Life at the Water's Edge

Introduction to Streamside Management

one in a series of six fact sheets on stream management

OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF SOIL & WATER CONSERVATION

You are receiving this series of fact sheets because you live on or near a stream. Streams in Northeast Ohio eventually drain to Lake Erie, the source of our drinking water. The health and functions of Lake Erie and the Chagrin River are dependent on the health of its small headwater streams and tributaries.

JOSEPH C. HAMMOND

This series of fact sheets provides an opportunity to:

- ☑ Increase your land value
- ☑ Reduce problems, like erosion, along your stream
- ☑ Improve wildlife habitat on your property
- ☑ Protect and improve the quality of the Chagrin River and Lake Erie
- ☑ Make a difference in your community

Project funded in part by the Great Lakes Basin Program, Great Lakes Commission. Originally written and designed by the Cuyahoga Soil and Water Conservation District in collaboration with Summit Soil and Water Conservation District and Cuyahoga River Remedial Action Plan.

How does maintaining or improving my stream increase property values?

Studies have shown that:

- The appraisal value of houses with natural streams is 3 times HIGHER than those with channelized streams.
- The closer a property is to a natural area, the higher its value.
- 60% of suburban residents enjoy wildlife viewing and are willing to pay a higher price for properties that are attractive to wildlife.

What is Stream Stewardship?

Stream stewardship is the idea that each and every one of us is responsible for the sensible use of streams that flow through our properties.

Who's Responsible for What?

Every stream has two components:

- The water flowing in it
- The land beneath & around it

Private individuals own the land that forms the stream channel on their property. However, because it is considered a "public good", the water in the stream is owned by the State of Ohio, or all of us! This means that property owners can use the water, but not in ways that infringe on the rights of others.

What many property owners may not realize is that "using" water properly also depends on what they do with their land. If, for example, you decide to armor the stream bank, culvert the stream in a pipe, remove natural bed materials, or fill in a ravine, your land alterations can negatively affect:

- Flooding & erosion rates downstream
- The value of the property you've tried to protect and improve
- How the stream water flows
- What the water contains
- Whether the stream's inhabitants are healthy, or can even exist

You are responsible for any changes downstream resulting from actions on your land.

Backyard Habitat Improvement Ideas

Control Invasive Non-native Species!


ODNR

Glossy Buckthorn

Invasive non-native plant species threaten Ohio's native ecosystems by crowding out native plant species, altering the food web and displacing the wildlife that relies on native plants for food, shelter, and breeding sites. Of the more than 700 non-native plants in Ohio, fewer than 100 are known to be a problem in natural areas. Invasive non-native plants typically grow fast, produce a lot of fruit, and have an efficient method of dispersing their seeds. Consider phasing out invasive non-native species in your backyard and along your stream, and replace with native plants. To find out more about controlling invasive non-native plants in your backyard, contact your local Soil & Water Conservation District or Ohio Department of Natural Resources (ODNR) – Division of Natural Areas and Preserves at (614) 265-6453.


ODNR

Purple Loosestrife


ODNR

Honeysuckle

Acting today to maintain the Chagrin River Watershed

Information provided by Invasive Plants of Ohio, created by ODNR – Division of Natural Areas and Preserves, the Nature Conservancy, and Columbus & Franklin County Metro Parks.

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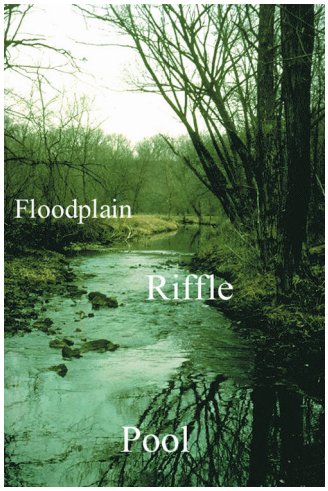
P.O. Box 229
Willoughby, Ohio 44096-0229
(440) 975-3870

2 Life at the Water's Edge

How Streams Work

two in a series of six fact sheets on stream management

Streams are "dynamic systems", which means they're constantly changing and are always striving to balance energy.



STREAM CORRIDOR RESTORATION: PRINCIPLES, PROCESSES, AND PRACTICES, 10/98, BY THE FEDERAL INTERAGENCY STREAM RESTORATION WORKING GROUP

Components of a natural stream

In our area, many streams are composed of alternately spaced, deep and shallow areas called pools and riffles. *Pools* are deep areas that often contain fine materials such as sand, a perfect respite for fish! *Riffles* are shallow, fast moving areas that often contain larger materials like cobbles and boulders. These areas provide important habitat for fish spawning and macroinvertebrates (i.e. mayfly nymphs), an important food source for fish. Another important component of streams is the *floodplain*. Floodplains provide a critical service to the community and are essential for healthy streams because they:

- Reduce flooding in our communities by containing excess storm water.
- Reduce stream bank erosion by relieving energy in the channel.
- Reduce pollution by allowing sediment, bacteria and fertilizers to settle out and be utilized by plants.
- Recharge and filter groundwater so streamflow is maintained in dry weather.

STREAM CORRIDOR RESTORATION: PRINCIPLES, PROCESSES, AND PRACTICES, 10/98, BY THE FEDERAL INTERAGENCY STREAM RESTORATION WORKING GROUP

Why do streams meander?

It's a balancing act! All streams transport water along with bed materials like soil and rocks. By meandering, streams can balance the work involved in carrying bed materials and the energy of transporting water.

How much will a stream meander?

The size of the meander is related to the slope of the stream and the area of the land draining to the stream. Steep mountain streams hardly meander at all, while large rivers in flat valleys often have large meanders.

What happens when a stream un-meanders?

Streams are not pipes. When we eliminate natural meanders in streams, and attempt to "nail" the stream into a straight line, the effects are often dramatic. Excessive energy often becomes trapped in the stream channel causing the stream to cut a deeper channel. Eventually deep, incised stream channels will begin to erode side walls of channels and widen the stream. Erosion increases as the stream attempts to recreate the missing meanders. Floodplains often become disconnected from the stream, and downstream landowners are at a greater risk of flooding and erosion.

Fact: Even water flowing through a pipe at low flow will meander!

Is stream bank erosion natural?

Even streams in balance erode, but usually not in a way that degrades the stream. Erosion in a healthy stream usually equals the amount of material deposited. If a stream begins to erode excessively, it may be out of balance. Upstream increases in storm water runoff or changes to stream channels upstream may start a downward cutting process leading to unstable, eroding stream banks.

What's a healthy stream?

- *A meandering, winding, "S"-shaped curve*
- *Open access to floodplains*
- *Vegetated riparian area*

CUYAHOGA SOIL & WATER CONSERVATION DISTRICT

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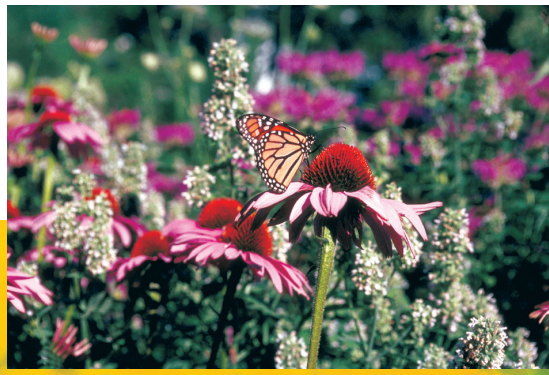
Backyard Habitat Improvement Ideas

Benefit with Butterflies


ODNR



Attracting butterflies is a great way to begin the process of making our yards more wildlife friendly. Butterflies require two types of plants: a nectar source for the adult butterflies, and a host plant for caterpillars. Butterflies can actually smell these plants up to two miles away! What's so amazing is that these plants are so common. Nectar Sources: lilac, phlox, zinnias, cosmos, purple coneflower. Host Plants: dill, parsley, carrot, violet, dogwood, viburnum.

Acting today to maintain the Chagrin River Watershed

Two in a series of six fact sheets on stream management

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How Streams Work

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3 Life at the Water's Edge

three in a series of six fact sheets on stream management

Don't Mow in the Riparian Zone!

A stream's riparian zone is the strip of natural vegetation along the banks that separates the stream from developed areas (lawns, buildings, driveways, etc.).

Mowing right to the stream edge may look neat, but it's actually creating disaster, faster! You may be able to get away with it for awhile, but it will catch up with you. If you eliminate natural plants and shrubs along a stream you lose the valuable root systems that hold the stream bank soil in place. The result: the banks erode faster, they de-stabilize, they crumble and cave-in, and you'll soon be living with this! Just think of all that valuable land washing away.

CUYAHOGA SOIL & WATER CONSERVATION DISTRICT

Water can move mountains! Consider that the Appalachian mountains were once higher than the Rockies! Maintaining healthy vegetation along your section of the stream is insurance, protecting you from changes in the watershed upstream of your property.

ODNR

Simple Solutions

- Keep your stream side areas "mower-free"!
- If your riparian zone is healthy...MAINTAIN IT!
- If your riparian zone is degrading...IMPROVE IT!

How big should a healthy riparian zone be?

Ideally, a healthy riparian zone should be large enough to accommodate a naturally meandering stream for many years to come, regardless of upstream changes in the watershed. Streams tend to meander within a predictable width, known as their "belt width". The size of the belt width is related to the size of the watershed draining to your stream.

Unfortunately, in urban areas these recommended riparian zone widths often exceed the entire width of our properties! One rule of thumb that is often used in identifying a recommended riparian zone width is 3 times the width of your stream. Otherwise, the following guidelines are helpful:

For existing urban backyards, a 10 to 25-foot riparian zone is essential.

For mid-sized streams in larger backyards, a minimum riparian zone of 75 feet is recommended.

For very large streams, a 150 to 300-foot riparian zone is not only ideal, it's *smart*!

Want to find the ideal width for your riparian zone? Contact your local Soil and Water Conservation District or Chagrin River Watershed Partners (CRWP) for information on determining the belt width of your stream. Many communities are adopting riparian setbacks into their zoning codes to protect their residents and maintain the streams natural flood control, erosion control, and water quality functions. Riparian setbacks are similar to front, side or rear yard setback which limit building in these areas. Contact your locality or CRWP to determine if similar legislation has been adopted in your area.

What Healthy Riparian Zones Do:

- Stabilize stream banks
- Provide active floodplains
- Reduce erosion
- Reduce sediment and chemicals from rainwater runoff
- Provide shade to keep the stream at cooler temperatures for healthy aquatic communities
- Provide wildlife habitat
- Increase beauty
- Increase property value

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Backyard Habitat Improvement Ideas

Supplemental Shelter for Wildlife

Bats are the single most important controller of night-flying insects, including mosquitoes, moths and beetles. One little brown bat can eat more than 600 mosquitoes in an hour! A bat house provides critical roosting habitat. Bat houses should be installed on a pole at least 15 feet high in a spot that receives sun at least 4 to 6 hours a day. Trees are generally not a good location for bat boxes due to lack of sunlight.

Make or buy birdhouses that will attract the type of birds you want in your yard. The size of the entrance hole is critical for successful nesting. Other considerations include box size, height above the ground, direction the entrance hole faces, and amount of sunlight. Also, make sure your birdhouses can be easily opened and cleaned annually with a mild bleach solution to reduce the spread of bird diseases. Birdhouses may need baffles to limit access by cats and other predators.

For more information about birdhouses and wildlife habitat, contact your local Soil and Water Conservation District, or check out your local library. Also, search the web for the USDA Natural Resources Conservation Service Backyard Conservation Program.

Acting today to maintain the Chagrin River Watershed

3 Steps at the Water's Edge

Don't Mow in the Riparian Zone!

three in a series of six fact sheets on stream management

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Willoughby, Ohio 44096-0229
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4 Life at the Water's Edge

four in a series of six fact sheets on stream management

Plant Cuttings to Stabilize Your Stream!

Stream banks with little woody vegetation in the riparian zone are not as effective in the erosion battle. One of the easiest and most inexpensive methods of stabilizing stream banks is the use of live, but dormant, unrooted cuttings (no buds, leaves, or visible roots).

The following shrub species develop a dense, fibrous root system that helps hold soil in place.

"Ruby" Redosier Dogwood
Cornus stolonifera

Grey Stem Dogwood
Cornus racemosa

Silky Dogwood
Cornus amomum

ODNR

Green Twig / Round-leaved Dogwood
Cornus rugosa

Sandbar Willow
Salix interior

"Bankers" Dwarf Willow
Salix x cottetii

"Streamco" Purpleosier Willow
Salix purpurea

Buttonbush
Cephalanthus occidentalis

NATURAL RESOURCES CONSERVATION SERVICE

After 3 years, these plants can be used as a source of cuttings for additional stream bank planting projects!

Avoid planting large, heavy tree species directly on the stream bank. They can eventually get so heavy that they cave in the stream bank, blocking stream flow and contributing to local flooding problems. If you already have an erosion problem and large trees are in danger of caving in the stream bank, consider cutting down the tree. ALWAYS leave the existing stump in the stream bank and dispose of the tree remains properly (that means not in the stream channel or the floodplain!).

Frequently Asked Questions

What do these shrub species look like?
Dormant shrub cuttings are usually between 1-3 feet in length and about 1/2 inch in diameter.

How much do they cost?
Cuttings can often cost as little as 15-cents each!

Where do I get them?
Many of these shrubs are available through mail-order suppliers, local Soil and Water Conservation Districts (SWCD) and the Ohio Department of Natural Resources, Division of Forestry.

How big will they get?
Shrubs like these will have trunks 1.5-2 inches in diameter, and will reach a height of 6-18 feet.

What do they need to stay healthy?
Ample light and moisture.

When do I plant them?
In our area, the best time to plant dormant, un-rooting cuttings is either in late fall or early spring.

CUYAHOGA RIVER REMEDIAL ACTION PLAN

How do I plant them?
1. *Create pilot holes on the stream bank using re-bar and a fence post driver. Spacing should be 6-12 inches apart. The depth of the pilot hole will depend on the length of the cuttings. Allow 6 inches of the cuttings to remain above the ground.*
2. *Insert a cutting into the pilot hole, backfill with soil, and pack the soil tightly. Always insert the cutting with the buds pointing up toward the sky!*
3. *Water as necessary, until well established.*
4. *Avoid planting them in the active stream channel where they'll be washed away*

While vegetated riparian areas go a long way to controlling flooding and erosion, your erosion problem may require a more "engineered" solution. If your stream banks are eroding and a structure is threatened, contact your SWCD or Chagrin River Watershed Partners.

APPALACHIAN ENVIRONMENTAL

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Backyard Habitat Improvement Ideas

Native Plants for Wildlife

Our native wildlife populations, including birds, butterflies and insects, have evolved using native plants as their primary food and nectar sources. Plant a variety of native plants that provide shelter and food sources throughout the year. Some suggestions include:

Trees: Apple, Black cherry, Crabapple, Hawthorn, Hickory, Oak, Balsam fir, Eastern white pine

Shrubs: Dogwood, Holly, Pyracantha, Serviceberry, Spicebush, Sumac, Viburnum, Willow

Vines: American bittersweet, Virginia creeper, Wild grape

Nectar plants for hummingbirds, butterflies, and bees:

Aster, Azalea, Bee balm, Black-eyed susan, Cardinal flower, Clover, Columbine, Lobelia, Lupine, Milkweed, Perennial phlox, Purple coneflower

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Life at the Water's Edge

Plant Cuttings to Stabilize Your Stream!

four in a series of six fact sheets on stream management

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Life at the Water's Edge

Don't Dump!

five in a series of six fact sheets on stream management

CUYAHOGA SOIL & WATER CONSERVATION DISTRICT
NATURAL RESOURCES CONSERVATION SERVICE

Few, if any, 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 OK to deposit "organic" material like leaves and grass onto a stream bank or into the stream itself. Many even think it's helpful in the erosion battle.

Well, when it comes to stream dumping, even organic doesn't "cut it". When yard waste (grass, leaves, pet waste, etc.) is deposited in the stream, it begins to rob the water of critical, life-giving oxygen. As a result, fish kills can occur while the stream becomes unsightly and foul smelling. Dumping yard waste or other materials near your stream also fills in the valuable floodplain area that stores and treats excess water.

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With more than 30 million acres of lawn in the United States, stream-smart lawn maintenance DOES make a difference!

Simple Solutions:

Mowing?
"Cut it high, and let it lie."
Grass is its own best natural fertilizer. Composed of 90% water, clippings break down quickly. Grass clippings contain valuable nutrients that can generate up to 25 percent of your lawn's total fertilizer needs. Use a mulching mower to most efficiently break down your grass clippings. Leave a "no mow" zone near the stream.

Fertilizing? Do it sensibly. Many people use too much fertilizer. When it rains, excess fertilizers run off the lawn and pavement, into storm drains, and into streams. Once there, fertilizers pollute the water by encouraging too much algae growth. When the algae die, the oxygen levels often decrease too much to support fish and insect populations. Also, don't forget to sweep fertilizers off the pavement.

Not Composting? Get Started!
Composting is 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. To find out more about composting techniques, contact your local Soil and Water Conservation District or local Ohio State University Extension office. Just remember not to compost near the stream!

Don't Change the path of your stream

Purposefully using concrete or rocks to build artificial walls to "shore up" the banks often leads to *problems, not solutions.* If not designed and installed properly, these structures not only damage the land and stream, they can be *dangerous* for you, your family and downstream landowners.

OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF SOIL & WATER CONSERVATION

Haphazardly dumping concrete and rocks in your stream ACCELERATES STREAMBANK EROSION!

Simple Solutions:

- *Leave a vegetated riparian zone along your stream. This is your greatest defense against upstream changes in the watershed.*
- *If possible, let nature take its course. Remember streams meander for a reason.*
- *Consult your community engineer, Soil and Water Conservation District, or Chagrin River Watershed Partners before addressing stream issues.*

Why culverting your stream is not the answer...
Confining a stream in a pipe underground eliminates not only the stream but its floodplain as well. Downstream erosion and flooding are accelerated, and, groundwater, essential for stream flow during the hot summer months, becomes disconnected from the stream.

Backyard Habitat Improvement Ideas


ODNR

Water and Wildlife

A fresh water source is critical to wildlife. Consider installing a small pond or birdbath to provide essential habitat for birds, insects and amphibians.


ODNR

Get a toad or two! Toads are great insect-eaters consuming three times their weight in garden pests each day. Prey includes slugs (a favorite!), beetles, cutworms, flies, grasshoppers, gypsy moths, sow bugs, pill bugs, centipedes, millipedes, mole crickets, and ants. They won't harm your flowers or vegetables, either. To attract them, just place a flowerpot upside down, with one corner propped up so they can get underneath. Don't forget to provide a water source such as a saucer, bird bath at ground level, or a small pond.

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Life at the Water's Edge

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Enhance the Stream in Your Backyard & Beyond!

Clean Your Stream!

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

CUYAHOGA SOIL & WATER CONSERVATION DISTRICT
NATURAL RESOURCES CONSERVATION SERVICE

- Regularly remove old tires and other garbage from the water and stream banks.
- Educate all family members to refrain from littering.
- Participate in community clean-up days

Every bit helps! Remember to always wear proper footgear and gloves to prevent injuries!

Protect Your Storm Drains!

Storm drains and ditches in the watershed flow directly to streams and creeks. Never deposit waste or trash into storm drains. They can become clogged and flood nearby basements, including your own! Also, sweep up and reuse fertilizers left on sidewalks and driveways. Always recycle used motor oil and anti-freeze. Contact your County Solid Waste District for information on recycling locations in your community.

Maintain Septic Systems!

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

Simple Solutions:

- Have your septic system pumped regularly.
- Reduce or eliminate the amount of bleach, chemicals, oil and grease that you wash down the drain.
- Contact your County Board of Health for more information.

If you have just moved into a home, you may not know the size of the tank. In this case, you should contact your County Board of Health for information on your septic system and for information on pumping. The frequency of pumping depends on several factors:

- capacity of the septic tank
- volume of wastewater (related to size of household)
- amount of solids in wastewater (e.g. garbage disposals produce more solids)
- number of people in the household

Get Involved!

Stream Monitoring:

Sample the stream for macro-invertebrates. These insects live in the stream all year round and are an important indicator of water quality.

Storm Drain Stenciling:

Stenciling your storm drains is a reminder to "Dump No Waste, Drains to Creek." Contact your Soil and Water Conservation District for more information.

Stream Clean-ups:

Join your community for annual clean-up activities in the watershed or adopt-a-spot near your home and keep it clean.

Community Storm Water Management Plans:

As of March 2003 your community might have been required to develop a storm water management program by Ohio EPA. Your community needs your help planning and implementing their storm water management plan, which addresses water quality and water quantity problems in your community. Take the opportunity to voice your opinion and concerns or just find out what it's all about.

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Backyard Habitat Improvement Ideas

Help Monitor the Chagrin River

Ohio's landscape is changing rapidly. The health of our rivers and streams is closely linked to their surrounding watersheds. Responsible planning and continued monitoring can reduce the impact of inappropriate development along Ohio's waterways.

ODNR, DIVISION OF NATURAL AREAS & PRESERVES

Biological monitoring is a proven way of determining the quality of rivers and streams. Developed in 1983 by the Division of Natural Areas and Preserves, Ohio's Stream Quality Monitoring (SQM) Project uses a variety of biological testing techniques to compile information on the quality of the state's scenic rivers and streams. With the help of volunteers, the Ohio SQM Project maintains data on 20 state scenic river segments. Biological monitoring can be performed year-round, but most volunteers participate during warmer weather months, usually April through October. Ongoing monitoring is essential to protecting the health of Ohio's scenic rivers. Abnormal changes can indicate potential pollution problems, which would prompt further investigation.

Being an SQM volunteer is easy, fun and doesn't take a large commitment of time or any prior experience. Volunteers range from individuals and organizations to teachers and their entire classes. For more information, please call ODNR, Natural Areas and Preserves at (330) 265-6453 or look on ODNR website at http://www.ohiodnr.com/dnap/monitor.

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6 Style at the Water's Edge

Enhance Your Stream in Your Backyard & Beyond!

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Willoughby, Ohio 44096-0229
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