

# The Reedville *Living Shoreline*

Teaching Garden



This garden was designed to demonstrate an environmentally friendly approach to shoreline stabilization and natural landscaping. Established in 2005 by the Reedville Fishermen's Museum, with funding from the Virginia Soil and Water Conservation Service, the garden is currently managed by the Northern Neck Master Gardeners. Groups from throughout Virginia benefit from this volunteer, community effort by experiencing a real life context for beautification and conservation of privately owned shorelines.

*Welcome -- Enjoy the Garden!*

## Call to Action

The Reedville Living Shoreline garden is situated on picturesque Cockrell's Creek, covering a fifty by one hundred foot slope between the creek and an asphalt parking lot. While the major concern was pollution of the Creek, the garden was established to address several problems.

Rain water washed off the surrounding buildings and rushed unimpeded across the parking lot, eroding a gully into the narrow strip of land, and depositing oil and gas residue and sediment into the Creek.



Before the garden, the water view was completely obstructed by tall weeds and invasive greenbrier, honeysuckle vines and poison ivy. The shoreline collected trash and debris, creating an unsightly mess. Grass growing in a wet area was mowed to the water's edge, allowing nitrogen and fertilizer from adjoining lawns to wash into the creek, adding to the creek's pollution.

Concern for the creek's water quality and a desire to educate the public on conservation landscaping techniques forged a partnership of community organizations. The call to action: beautify the area, rid the marsh and shoreline of invasive plants, stop erosion, and improve water quality. Many waterfront landowners have the same concerns.

By sharing the steps taken to establish the Reedville Living Shoreline Garden, the Master Gardeners will demonstrate methods to maintain water quality and enhance the rural, natural beauty that attracted you to Virginia's Northern Neck and the Chesapeake Bay.

## The Living Shoreline

A living shoreline is a natural system for shoreline stabilization that involves buffering rivers and creeks with native grasses, shrubs, and wildflowers, which hold soil. This natural, rather than man-made, approach has numerous benefits: provides shallow water habitat for aquatic animals; allows shoreline access to wildlife, such as nesting ducks and muskrats; absorbs wave energy and often costs less than rock or wooden walls.

Living Shorelines improve water quality as the growing vegetation provides a series of natural filters which trap silt and pollutants propelled by rainwater, including nitrogen and phosphorus.

Approximately thirty percent of pollutants move in surface runoff; the balance moves via sub-surface flow. When this flow encounters the root system of vegetation, pollutants are trapped or absorbed, thereby improving water quality.

Plantings are often combined with bioengineered material. When necessary, the strategic placement of a low profile fill material such as sand, rock, or coconut-fiber logs may be used to restore and protect the natural function of the shoreline.

Living Shoreline designs will **not** work in all situations. High energy shorelines, such as those bordering the bay with a long fetch, have too much wave energy for plants to survive.

*Living Shorelines for the Chesapeake Bay Watershed* pamphlet provides an overview on creating an environmentally friendly shoreline. Download from [www.cbf.org/document.doc?id=60](http://www.cbf.org/document.doc?id=60) or contact the Chesapeake Bay Foundation at (804) 780-1392.

The Virginia Institute of Marine Science also has helpful information at [www.ccrm.vims.edu/coastal\\_zone/living\\_shorelines/index.html](http://www.ccrm.vims.edu/coastal_zone/living_shorelines/index.html)

## **Garden Design**

Whether the goal is to manage surface water runoff or to prevent erosion from wave action, project design is site specific. A combination of factors should be considered as water movement is influenced by wind direction, soil conditions, sun or shade, grade, and plants.

As you consider the approach for your shoreline, there are several steps you may want to take. First walk your property and note its features. Do you have a problem with a slope, erosion or minimum sunlight? Test your soil. Is it well drained or does it drain poorly? What is its texture? What plants are growing in the area?

To establish the Reedville Shoreline Garden, the shoreline was cleared of trash and debris. Tall saltbush and cattails were cut down to allow sunlight to reach the existing marsh grasses. Given the gradual slope of the site, no grading was necessary. However, equipment was used to bring in rock for the marsh sill, clear the shoreline of debris and prepare the soil for planting.

Following recommendations from Master Gardeners, the wet area adjacent to the garden is no longer mowed, which has allowed wetland native grasses and herbaceous plants to regenerate in the area.

A stone sill was placed away from the shoreline and backfilled with sand to encourage outward migration of existing marsh grass in front of a low eroding bank.

## Conservation Landscaping

To guide the garden design, Northern Neck Master Gardeners adopted the principles of conservation landscaping, which are: to create a design to benefit the environment and function well for personal use; provide wildlife habitat by using native plants; control invasive alien plants, and promote healthy soils to conserve and improve water quality. The overarching principle: minimize the impact upon a site's natural features.

A shoreline garden of native plants and shrubs embodies these principles. Master Gardeners chose commercially available native plants for the demonstration garden so the general public might readily purchase them.

As you tour the garden, plant labels are used for identification wherever possible. For additional information, refer to the enclosed list which identifies plants and their key requirements.

This publication from the U. S. Fish and Wildlife Service is an excellent resource: *Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed*. Available online at [www.nps.gov/plants/pubs/Chesapeake/](http://www.nps.gov/plants/pubs/Chesapeake/)

## Why Native Plants?

Nonnative plants may displace naturally occurring vegetation and could upset nature's balance and negatively impact wildlife. Native plants have adapted to the local climate, soils and insects. Consequently, native plants require less water, fertilizer and pesticide. Hence, fewer chemicals carried into the Chesapeake Bay.

However, choosing native plants for your garden does not mean you can forget about the "right plant, right place" mantra.

# Controlling Invasive Plants

Invasive plants such as honeysuckle and greenbrier, and poison ivy are alien plants that cover and crowd out native plants that feed and shelter wildlife.

Phragmites is an invasive marsh grass which can grow to twelve feet high with roots forming a mat up to several feet thick. This dense growth crowds out beneficial plants, increases the risk of wildfire, and obstructs water movement which encourages mosquito breeding. At the head of the creek, a well established stand of Phragmites was sprayed in the beginning phase of the garden. However, Phragmites continues to grow on adjoining property.



1Phragmites

The most effective control is the application of glyphosate herbicide, approved for aquatic use, in the fall after the other marsh plants have died back for the season. Spraying in subsequent years may be necessary for long-term control.

## Right Plant, Right Place

A wide variety of grasses, shrubs, flowers and trees are adapted to both fresh and salt water. Where shoreline plants grow depends on the frequency and salinity of tidal inundation, salt spray, wind and wave action. Site conditions such as elevation, slope, soil type, sunlight, and rainfall should be considered when selecting the plants. These elements may create many different planting zones within each site. Success is achieved when a plant's key requirements are in harmony with the different conditions present at most sites.

In the teaching garden, the central path marks the boundary between the generally moist and generally drier soil conditions.

## Upland Slope Zone

Immediately adjacent to the parking lot, the soil is extremely dry as rainwater flows across quickly down the slope. Plants that thrive in dry, well-drained soil were needed here; such as: Wax myrtle, butterfly weed, asters and beebalm. These herbaceous and woody plants help stabilize the slope by spreading the runoff as it sheets from the parking lot.



2 Butterfly weed

Leftover gravel from the parking lot construction created dry conditions and compacted soil at the corner of the parking lot. A sampling of commercially available native grasses are planted here to demonstrate their ornamental features. Naturally occurring native switchgrass can also be seen just at the top edge of the bank.

## Fresh Water Wet Zone

Below the path, the area is low and wet, primarily from fresh groundwater seepage. This area is also inundated by extreme storm tides.



3 Cardinal flower

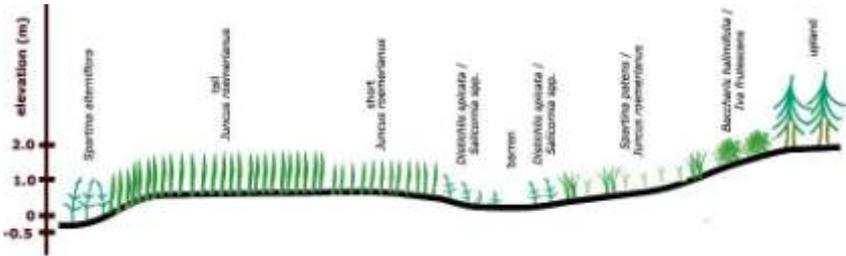
Some freshwater plants will not survive if salt water intrudes, while others are adapted for varying salinity levels. Plants such as marsh hibiscus, iris, cardinal flower and Joe Pye weed were chosen for this area. Natives such as soft rush, seedbox and seaside goldenrod have reappeared on their own since the project began.

# Marsh Fringe Zone

The marsh fringe is the area of shoreline between mean low and just above mean high water. Already growing in this area were several native saltmarsh grasses: smooth cordgrass, salt meadow hay, Olney three-square, and saltmarsh bulrush. Additional plugs of cordgrass were planted at the beginning of the project. Now established, the grasses have colonized the sand behind the stone sill and along the shoreline.

Together, the removal of overhanging shrubs which allowed full sunlight to reach the grasses, plus the installation of the marsh sill to correct a bank erosion problem, have contributed to a healthy and growing marsh fringe. The marsh adjoining the sill has now migrated outward into the creek, resulting in diminished erosion and additional nutrients filtering capacity.

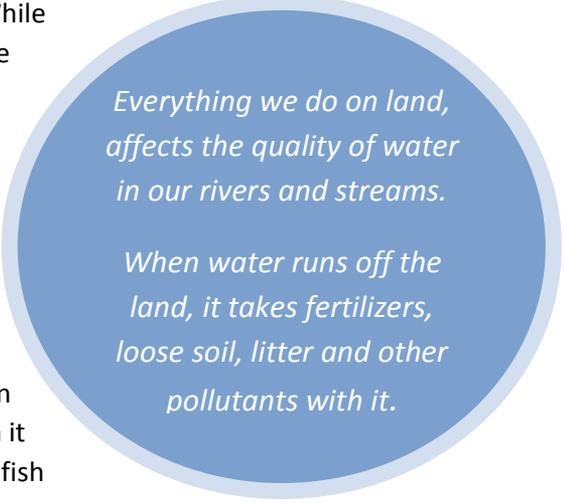
It is very critical to match the species of grass with the specific habitat in which it is found. Salt tolerance and amount of daily flooding are the controlling factors. Within the zone between the daily low and high tides, saltmarsh cordgrass and Olney three-square grow at the lowest elevations and saltmarsh bulrush and saltmeadow hay grow at the higher elevations.



## ***Make YOUR Shoreline Environmentally Friendly*** **A Natural Approach to Shoreline Stabilization**

Annually, more than 16 miles of Chesapeake Bay shoreline is hardened with rip rap and bulkheads, which often destroys valuable wetlands habitat and intertidal areas. While hardening the shoreline may be appropriate under some circumstances, it is not the only solution.

Not only is soil erosion a threat to property value, erosion is a huge threat to our waterways and the bay. The result; murky water....when sediment settles to the bottom it covers underwater grass beds, fish habitat and oyster beds.



*Everything we do on land,  
affects the quality of water  
in our rivers and streams.*

*When water runs off the  
land, it takes fertilizers,  
loose soil, litter and other  
pollutants with it.*

Erosion can be controlled by using plants to reduce the amount and speed of runoff. Ground covers are one of the best controls and include any plant material that prevents rain from directly hitting the soil. While grass will prevent soil washing away, it is less effective in filtering fertilizers and pesticides. Many other native, low-growing herbaceous and woody plants work well. Once established, these plants require less water, pesticides and fertilizer, thus reducing runoff and pollution.

A Living Shoreline of native plants and shrubs will attract wildlife, provide beautiful blooms and movement of grasses, and change with the season. Living Shorelines often cost less than hardening the shoreline, can be as effective in managing erosion and is better for the health of Chesapeake Bay.

## Acknowledgements

Northern Neck Master Gardeners

Reedville Fishermen's Museum

Bethany United Methodist Church

Northern Neck Chapter, Virginia Native Plant Society

Northumberland Association for Progressive Stewardship

Northern Neck Audubon Society

Chesapeake Bay Garden Club

Virginia Institute of Marine Science

For more information, contact the Northern Neck Master Gardeners at: [www.nnmg.org](http://www.nnmg.org) or (804) 580-5694



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