

## Plant Species Appropriate for Pennsylvania Buffers and Shorelines

Appropriate vegetation is the key to effective buffer strips and shoreline stabilization. These plant species provide beneficial habitat, anchor shoreline soils, dissipate wave energy, and enhance the beauty of shoreline property. Some of the species listed here may not be appropriate in all areas. You should consult one of the organizations listed below to verify which plants will do best under your local conditions.

### Shrub/Brush Species

Buttonbush	<i>Cephalanthus occidentalis</i>
Red-Osier Dogwood	<i>Cornus stolonifera</i>
Common Witchhazel <sup>S</sup>	<i>Hamamelis virginiana</i>
Chokeberry <sup>S</sup>	<i>Prunus virginiana</i>
Peach-Leaved Willow	<i>Salix amygdaloides</i>
Pussy Willow	<i>Salix discolor</i>
Sandbar Willow	<i>Salix interior</i>
Black Willow	<i>Salix nigra</i>
Elderberry	<i>Sambucus canadensis</i>

### Lower Bank and Nearshore

Sweet Flag	<i>Acorus calamus</i>
Water Plantain	<i>Alisma subcordatum</i>
Bluejoint Grass	<i>Calamagrostis canadensis</i>
Creeping Spike Rush	<i>Eleocharis acicularis</i>
Blue Flag Iris	<i>Iris virginica</i>
Torrey's Rush	<i>Juncus torreyi</i>
Switch Grass	<i>Panicum virgatum</i>
Arrowhead	<i>Sagittaria latifolia</i>
Hardstem Bulrush	<i>Scirpus acutus</i>
Dark Green Rush	<i>Scirpus atrovirens</i>
River Bulrush	<i>Scirpus fluviatilis</i>
Prairie Cord Grass	<i>Spartina pectinata</i>
Blue Vervain	<i>Verbena hastata</i>
Common Cattail <sup>+</sup>	<i>Typha latifolia</i>

<sup>+</sup> *Cattails are invasive and can become a problem. However, they are very effective at dissipating wave energy and can become established under difficult situations. Other plantings should be chosen accordingly.*

### UNDESIRABLE SPECIES!

Box Elder*	<i>Acer negundo</i>
Garlic Mustard*	<i>Alliaria officinalis</i>
Japanese Honeysuckle*	<i>Lonicera japonica</i>
Tartarian Honeysuckle*	<i>Lonicera tatarica</i>
Purple Loosestrife*	<i>Lythrum salicaria</i>
Reed Canary Grass*	<i>Phalaris arundinacea</i>
Common Buckthorn*	<i>Rhamnus athartica</i>
Glossy Buckthorn*	<i>Rhamnus frangula</i>
Multiflora Rose*	<i>Rosa multiflora</i>

### Banks and Slopes

Sideflowering Aster <sup>S</sup>	<i>Aster laterifolius</i>
Big Bluestem	<i>Andropogon gerardi</i>
Gray Sedge <sup>S</sup>	<i>Carex amphibola</i>
Common Wood Sedge <sup>S</sup>	<i>Carex blanda</i>
Pennsylvania Sedge <sup>S</sup>	<i>Carex pennsylvanica</i>
Brown Fox Sedge	<i>Carex vulpinoidea</i>
Canada Wild Rye	<i>Elymus riparius</i>
Streambank Rye	<i>Elymus villosus</i>
Silky Wild Rye	<i>Elymus virginicus</i>
Fowl Meadow Grass	<i>Glyceria striata</i>
Torrey's Rush	<i>Juncus torreyi</i>
Evening Primrose	<i>Oenothera biennis</i>
Switch Grass	<i>Panicum virgatum</i>
Indian Grass	<i>Sorghastrum nutans</i>
Prairie Cord Grass	<i>Spartina pectinata</i>
Blue Vervain	<i>Verbena hastata</i>

\* not native, <sup>S</sup> shade tolerant

### Wildflowers (non-stabilizing)

Columbine	<i>Aquilegia canadensis</i>
Jack-in-the-Pulpit <sup>S</sup>	<i>Arisaema triphyllum</i>
Green Dragon <sup>S</sup>	<i>Arisaema dracontium</i>
Swamp Milkweed	<i>Asclepias incarnata</i>
Turtlehead <sup>S</sup>	<i>Chelone glabra</i>
Shooting Star <sup>S</sup>	<i>Dodecatheon meadia</i>
Joe-Pye Weed	<i>Eupatorium maculatum</i>
Spotted Jewelweed <sup>S</sup>	<i>Impatiens capensis</i>
Cardinal Flower <sup>S</sup>	<i>Lobelia cardinalis</i>
Virginia Bluebells <sup>S</sup>	<i>Mertensia virginica</i>
Blue Phlox	<i>Phlox divaricata</i>
May Apple <sup>S</sup>	<i>Podophyllum peltatum</i>
Solomon's Seal <sup>S</sup>	<i>Polygonatum canaliculatum</i>
Swamp Buttercup <sup>S</sup>	<i>Ranunculus septentrionalis</i>
Bloodroot <sup>S</sup>	<i>Sanguinaria canadensis</i>
False Solomon's Seal <sup>S</sup>	<i>Smilacina racemosa</i>
Spiderwort	<i>Tradescantia ohiensis</i>
White Trillium <sup>S</sup>	<i>Trillium grandiflorum</i>
Prairie Trillium <sup>S</sup>	<i>Trillium recurvatum</i>
Big Merrybells <sup>S</sup>	<i>Uvularia grandiflora</i>
Culver's Root	<i>Veronicastrum virginicum</i>
Golden Alexanders	<i>Zizia aurea</i>

### Cover Crops

Annual Ryegrass*	<i>Lolium multiflorum</i>
Perennial Ryegrass*	<i>Lolium perenne</i>
Smartweed	<i>Polygonum punctatum</i>
Yellow Coneflower	<i>Ratibida pinnata</i>
Blackeyed Susan	<i>Rudbeckia hirta</i>



## Shoreline Buffer Strips

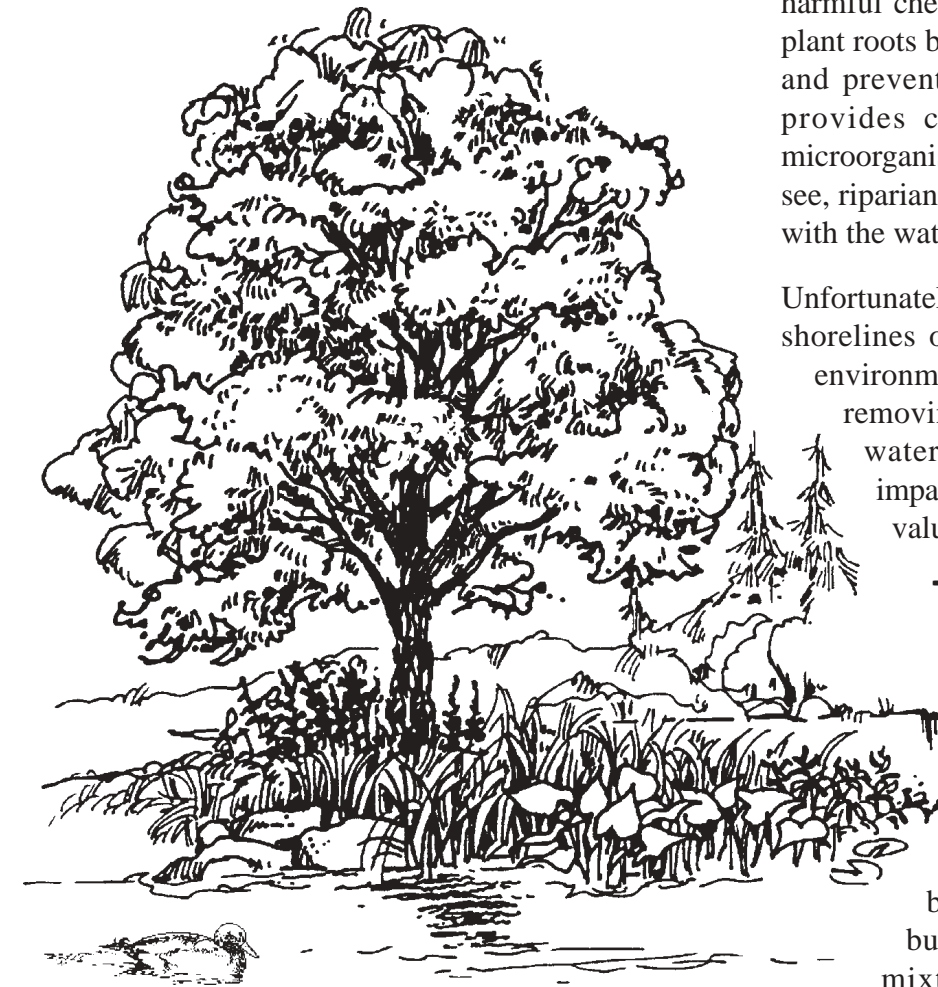
Picture an idyllic lake or streamside setting. The sun glimmers on clear, clean water. Children wading along the shore. A fisherman casting for elusive bass. A lushly vegetated shoreline that blends into the surrounding landscape.

The interrelationship between a lake or stream and its shoreline is important. The shoreline, or riparian zone, is the last line of defense against forces that may otherwise pollute a healthy body of water. A naturally-vegetated shoreline filters runoff generated by surrounding land uses in the watershed, removing harmful chemicals and nutrients. At the same time, plant roots bind to the soil helping to keep it in place and prevent soil erosion. The riparian zone also provides critical habitat for aquatic insects, microorganisms, fish and other animals. As you can see, riparian zones are unique areas, linking the land with the water.

Unfortunately, as landscapes are developed, natural shorelines often are damaged. In urban and rural environments, for instance, cutting, mowing, or removing vegetation can lead to soil erosion, water pollution, degraded aquatic habitat, impaired aesthetics, and a reduction in property values.

### The Buffer Concept

Ecologists, water quality specialists, land planners and lake managers all agree that a naturally-vegetated buffer strip along the edge of a lake, stream or wetland, is critical to maintaining a healthy water body. The buffer concept is fairly simple: A riparian buffer should ideally be comprised of a mixture of trees, shrubs or grasses that naturally exist in an area. Buffers usually



Pennsylvania Department of Environmental Protection  
Bureau of Watershed Management  
P.O. Box 8555  
Harrisburg, PA 17105-8555  
717-783-7420  
www.dep.state.pa.us

Stream Relief Program "Toolkit"  
Pennsylvania Department of Environmental Protection  
Bureau of Watershed Management  
P.O. Box 8555  
Harrisburg, PA 17105-8555  
717-787-5267  
www.dep.state.pa.us

### Further Assistance

North American Lake Management Society  
P.O. Box 5443  
4513 Vernon Blvd., Suite 100  
Madison, WI 53705  
608-233-2836  
www.nalms.org

PA Fish & Boat Commission  
Habitat Management Section  
450 Robinson Lane  
Bellefonte, PA 16823-9685  
814-359-5185  
www.fish.state.pa.us

Pennsylvania Lake Management Society  
P.O. Box 425  
Lansdale, PA 19446  
570-226-3865  
www.palakes.org

Partners for Wildlife  
U.S. Fish & Wildlife Service  
315 South Allen Street, Suite 322  
State College, PA 16801  
814-234-4090

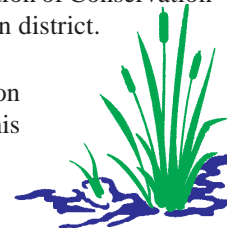
Forest Stewardship Program  
Pennsylvania Department of Conservation & Natural Resources  
Bureau of Forestry  
P.O. Box 8552  
Harrisburg, PA 17105-8552  
717-787-2106  
www.dcnr.state.pa.us

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The objective of the series is to provide residents with a greater understanding of how human actions can help protect water quality. For more information about other publications in this series visit the PACD website or contact the Pennsylvania Association of Conservation Districts, Inc. at 25 North Front Street, Harrisburg, PA 17101 (717) 238-PACD (7223) or your county conservation district.

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require little maintenance, and the use of fertilizers and pesticides within the buffer is discouraged. Buffer strip characteristics such as plants sizes may vary. A buffer may be twenty-five feet wide around a small urban pond, or hundreds of feet wide along a pristine rural lake. Intrusions into the buffer may be strictly controlled, or flexible to allow for user access.

## Buffer Strip Benefits

The benefits of buffer strips include:

- **Runoff filtering:** As runoff from adjacent lands flow through a buffer, pollutants and sediment are filtered and removed. Excess nutrients from lawn fertilizers, animal manure and failing septic systems, for instance, can be taken up and used by plants. In addition, buffer grasses can help slow down the velocity of surface runoff.

*Depending on the width and characteristics of the buffer, as much as 70 to 95 percent of incoming sediment, and 25 to 60 percent of incoming nutrients and other pollutants can be removed from the runoff.*

- **Bank stabilization:** Natural buffers that extend down to the water's edge can be very effective in stabilizing banks and preventing erosion. In contrast to conventional turfgrass (which is shallow-rooted), natural riparian

vegetation often has dense, deep root systems that firmly anchor shoreline soils.

- **Preservation of fish and wildlife habitat:** Many aquatic organisms, particularly insects, spend substantial portions of their life cycles in upland environments. Buffers provide a critical transition zone between upland and lowland aquatic/wetland areas. Buffer plants also can shade shorelines providing necessary habitat for fish and other wildlife. Depending on the width, buffers also can shield sensitive species, particularly birds, from potentially disruptive activities occurring on adjacent land uses.
- **Screening noise:** Beyond protecting wildlife uses, buffers also can preserve the quality of lake recreational uses by filtering noise. Forested buffers, in particular, can effectively intercept noise from adjacent highways and industrial operations.
- **Preservation of aesthetic values:** Lake and streamside property owners often have varying opinions about what constitutes "appropriate" shoreline landscaping. However, most will agree that "natural" is better than "artificial." Even a narrow buffer can enhance the view. In addition to reducing noise levels, forested buffers can help provide privacy from surrounding developments.

## How to Create Effective Buffer Strips

Before beginning any activity that alters an existing lake, stream or wetland, contact your County Conservation District for required permitting and other helpful information.

Buffer characteristics can vary widely depending on local circumstances. However, it is important to understand certain basic, minimum criteria.

- **Buffer width:** Any width of natural vegetation will provide some benefits, however, a 25 foot minimum width is most often recommended. Wider buffers (e.g., 50 to 100 feet) should be established for larger or more sensitive lakes. The U.S. Department of Agriculture recommends "filter strips" of 66 to 99 feet for water quality protection.
- **Buffer intrusions:** While a continuous, uninterrupted buffer is preferable for protection of water quality and habitat, some flexibility may be needed to provide access to beaches, piers and for other uses. Access typically is provided via a mown footpath. Less intrusive pedestrian access could be provided via a stepping stone trail. Paving through a buffer is discouraged.
- **Buffer vegetation:** Planting native plant species is preferred over using non-native species. Because, in general, native species are established more successfully and are easier to maintain. Properly selected native plants, for instance, are usually able to withstand extended periods of drought or inundation. As you can see, planting native species can potentially save a landowner replanting time and money.

Non-native species on the other hand, often called exotics, can create many problems for the landowner and the surrounding community and be difficult to establish and maintain. Many exotics become invasive, choke out preferred plants and can pose other risks to lakes and streams.

Buffer vegetation also should reflect local needs and conditions. For example, a forested buffer is



appropriate if noise screening is desired—but it may not be appropriate if local residents desire an unobstructed view. Similarly, some property owners will prefer a greater mix of showy wildflowers that may be less functional than other plants but will enhance the beauty of the shoreline.

Buffer installation often begins with the removal of existing, undesirable vegetation. (Removal methods involving earth disturbances may require a permit.) Planting should begin at or below the normal water elevation with wetland species and should proceed up the shoreline slope with water-tolerant and upland species. While buffer vegetation is being established, mowing and/or selected use of approved herbicides may be necessary to control the spread of aggressive, non-native or other undesirable plants.

- **Buffer maintenance:** Once the buffer is well established (typically within 1-3 years), maintenance will involve occasional mowing or measures to control weeds and maintain native plant diversity. If certain noxious weeds need additional control, limited use of approved herbicides may be appropriate in localized areas. Use of fertilizer is not necessary and should be avoided in the buffer strip.

For additional information on establishing or maintaining buffer strips, contact your county conservation district or Penn State extension office.

