

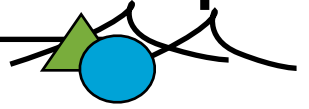


# From My Backyard to Our Bay

A Dorchester County Homeowner's Guide:  
Actions to Improve the Water Quality of the Chesapeake Bay



# The Chesapeake Bay Needs Your Help



## What is Threatening the Bay?

Nitrogen. Phosphorus. Sediment. These are the major factors responsible for the decline of water quality in the Chesapeake Bay and its tributaries, and main focus for current efforts to restore the Bay.

Nitrogen and Phosphorus are essential to the growth of living organisms in the Bay, however, too much nitrogen and phosphorus stimulate a cycle of algae blooms leading to dangerously low oxygen levels that in turn, accelerates marine animal and plant death and threatens the delicate ecosystem.

Sediment is soil that washes into the Bay with runoff and shoreline erosion. Excess sediment particles in the Bay block the sunlight required for plants to grow and smother oyster beds. Phosphorus is carried along with sediment particles.

In our daily routines, we continue to add nitrogen, phosphorus, sediment and other inputs to the Bay. Lawn and crop fertilization, animal waste disposal, poorly maintained septic systems, soil disturbance, and tail pipe emissions, all contribute to the growing pollution in our Bay, making it impossible for the Bay to use effectively its own defense systems to maintain its health.

## Who is Responsible?

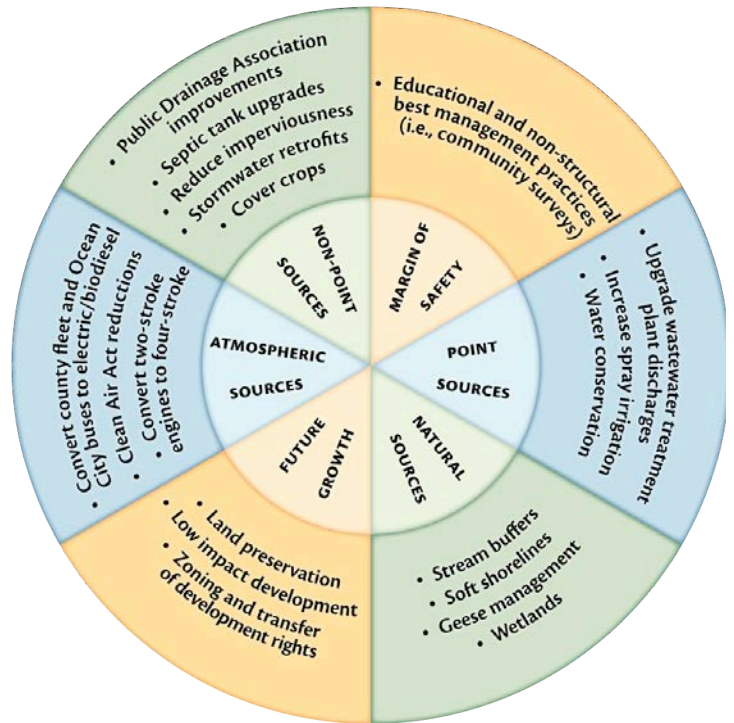
Every one of us. Each man, woman and child can make a difference. First, we must understand what impact our actions have. Second, we must take responsibility for changing our activities which contribute to the degradation of the Bay. EACH OF US CAN TAKE ACTION.

## What Can You Do?

*From My Backyard to Our Bay* offers solutions for living in harmony with the Bay. It describes the basic mechanics of how we pollute, and provides specific directions to reduce the nitrogen, phosphorus, sediment and other inputs that flow into the Bay.

*This guide was originally produced by University of Maryland Extension-Talbot County Bay-Wise program in partnership with Agencies of the Talbot County Government, Talbot County Soil*

*Conservation District, Maryland Department of Natural Resources Chesapeake and Atlantic Coastal Bays Trust Fund, the Choptank Trib Team, Environmental Concern Inc., Midshore Riverkeeper Conservancy, Midshore Recycling, Hill's Drug Store, and Sylvan Green Earth Consulting. It was modified and adapted for Dorchester County by the UME-Dorchester Master Gardener Program, Dorchester Citizens for Planned Growth, University of Maryland Sea Grant Extension, and League of Women Voters of the Mid-Shore of Maryland. Funding was provided by University of Maryland Sea Grant Extension Program.*

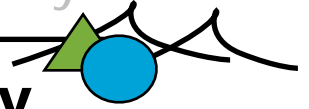


**Managing Pollution.** This conceptual diagram illustrates pollution sources and their associated Best Management Practices. Diagram courtesy of the Integration and Application Network ([www.ian.umces.edu](http://www.ian.umces.edu)) University of Maryland Center for Environmental Sciences.

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We want your opinion! Please call us at (410) 228-8800 to give us feedback on this booklet.



## Reporting Problems on Our Bay, Rivers, and Streams

We can all be the “eyes and ears” of our local waterways. Maryland Department of Natural Resources has established the Chesapeake Bay Safety and Environmental Hotline—1-877-224-7229—as a toll-free phone number for reporting problems on tidal waters. One call will direct you to the appropriate agency to make a report 24 hours a day, 7 days a week.

Use the hotline to report any of the following:

- Fish kill or algae bloom
- Public sewer leak or overflow
- Oil or hazardous material spill
- Wetlands violation
- Floating debris that poses a hazard to navigation
- Suspicious or unusual activity
- Boating accident or reckless activity
- Illegal fishing activity



**Pollution.** Trash accumulates at the end of a creek. Photo courtesy of Environmental Concern Inc. at [www.wetland.org](http://www.wetland.org).

### WHERE TO REPORT A PROBLEM ...

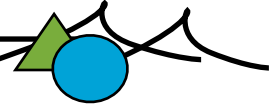
- The 911 for the Chesapeake Bay:

**1-877-224-7229**

- Midshore Riverkeeper Conservancy: (443) 385-0511
- Dorchester Soil Conservation District: (410) 228-3733

# Environmental Challenges in Your Community

## Restoring the Chesapeake Bay

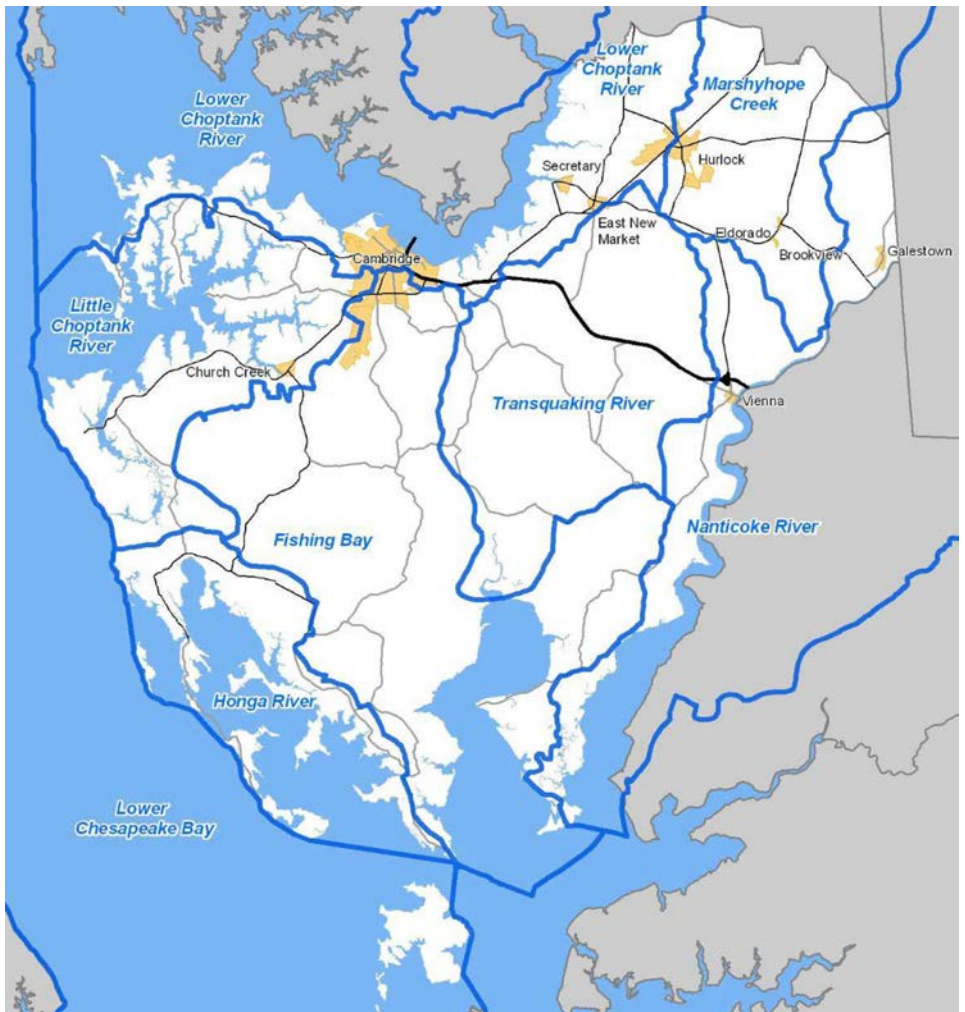


People living in Dorchester County enjoy the benefits of living near the Chesapeake Bay—the small towns, rural landscape, fishing and boating opportunities, and views of the water. Our lifestyles and livelihoods are tied to the Bay and its health.

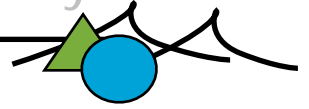
State and federal initiatives have developed many programs to address Bay health issues. In May 2009, the President declared “the Chesapeake Bay is a National Treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world.” He signed an executive order calling for renewed efforts to restore the Bay.

The Chesapeake Bay and its tributaries are suffering from excessive amount of nutrients, oxygen-demanding materials, and other pollutants. Many of these pollutants cause excessive amounts of algae, or algae blooms. When these blooms die off, they use up the valuable oxygen in the water during the decaying process, which greatly reduces the amount of oxygen available to fish, crabs, oysters, and other aquatic life.

In 2010 Federal Agencies began to work with the Chesapeake Bay watershed states to define water quality goals and implement measures, such as Total Maximum Daily Loads (TMDLs), designed to measure Bay pollutants and restore the Bay’s health. Each state, county, and municipality has a part to play in achieving those goals.



**Watershed Map for Dorchester County:** This county crosses four watersheds, the Choptank, Blackwater-Wicomico, Nanticoke, and Upper Chesapeake Bay watersheds. Map courtesy of Dorchester County



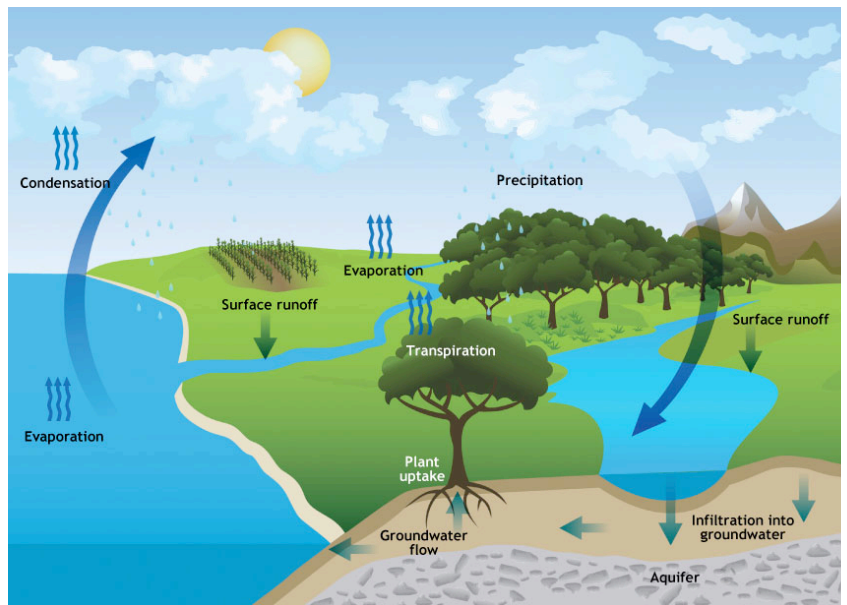
## What is a Watershed?

A watershed consists of all the land areas that drain into a specific body of water. Topography—the elevation and contour of the land—determines where and how fast water will flow and eventually drain to a surface water body such as a stream, creek, or river. Watersheds may cross county, state, or even national borders. Almost every resident of Dorchester County lives in either the Choptank or Nanticoke watershed, and most residents live within one-half mile from a storm drain, stream or river.

These watersheds support more than 40 species of fish and an abundance of other aquatic and land-based life.

## What Part Does the Hydrologic Cycle Play?

The water cycle, or hydrologic cycle, describes the movement of water on, through, above and below the Earth's surface (see figure to the right). Water, in the form of vapor, liquid or ice, carries pollutants from one area to another through evaporation, condensation, precipitation, infiltration, runoff, and subsurface flow. The downhill flow of rain water on land carries pollutants it picks up along its path.



**The Water or “Hydrologic” Cycle.** Water continuously cycles in many forms. Air pollutants are picked up and carried by rainwater; ground pollutants are carried by runoff. Figure courtesy of [www.landscapeforlife.org](http://www.landscapeforlife.org).

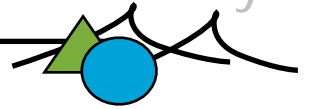
## What is Runoff?

Runoff is water flowing downhill as it is pulled by gravity; it is most often from a storm event and referred to as stormwater runoff, but can also be water from a sprinkler system or other source. There are two important aspects to runoff: Water Quality (pollutants, nutrients, sediment) and Water Quantity (water volume that runs off rather than sinking into the ground).

### WATER QUALITY

Pollutants are considered contaminants to the natural environment. As water moves, it picks up particles, including pollutants, and carries these along with it. Water pollution derives from two sources: point and non-point. (NOTE: Rain water falling directly into an ocean or river also carries a substantial amount of pollution; see page 28.) A point source is a concentrated discharge, like the outflow from a pipe at an industrial operation or sewage treatment plant. These sources are regulated and carefully monitored.

# Environmental Challenges in Your Community



Non-point source (NPS) pollution is often difficult to identify, but still very important to manage. Typically, NPS is characterized by stormwater flowing over large areas such as parking lots, lawns, farms and roads, and draining to gutters, storm drains, and streams.

## WATER QUANTITY

The quantity of water filling our aquifers and other groundwater supplies is affected by changes at the surface of the land.

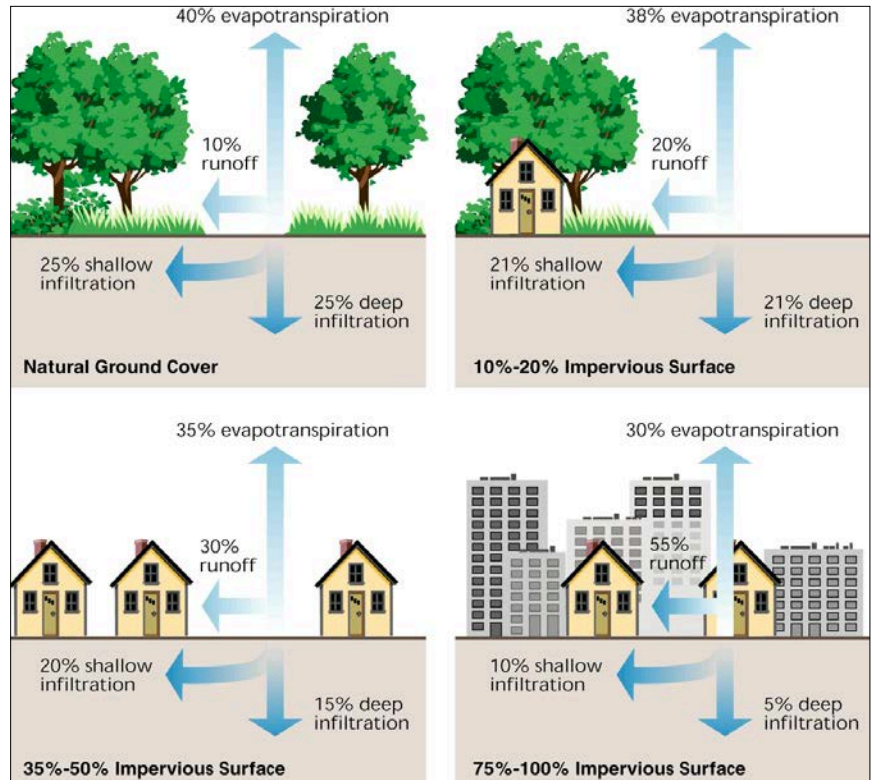
Undisturbed land allows for the natural infiltration of water through the soil and into groundwater sources.

As land is developed, an increasing amount is covered by buildings, roads, parking lots, and other hard surfaces.

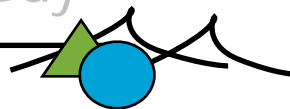
These are known as impervious surfaces, which means the surface does not allow water to filter through the soil—these surfaces form a barrier to our underground reservoirs. When the water cannot be absorbed by the

soil, it runs across the surface. These hardened surfaces contribute directly to runoff. Each time it rains, water runs quickly off these hard surfaces and into our streams. Water levels in the streams rise quickly, sometimes causing flash floods. Then after the rain the stream flow returns to normal. These flash floods scour the bottoms of the streams, deepen the stream channels, cause bank erosion, and alter the habitat for fish and other creatures in the stream. As little as a 10% change in impervious cover can result in stream degradation. This also becomes important since we rely on groundwater aquifers for our water supply. Infiltration recharges these aquifers and provides us with fresh water.

Guidelines in this book will help residents do a better job at managing these non-point sources of pollution and excess runoff volume from our properties, through practices involving rain gardens, rain barrels, cisterns, stormwater ponds, lawn and landscape maintenance, native plantings, and more. It also addresses ways to increase infiltration.



**Impact of the Increasing Area of Impervious Surface.** As land development continues, more hard surfaces cover the land, thus decreasing the ability of the land to absorb rain water. Development reduces the amount of water filtering through to our water tables, and increases the amount of runoff carrying pollutants to our Bay. Figure courtesy of [www.nrcs.usda.gov](http://www.nrcs.usda.gov).



## Are You in the Critical Area?

Dorchester County has more than 1,700 miles of shoreline formed by many rivers, creeks, and coves. The Critical Area is defined as 1,000 feet beyond the landward edge of tidal wetlands. Homeowners living within 1,000 feet of tidal waters or tidal wetlands live in the “Critical Area” and have obligations guided by county, state and federal regulations to help keep our Bay clean. These homeowners are our first line of defense!

Stop and ask! Any land- or vegetation-disturbing activities, such as building a structure or cutting down a tree (alive or dead), carried out within this 1,000 feet in Dorchester County first requires contacting Dorchester County Planning and Zoning (see contact information in “Help Box”). A representative will help you determine what steps to take, and what regulatory offices you will need to contact. A complete resource guiding Critical Area property owners in these matters is “The Green Book for the Bay” (see reference to online source below).

Additionally, residents need to take special precautions with yard care—especially fertilizer, herbicide, and pesticide application—in the Critical Area. These topics are addressed in the following pages of this booklet.

**100- and 200-Foot Buffers:** Within the Critical Area, there is an even more sensitive zone, a buffer immediately along the shoreline, that serves as a transition between upland and aquatic habitats. This Critical Area Buffer, required by the Critical Area law in Dorchester County, is measured 100 or 200 feet inland from mean high water, the landward extent of tidal wetlands, and the edge of tributary streams. The buffer applicable to your land depends upon when your plot was developed. Where steep slopes or particularly sensitive soils are present, the buffer may be even greater. Contact Dorchester County Planning and Zoning to determine what buffer area applies in your case.

Plans for building projects disturbing or removing more than 5,000 square feet of ground cover must be also submitted to local and State agencies. For more information visit Dorchester Soil Conservation District’s website.

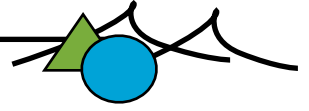
### WHERE TO GET HELP FOR...

#### **CRITICAL AREA**

- Dorchester County Planning and Zoning at (410) 228-3234, or [www.docogonet.com](http://www.docogonet.com)
- Maryland Chesapeake Bay Critical Area Commission at <http://dnr.maryland.gov/criticalarea/compliance.asp>
- Dorchester Soil Conservation District at (410) 228-3733, or [www.mascd.net/dorchester/](http://www.mascd.net/dorchester/)
- “The Green Book for the Bay” go to <http://www.firststopforthebay.org>
- University of Maryland Extension— Dorchester County at (410) 228-8800 or [www.extension.umd.edu/dorchester-county](http://www.extension.umd.edu/dorchester-county)



# What You Can Do in Your Backyard and Home



## What Practices Can Help You Control Runoff?

You can do a number of things to slow down and reduce the volume of water that runs off your property and into the Bay—otherwise known as surface water runoff. By slowing the water down, you give the water more time to infiltrate below the surface, through the soil and eventually to streams and even groundwater sources—this is referred to as groundwater recharge.

The first and simplest rule of conservation is to minimize runoff and maximize



**Permeable Pavers.** Pavers allow for runoff to filter through the open areas planted with grasses.

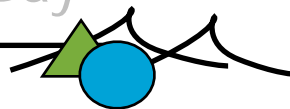


**Dorchester Master Gardeners** Jim Leech and Bruce Gootee demonstrate how to build a rain barrel during the Dorchester Showcase in downtown Cambridge.

infiltration of rainfall. Protecting soil with grasses, shrubs, trees, or mulch will enable the soil to absorb a greater amount of rainfall before runoff begins to occur and protect against erosion.

You can minimize runoff dramatically by eliminating a hard surface area. Replacing a unused parking area with a planted area increases the filtration capacity of that area while beautifying it. Another approach is to change out impervious surface areas with materials allowing for infiltration. Permeable pavers can be used on driveways, walkways and patios. When planted with grass or moss, the pavers can transform an unattractive surface into a pleasing display of color and texture. Impervious roofs can be transformed into green roofs, a living system of soil, compost and plants. The plants and soil filter rainwater and pollutants; the plants produce oxygen, cleaning the air.

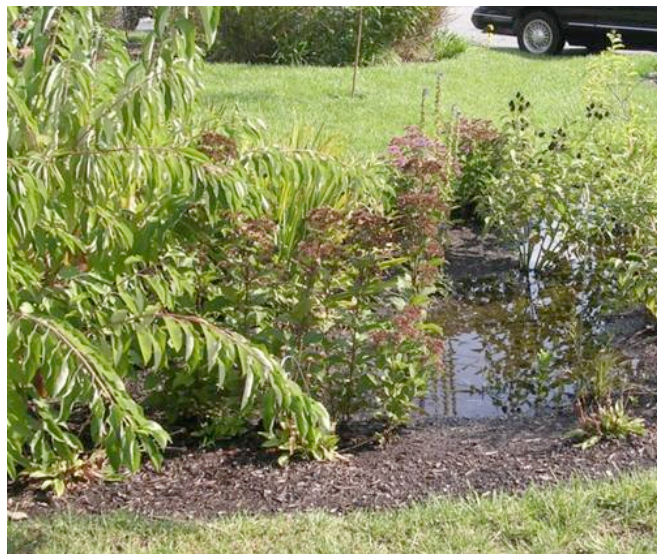
Rain gardens, rain barrels, and cisterns are other excellent solutions for homeowners to manage runoff. Stormwater ponds are often utilized in suburban developments, but can also be installed on larger properties.



## Rain Gardens

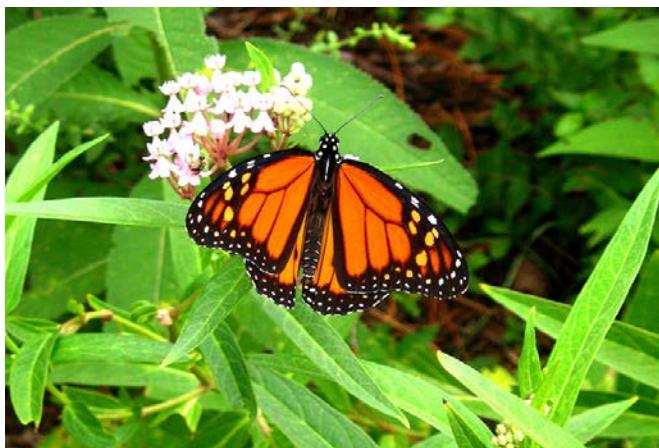
During a 1-inch rainstorm, more than 750 gallons of water fall on 1,200 square feet (about half the space of ground covered by the average American house). That's a lot of water rushing off into storm drains, saturating lawns, and heading for the Bay and its tributaries. Rain gardens are gaining popularity as a way to control stormwater runoff coming from downspouts, driveways, walkways, and other impervious surfaces.

A rain garden is more than just a bed of pretty plants; properly sized and installed, it can collect and filter as much as 100% of the water of your drainage area! This helps keep pollutants such as fertilizers, motor oil, and heavy metals out of our streams that eventually flow into the Bay. A rain garden can also save time and money that may otherwise be spent watering a lawn or delicate flowers. Furthermore, a rain garden allows us to create habitat for wildlife.



**Rain Garden at the Talbot County Agricultural Center.** A properly built rain garden can catch all the water of your drainage area and drain within 48 hours. Photo courtesy of UME Talbot County.

The difference between a traditional garden and a rain garden lies underground and in the plant selection. A rain garden is positioned slightly downslope of the runoff source, in order to catch the rainwater. The ground is dug to create a depression of up to 9" at the lower end of the downslope, or ponding depth. Depending upon soil makeup, the soil may be dug up and amended with a mixture of topsoil and organic material, compost, or shredded leaves and sand. If heavy clay soils are present, other techniques (such as vertical cores of gravel) may be needed. A 2- to 3-inch layer of mulch keeps the plants moist and provides additional filtration.



Monarch butterflies are attracted to rain garden plants like this Swamp Milkweed. Photo credit Diane Miller.

Rain gardens are generally best sited in sunny locations, and the plants that do best in them prefer full to partial sun. Plants selected for rain gardens must tolerate drought as well as periodic flooding; deep root systems are also good. Luckily, many attractive native plants fit these requirements. See one of the many sources in the "Help Box" on the next page for detailed instructions to build a rain garden and for plant lists.



## Tips for Planting a Rain Garden



- Pick the Location: Sunny areas where the land slopes slightly away from the house are best.
- Determine Size: Measure the area that will drain to the rain garden. The garden should be about 20% of the size of the area to be drained.
- Keep your Distance: Plant the rain garden at least 10 feet away from a dwelling foundation and 25 feet away from a septic drainage area or well head.
- Choose Native Plants with Large Root Systems: They are generally best suited to the rain garden environment and there are many to choose from. Non-native plants can be used, but may not adapt as well as native plants. Avoid invasive plant species.
- Don't Fear the Mosquitoes: Their larvae take 7 to 10 days to mature. A well-designed rain garden should drain in 3 days or less. It will also attract predators such as birds, toads, and dragonflies to keep bugs at bay.

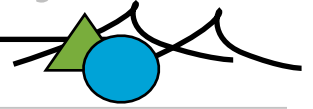


**Native Plants and Flowers.** From left to right: passionflower, American beautyberry and coneflower. Photos courtesy of Lisa Marie Ghezzi.

### WHERE TO GET HELP FOR...

#### RAIN GARDENS

- University of Maryland Extension—Dorchester County at (410) 228-8800 or [www.hgic.umd.edu/content/documents/Rain\\_Gardens\\_Across\\_MD.pdf](http://www.hgic.umd.edu/content/documents/Rain_Gardens_Across_MD.pdf)
- Environmental Concern Inc. at [www.wetland.org/nursery\\_raingarden.htm](http://www.wetland.org/nursery_raingarden.htm)
- Low Impact Development Center Rain Garden Templates [http://www.lowimpactdevelopment.org/raingarden\\_design/](http://www.lowimpactdevelopment.org/raingarden_design/)
- Maryland Sea Grant --YouTube videos of rain garden installations [http://www.youtube.com/playlist?list=PLieA6Ru6uFiuBCsB8O687q2Tlhq\\_jg8PA](http://www.youtube.com/playlist?list=PLieA6Ru6uFiuBCsB8O687q2Tlhq_jg8PA)
- U.S. Fish and Wildlife, Native Plants for Wildlife Habitat and Conservation Landscaping, Chesapeake Bay Watershed, [www.nps.gov/plants/pubs/chesapeake](http://www.nps.gov/plants/pubs/chesapeake)
- Rainscaping.org at [www.rainscaping.org/index.cfm/fuseaction/home/showpage/pageID/5/index.htm](http://www.rainscaping.org/index.cfm/fuseaction/home/showpage/pageID/5/index.htm)



## Rain Barrels

Rain barrels provide so many benefits, it's a wonder not everyone has at least one. They temporarily store rainwater runoff from rooftops, reducing the flow of water into our streams, rivers, and Bay. They provide access to water where you might not have running water.

Rain barrels are plastic drums that are connected directly to a downspout. Water is collected in the drum for later use. One 55-gallon rain barrel can save over 1,000 gallons of water during peak summer months. Rain barrel water can be used to water lawns and plants, and even to wash cars. They are especially convenient in areas where you do not have a source of running



These rain barrels collect rain water from the roof of the Dorchester Historical Society in Cambridge. Photo courtesy of Dorchester Citizens for Planned Growth.

water close by. Of course, rain barrels must be emptied before the next storm to function most effectively, but that lets you control when and how fast the water is released.

They can even be designed quite beautifully coordinating with the color and design of your home. See the sources below for specific instructions to plan for and install your rain barrel.



## Cisterns

Cisterns, like rain barrels, provide a place to store rain water to be used at a later time. Cisterns are significantly larger than rain barrels often storing more than 1,000 gallons of water.

Cisterns can be constructed of nearly any impervious, water-retaining material and can take on a variety of shapes. They can be located either above or below ground, and in out-of-the-way places that can easily be incorporated into a site design. Though it is easier to plan and install a cistern during new construction, cisterns can be designed and incorporated into existing home and landscape structures. Cisterns can either be constructed on-site to meet individualized design requirements or pre-manufactured and then placed on-site.



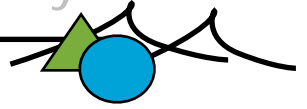
**Cistern.** This beautiful example of a cistern can be seen if you visit the Talbot County Senior Center, Easton Maryland. Photo courtesy of Lisa Marie Ghezzi.

You can use the water you collect in your cistern for all your water needs—watering your plants, to washing your car, and even for drinking water, if it is filtered properly.

### WHERE TO GET HELP FOR...

#### **RAIN BARRELS & CISTERNS**

- University of Maryland Extension—Dorchester County at (410) 228-8800
- Maryland Department of Natural Resources at <http://www.dnr.state.md.us/ed/rainbarrel.html>
- LID Urban Design Tools at [http://www.lid-stormwater.net/raincist\\_home.htm](http://www.lid-stormwater.net/raincist_home.htm)
- Rainscaping.org at [www.rainscaping.org/index.cfm/fuseaction/home.showpage/pageID/6/index.htm](http://www.rainscaping.org/index.cfm/fuseaction/home.showpage/pageID/6/index.htm)
- Dorchester Citizens for Planned Growth at <http://dcpgonline.org/>
- Low Impact Development Center, Inc. at [http://www.lid-stormwater.net/raincist\\_specs.htm](http://www.lid-stormwater.net/raincist_specs.htm)



## Stormwater Management

Stormwater management is part of our everyday landscape in Dorchester County. We may not even notice it's there. Roadside ditches, stormwater ponds, catchments and storm drains are all designed to help keep our roads safe, and our homes and businesses from flooding. Some of these structures are meant to simply convey water quickly (e.g., storm drains, ditches), while others such as detention ponds are meant to temporarily store water and release it slowly to the surface or ground water, reducing the impacts of flash flooding.

Innovations in urban stormwater design have led to many new products and practices to help reduce the amount of runoff and promote infiltration. Examples of these are stormwater wetlands, bioretentions and bioswales. Ditches and stormwater detention ponds are being re-interpreted to include wetland plants as an added level of water treatment (see Wetlands page 38).

New residential developments and shopping centers incorporate these practices as Smart Design. Older communities seek to retro-fit some of these practices within their existing open spaces to help improve water quality and reduce runoff.



**Stormwater Wetland.** Dorchester Master Gardeners learn about stormwater wetlands on a visit to Environmental Concern. Photo Courtesy of Environmental Concern Inc.

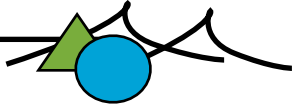
Maryland first developed its stormwater management program as part of the Chesapeake Bay initiatives in 1984. Current regulations require developers and designers to follow Environmental Site Design (ESD), a practice that incorporates stormwater planning from the start of the land development process, and may include maintaining 100% of the annual predevelopment run-off volumes, conserving natural drainage patterns, and minimizing impervious surfaces.

### WHERE TO GET HELP FOR...

#### **STORMWATER MANAGEMENT**

- Maryland Department of the Environment at (800) 633-6101 or <http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/www.mde.state.md.us/assets/document/State%20and%20Federal%20SWM%20Guidelines%20final.pdf>
- Dorchester County Department of Public Works-Engineering Division at (410) 228-2920 <http://docogonet.com/index.php?page=engineering>
- Dorchester Soil Conservation District at (410) 228-3733
- Dorchester County Planning and Zoning at (410) 228-3234, or [www.docogonet.com](http://www.docogonet.com)

## Streams in Your Neighborhood Need Help!



Streams flowing through suburban areas need special care. As urbanizing areas develop, natural stream channels must increase in size to handle a higher volume of stormwater due to the new expanses of impervious surfaces such as roofs, parking lots, and streets. High, turbulent waters scour stream channels and undercut the banks until the tops of the stream banks cave in and are carried away, degrading the stream with tons of sediment.

Stream banks should be protected with vegetation and trees. Streamside vegetation acts as a filter for runoff flowing from upland areas toward the stream and is very effective at trapping and absorbing runoff and associated pollutants. The shade from trees and shrubs whose canopies overhang the stream keeps the water cool to protect stream-dwelling organisms. Buffers also provide excellent habitat for birds and other wildlife. Streams also suffer from the trash build up. Debris is carried off in stormwater events to storm drains and out into the streams. Besides being unsightly, trash is harmful to plant growth and wildlife.

Many nonprofit organizations have stream buffer cleanup projects throughout the year.

You can volunteer to help. Find out more by contacting the Dorchester Citizens for Planned Growth (DCPG), the Nanticoke Watershed Alliance or Midshore Riverkeeper Conservancy.



**Project Clean Stream:** DCPG Volunteers participate in Project Clean Stream. Photo courtesy of Dorchester Citizens for Planned Growth.

### WHERE TO GET HELP FOR...

#### **STREAMS**

- Dorchester Citizens for Planned Growth (DCPG) at (443) 366-3741; [www.dcpgonline.org](http://www.dcpgonline.org).
- Nanticoke Watershed Alliance at (410) 430-3273; [www.nanticokeriver.org](http://www.nanticokeriver.org).
- Midshore Riverkeeper Conservancy at (443) 385-0511 or email [info@midshoreriverkeeper.org](mailto:info@midshoreriverkeeper.org); [www.midshoreriverkeeper.org](http://www.midshoreriverkeeper.org)
- Dorchester Department of Planning and Zoning at (410) 228-3234.
- Dorchester Soil Conservation District at (410) 228-3733.



## What Else Can I Do to Control Runoff? Backyard Best Management Practices

You have slowed down the water moving across your backyard with rain gardens, rain barrels, or other drainage solutions. What more can you do to decrease runoff volume, promote infiltration and limit the number of pollutants water picks up on its way to the Bay?

### Keeping a Healthy Lawn

For too many of us, a lush, green, weed-free lawn has come to symbolize success as homeowners or gardeners.

According to the Environment Maryland Research and Policy Center, in 2009, there were more than 1.3 million acres of turf statewide, compared to 1.5 million acres of all other crops. If each of us over-fertilizes our lawn by just 1 pound, a huge amount of excess nutrients ends up polluting groundwater, streams, rivers, reservoirs, and the Chesapeake Bay.



**Organically Treated Lawn.** A healthy lawn treated only with an organic solution for two years; the treatments include crabgrass and broadleaf suppressants. The grass is thick and lush, and little to no overseeding is required. Photo courtesy of Lisa Marie Ghezzi.

Maryland's Fertilizer Use Act of 2011 will go into effect beginning October 2013. The new law limits the amount of phosphorous sold in fertilizer products, and puts restrictions on lawn care professionals. It also makes recommendations for proper fertilizer application timing and procedures for both professionals and home owners.

Soil fertility should be tested before seeding a new lawn and every three years for an established lawn to determine the amount of fertilizer and lime needed. Contact University of Maryland Extension for more information on where to get a soil test kit (see "Help Box" below).

Before establishing a lawn, consider whether turf grass is suitable. Heavily shaded or severely sloped areas may not provide the conditions needed for turf, leading to erosion, pest, and nutritional problems. Native ground covers or plants such as Switchgrass may be more suitable.

Fertilizer-free and pesticide-free lawns are the best choice for the environment. Both time and money can be saved by reducing the frequency of fertilizing and applying pesticides. Slow release and low or no phosphorous fertilizers are optimal to promote a healthy environment. New lawns may require some phosphorous, but require very little once established. Don't over-fertilize!

#### WHERE TO GET HELP FOR...

#### LAWN CARE

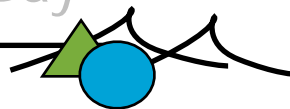
- University of Maryland Extension—Dorchester County at (410) 228-8800 or <http://extension.umd.edu/hgic>
- Maryland Department of Agriculture at <http://mda.maryland.gov/Documents/HowToFertilizeYourLawn.pdf>
- Environment Maryland, <http://www.environmentmaryland.org/reports/mde/urban-fertilizers-chesapeake-bay>





## Tips for Lawn Care

- Reduce lawn mass where possible and put into conservation landscaping. For some areas (like steep slopes and shady places), groundcover or planting islands (areas with groupings of trees, shrubs, and flowers) may be a better choice than turf grass.
- Fertilization Amount: If you have to fertilize, follow recommendations in Maryland's Fertilizer Use Act of 2011. Apply the recommended amounts of fertilizer. Use no more than 0.9 pounds of nitrogen per 1,000 square feet of lawn per application. If fertilizer is needed, spread 2 or 3 small applications, 1 month apart (early September, October, and November), rather than 1 large application.
- Go Organic: Try organic lawn care solutions and see how they can improve the health of your lawn!
- Fertilization Timing: Do not apply fertilizer to frozen ground or dormant turf (especially when cool season grasses turn brown during summer months).
- Spreaders: Keep fertilizer off paved areas by sweeping it back onto the grass. Use a drop spreader around the edges and in restricted areas to avoid fertilizer going to unwanted places. Calibrate your spreader.
- Mower: Switch to a mower with a less polluting 4-stroke engine or if you have a small yard consider a reel mower.
- Ideal Grass Height: Maintaining grass height of at least 2 ½ inches helps keep the soil cool and provides drought protection. Mowing too short may reduce root and stem development and encourage weed problems. Proper mowing height helps to reduce weeds by as much as 50–80%. Cut no more than 1/3 of the grass height at one time.
- Grass Clippings = Fertilization: Mow with a sharp mulching blade to fertilize the lawn naturally with grass clippings. Routinely leaving grass clippings on the lawn provides the same benefit as one fertilizer application annually.
- Watering Deeply: In the spring or fall, watering slowly to wet the soil to a depth of 4–6" will prevent runoff from leaving your property. Early morning is the best time for watering. Light, frequent watering or watering in the evening can actually damage your lawn.
- Watering Established vs. New Lawn: Most Dorchester County lawns are cool season grasses that naturally go dormant in summer. Watering an established lawn during the dormant season may cause undue stress to it. Be sure to water lawns just being established.



## Planting Natives

What's all the fuss about planting natives? There are many reasons to plant native species in your landscape. They are well adapted to local climate and soil conditions. They don't need additional fertilizer or constant watering. More importantly, using plants native to our region helps to promote biodiversity, providing habitat for songbirds, wildlife, and beneficial insects. In addition, they are beautiful! Many garden centers are beginning to carry a variety of native species. Additional local resources for native plants, trees, and shrubs are listed below.



Buttonbush (*Cephalanthus occidentalis*) is a native shrub with unusual round flower clusters that attract butterflies.

## Trees in the Landscape

Trees in the Landscape serve many essential functions. Forests are important habitat for many rare and threatened plants, animals, and birds. They provide shade and structure, food and nesting sites. Trees also play key roles in stormwater management, carbon storage, and interception of airborne pollutants. By increasing tree canopy coverage, we realize several advantages:

- **Reduced Surface Runoff:** The forest floor with its layers of twigs, leaves, and understory vegetation, acts like a sponge for stormwater.
- **Decreased Erosion:** Leaf canopies help reduce the erosive effect of heavy rains.
- **Reduced Air Pollution:** The amount of carbon storage capacity increases with every tree, shrub and plant, as well as the capacity to absorb other airborne pollutants.
- **Less Pollutants Enter the Bay via Groundwater:** Root systems of native trees, shrubs, and plants take up pollutants that would otherwise filter through to groundwater.
- **Reduced Cooling Costs:** Tree canopy provides shade resulting in cooler surface temperatures during the summer. The shade from deciduous trees planted near a home can reduce air conditioning costs by as much as 40%.
- **Decreased Heating Costs:** Planting evergreen trees as a wind break can reduce home heat loss when they are



Planting trees across the state is part of the Governor's Smart, Green, and Growing initiative - Marylanders Grow Trees.

### WHERE TO GET HELP FOR...

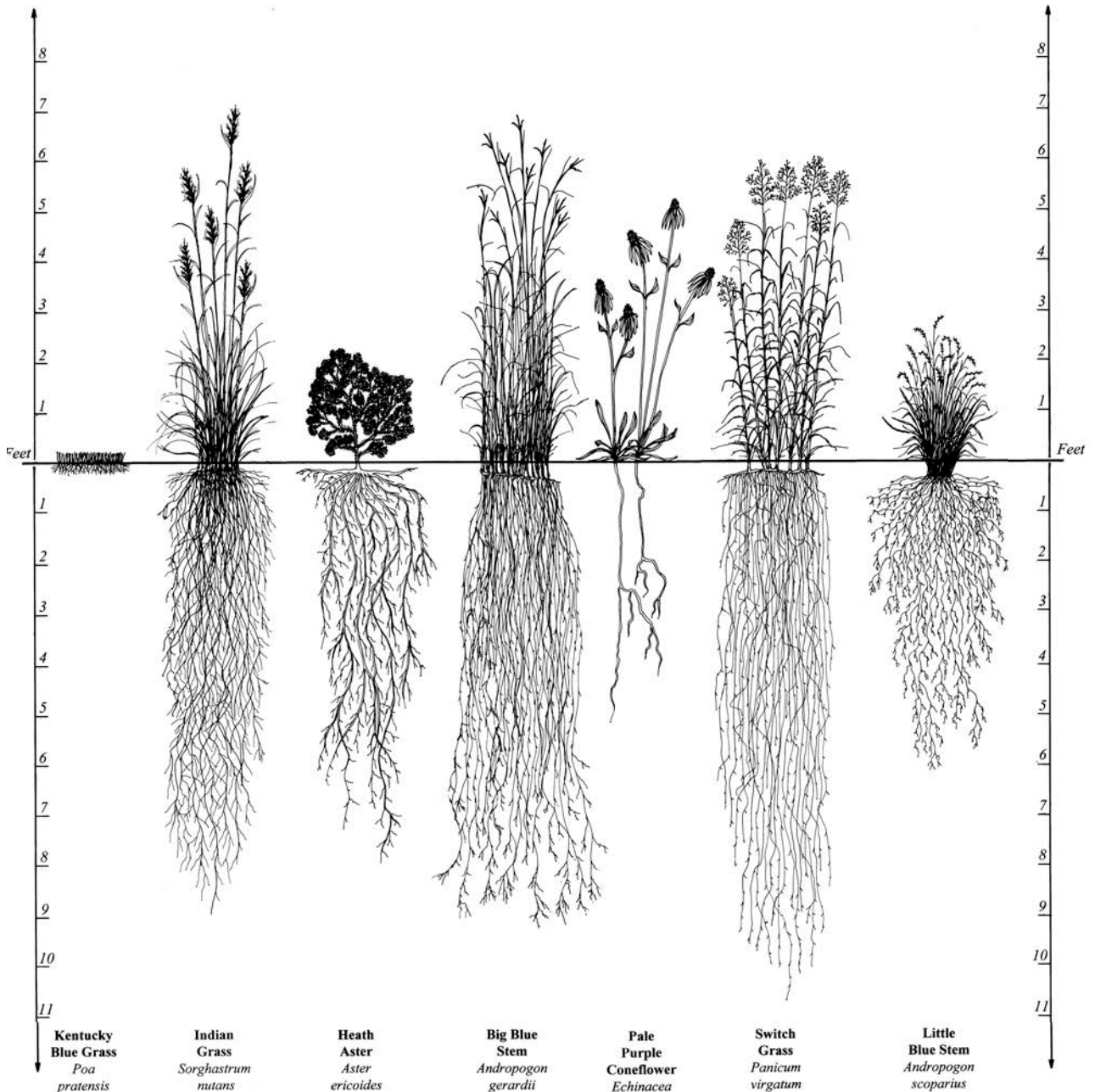
#### NATIVE PLANTINGS

- University of Maryland Extension—Dorchester County, Bay-Wise program at (410) 228-8800 or <http://extension.umd.edu/hgic>, <http://www.hgic.umd.edu/media/documents/NativePlantsofMD.pdf>
- U.S. Fish & Wildlife Service native plant publication at <http://www.nps.gov/plants/pubs/chesapeake/>
- MD DNR – Forest Service Upper Shore Project at (410) 819-4120, <http://www.dnr.state.md.us/forests/programs/urban>, <http://www.dnr.state.md.us/forests/nursery>
- Environmental Concern at (410) 745-9620 or email [nursery-sales@wetland.org](mailto:nursery-sales@wetland.org)
- Adkins Arboretum at (410) 634-2847 or <http://www.adkinsarboretum.org/>
- Marylanders Plant Trees: <http://www.trees.maryland.gov/>

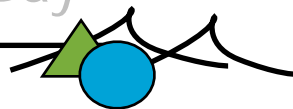
# What You Can Do in Your Backyard and Home

Marylanders Plant Trees is part of the Governor's "Smart Green & Growing" initiative. It provides citizens with resources to learn the benefits of trees, which tree is best for their property, and even provides a \$25-off coupon that can be used when purchasing native trees from a list of participating nurseries. It even includes interactive maps where you can register your trees & follow progress for Dorchester County. The Maryland Department of Natural Resources Forest Service is the state agency responsible for the management and protection of the state's forest resources.

Contact an arborist or a licensed tree expert for advice and assistance when pruning, clearing, or treating diseased trees. You may need permits for these activities, particularly if you live in the Critical Area. Bay-Wise Master Gardeners can help you identify trees, shrubs, and plants that are best for your landscape, and answer other garden-related challenges you may have.



**Native Plant Root Systems.** Compare the roots of the non-native Kentucky Blue Grass (far left) to the deep roots of the Maryland native plants (shown left to right): Indian Grass, Heath Aster, Big Blue Stem, Purple Coneflower, Switch Grass and Little Blue Stem. Illustration adapted from Conservation Research Institute by Environmental Concern Inc.



## Controlling Noxious Weeds and Invasive Plants

Noxious weeds are agricultural pests. Maryland's noxious weed law requires landowners to control Canada, Bull, Plumeless and Musk thistles; Johnsongrass; and Shattercane on private property. For effective control, both the seed and the root system of these weeds must be managed by mowing, cultivating, or treating with approved herbicide. For information on identifying or controlling these plants, contact Dorchester County Weed Control at the number in the "Help Box" below.

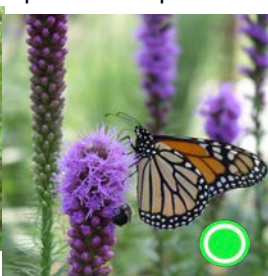
Plants that are widely known to outcompete native plants and quickly take over natural areas are called invasive plants. Most of these non-native plants come from other countries or habitats with similar climates. When introduced to new landscapes where they lack the animals and insects that feed on them or there are no diseases to limit their populations, they quickly outcompete native species. Invasive plants are often spread by wind borne seeds or by birds and other animals. These plants can overrun nearby wetlands, meadows, or forests, crowding out native plants that provide habitat for our local birds and other wildlife leading to habitat degradation and loss of species diversity. Phragmites and multiflora rose are just two examples. A vegetation removal permit may be required, especially for plants such as phragmites that grow in wetlands. For information, contact Dorchester County Weed Control or Dorchester County Planning and Zoning (see contact information below).

Many common invasive plants are still commonly sold for landscape use. Before you purchase a plant, be sure it is not a listed invasive plant. Some of these plants include purple loosestrife, miscanthus, winged euonymus, Bradford or Callery pear, English ivy, vinca, periwinkle, and Japanese stilt grass.

Photos below show native options to replace invasive species. Courtesy of [www.SylvanGreenEarth.com](http://www.SylvanGreenEarth.com)



**Invasive:** purple loosestrife



**Native:** blazing star



**Invasive:** Bradford pear



**Native:** serviceberry

### WHERE TO GET HELP FOR...

#### NOXIOUS WEED & INVASIVE PLANT CONTROL

- Dorchester County Weed Control at (410) 943-4386.
- Maryland Department of Agriculture, Plant Protection and Weed Management at (410) 841-5871 [http://www.mda.state.md.us/sc/plants-pests/plant\\_protection\\_weed\\_mgmt/noxious\\_weeds\\_md/index.php](http://www.mda.state.md.us/sc/plants-pests/plant_protection_weed_mgmt/noxious_weeds_md/index.php)
- Dorchester Soil Conservation District, (410) 228-3733.
- Dorchester County Planning and Zoning at (410) 228-3234.
- University of Maryland Extension — Dorchester County at (410) 228-8800 or <http://extension.umd.edu/hgic>
- Maryland Department of Natural Resources at <http://www.dnr.state.md.us/wildlife/>
- Maryland Invasive Species Council at (410) 841-5920 or <http://www.mdinvasivesp.org>
- U.S. Department of Agriculture at <http://www.invasivespeciesinfo.gov>
- The National Invasive Species Council at <http://invasivespecies.gov/>
- Sylvan Green Earth at [www.SylvanGreenEarth.com](http://www.SylvanGreenEarth.com).



## Integrated Pest Management

What can Integrated Pest Management have to do with improving the health of the Chesapeake Bay? Is it really an important contributor?

Pesticides are one pollutant of the Bay. When over-applied, especially before a major rain event, pesticides can be caught in the runoff and flow into the Bay impacting fish and other marine life. Pesticides can also harm beneficial insects, an essential element of the ecosystem supporting the Bay. Honey Bees, for instance, can be killed by the pesticides used to kill mosquitoes. The Department of Agriculture has strict guidelines for spraying in the proximity of bee hives. Birds, bats, insects and other animals also rely on insects as a food source. Pesticides can also be harmful to household pets, children, and adults.

An integrated approach to managing your garden pests and disease, or Integrated Pest Management (IPM), can help you address your challenges more effectively while not creating even more problems. IPM can also help save you money and reduce hazardous materials you use around your home.

IPM's foundation is building a healthy garden. When a garden is functioning properly, all its parts work to manage pest populations and reduce plant disease. Plant health relies on the right plantings in the right places—plants that are acclimated to the weather and soil conditions—or native plants. Plants brought in from other areas—or non-native plants—may not be accustomed to the heat, humidity, rainfall, or soil drainage properties, and as such will weaken, and be more susceptible to insects and diseases. Get to know your garden so you can prevent problems. IPM does not mean you cannot use pesticides and herbicides, but it does mean that you should understand your garden and resort to the best solution. It may be that you need to move a plant to the shade to reduce stress. Get started by reading University of Maryland Extension's Home & Garden Mimeo #62, or by inviting a Bay-Wise trained Master Gardener volunteer to walk your garden with you and begin to identify issues and possible solutions.

### Good Bugs!

Let them do their work!

**Beneficial Insects:** Naturally occurring predators such as praying mantis (right), ladybird beetles (far right), lacewings, assassin bugs, aphid midges, dragon and damsel flies, predatory wasps, ground beetles and syrphid flies help to control many pests in your garden. Birds, frogs, toads, and lizards help too! Let them do the work rather than pesticides. Photo to far right courtesy of UMCES at [www.umces.edu](http://www.umces.edu).

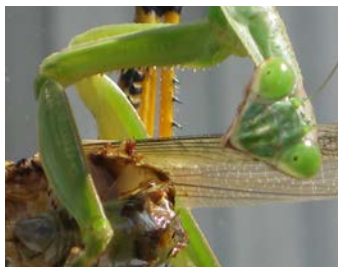


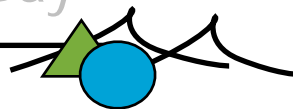
Photo courtesy of Lisa Marie Ghezzi.



### WHERE TO GET HELP FOR...

#### INTEGRATED PEST MANAGEMENT

- University of Maryland Extension — Dorchester County, Bay-Wise program at (410) 228-8800 or Mimeo #62: [http://www.hgic.umd.edu/media/documents/IPMSeriesLandscapeHG62pfv\\_000.pdf](http://www.hgic.umd.edu/media/documents/IPMSeriesLandscapeHG62pfv_000.pdf)
- State of Maryland, Department of Agriculture, Office of Plant Industries and Pest Management, Mosquito Control at (410) 841-5870.
- Maryland Department of Agriculture at <http://www.mda.state.md.us/plants-pests/>



## Shorelines

### Protecting Shorelines

If you live on one of Dorchester County's many tidal creeks or rivers you are aware that shoreline erosion is a constant process and a serious problem. Storms, water craft wakes, and sea level rise can all lead to increased erosion and loss of property. If we study historic aerial photographs of the shoreline we can see that shorelines continually change. In most cases, as time passes, the shorelines recede. This loss of land represents many thousands of tons of sediment entering our waterways and the Bay, smothering underwater grasses and shellfish. Wave action removes the soil undermining trees, causing them to collapse.



**Shoreline Erosion.** Trees are undermined by daily tidal action causing them to uproot. When they fall, they carry large amounts of sediment into the creek with them. Photo courtesy of Lisa Marie Ghezzi.



**Wetland Plants.** Smooth Cordgrass or Saltmarsh Cordgrass (*Spartina alterniflora*) has adapted to thrive in salt water. Its deep fibrous root system prevents erosion. Photo courtesy of Environmental Concern Inc.

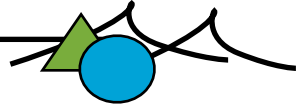
In attempts to protect property from erosion, many landowners have installed protection such as bulkheads and riprap (rock revetments). While these methods may effectively protect the upland, they may cause erosion of the bottom as waves crash into these vertical structures and move sediment away from them. As sea level rises and storms worsen many of these structures are over-topped by waves causing the structures to fail. These structures do not provide habitat or water quality benefits. The Maryland Department of the Environment (MDE) and the Chesapeake and Coastal Bays Critical Area Program encourage landowners to select the most environmentally sensitive methods for protecting their shoreline.

### Creating Living Shorelines

A living shoreline uses wetland plants to absorb the erosive energy of waves to protect the upland. The tidal wetland that is created is well adapted to the rise and fall of tides, the

salinity of the water, and the effects of waves and storms. The plants in the salt marsh filter and trap sediment from stormwater runoff.

# What You Can Do In Your Backyard and Home



These plants also take-up nutrients that have already made their way into the tidal waters. Wetland soils support denitrification, a process by which nitrates from fertilizers and animal wastes are released to the atmosphere as a harmless gas.

Tidal wetlands provide habitat for many species of shore birds, fish, shellfish, turtles, and other organisms. They are nurseries for many sport fish as well as Maryland blue crabs. The plants form the base of the food chain for the Bay ecosystem.



**Elliott Island.** Demonstration Living Shoreline: This is a large marsh restoration project along Elliott Island Road on Fishing Bay. It is 4,000 feet long and provides 17 acres of restored marsh habitat. Photo courtesy of Environmental Concern Inc.



**Restoration --Before.** The existing marsh on this residential waterfront was washing away before the marsh restoration project. Photo courtesy of Glenna Heckathorn.

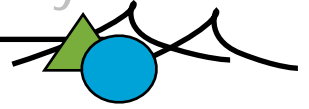


**Restoration - After.** A marsh edge was created by placing logs of coir, backfilling with sand, then planting. The coir temporarily holds the sand in place until plants become established. Photo courtesy of Glenna Heckathorn.

## WHERE TO GET HELP FOR...

### LIVING SHORELINES

- MDE, Wetlands and Waterways: Tidal Wetlands Division at (410) 537-3837.
- Maryland Department of Natural Resources at <http://www.dnr.maryland.gov/coastalbays/>
- Environmental Concern at (410) 745-9620 or [www.wetland.org](http://www.wetland.org)
- Dorchester County Planning and Zoning at (410) 228-3234.
- NOAA Habitat Conservation at <http://www.habitat.noaa.gov/restoration/techniques/livingshorelines.html>
- Chesapeake Bay Trust at [http://www.cbtrust.org/site/c.miJPKXPCJnH/b.5457537/k.B2A2/Living\\_Shorelines.htm](http://www.cbtrust.org/site/c.miJPKXPCJnH/b.5457537/k.B2A2/Living_Shorelines.htm)



# Best Management Practices for Your Household

There are many things each of us can do in our daily lives that will have a lasting positive effect on the Bay and other important resources. As we understand the factors impacting our environment, we will use resources more wisely. These actions will help us to conserve water and energy, as well as the beauty of our natural environment and wildlife.

## Water Use and Conservation

For homeowners utilizing individual wells, as well as Dorchester County residents supplied by Cambridge Utilities Commission, water is sourced from naturally filtered underground aquifers. Cambridge Utilities pumps from ten wells that are withdrawing from three different aquifers. The water is then treated and pumped into its distribution system. A public forum is held at the Cambridge City Council Chambers on the 4th Thursday of each month to discuss concerns about drinking water. The public is always welcome.

Contamination of groundwater occurs when pollutants reach groundwater supplies, especially those wells closer to the surface. Some sources of these products include storage tanks, landfills, septic systems and the use of road fertilizers, pesticides, road salts, and other chemicals.

Although Dorchester County typically gets about four inches of rainfall each month, it has also experienced severe drought periods that have had serious impact on water supplies, both from private wells and the public water systems. As water is pulled up from our wells, or as water is treated and delivered to homes, a considerable amount of energy is used. The Cambridge Utilities Annual Water Quality Report covers this and other local water data and is available at the Commission office.

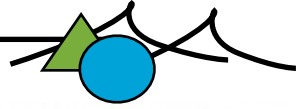
As the population grows in our county and region, more people vie for the same sources of water and conserving water becomes ever more critical. By adopting a few simple habits, you can help extend precious water supplies and reduce the load you place on your septic system or public sewer system.

Waste water is treated before it goes into the Bay. Dorchester County residents can do their part to decrease the energy and resources required to treat the waste water by reducing the amount of contaminants they put down the drain. See page 29 for information on how to properly dispose of household hazardous waste.



**Water Saver Toilet:** This inexpensive retrofit can convert any toilet into a water saving toilet.





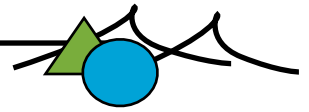
## Tips for Conserving Water and Energy to Treat Waste Water

- Leaks and Drips: Repair all leaks and drips around the house. A single running toilet can waste 200 gallons of water per day.
- Turn off the faucet while you brush your teeth, shave, or lather up.
- Water Saving Fixtures: Install low-flow fixtures on showerheads, sinks, and toilets.
- Full Loads: Run only full loads of dishes or laundry.
- Water Saving Appliances: Make your next washing machine a front loading model (they use less water).
- Increase Soil Absorption: Be savvy about lawn and garden care. Add organic matter to the soil to increase water absorption; this helps the soil to retain water, thus requiring less watering.
- Mulch bare areas to conserve moisture.
- Garden Watering Approaches: Water deeply, thoroughly, and infrequently—early morning is the best time to water. Make sure your water stays on the lawn and garden, and not on the sidewalk or street.
- Outdoor Solutions: Install drip irrigation and/or timers to reduce water use.
- Water Saving Nozzles: Use nozzles on outside hoses and wash cars with a bucket of water, using the hose only to rinse.
- Car: Wash your car on your lawn rather than on the driveway to prevent runoff.

### WHERE TO GET HELP FOR...

#### **WATER CONSERVATION**

- City of Cambridge Municipal Utilities Commission at (410) 228-5440; Academy and Muir Streets, Cambridge.
- Maryland Department of the Environment at 800-633-6101 or <http://www.mde.state.md.us/programs/water/Pages/Programs/WaterPrograms/index.aspx>
- USDA Natural Resources Conservation Service <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water>
- US Environmental Protection Agency at <http://water.epa.gov/scitech/climatechange/index.cfm>



## Energy Conservation

Scientists tell us that about 25% of the excess nutrients entering the Chesapeake Bay come from air pollution that is rinsed directly into the Bay with rainfall or deposited on the land and then washed into the Bay's tributaries. Where does that air pollution come from?

The great majority of it comes from motor vehicles and from coal-fired power plants that produce the electricity we all use. As the demand for energy increases in the United States along with population and development demands, we must all become increasingly conscientious of conserving energy at every turn. Every household can help reduce energy demand and the flow of pollutants to the Bay.

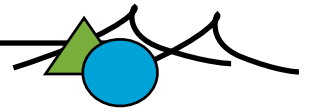


**Environmental Sustainability.** This solar array was recently installed at Mace's Lane Middle School. This investment by Washington Gas Energy Systems and their partner Kenyon Energy required no upfront financial outlay from the County, will serve as an educational vehicle encouraging environmental sustainability awareness, and will help reduce greenhouse gas emissions equal to planting more than 35,000 pine trees or avoiding the use of 1,780,000 gallons of gasoline over 20 years. <http://www.businesswire.com/news/home/20121004005942/en/Washington-Gas-Energy-Systems-Awarded-Dorchester-County>

### WHERE TO GET HELP FOR...

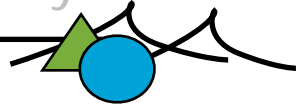
#### **ENERGY CONSERVATION**

- Maryland Energy Administration at (410) 260-7655 or <http://www.energy.state.md.us>
- U.S. Environmental Protection Agency at <http://www.epa.gov/climatechange/wycd/home.html>
- Maryland Public Service Commission: (410) 767-8000 <http://webapp.psc.state.md.us/Intranet/home.cfm>
- Choptank Electric Cooperative at (877) 892-0001 or [www.choptankelectric.com](http://www.choptankelectric.com)
- Delmarva Power at (800) 898-8045 or [www.delmarvapower.com](http://www.delmarvapower.com)



## Tips for Conserving Energy

- **Lights:** Turn off the lights when leaving a room.
- **Tight House:** Keep doors, windows, and drapes closed when running the air conditioning and the drapes open during the day when running the heat.
- **Replace Old Units with Energy Efficient Ones:** If your air conditioning or heating unit is old, consider replacing it. A new energy-efficient model could save significantly on your energy bills.
- **Energy Supplier:** Did you know that you can choose your energy supplier? You can make a difference by choosing one that offers renewable sources of energy such as wind power, solar, or hydroelectric. You will be surprised that the cost is not much different than heavily polluting coal-produced power. The website for the Maryland Public Service Commission (see Pg 28) can help you choose wisely.
- **Air Dry:** Air dry dishes instead of using the drying cycle on your dishwasher.
- **Increase Air Circulation:** Clean the lint filter in the clothes dryer after every load to improve circulation.
- **Laptops Use Less Energy:** Consider buying a laptop for your next computer upgrade; laptops use less energy than desktop computers.
- **Power Strips Can Be Useful:** Plug appliances and electronics such as TVs and DVD players into power strips. When the appliance is not in use, turn off the power strip. Appliances still use energy when plugged in and not in use. Approximately twenty percent of a typical American's electric bill is from appliances that are not in use.
- **Programmable Thermostat:** Replace your conventional thermostat with a programmable thermostat. In winter, reducing your thermostat from 72 to 68 degrees for 8 hours a day (when at work) can lower your heating bill up to 10%.
- **Energy Efficient Light Bulbs:** Lighting accounts for approximately 15% of household electricity use. Fluorescent bulbs reduce energy use by 75% and last 10 times longer than incandescent bulbs. Since fluorescent bulbs contain mercury, dispose of them properly.
- **Energy Audit:** Consult your local power company for information on online or in-home energy audits.



## Maintaining Your Vehicles and Boats

Vehicle maintenance is an important and easy way to prevent oil, heavy metals, and other toxic chemicals from reaching our drinking water and the Bay. After oil has leaked from a car onto a driveway, rainwater washes it into the street, toward the nearest storm drain, or into the yard, toward a Bay tributary. Likewise, oil leaks from boats harm the Bay. It is estimated that 180 million gallons of oil are disposed of improperly each year. A single quart of oil can contaminate 250,000 gallons of drinking water.

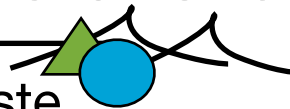
### Tips for Keeping the Chesapeake Bay Free of Vehicle and Boat Contaminants

- **Regular Maintenance:** Check your vehicles—trucks, cars, motorcycles, boats—regularly for oil leaks and drips. If you find leaks or drips, fix them quickly.
- **Drip Cloths and Pans:** Use ground cloths or drip pans when you find leaks, while changing the oil, or when working on the engine.
- **Oil Spills:** If a spill occurs while changing the oil or working on the engine, clean up the spill immediately and properly dispose of the cleanup materials.
- **Antifreeze:** Collect used oil or antifreeze in containers with tight-fitting lids (e.g., plastic jugs) and take it to the Beulah Landfill in Hurlock, or to the Transfer Station in Golden Hill or Secretary (see reference to the Dorchester County Department of Public Works on next page). Do not mix waste oil or antifreeze with gasoline, solvents, or other engine fluids. The oil and antifreeze will become contaminated and will not be reusable. Motor oil, antifreeze, transmission fluid, or other engine fluids should never be dumped onto roads, into gutters, down a storm drain or catch basin, onto the ground, or into a ditch. It will end up in the Bay.
- **Boaters:** Use environmentally safe paints, instead of anti-fouling paints that contain copper, mercury, arsenic, or volatile organic compounds (VOCs). When washing your boat, try plain water, or use phosphate free detergents, biodegradable and non-toxic cleaners. Keep oil absorbent material in bilge and replace it once per year. Never discharge bilge water with oily sheen. A single drop of oil can pollute a million drops of fresh water. Pump out sewage at approved facilities. Use approved Marine Sanitation Devices (MSDs) or use restrooms ashore when possible.

#### WHERE TO GET HELP FOR...

#### **VEHICLE & BOAT MAINTENANCE**

- Maryland Department of the Environment at (800) 633-6101 or [www.mde.state.md.us/programs/water/Pages/index.aspx](http://www.mde.state.md.us/programs/water/Pages/index.aspx)
- Maryland Department of Natural Resources: Boating Services -- Pumpouts in Maryland, [www.dnr.state.md.us/boating/pumpout/](http://www.dnr.state.md.us/boating/pumpout/)
- U.S. Environmental Protection Agency Used Oil Management Program at [www.epa.gov/osw/consERVE/materials/usedoil/](http://www.epa.gov/osw/consERVE/materials/usedoil/)



## Disposing of Household Hazardous Waste

The average household contains between 3 and 10 gallons of materials that are hazardous to human health or to the environment. The improper disposal of household hazardous wastes (HHW) can cause problems for the entire community. Wastes can be explosive or highly flammable. Sewers have exploded and garbage trucks have burned because people have carelessly discarded flammable or reactive wastes.

Household hazardous wastes can leak from landfills and contaminate groundwater and surface water, or enter the air we breathe through emissions from landfills and incinerators. Some wastes are poisonous to humans and/or wildlife, while others can cause cancer, birth defects, or other serious medical problems.

It is important to learn about the products you use in your home, garden, and workshop, and how to dispose of them when they are no longer needed. These include expired drugs which should only be disposed of along with solid waste, not down the toilet! The Prescription Drug Take Back Program, jointly sponsored by the Cambridge Police Department and the Dorchester Department of Health, helps to minimize pollution in our soil and water. Craig's Drug Store hosts events each fall and spring. The U.S. Drug Enforcement Administration transports the collected drugs to a regulated facility that disposes of the drugs in an environmentally sensitive way.

Dorchester County currently does not have a household hazardous waste program. The Land Use Committee of the Mid-Shore League of Women Voters is exploring the benefits of Dorchester County joining the Midshore Regional Recycling Program. Florescent light bulbs, mercury thermometers and batteries are collected at the Beulah Landfill. Oil and antifreeze are collected at the Beulah Landfill and transfer stations in Golden Hill and Secretary.

To reduce the amount of hazardous material you use, find less hazardous substitutes, do not buy more than you need, and follow the directions on the packaging. To prevent leaks, store your waste materials in their original containers until you can take them for disposal.

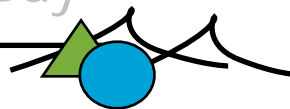


Help conserve our natural resources. Illegal dumping of used oil and antifreeze harms the environment and people. Did you know that the used oil from one oil change can contaminate one million gallons of fresh water? That is a year supply for 50 people (U.S. EPA).

### WHERE TO GET HELP FOR...

#### HOUSEHOLD HAZARDOUS WASTE

- Dorchester County Department of Public Works at (410) 770-8170 or [http://www.docogonet.com/index.php?page-solid\\_waste](http://www.docogonet.com/index.php?page-solid_waste), or Director of Public Works at (410) 228-2920, or solid waste division (410) 943-1092.
- Maryland Department of the Environment at (800) 633-6101 or [http://www.mde.state.md.us/programs/Land/HazardousWaste/HazardousWasteHome/Pages/programs/landprograms/hazardous\\_waste/home/index.aspx](http://www.mde.state.md.us/programs/Land/HazardousWaste/HazardousWasteHome/Pages/programs/landprograms/hazardous_waste/home/index.aspx), MDE -- Dorchester County Fact Sheet <http://www.mde.maryland.gov/programs/Land/RecyclingandOperationsprogram/EducationandOutreach/Pages/Programs/LandPrograms/Recycling/Education/factsheets.aspx>
- U.S. Environmental Protection Agency at <http://www.epa.gov/epawaste/conserves/materials/hhw.htm>
- U.S. Department of Justice, Drug Enforcement Administration at [http://www.deadiversion.usdoj.gov/drug\\_disposal/index.html](http://www.deadiversion.usdoj.gov/drug_disposal/index.html)
- Dorchester County Health Department at (410) 228-3223, [www.dorchesterhealth.org](http://www.dorchesterhealth.org)
- Craig's Drug Stores at (410) 228-3322 or [www.craigdrugstore.com](http://www.craigdrugstore.com)



## Recycling

The Maryland Recycling Act requires all Maryland counties to recycle at least 15% of the waste generated. Recycling helps us control the amount of pollutants in the Chesapeake Bay watershed and keeps recycled items from piling up in our landfills. Like any other pollutant, litter is carried by runoff into our streams and rivers and into the Bay. Litter is not just unsightly—improperly disposed of items such as plastic bags and plastic 6-pack holders may even be harmful to marine life.

Recycling also helps us reduce energy consumption. One ton of recycled aluminum saves 14,000 kilowatt hours, 40 barrels of oil, 238 million Btu's of energy and 10 cubic yards of landfill space! Recycling one glass bottle saves enough energy to light a 100 watt light bulb for four hours. Also think of the forests that can be preserved and the energy saved by reusing paper products.



Cambridge Recycling Center allows citizens to drop off #1 & #2 plastic, paper, newspaper, cardboard, tin and aluminum cans, and glass.

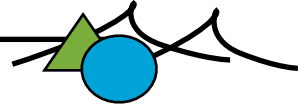
Dorchester County operates recycling drop-off centers around the County where residents can recycle glass, aluminum and bi-metal cans, plastic (#1 and #2), newspaper, miscellaneous paper and magazines, and cardboard. Beulah Landfill in Hurlock accepts batteries, mercury thermometers, and florescent light bulbs to be recycled. Dropping off aluminum cans at the Dorchester Humane Society helps support their efforts. Check the yellow pages for companies who pay cash for scrap metal to turn trash into cash.

Dorchester County participates in the Oyster Recovery Partnership ([www.oysterrecovery.org](http://www.oysterrecovery.org)). Oyster shells are accepted at the Beulah Landfill, the Secretary and Golden Hill transfer stations where they are placed back in the Bay to restore oyster reefs.

Dorchester County Recycling Centers:

- Cambridge on Chesapeake Drive off Routes 50 and 16, Cambridge, MD 21613, (410) 943-1092
- Hurlock on Nelson St., Hurlock, MD 21643, (410) 943-1092
- Beulah landfill, 6815 Elwood Rd., East New Market, MD 21631, (410) 943-1092
- Golden Hill on MD Route 336, Church Creek, MD 21613, (410) 397-3865
- Secretary on MD Routes 16 and 331, Secretary, MD 21664, (410) 943-8294

# What You Can Do In Your Backyard and Home



Dorchester County currently does not have an electronics-recycling program. Several local businesses provide battery and electronics recycling:

- RadioShack: Dorchester Square Shopping Center Cambridge, MD 21613, (410) 228-9539: Accepts Cell Phones, NiCad batteries, and Rechargeable Batteries.
- Staples: Elliott Rd Easton, MD 21601, (410) 770-3839: Accepts Cell Phone Accessories, Cell Phones, Computer, Peripherals, CRT Computer Monitors, Desktop Computers, Digital Cameras, GPS Systems, Ink jet cartridges, Laptops, LCD Monitors, MP3 Players, Batteries, Office Electronics, Printers, and Toner Cartridges.
- Goodwill Industries of the Chesapeake - Dell Reconnect Donation Site: 134 N Washington St Easton, MD 21601, (410) 770-4458: Accepts Desktop Computers, LCD Computer Monitor and Office Machines.
- Target: Marlboro Ave Easton, MD 21601, (410) 770-6180: Accepts Cell Phones, Inkjet Cartridges, MP3 Players.
- Best Buy: Salisbury, MD Accepts a wide variety of household electronics and appliances including TVs.

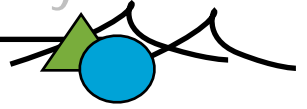


**E-Cycling:** Valuable resources like copper, silver, gold and palladium can be reclaimed by recycling household electronics.

## WHERE TO GET HELP FOR...

### RECYCLING

- Dorchester County Department of Public Works [http://docogonet.com/index.php?page=solid\\_waste](http://docogonet.com/index.php?page=solid_waste) Contact: Director of Public Works (410) 228-2920 or the Solid Waste Division (410) 943-1092.
- Maryland Department of the Environment at (800) 633-6101 or [http://www.mde.state.md.us/programs/Land/HazardousWaste/HazardousWasteHome/Pages/programs/landprograms/hazardous\\_waste/home/index.aspx](http://www.mde.state.md.us/programs/Land/HazardousWaste/HazardousWasteHome/Pages/programs/landprograms/hazardous_waste/home/index.aspx); Dorchester County Fact Sheet at [http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/EducationandOutreach/Documents/www.mde.state.md.us/assets/document/recycling/Dorchester\\_County.pdf](http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/EducationandOutreach/Documents/www.mde.state.md.us/assets/document/recycling/Dorchester_County.pdf)
- E-cycling in Maryland <http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/SpecialProjects/Pages/programs/landprograms/recycling/specialprojects/ecycling.aspx>
- U.S. Environmental Protection Agency at <http://www.epa.gov/epawaste/conserves/materials/hhw.htm>
- U.S. Department of Justice, Drug Enforcement Administration at [http://www.deadiversion.usdoj.gov/drug\\_disposal/index.html](http://www.deadiversion.usdoj.gov/drug_disposal/index.html)
- Dorchester County Health Department 3 Cedar Street Cambridge at (410) 228-3223 or <http://www.dorchesterhealth.org/>
- Craig's Drug Store at 409 Race Street (410) 228-3322 or <http://www.craigdrugstore.com/>



## Composting and Yard Waste

The EPA estimates that each person in the U.S. contributes 4.5 pounds of garbage (municipal solid waste) daily. That equals 1,642 pounds of garbage per person per year! Much of this waste is organic matter and would degrade naturally if composted, saving space in landfills and reducing greenhouse gases. As much as 75% of materials going into the landfill could be composted.

Composted organic material is like black gold—the best kept secret for your garden! It is a dark, crumbly, rich earthy-smelling material that is the result of organic materials decomposing. Compost can be used to improve soil for lawns and gardens, further reducing the need for fertilizers. Start reaping the benefits by setting up a backyard compost tumbler.



**Bin System.** This bin compost cube contains the yard waste and allows air to circulate.

### Tips for Composting

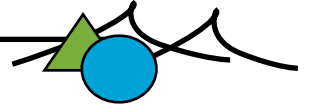
- **Start Small:** There are many different ways to compost: the bin system, tumblers, trench, sheet, and even vermicomposting (using worms to break down material). Some methods are simpler than others. Take a little time to understand what method is best for you.
- **Keep it Simple the First Year:** Compost either kitchen scraps or yard debris, not both!
- **Kitchen Scraps Attract Wildlife:** If you choose to compost kitchen scraps, try vermicomposting in a closed outdoor building or basement; the odors can be strong and will attract animals. By keeping your bin in a closed environment, you will be able to manage keeping wildlife out of your compost bin.
- **Chop or Cut Compost Material:** The smaller the pieces are the faster it will break down.
- **No Animal Products:** Do not add pet waste, grease, meat, or dairy products to a compost pile. These items may attract pests and do not compost well. Egg shells are fine.
- **Diseased Plant Material:** Do not add diseased plant material to your compost pile. Though composting will often neutralize diseased materials if brought to the right temperature for the necessary period of time, it is better not to include these until you fully understand the process. You don't want to spread disease where you use your compost.

#### WHERE TO GET HELP FOR...

#### COMPOSTING

- University of Maryland Extension — Dorchester County at (410) 228-8800 or [www.extension.umd.edu/dorchester-county](http://www.extension.umd.edu/dorchester-county)
- University of Maryland Extension, Home & Garden Information Center's
  - Indoor Redworm Composting at [http://www.hgic.umd.edu/content/documents/hg40\\_000.pdf](http://www.hgic.umd.edu/content/documents/hg40_000.pdf), or
  - Backyard Composting at [http://www.hgic.umd.edu/content/documents/HG35BackyardComposting10\\_2010final\\_000.pdf](http://www.hgic.umd.edu/content/documents/HG35BackyardComposting10_2010final_000.pdf)





## Managing Pet Waste

Always pick up pet waste. Animal waste can be carried easily by rainwater, untreated, to the nearest stream or storm drain. Pet waste contains many harmful bacteria and may contain parasites. It is important to keep these bacteria from entering our surface waters. Many of the streams in Dorchester County contain high levels of fecal coliform bacteria, leading to fish and shellfish harvest restrictions and even swimming restrictions.

In addition, pet waste acts as a fertilizer in the water system and



**Conscientious Observers.** Sean and Clancy watch their owner dispose of pet waste properly. Photo courtesy of Lisa Marie Ghezzi.



**Pet Waste Station.** A pet waste station like the one pictured above, helps to remind pet owners to “scoop the poop”. Photo courtesy of Morgan Ellis.

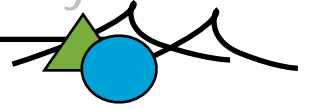
promotes the unhealthy growth of aquatic plants, including algae. The increased abundance of aquatic plant life can rob desirable aquatic life of much-needed oxygen.

When walking the dog, take a plastic bag along. Pick up the pet waste and flush it down the toilet, where it will be properly treated, or dispose of it with your other trash. If flushing is not an option, dig a small trench in the yard and layer pet waste with leaves, grass clippings, and dirt. Do not put pet waste down a storm drain or leave it exposed in your yard!

### WHERE TO GET HELP FOR...

#### **PET WASTE**

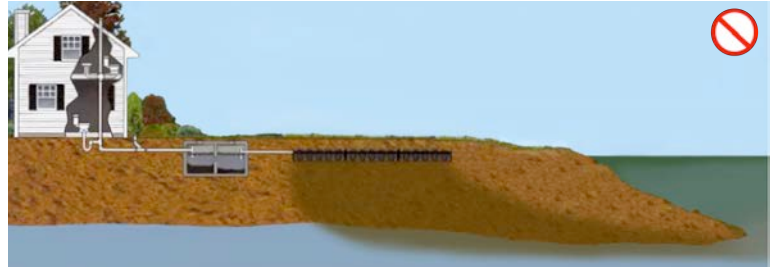
- Dorchester County Health Department, [www.dorchesterhealth.org](http://www.dorchesterhealth.org)
- University of Maryland Extension — Dorchester County, (410) 228-8800.



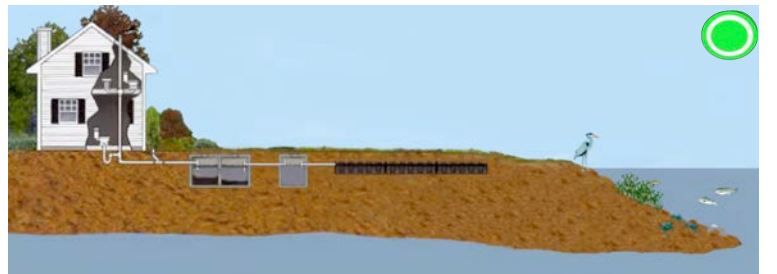
## Managing Your Septic System

In areas without public sewer service, household wastewater (from the bathroom, kitchen, and laundry) is treated by individual septic systems. Septic systems can pollute both the surface waters and the ground waters with bacteria, nitrogen and oxygen-demanding materials. Nutrient pollution impacts the clarity of the Chesapeake Bay and nearby waters by causing harmful algae blooms.

A septic system has two major components: a septic tank and a drain field. Wastewater sewage flows from the house to the septic tank, which retains wastewater long enough for the heavy solids to settle to the bottom. A solid pipe leads from the septic tank to a distribution box, where the untreated wastewater is channeled to the drain field—one or more perforated pipes set in trenches of gravel. Here the water slowly infiltrates into the underlying soil. Dissolved or suspended wastes and bacteria in the water are trapped or absorbed by soil particles or decomposed by microorganisms.



**Septic System BEFORE.** Improperly maintained septic system allows nutrients and oxygen-demanding nutrients to seep into the Bay. Figure courtesy of Talbot County Government.



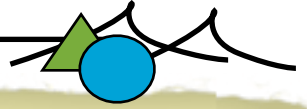
**Septic System AFTER.** Septic system modified with BAT technology provides onsite sewage treatment that reduces the amount of nitrogen released. Figure courtesy of Talbot County Government.

These microorganisms perform the only treatment of the water before it percolates into the groundwater. Under normal conditions, the microorganisms perform well, unless very toxic materials overwhelm the septic system. Microorganism performance can also be diminished if the drain field becomes saturated with stormwater.

When a septic system is not working properly, and is located close to the water's edge, sewage and toxic materials can seep into the Bay. Maintain your system regularly to avoid contaminating the surface water.

A stand alone septic system is not designed to remove nitrogen, however, Best Available Technology (BAT) for septic systems provide an advanced onsite sewage treatment system that will greatly reduce the amount of nitrogen emitted from a septic system. BAT units combine settling of solids, extended aeration, and recirculation to produce a greatly reduced amount of nitrogen in the effluent. The typical traditional household septic system produces 24.7 pounds of nitrogen per year. BAT systems can cut that load in half.

To check on available funds and eligibility for septic upgrade, contact Dorchester County Office of Environmental Health at (410) 228-1167.



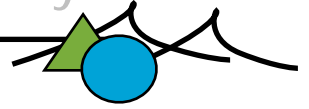
## Tips for Septic System Care

- **Pumping Septic Tank:** Tanks should be checked a minimum of once every 3 years, to determine if pumping is required. Use the size of the tank, and the number of people in the house to determine how frequently pumping should occur. If the tank gets too full, sludge particles will flush out of the tank and clog the drain lines. The EPA recommends tanks be pumped before sludge and scum accumulations exceed 30% of the tank volume.
- Do not add starter enzymes or yeast to your system. Additives have not been scientifically proven to improve the performance of your system.
- Do not pour fats and oils, chlorine bleach, solvents, chemicals, pesticides, paint thinner, or auto products down the drain. These substances can kill the bacteria that make the system function.
- Do not put trash in the toilet such as paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms. These items do not break down quickly and can fill the septic tank. Also avoid flushing drugs down the toilet (see Household Hazardous Waste section).
- **Additional Runoff:** Direct downspout discharges and runoff away from the septic field to avoid saturating the drain field area with excess water.
- Do not overload the system—this is the primary cause of system failures. Early morning and bedtime are peak use times in the bathroom. Run dishwashers and washing machines at other times of the day. Try not to do more than one load of laundry each day.
- **Plantings Near Drainfield:** Dense grass cover and other shallow-rooted plants are beneficial over a drain field. However, do not plant trees near a drain field because large plant roots can clog or break the pipes.
- **Compaction:** Avoid compacting the soil over a drain field to ensure proper percolation of effluent.
- **Limit Garbage Disposal Use:** Using a garbage disposal can double the amount of solids in the tank. Instead, consider composting organic matter. See the “Composting” section for tips.
- **BAT System:** Look into getting a BAT unit for your septic system. BAT systems may be more expensive than traditional septic systems.

### WHERE TO GET HELP FOR...

#### **SEPTIC SYSTEM**

- Dorchester County Health Department, Office of Environmental Health at (410) 228-1167 or [www.dorchesterhealth.org/index.php?page=environmental-health](http://www.dorchesterhealth.org/index.php?page=environmental-health)
- University of Maryland Extension — Dorchester County, (410) 228-8800 or <http://extension.umd.edu/learn/septic-systems-and-their-maintenance>
- Bay Restoration Fund, <http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/index.aspx>



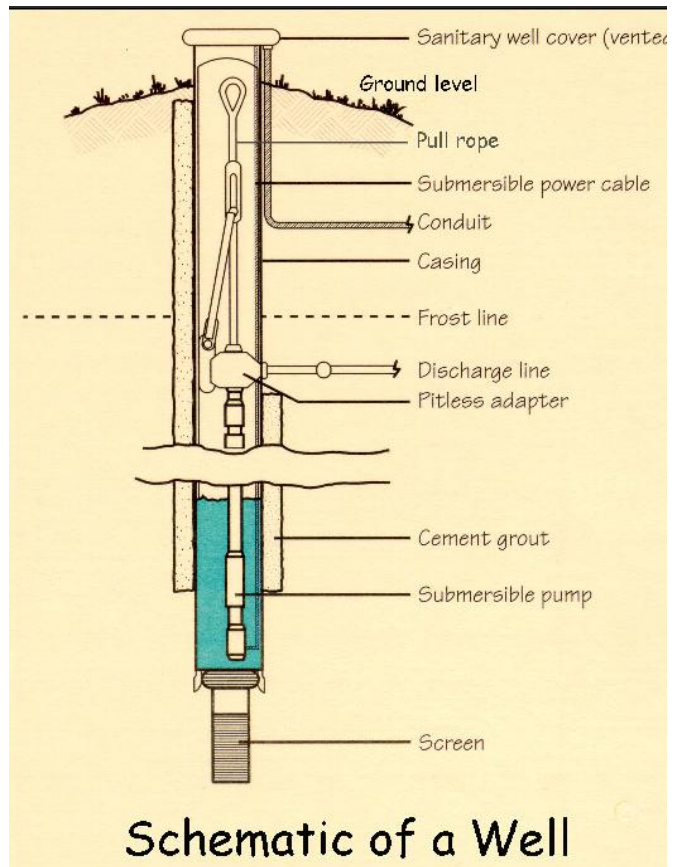
## Living on Well Water

If you have a home well, you are responsible for maintaining the safety and quality of your drinking water. When your well system is suitably located, correctly installed, properly maintained, and regularly tested, you should have few problems with water quality.

Depending on the depth of the well, residential wells are replenished by rainwater that falls anywhere from several hundred feet to miles away from the location of the well. For this reason, the way you and your neighbors use the landscape can be an important factor in the quality of your water supply.

Be alert to possible sources of well water contamination, such as runoff from large paved areas, faulty septic systems, leaking underground fuel tanks, landfills, industrial spills or discharges, and inappropriate use of animal wastes, fertilizers, and pesticides. Be sure the well head is protected and not susceptible to being disturbed by garden equipment. Blows to the well head can cause it to crack allowing contamination to enter.

Test your water supply once a year for bacteria and nitrates. Consider seasonal testing if one sample shows elevated levels of contaminants. Prolonged periods of heavy rain can flush contaminants into groundwater. At the least, test your water any time you notice unusual odors, colors, or cloudiness or if you note an interrupted supply, such as pumping air or sediment.

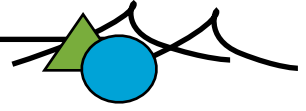


### WHERE TO GET HELP FOR...

#### **WELL SYSTEMS**

- University of Maryland Extension — Dorchester County, 410.228.8800 or [www.extension.umd.edu/learn/water-wells-and-their-maintenance-guidelines-0](http://www.extension.umd.edu/learn/water-wells-and-their-maintenance-guidelines-0)
- Dorchester County Health Department at 410.228.1167 or [www.dorchesterhealth.org/index.php?page=environmental-health](http://www.dorchesterhealth.org/index.php?page=environmental-health)

# The Landscape of Dorchester County



## Agricultural Lands

In Dorchester 34% (114,8000 acres) of the county's acreage is devoted to agriculture and the County has a Right-to-Farm Ordinance which protects farmers and farming activities. As a resident of a rural county, you will see, hear, and smell things that are quite different from an urban or suburban area.

Farmers are proud of their heritage and contributions to the Eastern Shore's beauty and economy. They believe a clean, safe, productive environment equals a bountiful and safe food and water supply.

They employ Best Management Practices (BMP) such as cover crops, nutrient management, precision agriculture, buffer strips, integrated pest management (IPM) and no-till farming to reduce sediment and nutrient runoff. Cover crops help to reduce the erosion of sediment into the Bay. The Dorchester Soil Conservation District reported Dorchester County farmers planted 32,200 acres of cover crops in the 2011/2012 season. Farmers are involved in programs such as Pesticide and Nutrient Management that require licensing from the State of Maryland for the application of these products along with strict storage, application and record keeping requirements. These practices help manage and reduce pollutants entering tributaries and streams leading to coastal waters.

Farmers have taken steps toward improving the health of the Bay. They have been actively engaged in the County's Watershed Implementation Plans (WIP) to develop Total Maximum Daily Load (TMDL) guidelines to reduce pollution and meet Bay clean up goals. In 2011, they participated in the nearly fifty Agricultural working groups to advance the WIP efforts. Farmers and city planners alike will be challenged continuously to reduce load levels.

Farmers, like homeowners, are following Best Management Practices to help improve the health of the Bay.

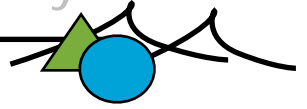


**Reduce Fertilizer Use.** Planting crops like alfalfa or other legumes helps fix nitrogen in the soil reducing the need for additional fertilizer. Photo courtesy of Beth Ann Lynch.

### WHERE TO GET HELP FOR...

#### **AGRICULTURAL QUESTIONS**

- University of Maryland Extension—Dorchester County at (410) 228-8800.
- Dorchester Soil Conservation District at (410) 228-3733.
- Dorchester County Planning and Zoning at (410) 228-3234.
- Maryland Department of Agriculture at <http://www.mda.state.md.us>



## Wetlands

Maryland's Eastern Shore is located on the Outer Coastal Plain which is characterized by flat land with low elevation. The Coastal Plain is 54% of Maryland's land surface but contains 94% of the state's wetlands.

Dorchester County contains more than 169,000 acres of wetlands and 1,700 miles of shoreline. That's 45% of the total land area of the county! Over 27,000 acres of wetlands are within Blackwater Wildlife refuge. Dorchester County residents have the opportunity to experience the beauty of wetlands around us every day.



**Blackwater Wildlife Refuge** contains 25,000 acres of wetlands and is host to more than 250 bird species and 165 threatened and endangered plants and animals. Photo courtesy of Diane Miller.

Wetlands are amazing places. They are critically important to the health of the Bay. They filter pollutants and sediment, produce oxygen, absorb pollutants and nutrients from runoff and tidal waters. They have the ability to take vast amounts of carbon from the atmosphere and store it in plant material both above and below ground. Wetland soils support a process called denitrification, by which excess nitrogen from fertilizers and animal waste are converted to a harmless gas and released to the atmosphere.

Wetland plants form the base of the food chain for marine and other wildlife. Chesapeake Bay fisheries rely on tidal wetlands which provide habitat for 97% of commercially important fish species during part of their life. Wetlands make available nesting and breeding grounds for many bird species, and overwintering areas and feeding grounds for migratory waterfowl. Wetlands serve as habitat for blue crabs, and nesting habitat for Diamondbacked terrapins and horseshoe crabs.

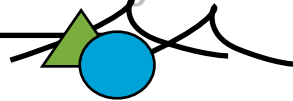
Tidal wetlands serve yet another important role related to shorelines. They support plant life and structure that protect the shorelines from from wave energy and erosion.

Wetlands need protection. It is estimated that Maryland has lost over 60% of its wetlands to draining or filling for agricultural uses and development. On the Eastern Shore many acres of forested wetlands were cleared and drained to grow crops, and many miles of tidal wetlands along shorelines have been altered to construct our homes and towns.

### WHERE TO GET HELP FOR...

#### WETLANDS

- Maryland Department of the Environment at [http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/DocumentsandInformation/Pages/Programs/WaterPrograms/Wetlands\\_Waterways/documents\\_information/mdwetlands.aspx#coastal](http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/DocumentsandInformation/Pages/Programs/WaterPrograms/Wetlands_Waterways/documents_information/mdwetlands.aspx#coastal)
- Blackwater Wildlife Refuge at [www.fws.gov/blackwater](http://www.fws.gov/blackwater)
- Environmental Concern at (410) 745-9620 or [www.wetland.org](http://www.wetland.org), or [http://www.wetland.org/restoration\\_visit\\_Waterside.htm](http://www.wetland.org/restoration_visit_Waterside.htm)



## Sea Level Rise

Dorchester County is particularly susceptible to sea level rise and the sinking (or subsidence) of land. "Nearly 60% of the county lies in the 100-year floodplain, with most of that area being tidal floodplain. Over 50% of the county's land area lies below elevation 4.9 feet above sea level" (Carlisle, Conn and Fabijanski, 2006, cited in Sea Level Rise - Technical Assistance for Dorchester County, 2008).

According to the Maryland Climate Change Commission report from 2013, "Updating Maryland's Sea Level Rise Predictions", the rate of rise of the average level of tidal waters has increased, partially as a result of global warming. The report gives a "High" estimate of sea level rise of 2.1 feet by 2050, and recommends that in the near term planning efforts should take this into account.

What does this mean for Dorchester County, and what can you do to prepare for these changes?

An increase in sea level rise means an increase in the number and severity of coastal and inland flooding episodes in the coming decades. This can have impacts on roads, bridges, and shorelines.



The cover photo for "Sea Level Rise – Technical Assistance for Dorchester County" (link below) published in 2008, shows a familiar scene in Dorchester County. Photo courtesy of Diane Wanda Cole.

One way homeowners can help manage this problem is by storing stormwater on site through the use of rain barrels, rain gardens, and conservation landscaping. These practices help slow the flow of water and give it places to go other than out into the street. By limiting the amount of impervious (hard/paved) surface on your property, you can help promote infiltration of the water and minimize "flashy" or high volume water flow that often contributes to local flooding.

Be prepared in the case of a high volume flood or storm event. Make sure to have an emergency preparedness plan (including arrangements for your pets) and keep supplies on hand in case you lose power for

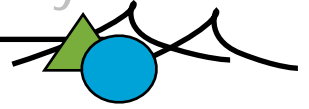
an extended period of time or get stranded. Check on elderly and infirm neighbors.

Sea level rise is partially attributed to human actions that are causing global temperature to rise. You can do your part to limit this rise by conserving energy in and outside the home. Consider switching to a "green" energy source such as solar or wind. Carpool where possible!

### WHERE TO GET INFORMATION ABOUT THE SCIENCE OF..

#### SEA LEVEL RISE

- Download: "Sea Level Rise – Technical Assistance for Dorchester County." 2008. By Wanda Diane Cole for Eastern Shore RC&D Council. <http://www.dnr.state.md.us/dnrnews/pdfs/Dorchester.pdf>
- Download: "Updating Maryland's Sea Level Rise Predictions." 2013. Scientific and Technical Working Group, Maryland Climate Change Commission. [http://ian.umces.edu/pdfs/ian\\_report\\_413.pdf](http://ian.umces.edu/pdfs/ian_report_413.pdf)
- Download: Coastal Land Conservation in Maryland. Chelsea Papiez. [http://www.dnr.state.md.us/ccp/pdfs/Papiez\\_TCS\\_PP.pdf](http://www.dnr.state.md.us/ccp/pdfs/Papiez_TCS_PP.pdf)
- Dorchester County Emergency Services <http://www.dorchestercounty.net/index.aspx?page=209>



## Forest Stewardship

Forestland is important to the overall health of the Chesapeake Bay. Forests provide several layers, from the canopy to the forest floor, that act as filters, improve water quality, reduce sedimentation, remove nutrients, and regulate stream flow during storms.

Maryland's 2.5 million acres of forest, most of it privately owned, cover approximately 42% of its land area. Dorchester County is the largest county on the Eastern Shore. 73% of its acreage is in agricultural use (34%) or forested (39%). With Dorchester County's extensive shorelines along tributaries of the Chesapeake Bay, its forests—and particularly its forested buffers—are critical to improving Bay health. The County occupies a forest transitional zone, where the dominant tree species vary from oak/hickory to tulip poplar to sweet gum/red maple and loblolly pine and cedar.



**Naturally Forested Area.** Forest floors function as sponges, absorbing runoff, allowing water to recharge underground supplies. Photo courtesy of Lisa Marie Ghezzi.

Forests can be harvested on a sustainable basis for materials, including structural lumber, crates, shelving and furniture, flooring, mulch, and pulp for paper. Timber harvests are approved by a partnership of agencies, including Dorchester Soil Conservation District and Dorchester County Planning and Zoning. For harvests occurring within the 1,000-foot Critical Area, the Dorchester County Forestry Board also provides oversight.

County residents with questions about woodland stewardship and management, as well as timber harvesting, should contact the DNR Forest Service forester. Maryland maintains a database of private Licensed Professional Foresters (LPFs), who work cooperatively with the DNR Forest Service to assist landowners with implementation of timber harvests. Lists of LPFs can be found at the DNR website below. Remember, although a forester may suggest a harvest plan, the final decision regarding logging or other management is always up to the landowner. Some of the most beautiful and ecologically diverse forests are those where the landowners have chosen never to log.

### WHERE TO GET HELP FOR...

#### **FOREST STEWARDSHIP QUESTIONS**

- Maryland DNR – Forest Service at (410) 228-1861.
- Maryland Department of Natural Resources at [www.dnr.maryland.gov](http://www.dnr.maryland.gov)
- Dorchester Soil Conservation District at (410) 228-3733.
- Dorchester County Planning and Zoning at (410) 228-3234.
- Old-Growth Forest Network at [www.oldgrowthforest.net](http://www.oldgrowthforest.net)
- National Agroforestry Center at [www.unl.edu/nac](http://www.unl.edu/nac)



# Dorchester County Master Gardener Program

Maryland Master Gardener Vision: A healthier world through environmental stewardship.

Dorchester County Master Gardener's are volunteers, trained by University of Maryland Extension, who provide horticultural education services to individuals, groups, and communities including government agencies, neighborhood associations, non-profit organizations, historic sites, schools and youth groups, senior citizens and garden clubs. Master Gardener programs and services are available to all Dorchester County residents and community groups.



**Bay-Wise Consultation.** Dorchester County Bay Wise trained Master Gardeners evaluate a property on Hudson Creek. Photo credit Diane Miller.

**Background:** The Maryland Master Gardener Program was started in 1978 as a means of extending the horticultural and pest management expertise of

University of Maryland Extension (UME) to the general public. Today, this popular program can be found in 18 Maryland counties, Baltimore City, and two Maryland prisons.

The program is designed to train volunteer horticultural educators for UME—the principal outreach education unit of the University of Maryland. Participants receive 40-50 hours of basic training from University of Maryland professionals and then agree to work in their communities to teach Marylanders how to cultivate garden spaces and manage landscapes sustainably using research-based information. This environmental horticulture approach reduces fertilizer and pesticide use resulting in improved soil and water quality.

**Bay-Wise Certification:** One of the most active Master Gardener programs is Bay-Wise. Master Gardeners receive special advanced training to evaluate and make recommendations on garden and landscape practices that protect the Chesapeake Bay. Any Dorchester County homeowner can request a consultation at his or her home by a team of Bay-Wise volunteers by contacting the Extension Office. Bay-Wise trained Master Gardeners will then visit the property with the homeowner to determine areas of concern, answer questions, and make Bay-Wise recommendations. Once the homeowner addresses suggested changes to incorporate Bay-Wise best practices, the Bay-Wise Master Gardeners return for certification. A landscape meeting multiple best-practice guidelines becomes Bay-Wise certified, and receives a Bay-Wise certification sign.

For more information on a Bay-Wise consultation for your home, call the University of Maryland Extension — Dorchester County at (410) 228-8800.



**University of Maryland Extension programs are open to all citizens without regard to race, color, gender, disability, religion, age, sexual orientation, marital or parental status, or national origin.**

# Dorchester Citizens for Planned Growth (DCPG)

DCPG supports strong County and City Comprehensive Plans that direct residential, commercial and industrial growth to our villages and towns while preserving the farming, fishing, and forestry industries. We oppose piecemeal amendments to the Comprehensive Plans that damage the open space, clean water and productive agriculture that is our heritage and future in Dorchester County. We offer a progressive voice that sustains our beautiful land, water, and historic tradition.

The group's mission statement: DCPG is organized to guarantee a public voice in issues of land and water use. The group pledges to advocate for the promotion, maintenance, and conservation of the natural resources, farmland, tidewater, and open spaces of Dorchester County.

If you would like to volunteer, help is needed for the following: Newsletter Articles, Attending Community Events Promoting DCPG, Fundraising, Water Quality Monitoring, and Photography.



**Water Quality Monitoring:** DCPG volunteers Richard Ball and Thomas Wolfe collect water samples for analysis.

## Local Organizations and Resources

Dorchester County Government  
Dorchester County Office Building  
501 Court Lane  
Cambridge, MD 21613  
Website: <http://docogonet.com/index.php?page=home>

Department of Planning & Zoning  
(410) 228-3234

Department of Public Works  
5435 Handley Road  
Cambridge, MD 21613  
(410)-228-2920

Dorchester Soil Conservation District  
204 Cedar Street  
Cambridge, MD 21613  
Telephone: 410-228-3733  
<http://www.mascd.net/Dorchester/>

Blackwater National Wildlife Refuge  
2145 Key Wallace Drive  
Cambridge, MD 21613  
(410) 228-2677  
Website: <http://www.fws.gov/blackwater/>  
volunteer information: <http://www.fws.gov/blackwater/getinvolved.html>

Nanticoke Watershed Alliance  
PO Box 111  
Vienna, MD 21869  
Website: <http://nanticokeriver.org>

Dorchester Shoreline Erosion Group: Dorchester  
County Resource Preservation & Development  
Corp.  
2315 Hoopers Island Road  
Fishing Creek MD 21634

Midshore Riverkeeper Conservancy  
24 N. Harrison Street  
Easton, MD 21601  
(443) 385-0511

# Special Thanks

Lead author and editor Lisa Marie Ghezzi, and co-authors and copy editors Diane Miller and Jennifer Dindinger. Individuals who generously contributed their time and efforts to make this Dorchester County version possible: Dorchester County Master Gardeners Sue Fischer, Diane Miller, Glenna Heckathorn; League of Women Voters of the Mid-Shore Margaret Anzalone; and Dorchester Citizens for Planned Growth Beth Ann Lynch, Lexine Lowe. We would also like to thank the organizations listed on page 2 and others who contributed their knowledge and expertise in the production of the original booklet. Thanks to University of Maryland Sea Grant Extension for funding the printing of this publication.

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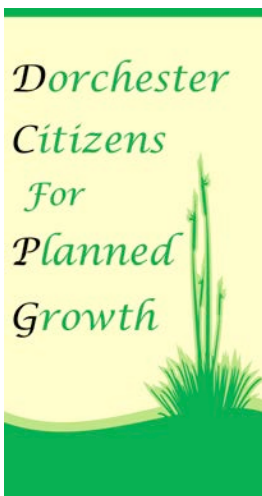


Master Gardener Program  
<http://extension.umd.edu/dorchester-county/horticulture/mg-community-program>



Sea Grant Extension Program  
Dorchester/Somerset/Wicomico/Worcester Counties  
Website: <http://extension.umd.edu/dorchester-county/maryland-sea-grant>

League of Women Voters of the Mid-Shore of Maryland  
PO Box 1724  
Easton, MD 21601  
Website: <http://midshore.lwvmd.org/>



Dorchester Citizens for Planned Growth (DCPG)  
601 Locust St  
Cambridge, MD 21613  
Website: <http://dcpgonline.org/>



University of Maryland Extension  
501 Court Lane, Rm 208  
Cambridge, MD 21613



Thank you for  
using your  
stamp!  
We have  
limited funds!

University of Maryland Extension  
Dorchester County  
501 Court Lane, Room 208  
P.O. Box 299  
Cambridge, MD 21613

***“From My Backyard to Our Bay”, survey***

THANKS for taking the time to give us your thoughts about this publication.  
You can help us make it an even better resource for Dorchester County residents  
by completing and returning this card.

- |    | Strongly Agree  |   |   |   |   |   |
|----|---|---|---|---|---|---|
| 1. | I learned something new from this booklet.  | 5 | 4 | 3 | 2 | 1 |
| 2. | I will change something in my daily life as a result of this booklet.                 | 5 | 4 | 3 | 2 | 1 |
| 3. | I know where to get more information if I need it.                                    | 5 | 4 | 3 | 2 | 1 |
| 4. | The information in this booklet was easy to understand.                               | 5 | 4 | 3 | 2 | 1 |
| 5. | I will talk with my neighbors about this booklet.                                     | 5 | 4 | 3 | 2 | 1 |
| 6. | I think this booklet should have more information on: _____<br>_____                  |   |   |   |   |   |
| 7. | Would you like a Master Gardener to contact you for a Bay-Wise consultation? Yes / No |   |   |   |   |   |

email: \_\_\_\_\_  
phone: \_\_\_\_\_

You can also call us with your comments at (410) 228-8800.