# Protecting Your Stream

**25 Ways to Protect your Stream and Streamside Property**

**Streamside Buffer**

There's more to a stream than the stream itself. The land right next to a stream or river is part of the riparian zone. This zone includes a stream, its banks, the surrounding floodplain and any connected wetlands.

To take good care of our streams it's important to take good care of the land surround them. The first and most important step is to establish a streamside buffer (also called a riparian buffer). This is an area along the edge of the stream that protects it from pollution and erosion.

Trees and plants growing here play a critical role in keeping the stream healthy.
The buffer zone absorbs nutrients and pollutants. It slows the runoff of rainwater into the stream and filters out sediments. Trees and shrub with deep root systems hold the soil and resist erosion. They also act like shock absorbers that diffuse the energy of floodwaters and thus reduce damage downstream. Trees cast shade that cools the water, reduces the growth of algae and improves fish habitat.

**Tips for Creating a Streamside Buffer:**

- Begin with a "no mow" or "no graze" zone along your stream banks. An ideal buffer is 35-75 feet wide. Make yours as wide as possible.
- Plant trees and shrubs in your buffer zone. They provide many long-lasting benefits and can be quite inexpensive to establish and maintain.
- Using shrubs will give your buffer a quick start; many reach full size in just a few years.
- Use the list of plants below as a guide to select native Pennsylvania grasses, trees and shrubs. They're beautiful and easy to maintain, and they attract wildlife.
- Where you do keep a lawn, set your mower blades at least three inches high. Taller grass slows runoff, resists drought and needs less fertilizer.

**Erosion and Bank Stabilization**

Well-planted streamside buffers are a proven, low-cost way to control erosion. Where buffers alone aren't enough, there are new and innovative techniques that can help solve the problem. It's best to work with experienced professionals as you look for the causes of, and the solutions

to, erosion problems. Your county planning commission, county conservation district or a regional watershed organization can help you find the local resources you need.

**Tips for Stabilizing Your Streambank**

- Limit the use of lawns along streams. The shallow roots of lawn grasses offer little protection against erosion. Never mow right to the edge of the stream.
- Use land management practices that protect streamside vegetation.
- Make sure you (and your consultant) fully understand the problem before trying to fix it.
- Be aware that a poorly designed solution on your property can make matters worse for your neighbors downstream.
- Work with your neighbors to manage the land along the entire length of a stream.
- Avoid or minimize channel narrowing and straightening.
- Contact your regional office of the Pennsylvania Department of Environmental Protection (DEP) before you alter a stream bank. Permits are likely to be required.

**Sediment and silt**

Let a glass of stream water sit for a while and you'll notice that a layer of silt settles out on the bottom. Every stream carries fine particles of soil. But too much soil can choke the life out of a stream.

Sediments clog the streambed, covering rocks and gravel where fish lay their eggs and smothering the other animals living there.

A major source of silt and sediment is construction – not just large-scale developments, but any project that disturbs the soil. Farming activities can also cause soil runoff. You can prevent excess silt and sediment with a few simple steps.

**Tips to Prevent Sediment**

- Use hay bales or a special silt fence to prevent soil from washing off construction sites.
- Cover piles of soil with tarps to protect them from rain.
- Never store loose soil near a stream.
- Use good farm practices like no-till cropping and planting winter cover crops to conserve soil.
- Contact your local DEP office or county conservation district if you see soil runoff from a construction site.

**Pollution**

Most stream pollution comes from manure, fertilizers, road salts, oil and other chemicals.

Called *non-point source pollution*, these come from the entire watershed rather than from any one point. Each adds only a small amount of pollution, but together, they add up to a huge problem.

Poorly stored trash, litter and yard debris also wash into streams. The result of the accumulated pollution and trash is an unattractive and unhealthy stream.

**Tips for Reducing Pollution**

- Base your fertilizer use on the conditions of your soil. More is not better; follow directions. Don't fertilizer plants near streams.
- Limit your overall use of pesticides and herbicides, and use extreme caution when using them near streams.
- Keep grazing and other farm animals out of and away from the stream. Contact your county conservation district or the U.S. Fish and Wildlife Service to find out about farm fencing programs.
- Compost yard waste. Don't bag lawn trimmings; leave them in place for effective recycling of nutrients.
- Don't store or dump manure, garden waste or grass clippings near streams.
- Don't burn refuse near stream banks.
- Store firewood, trash and other materials well away from streams.
- Never dump trash or chemicals into streams, storm drains or sewers.

**Managing Streamside Buffers**

Streamside buffers do more than protect the stream. A meadow or buffer with trees and shrubs is home to birds, butterflies and other fascinating creatures. To keep our local ecosystems thriving, learn more about the wildlife living there. The US Fish and Wildlife Service, Natural Resources conservation Service and Pennsylvania Game Commission are good sources of information.

Many landscape professionals specialize in ecologically friendly design. These experts can help you select and arrange planting to create a streamside garden. Contact your county Cooperative Extension for a list of referrals. Your area Pa DCNR-Service Forester can also provide assistance.

Invasive plants like purple loosestrife, mile-a-minute weed and Japanese knotweed crowd out desirable native species. You can find good information on native plants, invasive plants, and streamside buffers on the Internet.

This list (please refer to other table) represents a limited selection of Pennsylvania's native species appropriate for planting throughout the state along streams and in adjacent floodplains and wetlands. Plants are highly influenced by soil properties including moisture holding capacity, proximity to the water table acidity-alkalinity (pH). Choose plants adapted for your soil conditions, and your garden will thrive with less watering and without the use of chemical fertilizers or pesticides.

*This information was provided by the Pennsylvania Department of Environmental Protection, River Keeper, Morris Arboretum of the University of Pennsylvania with funds provided by the National Oceanic and Atmospheric Administration.*

**Pennsylvania's Native Plant Species**

Click here to learn about Pennsylvania's native plant species from Pennsylvania's Department of Conservation and Natural Resources

http://www.dcnr.state.pa.us/forestry/plants/nativeplants/

# Pennsylvania's Native Plant Species

| Common Name | Botanical Name | Sunlight | Moisture | Notes |
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| **FERNS** | | | | |
| Cinnamon Fern | Osmunda cinnamomea | Sun-shade | FACW | Cinnamon-colored fronds, most acid soils |
| Interrupted Fern | Osmunda claytoniana | Pt-full shade | FAC | Grows in clumps, common in woods & bogs |
| Sensitive Fern | Onoclea sensibilis | Sun - shade | FACW | Sunny or shaded swamps, marshes, moist meadows, forms colonizing masses. |
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| **GRASSES & SEDGES** | | | | |
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| Big Blue Stem | Andropogon geradii | Full sun | FAC | Tall clump forming, streambanks, moist meadows |
| Broom Sedge | Carex scoparia | Full sun | FACW | Moist open ground |
| False Nut Sedge | Syprus stigosus | Full sun – part shade | FACW | Moist fields, woods, swamps & streambanks |
| Lurid Sedge | Carex lurida | Full sun | OBL | Common in swamps, wet meadows & bogs |
| Riverbank Wild Rye | Elymus riparious | Full sun | FACW | Alluvial flats, meadows & streambanks |
| Sedge | Carex vulpinoidea | Full sun | OBL | Swampy areas |
| Soft Rush | Juncus effuses | Full sun | OBL | Swamps, moist fields & floodplains |
| Switch Grass | Panicum virgatum | Full sun | FAC | Clump grass; help control erosion |
| Tussock Sedge | Carex stricta | Full sun – part shade | OBL | Forms mound, swamps, streambanks |
| Virginia Wild Rye | Elymus virginicus | Full sun – part shade | FACW | Moist woods, meadow, streambanks |
| Wool Grass | Scripus cyperinus | Full sun | FACW | Tall clump forming, marshes, swales |
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| **FLOWERING** | | | | |

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| **PERENNIALS** | | | | |
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| Beard-Tounge | Penstemon digitalis | Full sun | FAC | White flowers in may-july, attracts hummingbirds, moist meadows |
| Bottle Gentian | Gentiana andrewsii | Full sun – part shade | FACW | Blue flowers in april – October, moist meadow species |
| Blue Vervain | Verbena hastate | Full sun – part shade | UPL | Blue flowers in june-september, streambanks & moist meadows |
| Blue-Eyed Grass | Sisyrinchium angustifolium | Full sun – part shade | FACW | White flowers in june –july, dry to moist meadows & fields |
| Boneset | Eupatorium perfoliatum | Part-full shade | FACW | White flowers in july – august, wet meadow species |
| Cardinal Flower | lobelia cardinalis | Full sun-full shade | FACW | Scarlet flowers in july-september, attracts butterflies & hummingbirds, streambanks and pond margins |
| Cut-Leaf Coneflower | Rudbeckia laciniata | Full sun-part shade | FACW | Yellow flowers in july-september , streambanks |
| Ironweed | Vernonia noveboracensis | Full sun | FACW | Purple flowers in august-september |
| Jack-in-the-pulpit | Arisaema triphyllum | Part-full shade | FACW | Green-purple flowers in april-june, bright red berries, moist woods, swamps & bogs |
| Joe-Pye Weed | Eupatorium fistulosum | Part shade | FACW | Purple flowers in august-september, attracts beneficial insects |
| New England Aster | Aster novae-angliae | Full sun – part shade | FACW | Purple flowers in august-october, dry to moist meadows |
| Partridgeberry | Mitchella repens | Part-full shade | FACU | White flowers in june-july, evergreen, ground cover, edible berry, moist woods |
| Purple Stemmed Aster | Aster puniceus | Full sun-part shade | OBL | blue flowers in aug – sept, Does well in moist meadows |
| Smooth Goldenrod | Solidago gigantea | Full sun – part shade | FACW | yellow flowers in july – November , Tall, dry to moist fields |
| Swamp Milkweed | Ascelpias incarnate | Full sun | OBL | rose flowers in July – August, Attracts butterflies, moist meadows, |
| Tall Meadow Rue | Thalictrum pubescens | Full sun-part shade | FACW | white flowers in june – july, Tall plant, moist meadows and swales |
| Wingstem | Verbesina alternifolia | Part shade | FAC | yellow flowers in august – October, Moist riverbanks, shaded lowlands |
| Wood Geranium | Geranium maculatum | Full sun-part shade | FACU | rose-pink flowers in april to may, Woods and fields |
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| **SHRUBS** | | | | |
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| American Elderberry | Sambucus Canadensis | Part shade | FACW | Edible berries, multi-stemmed, very high wildlife value |
| Arrowwood | Viburnum dentatum | Full sun – full shade | FA | Dark blue berries in fall, streambanks, pastures, |
| Black Chokeberry | Aronia melanocarpa | Part shade | FAC | White flowers, black berries, good fall color |
| Highbush Blueberry | Vaccinium | Part shade | FACW | Multi-stemmed, edible berries, fall color, |

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| | corymbosum | | | |
| Arrowwood | Viburnum dentatum | Full sun – full shade | FACW | Dark blue fruits in fall, streambanks, swamps, wet pastures, high wildlife value |
| Pussy Willow | Salix discolor | Full sun | FACW | Swamps and wet woods |
| Red Chokeberry | Aronia arbutifolia | Part shade | FACW | Red berries, high value for wildlife |
| Rosebay | Rhododendron maximum | Full shade | FAC | Showy flowers, evergreen, multi-stemmed, acid soils |
| Silky Dogwood | Cornus amomum | Full sun | FACW | Flowers in summer, blue berries, multi-stemmed, very high wildlife valued |
| Silky Willow | Salix sericea | Full sun – full shade | OBL | Good wildlife value, needs wet conditions |
| Spicebush | Lindera benzoin | Part – full shade | FACW | Bright red berries in fall, herbal uses, wildlife value |
| Swamp Dogwood | Cornus racemosa | Part shade | FAC | Colonizer, high wildlife value |
| Swamp Rose | Rosa palustris | Full sun | OBL | Showy & fragrant |
| Winterberry Holly | Ilex verticillata | Part shade | FACW | Showy berries in winter, high wildlife value, good colonizing shrub for stream banks |
| Witch-Hazel | Hamamelis virginiana | Full sun – full shade | FAC | Bright yellow flowers in winter, fragrant, medicinal uses |
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| **TREES** | | | | |
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| American Beech | Fagus grandifolia | Full sun – full shade | FAC | Large tree w/ smooth gray bark, moist, high wildlife value |
| Basswood | Tilia Americana | | FACU | Flowers aromatic with herbal uses |
| Black Ash | Fraxinus nigra | Full sun – pt. shade | FACW | Large tree in wet woods and bottomlands |
| Black Gum | Nyssa sylvatica | | FAC | Tall tree with outstanding all color, high wildlife value |
| Black Walnut | Juglans nigra | Full sun | FACU | Fast growing tall tree, high wildlife value |
| Black Willow | Salix nigra | | FACW | Catkins in spring; very fast grower |
| Green Ash | Fraxinus pennsylvanica | Part shade | FACW | Fast growth, good fall color |
| Hornbeam | Carpinus caroliniana | Full sun – full shade | FAC | Small tree with gray bark, moist woods |
| Pagoda Dogwood | Cornus alternifolia | Part shade | FAC | Small tree for moist woods and shaded ravines, dark blue fruit |
| Pin Oak | Quercus palustris | Full sun | FACW | Ornamental street tree, fall color, very high wildlife value |
| Red Maple | Acer rubrum | Full sun – full shade | FAC | Adapts to a range of moisture conditions, good fall color |
| River Birch | Betula nigra | Full sun – part shade | FACW | Notable for its peeling bark, floodplains, streambanks, wet woods & swamps |
| Shadbush | Amelanchier arborea | Part shade | FAC | Small tree with early spring flowers, delicious edible berries in summer |
| Shagbark Hickory | Carya ovata | Full sun – part shade | FAC | Shaggy gray exfoliating bark, very high wildlife value |
| Silver Maple | Acer saccharium | | FACW | Moist woods, streambanks, alluvial soils |

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| Swamp White Oak | Quercus bicolor | Part shade | FACW | Large tree with very high wildlife value, good wetland oak |
| Sweet Birch | Betula lenta | Full sun – part shade | FACU | Wintergreen scented bark & foliage; streambanks and woodlands |
| Sycamore | Platanus occidentalis | Full sun | FACW | Large tree with showy mottled bark; riverbanks, floodplains & alluvial soils |
| Tulip Tree | Liriodendron tulipifera | Full sun – full shade | FAC | Large tree with green/orange large flowers, fast growth, moist soils |
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