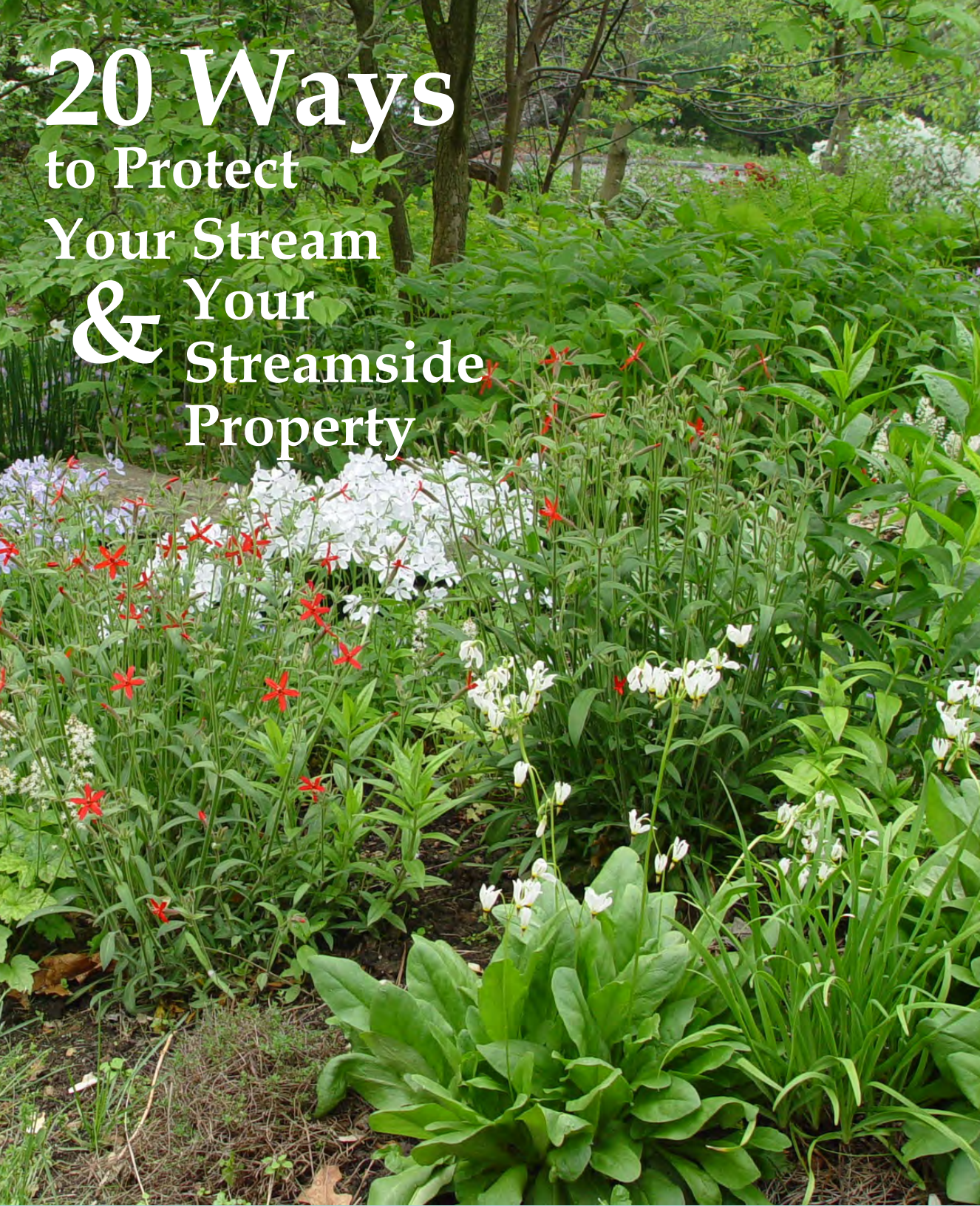


# 20 Ways to Protect Your Stream & Your Streamside Property



**To have healthy streams, it is important to take good care of the lands around them.**

**Stormwater is this country's number one water quality problem.** As it flows across the ground, stormwater picks up nutrients, bacteria, sediment, oil, and other pollutants and carries them to the local stream. As a watershed becomes built up and paved over, the amount of water that runs off the land during and following storms increases. Increased amounts of stormwater can worsen stream erosion and flood damages. By decreasing groundwater levels, greater amounts of stormwater also worsen droughts.

**All properties can be enhanced to prevent stormwater runoff and protect the watershed.** First protect existing trees and shrubs along streams and throughout your property. If a tree along your stream bank is in danger of falling, have it removed by a qualified expert, leaving the stump and roots in place so they can continue to provide stability to the bank. Also, plant a new tree to replace the removed tree.

*Why plant and protect streamside trees? A mature tree can reduce stormwater runoff by over 300 gallons, absorb over 120 pounds of air pollution annually, decrease heating and energy costs by 8 to 12%, and increase the value of your home 10 to 15%.*



**Protect vegetated, undeveloped land next to a stream.** These lands are known as riparian, or streamside, buffers. By protecting existing riparian buffers and planting new buffers, you can help minimize flood damages, encourage infiltration of stormwater, slow stream flow during storms, improve instream conditions for aquatic life, filter out pollutants, and protect against non-natural erosion.

**Riparian forests are the most beneficial types of buffers.**

**Do your part** to protect your watershed and stream for future generations. You can **beautify** and **protect** your property, **defend** clean drinking water, reduce flooding and drought, and help wildlife with **simple actions**.



## 10 Ways You Can Protect Watersheds and Local Streams

1. Plant native plants.
2. Avoid and control non-native invasive plants.
3. Increase your garden area and decrease your mowing area.
4. Raise your mower to cut at a height of 3 inches.
5. Recycle your yard waste and use it as mulch.
6. Avoid bare soil.
7. Use less fertilizer.
8. Avoid using pesticides.
9. Manage stormwater using rain barrels, by planting a rain garden, directing runoff into vegetated areas, and other best management practices.
10. Bag pet waste.



## Avoid and Control Invasive Plants

Among the most important things you can do to protect streams is to **avoid planting invasive plants and control those that have invaded**. Non-native invasives out-compete natives. They jeopardize threatened and endangered species, destroy wildlife habitat, change soil and water conditions, and diminish the land's beauty.

An estimated 5,000 invasive plant species are now found in natural areas, along rivers, in meadows and forests, in our National Parks and in our backyards. These introduced plants spread aggressively and can dominate a landscape quickly. Nearly \$10 billion dollars is spent in this country annually to control non-native invasives. The economic cost of invasives including damages is \$35 billion a year.

**Do your part to control the spread of invasive plants by removing them from your property and intentionally planting native plants instead.**

**If you have a stream concern, get help.** Contact your local municipality or county conservation district for resources and assistance in developing a plan that is right for you and your stream. Your regional Pennsylvania Department of Environmental Protection office can advise you about permit requirements for work along a stream.

## Prevent Pollution

**Avoid pesticides.** Manual and biological controls can be effective for small infestations. Use herbicides only when hand pulling and other non-toxic measures have proven ineffective. If you do choose to use a pesticide, apply the correct product at the correct time of year to maximize effectiveness and minimize side effects. Read and follow label directions.

**Pick up after your pets,** no matter where you live, because animal waste contains bacteria and nutrients that can affect our drinking water. If geese are a problem, make the site less attractive to the birds by maximizing riparian buffers by planting trees and shrubs.

**Never dump anything into storm drains.** Storm drains along roads and parking lots discharge untreated stormwater runoff into our streams. So clean up any spills or leaks that could wash into storm drains during a rain. Also, wash your car at a car wash where the water is properly treated or on your lawn where rinse water can infiltrate into the ground.



## 10 Ways Streamside Landowners Can Protect Watersheds and Local Streams

1. Protect existing native trees and shrubs.
2. Create a no-mow zone along the stream.
3. Plant a buffer of native trees and shrubs.
4. If you have livestock, use fencing to limit stream access.
5. Don't dredge, fill, dump, or backfill stream channels or floodplain areas.
6. Store soil, mulch, compost, yard waste and firewood outside of the stream corridor.
7. Give the stream room – don't encroach with structures.
8. Monitor the stream for changes.
9. Partner with neighbors and local organizations to create healthy stream stretches.
10. Work with nature. Get professional help to address stream issues.



## Help keep healthy waters healthy

**Capture, slow down and infiltrate stormwater runoff.** Reclaim stormwater and make it an asset. Plant a rain garden; use a rain barrel to collect rooftop runoff; direct runoff from your house, driveway, etc., into a vegetated area; install pervious pavement.

**Create a no-mow zone along your stream.** Mowing compacts soil, limits infiltration, encourages erosion, and provides no ecological benefit to the stream. And lawns do not make efficient buffers nor are they very effective for managing stormwater.

Leaving riparian buffers uncut through the growing season reduces stormwater runoff and helps improve water quality. Better yet, **plant buffer lands with native trees, shrubs and other plants.**

**Discourage new buildings or other structures in the floodplain and remove flood-prone structures.** When stormwater runoff causes streams to overtop their banks, open floodplains serve as a natural release valve and dissipate flood energy. Flooding is a natural and necessary river function, but preserving open space next to streams and rivers can decrease flood damages.



## Resources

- Backyard Conservation, Natural Resource Conservation Service, <http://www.nrcs.usda.gov> (search "Backyard")
- Native Plants of the Northeast, Donald J. Leopold, Timber Press, Inc., 2005
- Native Plants for Wildlife Habitat and Conservation Landscaping, U.S. Fish & Wildlife Service, <http://www.nps.gov/plants/pubs/chesapeake/>
- The Plants of Pennsylvania - An Illustrated Manual, Anne Fowler Rhoads and Timothy Block, University of Pennsylvania Press, 2000
- Plant Invaders of Mid-Atlantic Natural Areas, National Park Service, US Fish and Wildlife Service, <http://www.nps.gov/index.htm> (search for "Plant Invaders")
- Riparian Forest Buffer Guidance, PA DEP, <http://www.depweb.state.pa.us/> (search "Riparian")

## Photos Credits

Delaware Riverkeeper Network; Frank Miles; North Creek Nursery, Landenberg PA





# Recommended Native Plants to Help Protect Clean Streams

Because research has shown that the healthiest riparian buffers are a minimum of 100 feet in width, you should try to establish as wide a streamside buffer as possible. You can also increase the water quality benefits of a riparian buffer by planting a variety of native trees and shrubs. Trees shade the stream keeping water temperatures cool in summer months and improving oxygen levels for fish. Leaves and branches falling into the stream provide food and habitat for the aquatic insects on which fish feed. Shrub borders and perennial flower beds increase infiltration, provide habitat for wildlife, beautify your property, increase its market price, and decrease the time you spend mowing. Use this list to begin selecting plants for your riparian buffer today.

**Key:** LIGHT: SU = full sun; PS = part shade; SH = shade. MOISTURE: D = dry; M = moist; W = wet.

## Ferns



**Osmunda cinnamomea** - cinnamon fern  
Light: PS, SH - Moisture: M, W - Height: 2'-4'  
Spreads in low wet areas; deer resistant



**Matteuccia struthiopteris** - ostrich fern  
Light: PS, SH - Moisture: M, W - Height: 3'-5'  
Spreads along banks of small streams; deer resistant

## Grasses



**Panicum virgatum** - switchgrass  
Light: SU, PS - Moisture: D, M, W - Height: 3'-6'  
Adaptable warm-season grass; seeds or plants available



**Sorghastrum nutans** - Indian grass  
Light: SU - Moisture: D, M - Height: 3'-8'  
Warm season clump grass; apply by seed; deer resistant

## Herbaceous Perennials



**Asarum canadense** - wild ginger  
Light: PS, SH - Moisture: M - Height: 0.5'  
Semi-evergreen ground cover



**Asclepias incarnata** - swamp milkweed  
Light: SU, PS - Moisture: M, W - Height: 4'-6'  
Butterfly host; deer resistant



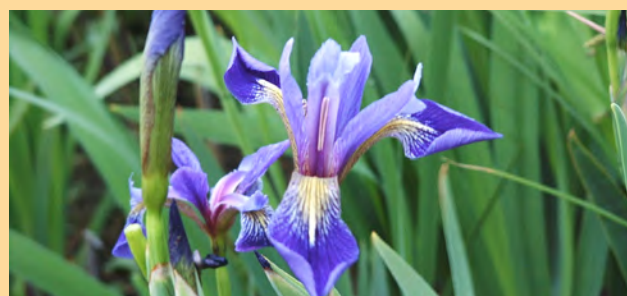
**Conoclinium coelestinum** - blue mistflower  
Light: SU, PS - Moisture: D, M, W - Height: 1'-3'  
Adaptable; deer resistant



**Echinacea purpurea** - purple coneflower  
Light: SU, PS - Moisture: M - Height: 3'-6'  
Long bloom period; attracts finches, many varieties



**Eurybia divaricata** - white wood aster  
Light: PS, SH - Moisture: D, M - Height: 0.5'-2'  
August to October bloom; deer resistant



**Iris versicolor** - larger blueflag  
Light: SU, PS - Moisture: M, W - Height: 0.5'-1.5'  
Spring bloom; adaptable; deer resistant



**Lilium superbum** - turk's cap lily  
Light: SU, PS - Moisture: M, W - Height: 4'-8'  
Red/orange/yellow flowers; takes several years to bloom



**Lobelia cardinalis** - cardinal flower  
Light: SU, PS - Moisture: M, W - Height: 2'-4'  
Long bloom time; attracts butterflies & hummingbirds



**Monarda didyma** - scarlet bee-balm  
Light: SU, PS - Moisture: M, W - Height: 2'-5'  
Aromatic; attracts butterflies; needs room to spread



**Penstemon digitalis** - foxglove beardtongue  
Light: SU, PS - Moisture: D, M - Height: 2'-4'  
Attracts hummingbirds; many varieties



**Solidago rugosa** - wrinkleleaf goldenrod  
Light: SU, PS - Moisture: M, W - Height: 1'-6'  
Tough plant; spreads; deer resistant

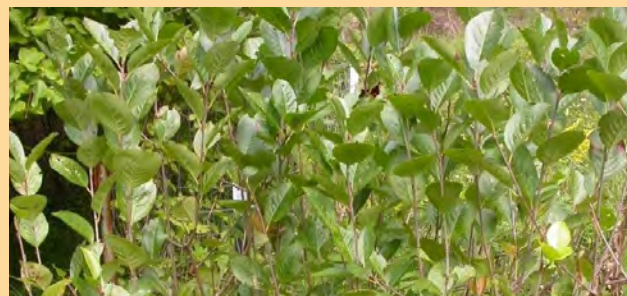


**Vernonia noveboracensis** - New York ironweed  
Light: SU, PS - Moisture: M, W - Height: 3'-8'  
Erect tough plant; spreads; attracts butterflies

## Shrubs



**Alder incana ssp. rugosa** - speckled alder  
Light: SU - Moisture: M, W - Height: 10'-30'  
Tolerates flooding and drought; spreads; bank stabilizer.



**Cornus amomum** - silky dogwood  
Light: SU, PS - Moisture: M, W - Height: 6'-10'  
Spreads; bank stabilizer; high wildlife value



**Lindera benzoin** - spice bush  
Light: PS, SH - Moisture: M, W - Height: 6'-15'  
High wildlife value; deer resistant



**Photinia pyrifolia** - red chokeberry  
Light: SU, PS - Moisture: D, M, W - Height: 6'-12'  
Red fall color; bank stabilizer; deer resistant



**Physocarpus opulifolius** - ninebark  
Light: SU, PS - Moisture: M, W - Height: 5'-12'  
Peeling bark; bank stabilizer; deer resistant



**Rubus odoratus** - purple flowering raspberry  
Light: PS, SH - Moisture: M - Height: 3'-6'  
Spreads; deer resistant



**Sambucus nigra ssp. canadensis** - American elderberry  
Light: SU, PS, SH - Moisture: D, M, W - Height: 6'-12'  
Bank stabilizer; high wildlife value; edible berries



**Viburnum dentatum** - southern arrowwood  
Light: SU, PS, SH - Moisture: D, M, W - Height: 6'-12'  
Adaptable; bank stabilizer; high wildlife value; deer resistant

## Trees



**Acer rubrum** - red maple  
Light: SU, PS, SH - Moisture: D, M, W - Height: 40'-60'  
Red spring flowers; adaptable; streambanks & floodplains



**Acer saccharinum** - silver maple  
Light: SU, PS, SH - Moisture: M, W - Height: 75'-100'  
Fast growing; streambanks & floodplains



**Amelanchier arborea** - common serviceberry  
Light: PS, SH - Moisture: D, M - Height: 35'-50'  
Early bloom; high wildlife value; deer resistant



**Betula nigra** - river birch  
Light: SU, PS - Moisture: M, W - Height: 50'-75'  
Fast growing, adaptable; streambanks & floodplains



**Cornus florida** - flowering dogwood  
Light: SU, PS - Moisture: D, M - Height: 20'-40'  
Red fall color; uplands; fall migratory birds eat berries



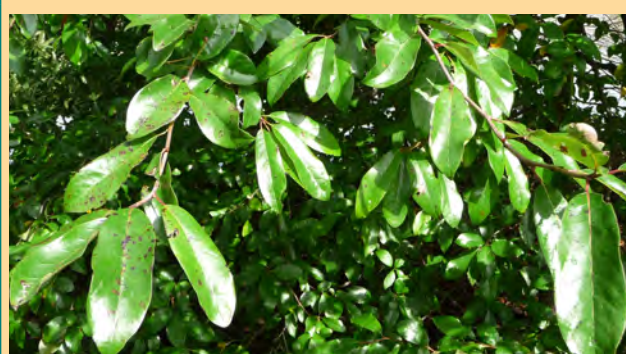
**Fagus grandifolia** - American beech  
Light: SU, PS - Moisture: M - Height: 50'-100'  
Yellow fall color; hillsides near streams; high wildlife value



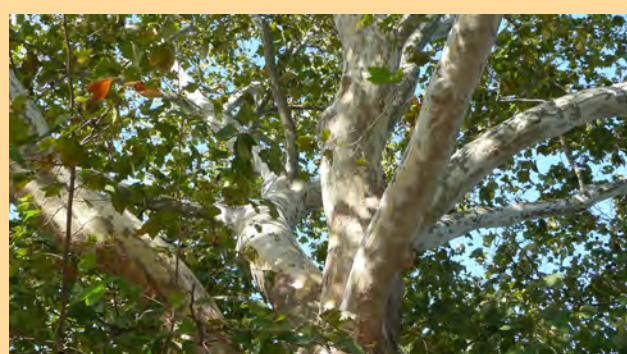
**Gleditsia triacanthos** - honeylocust  
Light: SU - Moisture: D, M, W - Height: 50'-75'  
Yellow fall color; adaptable; streambanks & floodplains.



**Liquidambar styraciflua** - sweetgum  
Light: SU, PS - Moisture: M, W - Height: 60'-100'  
Scarlet fall color; adaptable; streambanks & floodplains



**Nyssa sylvatica** - blackgum  
Light: SU, PS - Moisture: D, M, W - Height: 30'-75'  
Early fall colors; adaptable; lowland & upland; acidic soils



**Platanus occidentalis** - American sycamore  
Light: SU, PS - Moisture: M, W - Height: 75'-100'  
Showy bark; streambanks & floodplains



**Quercus palustris** - pin oak  
Light: SU - Moisture: M, W - Height: 50'-80'  
Adaptable; floodplains; high wildlife value



**Quercus bicolor** - swamp white oak  
Light: SU, PS - Moisture: M, W - Height: 60'-100'  
Peeling bark; adaptable; floodplains; high wildlife value



From the Highlands to the Delaware Bay, the Delaware Riverkeeper Network gives voice to the Delaware River and all the communities that depend upon its watershed.

Delaware Riverkeeper Network  
925 Canal Street, Suite 3701  
Bristol, PA 19007  
www.delawareriverkeeper.org

### Photos Credits

Delaware Riverkeeper Network  
Edge of the Woods Native Plant Nursery, Orefield PA  
North Creek Nursery, Landenberg PA  
Octoraro Native Plant Nursery, Kirkwood PA  
Pinelands Nursery, Columbus NJ  
Redbud Native Plant Nursery, Glen Mills PA

This brochure was financed in part by the Pennsylvania Department of Environmental Protection's Healthy Waters Program with funds provided by the U.S. Environmental Protection Agency.

