

Shoreline Erosion Problems?

**Think
Green!**

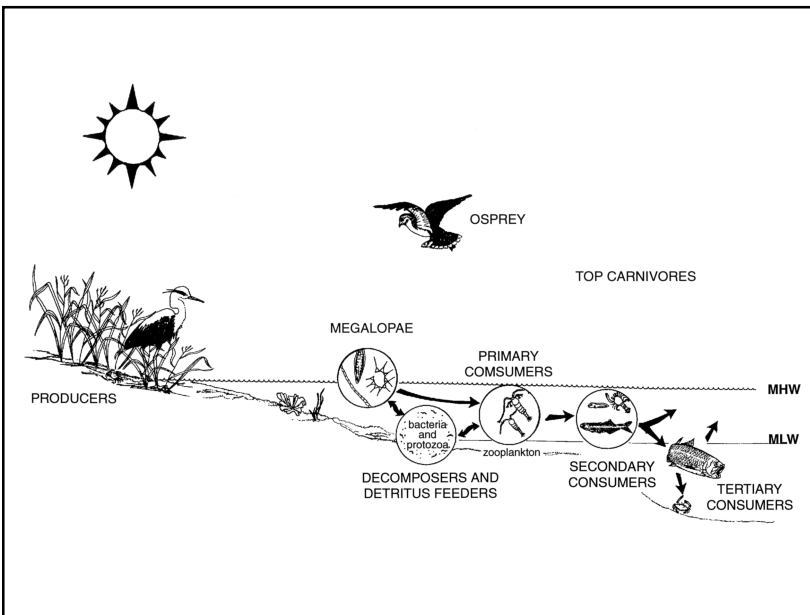
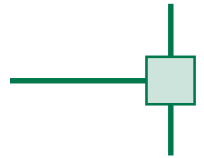
Control shoreline erosion, help restore the Chesapeake Bay and save money all at the same time.



If you have low to moderate shoreline recession problems, establishing marsh vegetation can provide long term shoreline stabilization at a fraction of the cost of conventional structures such as bulkheads and rock revetments. Additionally, no permits are required in many cases. A significant benefit to this “green” approach is the enhancement of Chesapeake Bay water quality and habitat availability.



An established marsh traps sand moving with the tide and helps maintain a suitable marsh elevation. Fringe marsh, composed of smooth cordgrass and saltmeadow hay, acts as a baffle, successfully diminishing wave energy in the grass stems before it reaches and erodes the upland bank.



A significant benefit to using a marsh to buffer erosion is the important contributions this wetland makes to water quality and habitat within the Chesapeake Bay and its tributaries. In addition, the wetland provides cover for numerous animals, nesting and resting areas for small birds and primary food for grazing herbivores.

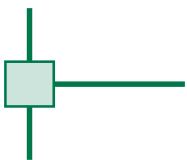


Planting a marsh is cheaper than building conventional erosion control structures. More money can be saved by *“doing-it-yourself.”*

No permit is required to plant marsh grasses on an existing shoreline such as the one shown in this photo taken one month after sprigging. When two or more types of marsh grasses are planted at progressively higher elevations, the probability of successful stabilization is increased significantly.



One year later, both the upland and wetland vegetation have filled in. The wetland vegetation has stabilized the shoreline and allowed additional volunteer species to spread and colonize the area.



This photograph shows the same site after ten years. Long term erosion control is possible with minimal maintenance on the part of the landowner. Raking accumulated debris from the marsh and occasionally transplanting bare areas will help maintain the vegetative cover.

Land loss before marsh planting was greater than 1 foot per year at this site.





This photo shows a residential site with a very short fetch. Minor bank grading and temporary toe protection utilizing straw bales was used first then *Spartina alterniflora* was planted to establish a marsh fringe. Local erosion and sediment control ordinances will be in effect because bank grading will cause temporary sedimentation. Technical advice should be sought before implementing this practice.

At this site, high water impinged upon the base of the bank. Therefore, only the intertidal species (*Spartina alterniflora*) was utilized. This photo shows the site one year after planting.



The established marsh fringe and vegetative upland slope are shown here after six years. Even the overwintering marsh fringe helps attenuate wave action and protect the base of the bank.



3 to 6
feet high

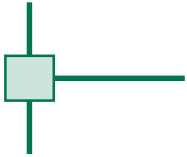
Smooth Cordgrass



1 to 3
feet high

Saltmeadow Hay

Two primary marsh grass species that have been used successfully to create marsh fringes are smooth cordgrass (*Spartina alterniflora*) and saltmeadow hay (*Spartina patens*). Smooth cordgrass grows between mid-tide and spring high-water elevations. Saltmeadow hay grows above mean high water to the base of the upland bank.



This site on the Rappahannock River in Virginia was first planted for erosion control in the early 1950's. The shoreline has been stable for more than 40 years with only **one** replanting. Water level in this photo is approximately mid-tide elevation.



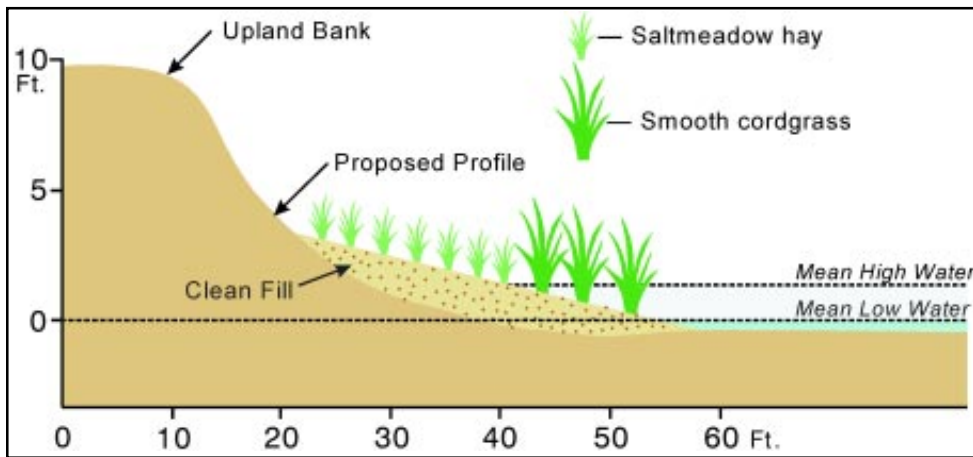
At this site, a permit was acquired in order to utilize clean sand to build a planting area wide enough to establish an effective marsh for erosion control. Overhanging limbs were thinned to allow adequate sunlight.



Three months after planting the grasses are well established and spreading by sending out underground stems (rhizomes) which send up new shoots as they lengthen.

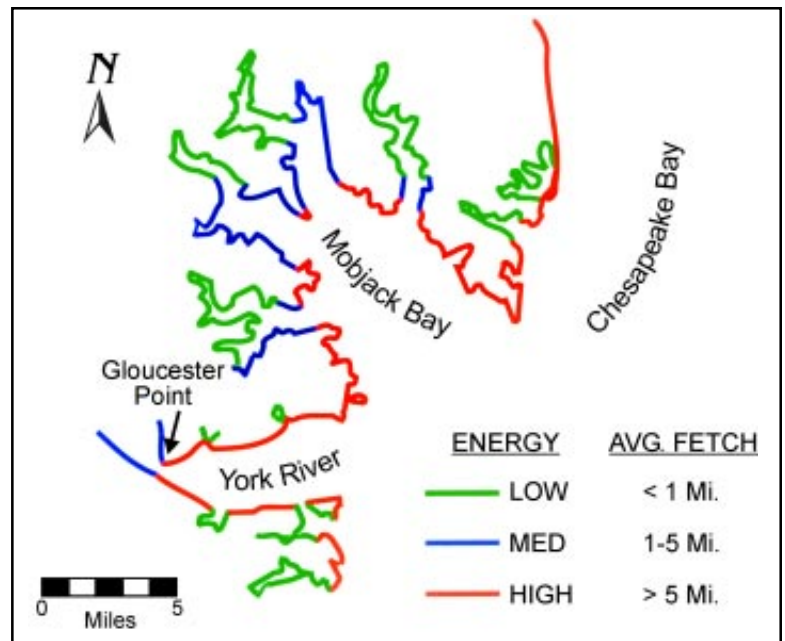
After six years, this fringe marsh protects 3,000 feet of shoreline. Smooth cordgrass grows along the edge of the water with saltmeadow hay flourishing above mean high water.





This cross section shows a proposed plan to stabilize a typical eroding shoreline using clean sand to create the appropriate planting area.

Along shorelines exposed to low wave energy conditions, like those found along small rivers and creeks, many segments of the natural marsh fringe have been lost, resulting in beach erosion. This may have been caused by long term wave erosion, short term boat wake action and/or shading due to overhanging trees. Typical structural methods used to correct shoreline erosion problems (eg., bulkheads, riprap and groins) are often expensive and may have potential adverse impacts on neighboring shores. Re-establishing a marsh fringe can be a cost-effective alternative.



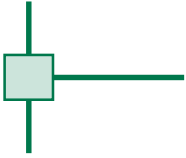
APPROXIMATE COST PER LINEAR FOOT FOR SHORELINE EROSION CONTROL

Type of Erosion Control	RELATIVE WAVE ENERGY (Average Fetch*)		
	LOW (< 1mile)	MEDIUM (1-5miles)	HIGH (> 5 miles)
Marsh w/o Sand			
20 ft/fringe	\$15	N/A	N/A
Marsh w/Sand			
20 ft/fringe	\$30	N/A	N/A
Bulkhead	\$65	\$150	\$300
Riprap	\$75	\$125	\$200

(Source: Shoreline Erosion Advisory Service [SEAS])

Although limited to creeks, coves and partially protected shorelines, marsh fringe establishment is less expensive and is a natural method to address shoreline erosion.

* Fetch: The distance over water which wind can blow to generate waves.



For more information about marsh planting and shoreline stabilization practices, contact:

Department of Conservation and Recreation

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Richmond, VA 23219
(804) 786-3998

Virginia Marine Resources Commission

Habitat Management Division
2600 Washington Ave.
P.O. Box 756
Newport News VA 23607
(757) 247-2200

Virginia Institute of Marine Science

Wetlands Program
P.O. Box 1346
Gloucester Point, VA 23062
(804) 684-7380

For more information about Chesapeake Bay Preservation Act requirements, contact:

Chesapeake Bay Local Assistance Department

Environmental Planning Division
James Monroe Building
101 North 14th St., 17th Floor
Richmond, VA 23219
1-(800) 243-7229

or your local planning office



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