream!
- Mowing? "Cut it high and let it lie." Grass is its own best natural fertilizer. Composed of 90 percent water, clippings break down quickly.
- Fertilizing? Do it sensibly! Also, do not fertilize a buffer zone. Fertilizing directions are there for a reason. Many people use too much fertilizer. When it rains, the excess runs off the lawn and pavement and into storm drains and the waterways that supply our drinking water. Once there, fertilizers pollute the water by encouraging too much algae growth. And when algae die, the low oxygen levels will not support fish and insect populations. Remember*: Sweep any excess fertilizers off the pavement.*

Other Suggestions for Good Stream Stewardship

Cardinal/Tom Barnes

Consider Improving Wildlife Habitat in Your Yard

Although the days are gone when our yards were dense forests filled with wildlife, they can still attract a wide array of birds, butterflies, and other wildlife.

Trees, shrubs, and leafy plants provide important food sources and shelter for these wonderful visitors. The types you attract will depend on your selection of vegetation. The best combination is a variety of plants (preferably native species) that flower and bear fruit at various times throughout the year. Some suggestions include:

Trees: Buckeye, cherry, hickory, yellow-poplar (Kentucky state tree), magnolia, maple, oak, pawpaw, pine.

Shrubs: Buttonbush, dogwood, holly, spicebush.

Vines: Cross vine, passionflower, trumpet vine, virgin's bower.

Flowers: Aster, black-eyed Susan, cardinal flower, columbine, milkweed, purple coneflower.

For more information, see Cooperative Extension publication FOR-68, available at county Extension offices or online at <https://www2.ca.uky.edu/agcomm/pubs/for/for68/for68.pdf>.

Yellow-poplar/Tom Barnes

Cross vine/Tom Barnes

Practice Natural Pest Control

Why not install a bat, wren, or purple martin house?

Bats eat night-flying insects, including mosquitoes, moths, and beetles. Purple martins eat a variety of flying insects. Wrens also eat insects.

Northern bat/Mark Gumbert

Enhance Biological Control

Many insects, such as lady beetles, lacewings, and parasitic wasps (all found in Kentucky), help reduce pests on garden and landscape plants. Most of these beneficial species need some supplemental nutrition. Eating pollen may help to increase egg production; sipping nectar will give energy for flight.

Plants in the carrot, aster, mustard, and legume families will supply pollen and nectar and can lead to more effective natural control in the surrounding area. Plan to use a variety of plants so that there is something blooming from spring to fall. Plants that attract butterflies will give splashes of color, as well as provide nectar and pollen.

Get Involved

Be involved in your community to be sure that proper storm flow management is followed when areas are paved over or streams are altered. Decisions made upstream can affect your downstream water quality.

Breathitt Co./Tom Barnes

Get a Toad or Two!

Toads are also great insect eaters. However, toads need shelter during the daylight hours. A flowerpot turned upside down, with one corner propped up, for example, provides an attractive retreat for these helpful creatures. Breeding sites along the buffer zone will increase the likelihood of attracting toads.

Look for Volunteer Opportunities

There are many opportunities for getting involved in environmentally positive activities. Many of them are ideal for the whole family! Check county Extension offices, newspapers, nature centers, gardening clubs and other civic groups, Conservation District, and Natural Resource Conservation Service (NRCS) offices for announcements of upcoming events.

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Related Cooperative Extension Service Materials

HENV-501 *Septic System Maintenance: Care and Feeding of Your System*
HENV-508 *Native Plant Landscaping of Septic Systems*
FOR-48 *Bats: Information for Kentucky Homeowners*
FOR-68 *Trees, Shrubs, and Vines that Attract Wildlife*
FOR-71 *Wild About Wildflowers*
FOR-73 *Creating Urban Stormwater Control Ponds for Water Quality and Wildlife Habitat (includes plant list)*
FOR-74 *Guide to Urban Habitat Conservation Planning*
FOR-93 *Definition of Conservation Practices in Kentucky, An Interagency Landowner Assistance Technical Publication*
FOR-97 *Hummingbirds: An Attractive Asset to Your Garden*
FOR-98 *Attracting Butterflies with Native Plants*
ID-185 *Planting a Riparian Buffer*
HO-75 *Home Composting*
ID-242 *Central Kentucky Backyard Stream Guide*

Related Programs

Kentucky Department of Fish & Wildlife Resources Habitat Improvement Program:
https://fw.ky.gov/Wildlife/Pages/Improve-Your-Land-for-Wildlife.aspx
National Wildlife Federation Backyard Wildlife Habitat Program
https://certifiedwildlifehabitat.nwf.org/

For additional assistance:

Kentucky Division of Water (502) 564-3410
Kentucky Division of Forestry (502) 564-4496
Septic tank information: *Contact your local health department*
U.S. Army Corps of Engineers
Bat Conservation International:
http://www.batcon.org/

Indigo bunting/Tom Barnes

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