

HOMEOWNER'S
guide to the
COASTAL BAYS

M A R Y L A N D C O A S T A L B A Y S P R O G R A M

IMPORTANT Phone Numbers

Have questions about regulations regarding your environment? Call to ask about your property or report violations.

HAZARDOUS SPILLS

1-866-633-4686

Nights and weekends: 410-537-3975

ACCIDENTAL CHEMICAL INGESTION

800-492-4020

WATER POLLUTION VIOLATIONS

410-901-4020

Day: 1-866-633-4686

Nights and weekends:

FISH KILLS

Nights and weekends:

410-548-7070

WETLANDS VIOLATIONS (TIDAL AND NON-TIDAL)

410-901-4021

FOREST VIOLATIONS

410-632-1200 ext. 1147

410-543-6745

BUFFER VIOLATIONS

410-632-1200 ext. 1140

SEPTIC VIOLATION

410-632-1200 ext. 1606

SEDIMENT AND EROSION CONTROL

410-632-1200 ext. 1140

STORMWATER MANAGEMENT

410-632-1200 ext. 1140

410-289-2253 (OC)

BOATING EMERGENCY

410-548-7070

410-289-7559

STRANDED MAMMALS/SEA TURTLES

410-548-7070

410-408-6633

PIER CONSTRUCTION

410-632-1200 ext. 1140

FISHING REGULATIONS (COASTAL BAYS)

410-548-7070

FISHING REGULATIONS (OFFSHORE)

301-713-2347

1-888-872-8862 (tuna)

1-800-894-5528 (billfish, swordfish)

DRINKING WATER PROBLEMS

410-632-1200 ext. 1606

GARDENING QUESTIONS

1-800-342-2507

WILDLIFE PROTECTION

410-548-7070

410-573-4500

BUILDING CODE VIOLATIONS

410-632-1200 ext. 1123

410-289-8855 (Ocean City)

PUBLIC SEWER LEAKS

1-800-922-8017

Day: 410-631-3510

Nights and weekends: 410-631-3937

ENVIRONMENTAL EMERGENCY

800-424-8802

BUSINESS ASSISTANCE

800-228-8711

LAND PLANNING

410-632-5651

410-632-1200 ext. 1140

ENERGY QUESTIONS

1-800-72-ENERGY

RECYCLING QUESTIONS

1-800-473-2925

410-632-1200

FARMING QUESTIONS

410-632-5439 ext.3

410-632-1200 ext. 1147

AIR POLLUTION VIOLATIONS

410-543-6913

Day: 410-631-3215

Nights and weekends: 1-800-633-6101

SENSITIVE AREAS

410-632-5651

GENERAL

410-632-2297 (MD Coastal Bays)

410-632-1972

800-438-2474

This Homeowners' Guide to the Coastal Bays was written and produced by the Maryland Coastal Bays Program with help from Ocean City.

Special thanks to: The Maryland Department of the Environment, Maryland Cooperative Extension Service, Maryland Department of Natural Resources, Worcester County, Western Maryland Research and Education Center (Tom Miller), San Francisco Estuary Project, USDA Natural Resources Conservation Service, Cornell Laboratory of Ornithology, Maryland Department of Planning.

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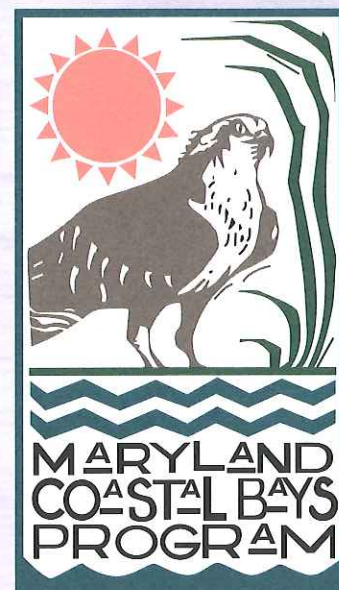


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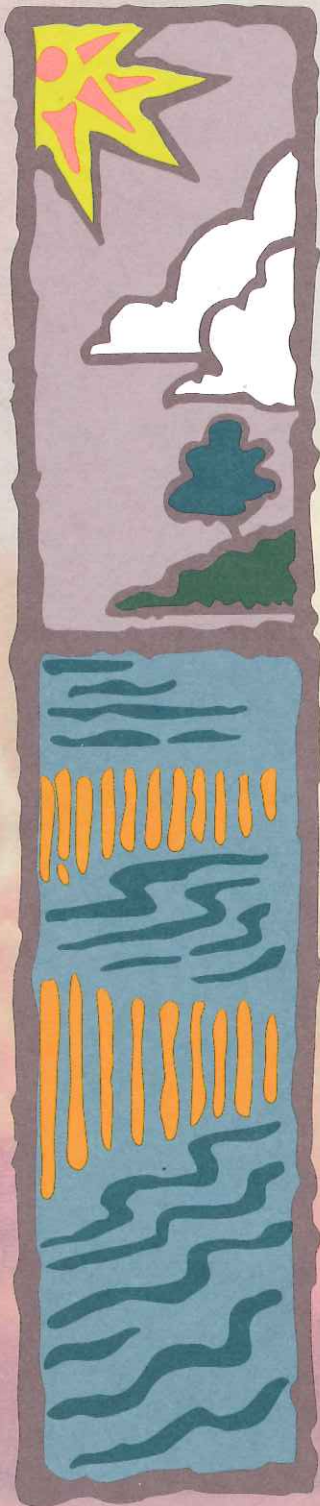
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THE COASTAL BAYS



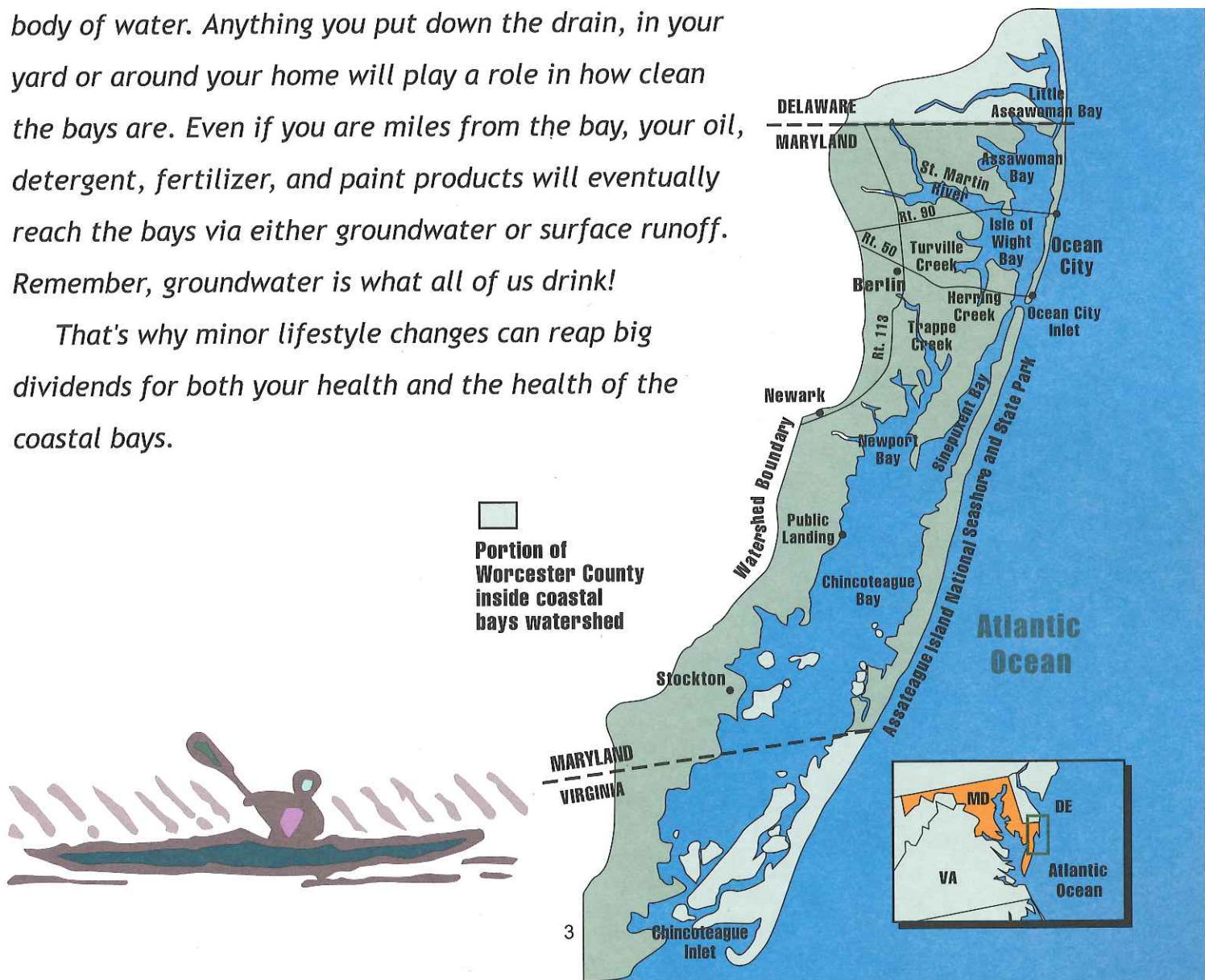
This estuary is the lifeblood of this community-which is why pollution prevention and water conservation are so important. You'd be surprised how much the coastal bays and its watershed contribute to your life. These waters irrigate crops, fill the taps in your homes and businesses, dilute and disperse your sewage and wastewater, grace your shoreline with parks and vistas, provide for billions of dollars in fishing, farming, and tourism, and are the home of herons, pelicans, egrets, otters, turtles and other natural wonders.

How Do **You** Affect Water Quality?

If you live in Berlin, Bishopville, Ocean City, Ocean Pines, around Snow Hill or Pocomoke or anywhere roughly east of Route 113, you are in the coastal bays watershed. This means your behavior has an effect on water quality.

A watershed is an area of land that drains to a given body of water. Anything you put down the drain, in your yard or around your home will play a role in how clean the bays are. Even if you are miles from the bay, your oil, detergent, fertilizer, and paint products will eventually reach the bays via either groundwater or surface runoff. Remember, groundwater is what all of us drink!

That's why minor lifestyle changes can reap big dividends for both your health and the health of the coastal bays.



THE COASTAL BAYS WATERSHED BY THE NUMBERS



▶ Total acres of land in watershed:	117,934 acres
▶ Acres of water	71,253 acres
▶ Acres of land and water	189,187 acres
▶ Miles of shoreline	284.5 miles
▶ Acres of wetlands drained in the past 300 years	25,000 acres
▶ Acres of forest lost in the past 300 years	60,000 acres
▶ Size of coastal bays watershed	175 square miles
▶ Size of Chesapeake Bay watershed	64,000 square miles
▶ Average depth of coastal bays	3.5 feet
▶ Percent of forest and wetlands lost	50 percent each
▶ Percent of coastal farmland lost between 1987-2012	25 percent
▶ Feet the northern seven miles of Assateague has moved westward since the building of the inlet jetty in 1934	350 meters
▶ Number of visitors who come to the coastal bays every year to swim, waterski, fish, crab, birdwatch, kayak, hike or enjoy a meal in one of Ocean City's bayside restaurants	8.5 million
▶ Annual dollars recreational crabbing and fishing bring to the local economy	\$21 million
▶ Annual employee income in the coastal bays from tourism-related activities	\$700 million
▶ Number of people living year-round in the coastal bays watershed in 2010	37,000 people
▶ Expected year-round population by 2020	50,000 people
▶ Number of people who visit Ocean City on summer weekends	300,000 people
▶ Rate of population growth in the watershed from 1990-2000	50 percent
▶ Rank in growth rate among all other Maryland counties	Rank in growth is 2
▶ Rank in animal diversity among Maryland counties	Rank in animal is 1
▶ Number of reptile and amphibian species in watershed	59 species
▶ Number of fish species	115 species
▶ Number of bird species	360 species
▶ Number of mammal species	44 species
▶ Number of rare, threatened and endangered species	108 species
▶ Percent of these animal species (black bears, cougars, elk, bison, timber wolves) that lived in the coastal bays watershed before Europeans arrived	100 percent

FACTS ABOUT THE COASTAL BAYS WATERSHED

The northern bays are suffering more highly from human impacts than the southern bays. These impacts have caused a decline in the diversity and numbers of fish, and shellfish species living in the northern bays, especially St. Martins River, Assawoman and Isle of Wight bays.

CHEMICAL CONTAMINATION

While nutrient runoff characterizes the principal concern in the bays now, it is likely that concern will shift to the more insidious problem of chemical and metal contamination. Such contamination from population and development pressures will present a greater threat to the coastal bays in the 21st century. Across the continental US, some 40 percent of all estuaries are unfit for swimming or fishing, not because of nutrients, but largely as a result of insurmountable chemical and metal inputs from burgeoning coastal populations. In the coastal bays, a EPA study showed about 68 percent of the combined Maryland and Delaware coastal bays have one or more chemicals at levels sufficient to harm living organisms. In the Chesapeake, that level is only 46 percent. No stormwater management for any development was required in Worcester prior to 1989. This means almost all of the stormwater from Ocean City and elsewhere carries chemicals directly to the bays.

NUTRIENTS

Nutrient enrichment from nitrogen and phosphorous is a major environmental problem facing Maryland's coastal bays. Nitrogen and phosphorous inputs become a serious problem when they exceed the bays' ability to absorb or effectively process them. Today, the amount of nutrients entering the bays is significantly higher than their natural condition. The result is excessive algae that consume the water's oxygen and stress or kill fish and other aquatic organisms. Nutrient sources come from septic systems, lawn and farm fertilizers, automobile emissions, and the burning of fossil fuels. Furthermore, the loss of forest and wetlands, which absorb nutrients and chemicals entering the bays, has allowed even more nutrients into the system.



SEDIMENTATION

Along with chemicals and nutrients, sedimentation from shoreline erosion, building, boating, clamming, farming

and some natural factors are reducing water clarity and burying bottom-dwelling organisms which make up the foundation of the bays' food chain. Water cloudiness, or turbidity, inhibits light penetration, thereby stifling the growth of submerged aquatic vegetation, an essential nursery area for fish and crabs. Trappe Creek, Newport Bay, St. Martins River, and Assawoman Bay have waterclarity insufficient to meet bay grass restoration goals.

WILDLIFE

Ducks, songbirds, terrapins, egrets and a host of other birds, mammals, and reptiles call eastern Worcester their home. These species rely on coastal bays habitat like seagrasses, islands, beaches, wetlands, and forests for their survival. Since the early 1950's, significant land use changes have depleted these important habitats.

Like habitat loss, changes in water quality have also affected wildlife. Degradation of the bay bottom from nutrients, chemical contamination, sedimentation, and impacts from recreational and commercial boating activities have reduced the abundance of aquatic species. Shoreline erosion and stabilization by bulkheads and riprap have also reduced the amount of bay beaches and tidal marsh habitat essential for birds, reptiles, and juvenile fish. A major stopover on the Mid-Atlantic Flyway, the watershed provides rest and shelter for some 360 species of migratory songbirds, waterfowl and birds of prey. Eastern Worcester County is the most ecologically diverse region in Maryland and one of the richest in plant and animal species on the eastern seaboard.



BAY GRASSES

Submerged aquatic vegetation (SAV) serves as a food source for waterfowl and is a critical nursery for gamefish and shellfish. Since a blight in the 1930's wiped out the grasses, this important vegetation has been steadily recovering, with a marked increase in the northern bays since 1995. Laws protecting the grass are helping to save it, but excessive nutrient inputs and propeller scarring continue to hinder the grasses' recovery.

FISH AND SHELLFISH

Maryland's coastal bays support a diverse fish community that is in generally healthy condition, but pollution-sensitive species are becoming less abundant. Here, striped mullet, menhaden and sea bass have been on the decline while more pollution-tolerant species, like mummichogs and killifish, have been on the increase.

In the shellfish arena, the review is mixed. Disease, predation, and overharvesting have left only tiny remnant populations of oysters in Sinepuxent and Isle of Wight bays. The constant influx of saltwater has allowed sepioid worms and other parasites to thrive in the once-fresher water. Efforts are underway to produce disease-tolerant oysters. Clams are doing well where sandy bottoms exist but remain at about 25 percent of their numbers from the mid-seventies. Overharvesting is the main culprit here. After a 60-year absence, bay scallops have returned to the coastal bays with

the return of bay grasses. Scallop numbers will likely increase as grass beds continue their recovery. Blue Crabs continue to show robust population numbers.



FORESTS AND WETLANDS

Forests and wetlands represent the two most important terrestrial habitats for protecting wildlife and water quality. Since colonial times, the coastal bays watershed has lost half of its forests and half of its wetlands. In addition to filtering sediments, nutrients and chemicals from water, forests and wetlands serve as the most important living space for the majority of wildlife species in the watershed. These functions render them the most critical areas in need of preservation.

Still, with regard to forests, fragmentation and the loss of old growth stands and hardwood species continue to impact wildlife and water quality. Although slowed, past and ongoing wetland losses have stolen bird and amphibian habitat and continue to hinder the land's ability to absorb flood waters and buffer coastal storms. Tidal wetlands, too, continue to erode away as bulkheading prevents the natural landward migration of salt marsh.

NUISANCE SPECIES

Invasive and exotic plant and animal species are decreasing habitat value for other plants and wildlife. Such species, like phragmites, feral cats, deer and mute swans, displace natural habitat and rob food sources from other species. Although some species, such as white-tailed deer, are native to the area, human-induced land use changes have caused their proliferation and the subsequent demise of other species.

GROWTH

In 1940, Worcester County's population was 21,245. According to the Maryland Office of Planning and Worcester County Planning Department, it now stands at 51,000 and by the year 2020, Worcester's population will be over 72,000 with some 80 percent of these people living in the coastal bays watershed. As the coastal-bays watershed explodes in population over the next 20 years, the ability of citizens and government to concentrate growth in and around existing infrastructure will determine whether Worcester remains economically and environmentally viable.

When land is developed away from existing infrastructure, local taxpayers foot the bill for new roads, schools and other amenities which exceed the tax base increase from the new development. Such sprawl also compromises natural ecosystems by removing species which cannot tolerate human intrusion. Land converted for commercial, residential, and industrial use also loses its ability to absorb and cleanse nutrients and chemicals before they enter the coastal bays. Such growth away from existing infrastructure adds new chemical and nutrient sources to formerly healthy areas.



HABITAT LOSS

Habitat loss is the single most important factor in the decline of plant and animal species. When black bears, bison, bobcats, cougars, elk, and gray wolves roamed the coastal bays in the early 1800's, the area was mostly forested with mixed hardwoods, pine, and cypress. Today, that legacy has been replaced with farming, loblolly pine plantations, malls and housing developments. In order to retain the vestiges of the area's natural heritage, directing growth and the pollution it creates is essential. Most of the species threatened with extinction in the coastal bays watershed are either beach-, island- or forest- dwelling plants and animals.

FARMING

For 300 years, farming has defined the character of the coastal bays watershed. Today, Worcester's 384 farms support the county's \$200 million annual agricultural contributions to the area. Still, farmers are finding it more difficult to earn a living or to keep their land free from development. Between 1987 and 2012, Worcester County lost 20,000 acres, or 16 percent, of its farmland. Retaining the culture and historical significance of this region will mean finding ways to

The Maryland Coastal Bays Program is a cooperative effort between Ocean City, Berlin, Worcester County, and a host of state and federal agencies which have brought together scientists and diverse stakeholder groups, including the agriculture, golf, tourism, fishing and development industries, to produce a comprehensive management plan for the coastal bays. The plan is community-driven, rather than government-driven and derives its direction from the local citizenry. The program exists under the umbrella of the National Estuary Program, designed to protect the most economically and environmentally significant areas in the United States. All in Maryland's Worcester county, the coastal bays behind Assateague Island and Ocean City, make up one of only 28 other estuaries nationwide which have received special attention. In these regions, the health of the economy is especially tantamount to the health of the environment.



limit burdens on farmers and foster agriculture as a sustainable way of life in this community.



TOURISM AND RECREATION

The coastal bays provide recreational and tourism opportunities ranging from watersports, boating, fishing to bird-watching and swimming. Every year, 10 million people visit the coastal bays watershed to enjoy the beaches, bays and other natural amenities found only here. Recognizing that natural resources are at the foundation of the tourism industry will keep tourism viable in this watershed. But it is important that residents and visitors recognize that activities can disturb sensitive areas such as bird rookeries, aquatic nurseries and bay grasses.

CLIMATE CHANGE

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Rising sea levels and significant losses in biological diversity are two outcomes of climate change. There are natural factors such as change in the sun's energy or slow changes in the earth's orbit around the sun, but human activities play the most significant role in changing the atmosphere's makeup, particularly the burning of fossil fuels. Since the 1960's average global temperatures have risen substantially despite solar activity and orbit declination that should have selected for cooling. Land surface change such as cutting down forests and building developments in cities and suburbs also contribute to local changes. Air deposition from coal and oil burning also contribute about a third of the excess nutrients entering the coastal bays.



What can **YOU** do to save the coastal bays?

▶ **HOUSEHOLD HAZARDS**

Your cupboards and closets contain dozens of every day cleaning, polishing and painting products hazardous to the coastal bays and the groundwater that flows to them. Under the sink lurk the drain openers, air fresheners, and oven and tile cleaners. In the laundry room loiter the chlorine bleaches and spot removers, and in the workshop, the glues, paints, and wood preservatives lie in wait. These and other household items add up to a considerable source of pollution as they find their way from homes into drains, toilets and the local landfill. Whether it takes an hour or 50 years, they will all end up in the coastal bays. More than two thirds of the bays have one or more chemicals at levels harmful to living organisms. In the Chesapeake that number is less than 50 percent. Residents can easily use safe substitutes for pesticides, household cleaners, paints and other chemicals. To make sure your family can continue to swim, fish, and crab in the coastal bays, check out these simple tips.



Read labels before buying household cleaners and other products. Become an environmentally friendly consumer by avoiding products containing certain ingredients (see page 10). Products labeled "caution" are usually the least toxic, "Warning" indicates moderate toxicity and "danger" or "poison" mean extremely toxic.

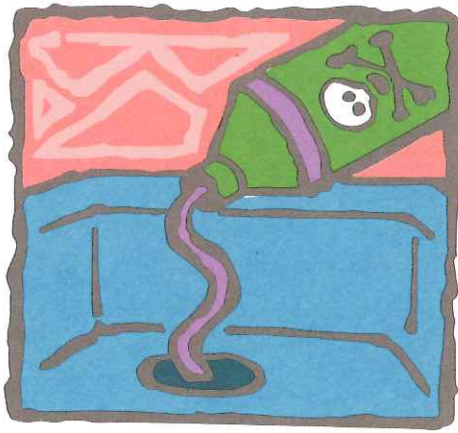
Buy only as much of a household chemical as you need. Why pay extra and let some chemical sit around the house for years? Use cleaners, paints and other chemicals sparingly and minimize waste and spills. Store leftovers in sturdy, airtight, labeled containers. Contain and absorb spills with sawdust or kitty litter and take the used absorbent to a household hazardous waste collection center or event.

Use safe, bays friendly substitutes. Most cleaning challenges can be met with baking soda, salt, soap, borax, vinegar or elbow grease in one combination or another. Your toilet, drain, oven, windows, floor, and furniture won't know the difference. See alternatives for every job imaginable on the next page.

Dispose of unwanted chemicals, detergents, batteries, and paints at the annual Worcester County household hazardous waste collection day in the spring at the Central Landfill, Ocean Pines and in West Ocean City at the Park and Ride. Never dispose of detergents, paints, oils, or wood preservatives in storm drains, toilets or sinks. Not sure what you have is toxic? Call the Department of Environment at 410-537-3000 - for emergency situation such as oil spills call 866-633-4686.

THE FACTS:

- ▶ Every year the average family disposes of 21 pounds of household hazardous waste.



Do not pour paints, preservatives, brush cleaners, or solvents down the sink, toilet, or stormdrain. If unavoidable, clean up brushes and buckets at the sink, never the gutter. See page 11 for chemicals safe to pour down the drain.

Use rechargeable alkaline batteries. Most household batteries are highly toxic. Ace Hardware, Black & Decker, WalMart, Radio Shack, and Target accept used batteries for safe disposal. Stop by the transfer station in Berlin for a "Battery disposal bag" which you can return when full.

Choose water-based paints over oil-based ones. Look for the words "latex" or "clean up with water" on the label. Don't use paints that are more than 20 years old. They usually contain toxic lead levels.

Care for your drains so you can keep your system free of clogs without using chemical drain openers. To prevent clogs, use a kitchen sink strainer. Periodically flush the drain with boiling water. Use a plumber's snake on tough clogs.

Friendly Substitutes...

Harsh chemicals eventually reach the bays harming them and you. Use chemicals less often or replace with non-toxic chemical alternatives listed below:

- **ALL PURPOSE CLEANER** Add a cup of vinegar to a pail of water or mix liquid castile soap and baking soda or borax in like amounts to two-gallon bucket.
- **ABRASIVE CLEANER** Rub area with 1/2 lemon dipped in borax, rinse.
- **COPPER CLEANER** Try paste of lemon juice, salt and flour.
- **DISINFECTANT** Try 1/2 cup borax or sodium carbonate dissolved in a gallon of hot water. For meat-cutting boards, shower stalls, or moldy areas, mix a 1/4 cup liquid chlorine bleach in a gallon of water.
- **DISH DETERGENTS** Use mild, biodegradable vegetable oil-based soap or detergent.
- **DEODORIZER** Sprinkle carpet with baking soda and vacuum 30 minutes later. Place baking soda at the bottom of cat boxes and garbage cans.
- **DRAIN CLEANER:** Mix 1 cup of each; baking soda, salt, and white vinegar. Pour into drain, wait 15 minutes. Flush with boiling water. Use a drain strainer in each drain to prevent clogs.
- **FLOOR OR FURNITURE POLISH** Use 1 part lemon, 2 parts olive or vegetable oil. Revitalize old furniture with linseed oil.
- **GLASS CLEANER** Use one part vinegar to every four parts water, or if needed add 3 teaspoons of ammonia to 3/4 cup of water.
- **LAUNDRY DETERGENT** Combine 2 tablespoons household ammonia, a teaspoon liquid soap and a pint of warm water for spray and wash.
- **LINOLEUM/VINYL FLOOR CLEANER** Mop with one cup of white vinegar mixed with two gallons of water to remove dull greasy film. Use tooth paste to remove scuff marks.
- **MILDEW REMOVER** Combine lemon juice (or white vinegar) with salt.
- **OVEN CLEANER** Mix 2 teaspoons of borax and 2 tablespoons of liquid soap in a spray bottle of water and scrub. Or try baking soda and steel wool.
- **PESTICIDES** Combine 2.5 teaspoons of liquid soap with one cup vegetable oil in a gallon of water for garden pests. Call Cooperative Extension Service at 410-632-1972 for the latest ideas. For roaches and ants apply boric acid dust to cracks and entry points (keep children and pets away to avoid nausea).
- **PAINT REMOVER** Use a heat gun to peel off paint. Lead-based paint should always be removed by professionals.
- **SILVER POLISH** Soak in boiling water with baking soda, salt and a piece of aluminum.
- **STAINLESS STEEL POLISH** Use baking soda or mineral oil for shine.

More Friendly Substitutes...

non-toxic chemical alternatives continued:

- **SURFACE CLEANERS** Mix one quart warm water, one teaspoon mild dishwashing liquid, one teaspoon borax and a splash of vinegar.
- **SCOURING CLEANSER** Combine 1/4 cup soap flakes, 2 teaspoons borax, 1.5 cups boiling water, 1/4 cup whiting.
- **STAIN REMOVER** Instead of powdered bleach, sprinkle borax or baking soda on stains and scrub. If using bleach, select a non-chlorinated brand.
- **TUB AND TILE CLEANER** Try 1/4 cup baking soda, 1 cup vinegar, 1 cup of ammonia and one gallon of water
- **TOILET BOWL CLEANERS** Combine one half cup borax in one gallon of water for cleaning and deodorizing. Clean frequently with baking soda. Or try liquid castile soap, baking soda or borax and a toilet brush.
- **TUB AND SINK CLEANERS** Use baking soda or a non-chlorinated scouring powder.
- **UPHOLSTERY AND RUG CLEANERS** Clean spills immediately by blotting with club soda. Or use a mixture of one quart warm water, one teaspoon mild liquid soap, one teaspoon borax, and a splash of vinegar. in a pinch, just sprinkle with cornstarch, then vacuum.

Watch out for these **TOXIC** ingredients:

- Degreasers:** Trichloroethylene (TCE), toluene, methylene chloride
Disinfectants: o-phynylphenol, phenol chlorobenzene, diethylene glycol
Drain cleaners: sodium hydroxide, potassium hydroxide, hydrochloric acid
Dry cleaning fluids: TCE, perchloroethylene (PERC), 1,1,1-trichloroethane (TCA), naptha
Gasoline: benzene (never use gas as a parts' cleaner or hand cleaner)
Glue and glue solvent: hexane, toluene
Moth balls: Napthalene, chlorobenzene, paradichlorobenzene
Oven cleaner: methylene chloride, sodium hydroxide, potassium hydroxide
Paint thinners: methylisobutyl ketone, toluene
Paint strippers: methylene chloride, xylene, toluene, methyl ethyl ketone (MEK)
Septic tank cleaner: TCE, TCA, methylene chloride
Shoe polish: TCE, methylene chloride, nitrogenzene
Spot removers or cleaning fluid: carbon tetrachloride, 1,1,1-trichloroethane (TCA), trichloroethylene (TCE). perchloroethylene (tetrachloroethylene, PERC)
Toilet bowl deodorizer: paradichlorobenzene
Upholstery cleaner: TCE
Wood preserevatives: pentachlorophenois (PCPs), arsenic

Always use the following toxins sparingly and never let these items escape outside to surface on groundwater:

Air freshener and deodorizers
 Antifreeze
 Bleach
 Cleaning fluid
 Car wax or polish
 Disinfectants
 Degreasers
 Drain Cleaners
 Flea powder
 Floor cleaner or wax
 Furniture polish
 Glue and glue solvent
 Herbicides
 Moth balls
 Motor oil/gasoline
 Oven cleaner
 Paint thinners and strippers
 Paint
 Pesticides
 Spot remover
 Septic tank cleaners
 Shoe polish
 Toilet bowl deodorizer/cleaner
 Upholstery cleaner
 Window cleaner
 Wood stain or varnish
 Wood preservatives





CHEMICAL DISPOSAL

Many products you use in your home and yard contain hazardous materials. Improper disposal of these products can cause groundwater and coastal bays contamination, fire, and injuries to people and animals. See below to identify hazardous products in your home and learn how to dispose of them properly.

- KEY:** ➡ Place in the trash.
 ▼ Pour down your toilet or sink if connected to a sanitary sewer only. If on septic take to hazardous waste collection site or to friend's house connected to sanitary sewer.
 ✕ Take to a hazardous waste collection site.

Garage and Workshop

Acetone	✕
Antifreeze	✕
Artist's paints and media	✕
Autobody repair products	✕
Battery acid	✕
Brake fluid	✕
Car batteries	✕
Car wax, solvent-based	✕
Contact cement	✕
Driveway sealer	✕
Fiberglass epoxy	✕
Gasoline and other fuels	✕
Glue, solvent-based	✕
Glue, water-based	➡
Joint compound	➡
Lighter fluid	✕
Motor oil	✕
Other oils	✕
Paint, all types	✕
Paint thinner	✕
Paint stripper	✕
Parts cleaner	✕
Photographic chemicals	✕
Rust remover	▼
Shellac	✕
Stain	✕
Transmission fluid	✕
Turpentine	✕
Varnish	✕
Windshield washer fluid	▼
Wood filler	✕
Wood preservative	✕

Kitchen and Bathroom

Alcohol-based lotions (perfume, aftershave)	▼
Bleach	▼
Cleaners, ammonia-based	▼
solvent-based	✕
Cosmetics	➡
Disinfectants	▼
Drain cleaner	▼
Floor care products	✕
Hair remover	✕
Medicine	▼
Nail polish	✕
Nail polish remover	✕
Oven cleaner	✕
Permanent wave solution	▼
Skin Cream	➡
Toilet bowl cleaner	▼
Tub and tile cleaner	▼
Window cleaner	▼

Home and Garden

Aerosol cans, empty	➡
Aerosol cans, full	✕
Batteries, alkaline	➡
Batteries, button	✕
Dry cleaning solvent	✕
Fertilizer	➡
Fungicide	✕
Furniture polish	✕
Insect spray	✕
Metal polish	✕
Mothballs	✕
Pesticide	✕
Pool chemicals	✕
Rat poison	✕
Septic tank cleaner	➡
Shoe polish	✕
Spot remover	✕
Stump remover	✕
Weed killer	✕

BUYING SMART

- ♥ Think twice before you buy! Switch to safe substitutes.
- ♥ Read the label to make sure the product will do what you want before purchasing. Follow label directions for safe use, storage, and disposal.
- ♥ Purchase only the amount you need, and use up what you buy.
- ♥ Avoid aerosols. Choose pump sprays or other alternatives.
- ♥ Select water-based, over solvent-based, products when available.

PROPER DISPOSAL

- Stores that sell car batteries must accept them back for recycling.
- Reuse products such as paint thinner and paint. Give leftovers to someone who will use them up for their intended purpose.
- Never pour oil, antifreeze, or other hazardous materials on the ground, into storm sewers or into septic systems.

CAR AND GARAGE

Dozens of simple, everyday car maintenance tasks contribute pollution to our estuary. Just throwing away an old battery, washing the car, or driving can add up to a significant threat to the coastal bays ecosystem. The millions of cars traversing our highways leave dozens of pollutants in their wake. Motor oil, battery acid, gasoline, antifreeze, transmission and brake fluids are the primary culprits. These car-related pollutants are degrading water in the coastal bays, particularly in the bays north of the Route 50 bridge. Airborne emissions alone account for one third of the nutrients entering the coastal bays.



- **Don't dump** used oil, gasoline or other automotive products in the toilet, sink, storm drain, street gutter, ditch or on the ground. Treat rags laden with paint, gasoline or solvents as hazardous waste. Oil, gasoline, and antifreeze are toxic. Recycle motor oil, batteries, tires, gear lubricant, brake and transmission fluid by placing them in strong plastic containers and taking them to a gas station, service station, marina or to the transfer station in Berlin. Oil can be reused once contaminants have been removed. Call 1-800-473-2925 for nearest oil and antifreeze recycling location.
- **Wash your car with as little soap as possible** Soap is toxic to fish and shellfish. Get a pistol grip hose nozzle to conserve water. Dump the used bucket of soapy water in the toilet or sink, not the street or storm drain. Wash car on grass or gravel where soap suds can better filter through vegetation before entering the coastal bays. Avoid car washing on paved areas. If you use car washes, patronize those that recycle 80 percent of their water. Wash car with biodegradable soap.
- **Substitute non-toxic products** whenever possible. Baking soda paste works well on battery heads, cable clamps and chrome. Mix the soda with a mild, biodegradable dishwashing soap to clean wheels and tires. For windows, try white vinegar or lemon juice mixed with water. Read product labels and choose those with the least toxic ingredients. See page 9 for more substitutes.
- **Keep your butt in the ashtray.** Cigarette butts are tainted with water-degrading chemicals and are responsible for the deaths of thousands of birds, sea turtles and fish annually which die after ingesting the synthetic waste. Cigarette butts are the number one pollutant collected every year during the Coastal Cleanup.
- **Turn off your engine** if you are planning on idling more than 30 seconds
- **Save money and gasoline** by reducing your engine load. Turn off the air conditioner when possible and use overdrive if your car has it. Air conditioners decrease fuel efficiency.
- **Drive 55.** Driving 55 mph improves fuel economy by 15 percent over a 65 mph speed.

- **Consider the mileage** cars will get and calculate your potential savings when purchasing a new vehicle. The average person drives more than 10,000 miles per year, making the money savings from 15 to 30 miles-per-gallon astronomical.
- **Plan your trips** to accomplish several errands at once and avoid driving during heaviest traffic hours.
- **Share rides.** Automobile exhaust is a major source of pollutants and nutrients to the bays. Use public transportation, walk, or bicycle whenever possible. Adjust your schedule to minimize extra car trips.
- **Ignore desires to pave** your gravel or grass driveway. When you change to an impervious surface, like asphalt, the oil and engine fluids from your car cannot be partially "treated" in the soil before flowing to the coastal bays.
- **Get regular tune ups.** Dirty carburetors, fuel injectors, clogged air filters, worn plugs, etc. not only waste gas but they also lower gas mileage and increase emissions. Fix oil and gas leaks from your car as soon as you notice signs of leakage on your driveway. Use absorbents (one possibility is cat litter) to clean up oil and gas drippings that will be washed to the bays in the next rain.
- **Align your wheels** and keep your tires inflated properly. Low tire pressure wastes more than 2 million gallons of gasoline in the U.S. every year.
- **Take tires** to the Worcester County Landfill in Newark or to most service stations. The Newark site charges \$1 a tire and most service stations around \$2. Both will send tires off for recycling. Remember because tires leach petroleum they are considered hazardous waste.
- **Pump gas and change fluid carefully** to avoid spills on the ground. Place a drip pan under your work area. Pour kitty litter, corn meal, or sawdust on spills and clean up after several hours. Be especially careful with antifreeze whose deceptively sweet taste can lure a pet or child to its death.
- **Recycle car batteries.** Your local scrap dealer should take them and may even pay you. Stores that sell such batteries accept them back for recycling.



Believe it or not...

- ▶ **One quart of spilled oil will produce an approximately one-acre oil slick and can contaminate 250,000 gallons of drinking water.**
- ▶ **There are 80 million gallons of oil from drivers improperly disposed of annually, six times the Valdez spill. (Am Petroleum Inste.).**
- ▶ **American drivers use 10 billion gallons more gasoline per year than they did in 1989. (US Dept. Transp.)**
- ▶ **Air conditioners decrease fuel efficiency by 20 percent.**
- ▶ **The average person drives more than 10,000 miles per year.**
- ▶ **Gasoline powered lawn equipment accounts for 5 percent of the country's total air pollution in summer.**

COMMUNITY CARING

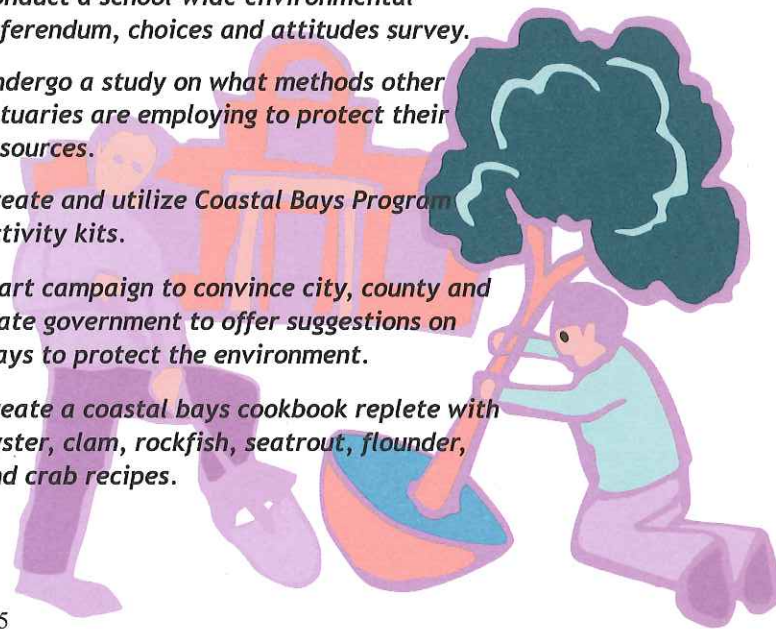
The only way to protect what you feel has value is to lift yourself and others off the sofa. No one has ever achieved greatness or affected change by idly complaining about the wayward direction the world is moving in. You need not chain yourself to a tree but get involved by participating in cleanups, fundraisers, public meetings and events which show you care. Your attendance not only helps the environment, it shows lawmakers that people care about the coastal bays.

- **GET YOUR FEET WET.** Join in the local clean-ups of our streambanks and shorelines. Participate in other hands-on, community-level estuary restoration programs such as wetland creation, dune revegetation, and wildlife habitat enhancement.
- **STENCIL YOUR LOCAL STORM DRAIN.** Stencil kits that indicate coastal bay drainage are available from the Coastal Bays Program. These will remind residents and vacationers that everything entering these storm drains flows to the coastal bays.
- **VOLUNTEER FOR ONE** of the many tasks undertaken by the Maryland Coastal Bays Program. These include student internships, office assistance, fisheries data collection, oyster gardening, terrapin and seagrass monitoring, and one-day events like Maryland Coast Day, the annual triathlon or planting projects. You can also serve on any of the following committees: Fundraising Committee, Fisheries Advisory Committee, Citizens Advisory Committee, Dead-end Canals Subcommittee, Legislative Subcommittee, Pesticide Use Subcommittee, Tracking and Evaluation Subcommittee, and the Dredging and Navigation Group.
- **EDUCATE YOUR FRIENDS,** office mates, and children about the importance of our estuary and the things they can do to protect its health. Encourage schools to obtain curricula focused on the coastal bays and marine ecology. This will ensure a brighter future for you and them.
- **ENCOURAGE YOUR LOCAL GOVERNMENT** to launch curbside recycling and motor oil pick-up programs, and to provide regular, easily accessible household hazardous waste disposal programs.
- **PUT YOUR NAME ON** the mailing lists of your local planning department, Worcester County Commissioners, Maryland Department of the Environment, MD Department of Natural Resources, and Army Corps of Engineers. This way, you'll receive notification of public hearings and public comment periods on draft environmental impact documents.
- **ATTEND PUBLIC HEARINGS** on water quality, land use and development issues. Voice concerns about environmental impacts, pollution, BMPs for business, sustainable development and natural resource protection. See page 32 for information on how the planning process works.
- **BE A WATCHDOG.** You can call the Coastal Bays Program or one of the agencies listed on the inside front cover to report spills, wetland filling, illegal dumping, forest clearing or water quality problems.
- **VISIT SHORELINE PARKS** and join guided birdwatching and wetland ecology tours. The more you understand about the marvels of our estuary, the more you'll want to save them.



Community / School PROJECTS

- ★ Design interpretive signs, displays, or bumper stickers to help residents and visitors learn about the coastal bays.
- ★ Organize a tree, grass, or native vegetation planting (borrow a backyard or tributary shoreline).
- ★ Build nesting boxes for blue birds, wood ducks, bats, ospreys, owls, or whatever you like. See page 26 for instructions.
- ★ Do a wetland restoration.
- ★ Organize an essay contest on coastal bays-related issues.
- ★ Organize a clean-up event or join Ocean City's Adopt-A-Street Program.
- ★ Undergo a demonstration project showing co-dependency of tourism dollars and natural resources protection.
- ★ Write or conduct a play or theater performance about the coastal bays.
- ★ Create a fact sheet, booklet, or brochure on local fish, wildlife or water quality.
- ★ Do plant and animal cataloguing on a given land parcel.
- ★ Design an educational course/forum for landowners, business owners, the fishing industry, or developers.
- ★ Create educational material on property management for canalside homeowners.
- ★ Design an educational course for boat owners.
- ★ Conduct an environmental ethics assessment/forum.
- ★ Organize a charity car wash where wastewater from the event is managed and treated.
- ★ Grow an organic garden or experiment by comparing organic to fertilizer/pesticide-enriched gardens.
- ★ Learn native bird calls and colors.
- ★ Create a library display on the cultural and natural history of the watershed.
- ★ Conduct a storm drain stenciling project ("Don't Dump-Coastal Bay Drainage").
- ★ Do a demonstration project on how silt-laden water is cleansed by clams/oysters.
- ★ Produce a groundwater flow model showing the relations between land use and water quality.
- ★ Conduct a class evaporation, water use, and percolation demonstration.
- ★ Start a habitat restoration, recycling, or land preservation program or organization.
- ★ Create a land, water, or animal inventory of the watershed.
- ★ Try a bulkhead replacement project.
- ★ Conduct a school-wide environmental referendum, choices and attitudes survey.
- ★ Undergo a study on what methods other estuaries are employing to protect their resources.
- ★ Create and utilize Coastal Bays Program activity kits.
- ★ Start campaign to convince city, county and state government to offer suggestions on ways to protect the environment.
- ★ Create a coastal bays cookbook replete with oyster, clam, rockfish, seatrout, flounder, and crab recipes.



GARDENING GREEN

Gardening may seem like an environmentally benign activity, but many of us lack the know-how or time to keep dandelions off the front lawn or moles out of the yard without a helping hand from chemicals or other pollutants. Pesticides and herbicides do kill garden marauders, but also contaminate groundwater headed to the coastal bays. The best way to vindicate your lawn is to replace it with native plants wherever possible.

Native trees, flowers and shrubs do a much better job of filtering nutrients and chemicals and slowing runoff rates than does turf. Indigenous plants also require less fertilizer, watering, and pesticides than lawns. Homeowners can give back some space, save money, and protect the bays and their drinking water by reducing fertilizer and chemical use and trading grass for other plant life. Below are some tips for making your yard an environmentally friendly one.

Water your lawn only once per week.

Daily watering of lawns keeps roots at the surface which causes damage to your grass. Try drip or soaker hoses instead of spray or sprinklers which lose 90 percent of water to evaporation. Homeowners should douse their lawns early in the morning one day per week. This will keep your lawn at an optimum health and conserve water.

Mow your grass only as short as three inches.

Grass stays healthier and grows slower when it's cut longer. Close-cut grass loses thickness, requires more water, and is prone to disease. Homeowners should mow high and in the evening to prevent sun damage. Leaving clippings on your lawns will fertilize it without the need for additional organics.

Limit your use of fertilizers. If you must fertilize, choose a fertilizer that has at least ¼ of its nitrogen in a slow release, water insoluble form. Have your soil tested to determine the appropriate amount to apply. Do not apply fertilizer within 50 feet of a water body. Overfertilization can make lawns more attractive to disease and pests.

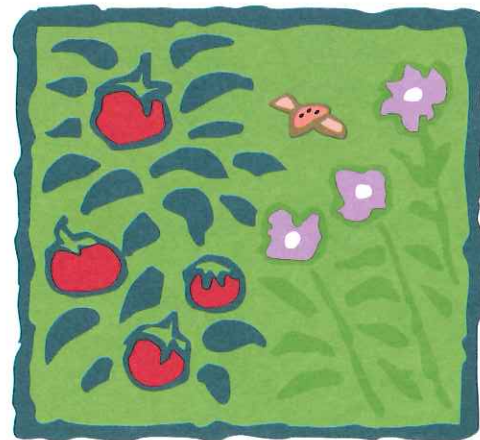
Use pesticides herbicides and other garden chemicals sparingly.

If you must use them at all. Pesticides have been pinpointed as major chemical pollutants in the coastal bays. Follow directions and prevent spills. Avoid applying near water, drains, or bare ground or if rain or wind is in the forecast. If you must use a herbicide, use only Rodeo. Remove intruding tree roots mechanically. Read labels and look for less toxic products such as biological pesticides (like B.t.), insecticidal soaps, and soap solutions (1 tsp. Ivory liquid, 1 gal. water), boric acid, and insect growth regulators like Precor. Avoid products containing diazinon. Make sure whatever you buy is specific to your pest or problem.

Plant native plants and trees.

One of the principal reasons subdivisions eliminate biodiversity is because most plants and animals, particularly now endangered ones, need forest and natural lands to survive. Lawns may be great for grackles and robins, but they are worthless to

thousands of other plants, mammals, reptiles, birds and insects. Native plant and tree species are best for wildlife and help prevent excessive nutrient and pollutant runoff into the bays. Even when far from a water body, tree roots reach well into the soil to tap and recycle groundwater. Trees also convert greenhouse gasses, slow erosion and clean pollutants and nutrients from the air. Native plants require no fertilizer, herbicides or pesticides because they are adapted for the coastal bays environment. Call the Coastal Bays Program Office to get a free list of Worcester's native plants, their color, height, soil conditions, type of wildlife each attracts, places to purchase them or go to www.mdcoastalbays.org.



Believe it or not...

Encourage natural pest

predators such as ladybugs, toads, and garter snakes. Why spray chemicals all over the place if you can have nature do its things without them? Chemicals do not discriminate and will kill the predators that devour lawn-killing pests. Also try a non-chemical approach by putting up traps and barriers, removing ivy, standing water, animal wastes, and other pest attractors. Remove pest eggs, cocoons, and larva by hand.

Be realistic about your lawn.

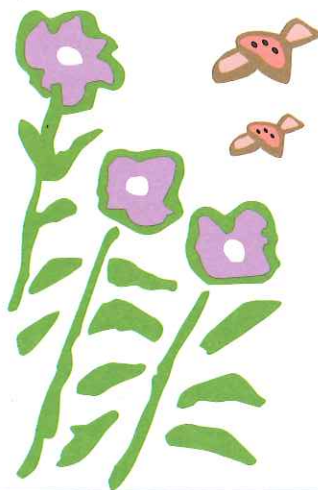
Is your lawn ever going to be as green as you're trying to make it? The neighbors may have better soil conditions and less slope than your home will ever have. Weigh the costs of flawless greenhood to the impacts you're putting on your local environment. You may find a few irises look better than your neighbors' lawn anyway.

- ▶ Household gardeners use pesticides at 10-20 times the rate farmers do.
- ▶ 90 percent of the insects on your lawn are good for it.
- ▶ The United States has 25 million acres of lawns.
- ▶ According to the Maryland Department of Agriculture, there are over 700,000 acres of residential lawns in Maryland.
- ▶ A typical gas-powered mower used for an hour creates as much air pollution as driving a car 50 miles.
- ▶ Allowing grass clippings to decompose on your lawn equals one to two fertilizer applications per year.
- ▶ Grass clippings and leaves compose 20 percent of the waste entering landfills. During the growing season this can increase to as much as 50 percent

Stay green the natural way...

Try these all-natural products on your lawn:

- **Sluggo:** (to get rid of slugs) www.montereylawnngarden.com
- **Pyola:** (insecticide for lawns) www.gardens-alive.com
- **WOW Plus:** (Kills crabgrass) www.gardens-alive.com
- **Concern Fast Acting Weed Killer:** (herbicide) search engine or store planet
- **Mole-Med:** (chases away moles) search engine or store
- **Schultz Clay Soil Conditioner:** (aerates soil) www.planetnatural.com/site/fast-acting.
- **VoleBloc:** (deters voles) 1-877-737-6284 www.volebloc.com
- **Mycor:** (helps plants grow) www.Jordantree.com
- **Compost:** (fertilizes) www.ftw.nrcs.usda.gov/feature/backyard/compost.html



NATIVE PLANTS FOR WILDLIFE LANDSCAPING*

HERBACEOUS SPECIES

Wild Columbine
Goat's Beard
Swamp Milkweed
Butterfly Weed
New England Aster
Smooth Aster
New York Aster
Snowbank
Partridge Pea
White Turtlehead
Whirled Tickseed
Joe-Pye Weed
Spotted Joe-Pye Weed
Boneset
Wild Geranium
yellow Sneezeweed
Sunflower
Rose Mallow
Blue Flag Iris
Cardinal Flower
Great Blue Lobelia
Wild Bergamot

Evening Primrose
Arrow Arum
Pickerelweed
Black-eyed Susan
Duck Potato
Water Dragon
Atlantic Blue-eyed Grass
Wrinkle-leaf Goldenrod
Seaside Goldenrod
new York Iron Weed

SHRUBS

Smooth Alder
Bartram Serviceberry
Sea Myrtle
Beauty Berry
Button Brush
Sweet Pepperbush
White Fringe-tree
Flowering Dogwood
Inkberry
Winterberry
Virginia Willow

Laurel
Sweet Bay
Bayberry
Beach Plum
Common Chokecherry
Swamp Rose
Rugosa Rose
Swamp Azalea
Highbush Blueberry
Southern Arrow-wood
Nannyberry

TREES

Red Maple
River Birch
Shagbark Hickory
Common Hackberry
Common Persimmon
American Beach
White Ash
Black Ash
Green Ash
American Holly

Black Walnut
Red Cedar
Sweet Gum
Tulip Poplar
Black Gum
Loblolly Pine
White Oak
Pin Oak
Red Oak
Atlantic White Cedar
Bald Cypress

GRASSES

American Beachgrass
Three-way Sedge
Virginia Wild Rye
Soft Rush
Rice Cutgrass
Coastal Panicgrass
Little Bluestem
Wool-grass
Indian Grass
American Bur-reed

* For a complete list of native plants, their size, color, required soil type and what they attract, go to www.mdcoastalbays.org.

RECYCLING RULES

The United States produces more trash than any other country in the world.

In 1993, the average U.S. citizen generated 5.1 pounds of trash each day, more than double the amount in 1963. During this time, the cost of new landfills has skyrocketed. Today, new landfills can cost \$300,000-500,000 per acre for design and construction. This expense has translated into additional fees or taxes for the community. There are also environmental costs involved with landfills. Our landfills degrade surface water and ground water which feed taps and the coastal bays.

In response to these problems, many communities, including Worcester County have initiated recycling programs. The life of a landfill can be expected 20-24 years by meeting a moderate recycling goal. In addition to this, recycling conserves natural resources. For most industries, it is much cheaper and easier to use recycled material instead of processing new stock. Considering the fiscal and environmental costs involved with constructing new landfills and the benefits to industry, recycling does make a difference in the coastal bays.

Purchase products that are recycled and products that can be recycled. Buy fewer products and purchase quality goods that will last longer.

Choose products with less packaging and buy economy size. The more packaging, the more energy and resources a product consumes. Buy products made from

renewable or recycled materials, including paper, motor oil, and carpeting.

Avoid throwaway cups, plates, utensils, napkins, sponges and dishcloths. Using 1,000 throwaway plastic teaspoons consumes over 10 times more energy and natural resources than making one stainless steel teaspoon and washing it 1,000 times.

Donate unwanted items to charity and shop at antique, Salvation Army, or any store selling second-hand items. Don't throw them out. In turn, purchase items at yard sales, or antique, thrift, and consignment stores.

Recycle. Recycle paper, cardboard, aluminum and tin cans, glass and plastic to help preserve natural resources. Newspapers are recycled for insulation,

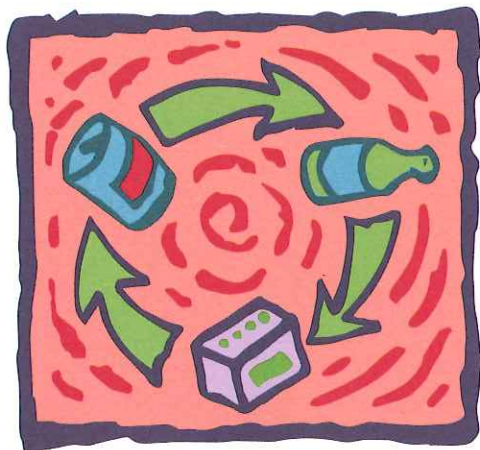
folders, and more newspapers. Glass is recycled for new jars and bottles aluminum for more aluminum.

Plastic #1 is recycled into new bottles, carpeting, polyester, fiberfill.

Plastic #2 is recycled into new bottles, flower pots, trash cans, traffic cones, and curbside recycle bins.

Plastic #4 is recycled into new plastic bags, and garbage bags.

Refuse bags or bring your own shopping bags to the store. Whether paper or plastic, bags are made from energy and resources, Reuse bags and containers.



Worcester County Recycling Centers

- **Berlin Transfer Station,**
Flower Street
- **Central Landfill,**
*Central Site Lane at Route 113,
Newark*
- **Pocomoke Transfer Station,**
Byrd Road
- **Snow Hill Transfer Station,**
Timmons Street at Holly Lane
- **West Ocean City Harbor**
*Corner of Golf Course Road and
Sunset Avenue (oil only)*

In Ocean Pines

Single-stream curbside Recycle (free with paid trash collection services) Rewards Points (\$167 average value of coupon offerings at selected merchants) 50 State Challenge Contest with a chance to win \$100,000 grant Once a week curb-side pick-up and free container County Recycle bins will remain at the South Gate

www.wmcurbside.com

800-834-2805

delmarvacustomerservice@wm.com

Worcester County 24-hour drop off/recycle bins

- Wal-Mart
- Berlin (William Street)
- Whaleyville Park
- Public Landing
- Ocean Pines (Fire House)
- Bishopville Park

Believe it or not...

- ▶ *The average American throws out 1,800 plastic products, 13,000 paper products, 500 aluminum products and 500 glass bottles every year.*
- ▶ *Each American discards 1,500 pounds of trash annually.*
- ▶ *Making products from recycled material uses less energy (30-55% less for paper, 33% less for glass, 90% less for aluminum).*
- ▶ *Every 115 pounds of recycled newspaper saves one tree.*
- ▶ *By recycling just 20 percent of trash, a community could extend the life of its landfill by 20-24 years.*
- ▶ *The US produces more trash than any country in the world.*
- ▶ *More than 50 percent of land-fill waste could have been recycled.*
- ▶ *Plastics dumped in landfills take 200-400 years to decompose.*



HEALTHY HOUSEKEEPING

Our neighborhoods are a major source of water pollution. When rainwater runs across lawns, driveways, or public streets, it picks up chemicals and small particles lying on these surfaces and sends them to the nearest storm drain or creek and into the bays. Soil, lawn care chemicals, pet waste, heavy metals, oil, antifreeze, trash, and yard waste are perpetual polluters. By making simple changes in home management, a significant amount of this residential pollution can be eliminated.



Consider replacing hard, impermeable surfaces around your home with permeable ones. Instead of solid paving for driveways, walkways, and other outdoor areas, use wooden decking, bricks, stones, or pavers so runoff can penetrate gaps and filter through the soil and gravel underneath. Use porous materials, such as concrete grid pavement, for driveways and sidewalks.

Position your gutter or spout to drain away from concrete or asphalt. By draining into vegetated areas, or a rain garden rainwater can be naturally stripped of nutrients and other pollutants before reaching the bays. Keep runoff away from septic system drain fields.

Compost yard waste. Leaves or grass clippings are nutrient sources. Do not deposit them in ditches, streets, or waterways. Compost them for re-use. Keep in mind compost piles will not kill bacteria or viruses from pet waste.

Avoid pesticide use. Pesticide not only kill mosquitoes, they kill other insects like butterflies and lady bugs which are an essential part of the food chain. Several species of birds, mammals, rep-

tiles and amphibians in Worcester rely on insects as a staple food source. Some pesticides do not biodegrade easily and eventually seep into groundwater, fouling it and parts of the bays for years.

Don't kill snakes. Snakes are just as important a part of the ecosystem as frogs, turtles, birds and mammals. If you see a snake leave it alone. If you suspect it is poisonous call animal control or the DNR Natural Resources Police who will remove it to a remote area for you. Many snake species are on the decline because they are persecuted. When their populations dwindle, the birds, mammals and other reptiles that eat them have less food and the mice and insects snakes normally eat have population explosions.

Pick up after your pet and dispose of wastes in the toilet. Just 2-3 days of droppings from 100 dogs in a small bay watershed can contribute enough bacteria to temporarily close the area to swimming.

Don't empty chlorinated water into ponds, streams, or storm drains where it could cause fish kills. Law requires you to remove all chlorine residue from pools

or hot tubs before you can empty them into a storm drain. To do this, let them sit for two weeks, then test the chlorine level with a kit available from pool and hardware stores. After the test reads zero for several days, discharge the water so it flows across as much lawn or plant life as possible before it reaches the storm drain. Also avoid using algacides in your pool, especially copper-based ones, which are highly toxic to marine life. Never drain directly into a waterway or the street. At the time of pool discharge, there should be no detectable levels of chlorine, and pH rating should be neutral (between 6.0 and 8.5).

Avoid discharging into a storm drain when pressure washing old exterior housepaint which could contain lead. Tarp the ground and collect solid waste paint residues for hazardous waste disposal.

Get off the sofa. People become disconnected and apathetic when they fail to spend time outdoors and discover what's around them. By educating themselves in this manner, people become better equipped to note the changes going on around them and make intelligent decisions about the future.

GOOD BUSINESS

Your place of business should show customers you care about your community. By touting your recycling and pollution control efforts you can lure and keep an increasingly environmentally-minded public. You can also set a good example.

Businesses consume far more water, electricity, energy and paper and glass products than the average household. In business, even modest efforts to be more thoughtful can reap large environmental dividends.

Encourage your business to draft a series of Best Management Practices (BMPs) specific to your company. BMPs focus on good housekeeping and controlling pollutants at the source. Beneficial practices include conserving water, paper, or controlling chemicals or other pollutants at the workplace. Always reuse and recycle as much as possible.

Consider asking your guests if they want their towels and sheets cleaned every day and use biodegradable cups and plates.

For restaurants, pressure-clean greasy equipment inside over sinks and sewer drains - not outside in parking lots where runoff flows to storm drains. Recycle paper, glass, aluminum, plastic, and cardboard. Ask customers if they would like water. Don't just provide it.

Avoid plastic or paper dishware and use a doggy bag not a doggy Styrofoam. Remember, using 1,000 throwaway plastic teaspoons consumes over 10 times more energy and natural resources than making one stainless steel teaspoon and washing it 1,000 times.

Encourage your patrons to:

- Take the Ocean City bus
- Pick their trash off the beach
- Avoid feeding the seagulls
- Rent a bike



SEPTIC SOLUTIONS

Sepptic systems are a major contributor of nutrients to the coastal bays, but they don't have to be. Most Eastern Shore residents who live outside of town limits have an on-site sewage disposal system. Unless something goes wrong, we normally don't think about them. However, our septic systems need to function every day in order to protect both our homes and the bays.

Let's compare our septic system to our teeth. Most of us regularly brush and floss as a means of preventative maintenance. But very few of us regularly pump and clean our septic tanks to rid them of solids which cause our systems to fail. Preventing septic system failure could dramatically reduce bacteria and nutrient inputs into the coastal bays watershed.

Scientists have determined the amount of nitrogen from septic going into the coastal bays is significantly higher than other areas because of the region's sandy soils, high water tables, and the percentage of watershed residents on septic.

Worcester County has a well and septic database for a program management of septic and well system installation and replacement. There are grant funds to assist with replacement of failing septic systems in the critical area.



Pump every 3-5 years. Septic tanks that do not get pumped out will cause the drainfield to fail. You must rid your tank of solids and the sludge that naturally build up. If these do not get removed on a regular basis they will get into the drainfield and clog the soil pores just like grease. Despite claims of certain products, there are no additives you can place in your septic tank to keep it from having to be pumped out regularly.

Know the location of your tank and drainage field. Call 410-632-1220 for a copy of your septic system type and layout especially before you start any construction.

Never use septic tank cleaning compounds which impair efficiency and damage the drainfield. Water conditioners, starter enzymes and yeast kill the bacteria which naturally break down solids. Additives damage septic functioning by breaking up the sludge and scum layers, causing solids to flush out of the tank and clog the infiltration bed

Never flush toxic materials. Cleaning compounds, paints, detergents, drain cleaners, medicines, and other household products kill bacteria in the tank which are needed to help the system

work properly (Limited bleach use is ok). Remember that these chemicals, when dumped down the drain, enter our groundwater. **See page 11 for household products which should never go into a septic system.**

Be on the lookout for signs of septic failure. These include visible drainage or ponding, strong odors, green spots on the lawn, or backing up of drains or toilets. Signs of failure are not always obvious.

Do not dump cooking grease down the drain! Grease can clog septic systems (as well as municipal sewage systems) and interfere with their proper operation. Fats and oils clog drains, pipes, septic tank baffles, and soil pores.

How Your System Works

A septic system has two major components: a septic tank and a soil absorption system.

Don't flush sanitary pads, tampons, paper, cigarettes, disposable diapers or chemicals. They do not decompose and will harm both your system and groundwater. Don't use a garbage disposal if you are on a septic system.

Don't plant deep-rooted trees or bushes on or near your septic field. The roots could enter the field and clog the system. However, dense grass cover and other shallow-rooted plants are beneficial. Also never drive over or near your system.

Minimize water flow to the septic tank with low-flow shower heads and toilet tank inserts. Low flow means longer life and better functioning. Early morning and bedtime are peak water use times in the bathroom. Run dishwashers and washing machines at other times of the day. Don't do all the family laundry in one day.

Keep a cover on your septic tank access at all times.

Consider installing an effluent filter in your septic tank to trap any suspended solids before they enter your drainfield.

SEPTIC TANK: Waste water flows from the house to the septic tank. The tank is designed to retain waste water and allow heavy solids to settle to the bottom. These solids are partially decomposed by bacteria to form sludge. Grease and light particles float, forming a layer of scum on top of the waste water. Baffles installed at the inlet and outlet of the tank force the water to move slowly through it, and prevent scum from exiting the tank.

SOIL ABSORPTION FIELD (TRENCH): A solid pipe leads from the septic tank to a distribution box where the waste water is channeled into one or more perforated pipes set in trenches of gravel, or other infiltrative products. Here the water slowly seeps into the underlying soil. Dissolved wastes and bacteria in the water are trapped or absorbed by soil particles or decomposed by microorganisms. This process removes disease-causing organisms, organic matter and most nutrients (except nitrogen and some salts). The purified waste water then either moves to the ground water or evaporates from the soil. Trench systems are the most common type of system used in new home construction.

An alternative to the common drain field is the **Seepage Pit (Dry Well)**. In this type, liquid flows to a pre-cast tank with sidewall holes, surrounded by gravel. (Older versions usually consist of a pit with open-jointed brick or stone walls). Liquid seeps through the holes or joints to the surrounding soil.

Another alternative is the **Sand Mound System**. These systems are used in areas where the site is not suitable for traditional septic systems. For instance, the soil may have too much clay to allow the water to seep through at a proper rate, or the water table may be too close to the surface. In these systems, the waste water flows from the septic tank to a storage tank. The liquid is then pumped from the tank to perforated plastic pipes buried in a mound of sand built on the original soil surface. This system provides a layer of suitable soil thick enough to ensure adequate time and distance for proper treatment of the waste water. Vegetation growing on the mound helps evaporate some of the liquid. This is particularly important in areas with shallow water tables.

Drip Irrigation can be an alternative as well. This type of system provides shallow disposal (6"-12") below grade in a sand bed through irrigation hose fitted with treated emitters. Waste water must be pre-treated before disposal to prevent clogging of the system.

Source: Tom Miller, Western Maryland Research and Education Center

How Often Should You Pump Your Tank?

Tank Size Gallons	Household Size (number of people)					
	1	2	3	4	5	6
500	5.8 years	2.6	1.5	1.0	0.7	0.4
750	9.1	4.2	2.6	1.8	1.8	1.0
900	11.0	5.2	3.3	2.3	1.7	1.3
1000	12.4	5.9	3.7	2.6	2.0	1.5
1250	15.6	7.5	4.8	3.4	2.6	2.0
1500	18.9	9.1	5.9	4.2	3.3	2.6
1750	22.1	10.7	6.9	5.0	3.9	3.1
2000	25.4	12.4	8.0	5.9	4.5	3.7
2250	28.6	14.0	9.1	6.7	5.2	4.2
2500	31.9	15.6	10.2	7.5	5.9	4.8

Table 1. Estimated Septic Tank Pumping Frequencies in Years (Source: Pennsylvania State University Cooperative Extension Service)

Believe it or not...

Within the coastal bays watershed behind Ocean City and Assateague, 4,300 septic systems release more than 33,600 pounds of nitrogen annually. Properly functioning septic systems contribute an average of 29 pounds of nitrogen per household per year to groundwater. Nutrient removing septic systems contribute 12 pounds while wastewater treatment plants contribute about 6 pounds per household. Unlike septic, nitrogen from industrial discharges, sewage plants, and agricultural operations is already regulated. There are over 420,000 septic systems in Maryland with another 120,000 units on the way by 2020. Statewide failure rates are 2-3%.

PET BOUNDARIES

Several oft-cited studies form the basis for an estimate of 100 million to 1 billion U.S. songbirds killed annually by domestic cats. One study, from the University of Wisconsin, finds that a reasonable estimate is 39 million birds killed by cats each year — in Wisconsin alone. Here's a dramatic quote from the same study: "Worldwide, cats may have been involved in the extinction of more bird species than any other cause, except habitat destruction." The University of Florida Conservation Clinic, in a report to the Fish and Wildlife Service, estimated that a free-roaming cat kills 100 mammals and birds per year.

- Be a responsible Cat Owner
- Spay and Neuter
- Keep your cat inside
- Support Feral Cat Programs aimed at reducing the number of feral cats through spaying and neutering programs and domestication and adoption programs.

Town Cats - 410-208-0922

Wags and Wishes -410-476-8629

Homeless Cat Helpers, Inc. - 302-344-3015

Delmarva Association of Animal Rescuers 443-366-1229



Be responsible and clean up after your pet!

Pet feces, otherwise known as poop, often carry bacteria such as E. coli, viruses and parasites into waterways. A single gram of poop contains 23 million fecal coliform bacteria-nearly twice as much as human waste. Pet poo doesn't disappear with time, it washes into streams and waterways and eventually into our bays and ocean. The easiest solution to reduce water pollution is to pick up after your pet and dispose of it properly - preferably flushing it down the toilet.





BIRD BASICS

10 MOST COMMON NATIVE COASTAL BAY BIRD FEEDER BIRDS:

Carolina chickadee*American goldfinch*white throated sparrow*cardinal
downy woodpecker*Mourning dove*tufted titmouse*blue jay*Junco

NON-NATIVE BIRDS YOU SHOULD DISCOURAGE AT YOUR FEEDER:

starlings • house finches • house sparrows



BIRD HOUSE DESIGNS

Kind Of Bird	Floor Dimensions	Height Of Box	Entrance Above Floor	Diameter Of Entrance	Height Above Ground	Special Considerations
	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>inches</i>	<i>feet</i>	
House Wren	4x4	6-8	4-6	1	6-10	Under the eave of a building or tree
Carolina Wren	4x4	6-8	4-6	1-1 ¹ / ₄	6-10	
Bluebird	5x5	8	6	1 ¹ / ₂	5-10	Open rural country with scattered trees, low ground cover. Avoid heavily wooded areas.
Chickadee	4x4	8-10	6-8	1 ¹ / ₈	6-15	In or near woodland. Hollow-log-type houses are best. Add 2-3 inches of sawdust or wood shavings.
Tufted Titmouse	4x4	8-10	6-8	1 ¹ / ₄	6-15	In swamps and wooded areas, on a tree trunk whenever possible
Crested Flycatcher	6x6	8-10	6-8	2	8-20	Near woodland edge or in an orchard, hollow-log-type houses are best
Purple Martin	6x6	6	1	2 ¹ / ₂	15-20	In direct sunlight in open land preferably near a pond or large stream of river. Should be modified to add 1/2 inch diameter maple dowel "fence" around each balcony to prevent baby martins from falling. Place covers in entrance during the winter to keep out sparrows. As soon as first martins are seen, remove covers.
Flicker	7x7	16-18	14-16	2 ¹ / ₂	6-20	In or near woodland, hollow-log-type houses
Downy Woodpecker	4x4	8-10	6-8	1 ¹ / ₄	6-20	In or at the edge of a woodland. Hollow-log-type houses are best. Add 2-3 ?inches of sawdust or wood shavings.
Red-headed Woodpecker	6x6	12-15	9-12	2	12-20	In open woods and orchards. Hollow-log-type houses are best. Add sawdust or wood shavings.
Hairy Woodpecker	6x6	12-15	9-12	1 ¹ / ₂	12-20	In woodland. Hollow-log-type house are best. Add 2-3 inches of sawdust or wood shavings.
White-breasted Nuthatch	4x4	8-10	6-8	1 ¹ / ₄	5-20	In or at the edge of a woodland. Hollow-log type house are best.
Barn Swallow	6x6	6	3 sides left open		8-12	Near meadows, marshes, and ponds, especially in farming areas.
Tree Swallow	5x5	6	1-5	1 ¹ / ₂	10-15	In open, sunny areas near marshes or streams. Gourd type is suitable.
Phoebe	7x7	8	3 sides left open		8-12	Near farms, gardens and orchards, especially along streams.

Screech Owl	8x8	12-15	9-12	3	10-30	In open woods and orchards or edge of woodlot. Open approach of a least 20 yards needed. 2-3 inches of wood chips should be placed in bottom of nesting box.
Kestrel	8x8	12-15	9-12	3	10-30	
Wood Duck	12x12	24	18-19	3x4 oval	10-30	Over or at the edge of a body of water. Boxes should be erected on posts, not on or near trees where they are vulnerable to predators. Should be protected below by a metal shield extending in all directions, at least 18 inches from tree or post.
Barn Owl□	12x40	16	7	6	20-25	The best place for the box is in a barn or covered silo, preferably one that is unused. Make sure the box is within 1 mile of pasture, hayfield or marsh habitats. The bottom of the box should have drain holes.
Bats	Open	18			12-15	Place on east side of house where protected from wind and near water where the insect level is high. Should be securely attached to side of building or tree. Daytime temperature must be very hot, about 80-90 degrees. One way to achieve this is to cover the bat house with two or more layers of tar paper.
Pileated Woodpecker	8x11	24	19	4	20-30	Place in a live or dead hardwood tree. Fill the nest box with sawdust all the way to the top and tamp it in. Top should be hinged to allow filling with sawdust.
Osprey	40x40	Open			20-30	Nest platforms and poles can be constructed in shallow bogs or wetlands that are frequented by ospreys.
Barred Owl	12x13	23	12	7	20-30	Should be located in a mature upland hardwood or lowland hardwood area, preferably within 200 feet of water. Place boxes 1/2 mile from each other because they defend a territory of 400-600 acres per pair. Removal of a few small trees in front of the box allows easier access for this owl's low level flight path. Add 2-3 inches of small wood chips in the bottom of the box.

GENERAL TIPS:

- Where you hang bird boxes depends largely upon what types of birds you want. The key is placing the box in the right habitat.
- Never put a perch on the outside of a box (except for purple martin and owl boxes). All cavity nesters have strong feet and can easily cling to any wooden surface. A perch only invites house sparrows.
- After you have put your nest boxes up, don't be discouraged if your target birds ignore them at first. It takes time for birds to accept a nest box as part of their environment.

BIRD FEED CHART

	Chickadees Titmice Nuthatches	Finches	Cardinals Grosbeaks	Sparrows Blackbirds	Jays	Wood- peckers	Orioles Tanagers	Pigeons Doves	Indigo Buntings	Painted Buntings
Sunflower	✓	✓	✓	✓	○	○			○	✓
Safflower	○	○	○							
Corn				○	✓			✓		
Millet		○		○				○	○	
Milo					○			○		
Niger		✓							○	
Suet	✓				○	✓	○			
<div> <div>✓ Preferred</div> <div>○ Readily Eaten</div> </div>										

Every year thousands of birds die when they are infected at feeders by salmonellosis. Spread by infected fecal matter, the disease takes its toll on migrants passing through towards breeding or wintering grounds. To protect these species at your feeder clean at least once per month with 10% bleach solution. Do not use toxic cleaning agents. Always remove soiled seed and do not touch dead birds.

▶ WATER CONSERVATION

Whose water is it anyway?

The water you use in your home comes from the ground which is replenished by rainwater. The supply is far from limitless. The more freshwater you use, the less there is for wildlife, farming, industry and wetlands. The average person uses 125 gallons of water per day. Farmers and wildlife need water too. Remember 40 percent of the water you use in your home is flushed down the toilet.



Machine wash only full loads of laundry and dishes. Use bowl or tub to rinse them if you don't have a washer.

Take short showers instead of baths. An average bath uses 30-50 gallons of water. An average shower, 15 gallons.

Install low-flow shower heads and faucets and fix any leaks immediately. You can cut the cost of your showers in half. The cost of low-flow fixtures is minimal and they are easy to install. Many devices can be purchased for around \$1. Ask your hardware store about water-saving devices for other appliances. Always use a trigger nozzle on your hose.

Choose low-flush toilets. Or place one or two half-gallon bottles in your old toilet to reduce water used for flushing.

Don't let tap water run while brushing teeth, washing dishes, or shaving. The U.S. consumes 450 billion gallons of water per day, but could cut that in half if more careful.

Adjust household water pressure to 30 psi. You'll barely notice the difference.

Limit children from playing with running water. Leaving a hose running for one hour consumes an average of 375 gallons of water.

Keep in mind that roads, parking lots, and houses are impervious surfaces which usually drain rainwater to underground pipes that send the water directly to the bays. This keeps rainwater from replenishing groundwater. Always limit impervious surfaces on your property.

THE FACTS:

- ▶ Rainwater runs off paved surfaces 10 times faster than unpaved land.
- ▶ The commercial fish and shellfish industry contributes \$45 billion to the U.S. economy every year.
- ▶ Leaving a hose running for one hour uses 375 gallons of water.



ENERGY CONSERVATION

What exactly do you mean by "energy?"

Webster defines "energy" as "the resources for producing usable power." All the energy you use to heat and cool your home, to turn on a light, or just to walk to the store comes from the earth. Water, gas, wind, food, oil, the sun, and nuclear fission, each produce the energy we use in our everyday lives. When we consume energy, we are changing its form to serve ourselves. This has resulted in damming rivers, nuclear waste production and the burning of fossil fuels which contribute to nutrient inputs and global warming. By conserving energy, we conserve and protect natural resources.

Turn off the television and lights when you're not using them. Why pay for energy you're not using anyway?

Set your home thermostat at no more than 68° in the winter and no less than 75° in the summer. A few degrees can save a lot of money and may inhibit illness by lessening inside-outside temperature differentials.

Use a microwave, electric skillet, or toaster oven instead of the stove.

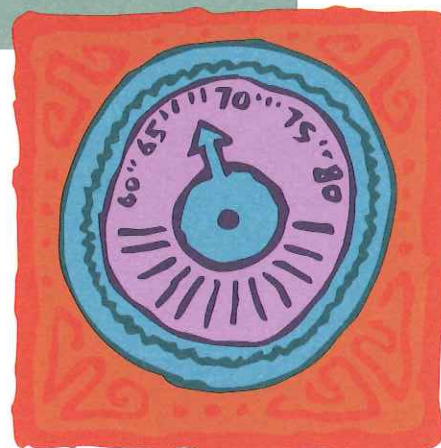
Wash clothes with warm or cold water instead of hot. Washing with cold water can reduce energy cost to 5 cents or less per load. Reduce the water level setting for small loads. Clean the lint filter after every load.

Set your hot water heater to 120 degrees Fahrenheit. You'll save energy and avoid scalding yourself. Also insulate your water heater. An insulation blanket quickly pays for itself even if your water heater is indoors.

Set your refrigerator at 38-40 degrees Fahrenheit. This will keep your food fresh and prolong the life of your fridge.

Locate refrigerators and freezers away from heat registers and stoves. Leave two to three inches clearance around the back, sides and top.

Avoid the heat dry option on your dishwasher. It is an energy guzzler.



BAYSIDE ADVICE

In the coastal bays watershed, the areas along the shore of the creeks and bays are the most critical for protecting wildlife and water quality. Hundreds of species of birds use these riparian areas to live, feed, nest and seek shelter. More natural shorelines also provide water quality protection by curbing nutrient, chemical and sediment runoff through uptake by trees and shrubs. Vegetated shores also provide shade to cool streams and tributaries. Without sufficient shoreline buffer, the coastal bays and the species that live here will falter.



Maintain existing vegetation and plant new trees and shrubs on shorelines or streambanks to minimize erosion and protect water quality. For streambanks, choose willow, alder, blackberry and other native trees and shrubs. Native trees especially help prevent excessive nutrient and pollutant runoff into the bays. Even when far from a water body, their roots reach well into the soil to tap and recycle groundwater. Trees also convert greenhouse gasses and clean pollutants and nutrients from the air. Atmospheric deposition accounts for one-third of the nitrogen inputs into the coastal bays.

Do not clear trees and shrubs from stream banks and lakes shore. Replant areas where woody vegetation has been removed or mowed down. Dead trees are where most wildlife feed and live so do not remove them, even when fallen.

Get advice or money from the Natural Resources Conservation Service or Cooperative Extension Service (410-632-1972). Tell them you'd prefer to use vegetation and other natural materials to protect and rebuild streambanks and bay shores, rather than using bulkheads and stone revetment. They may be able to offer financial rewards.

Let geese and ducks fend for themselves. By feeding Canada geese, mallards and hybrids you are hurting less common species struggling to compete. This upsets nature's balance and can foul waterways when out-of-control species degrade water quality with excessive guano.

Join neighbors and local governments in developing an environmentally-sound approach to watershed management up and down your stream.

Participate in local bay or river cleanup. By extracting debris you can protect natural resources, learn what's out there and help your community feel better about itself. Clear streams, creeks and bays of litter, debris, and unnatural obstructions. When outdoors leave only your footprints.

THE FACTS:

- ▶ 68 percent of the coastal bays have one or more types of chemicals at unacceptable level.
- ▶ 25 percentage of coastal bays have a high concentration of metal.
- ▶ Coastal water support 25.3 million jobs and generate \$213 billion in goods and service every year.

▶ CANAL CORRECTIONS

Artificial canals represent the greatest pollution hotspots in the coastal bays of Maryland. Because canals are generally deeper than surrounding waterways, they do not flush properly, which allows high levels of nutrients and chemicals to accumulate. An EPA study found coastal bay dead-end canals to contain more chemicals and more nutrients than any other parts of the bays. The homes surrounding the canals, the chemically treated bulkheads and pilings that line them, and the antifouling paints, anodes, gas and oil tanks from boats adds to the canals' problems. These artificial habitats are devoid of healthy aquatic life and have a negative impact on the surrounding bays. Options being explored to remedy the problem include retrofitting drainage into canals, alternative bulkheading materials, interconnection of canals for improved flushing, dredging disincentives, and alternative depth requirements. Here is what you can do in the meantime.

Direct your stormwater away from your canal. Direct it toward your yard, pond, or a vegetated area where it can be treated before entering the bays.

Remove yard waste, such as cut flowers, grass and leaves away from canal sides. Compost this material or take it to the landfill. Dead plants translate into more untreated nutrients into your canal.

Plant trees or plants along your canal border. These will take up nutrients and chemicals before they reach the water.

Learn the vulnerability of your canal to pollution. Factors include: (1) the tidal range and depth of the canal, (2) the size of the canal system in relation to the adjacent estuary, (3) the intensity of human activity in and adjacent to the canal, (4) the frequency of dredging. (5) and the particular flushing characteristics of the canal.

Check your nets and crab pots frequently. Fish and crabs which migrate in and out of canals can't stay long because of low oxygen levels. Check your traps, nets, and cages daily to keep wildlife from dying and further fouling canal waters.

Substitute non-toxic bulkhead materials for the toxic materials in existing bulkheads when they are replaced or repaired. Replace with marsh grass or stone riprap where possible. Most bulkheading is treated with arsenic.

Do not allow boat sewage, paint chips, fish parts, bilge water, detergents, or antifreeze, to escape into your canal. Limit anti-fouling treatment of your boat.

Dredge your canal sparingly. Pollution from high iron, sulfur, and organic material deposits in the sides and bottom of the canals may be abated by filling or allowing sedimentation to cover them. If maintenance dredging of

the canals is performed, these pollutants again become exposed and their detrimental effects accelerate. Maintenance should be limited to the minimum excavation possible. Changing canal slope or gradient during the dredging process could increase flushing and improve water quality.

Experiment with technology that increases flow and improves the condition in dead-end canals. This means interconnecting neighboring canals, proper dredging and other innovative technology.

Educate your neighbors. Tell your fellow canalside homeowners what they can do to protect the property you all share.





PLANNING PROCESS GUIDE

GENERAL WORCESTER COUNTY PROCESS FOR REVIEW OF PROPOSED PROJECTS:

The public can participate in the review of many types of individual development proposals and in long-range planning in the coastal bays watershed. All County Commissioner, Planning Commission,* and Board of Zoning Appeals **(BZA) meetings are open to the public, and interested parties may comment at hearings and information meetings. Staff review of projects occurs formally at Technical Review Committee (TRC) meetings. Agendas and meeting schedules may be obtained for a fee by contacting the Department of Development Review and Permitting (410-632-1200) or by visiting the website at www.co.worcester.md.us/drp/bdscomms/bdscommsindex.aspx.

Residential Subdivision: (5 lots or fewer)

Plats reviewed by staff for compliance and zoning and other applicable county regulations.

Residential Subdivision (6 lots or more)

Plats reviewed by TRC and Planning Commission for compliance with zoning and other applicable county regulations

Residential Planned Developments

Residential Planned Community District is a development type that promotes a holistic approach to a unified development plan. Permitted uses and structures include single family homes, multi-family dwellings, hotels, golf courses, marinas, retail and service uses. Applicant meets with TRC, Planning Commission, County Commissioners (at public hearing) for a review and approval of submission. There are three "steps" to approval: concept, master development plan approval, and the site plan review for subdivision process.

Surface Mining

Site plan is reviewed and approved by the Board of Zoning Appeals.

Commercial Industrial Project (less than 10,000 sq ft)

Site plan reviewed by staff or the TRC based upon total square footage. If staff feels the project has broad impact, it is forwarded to the Planning Commission for review.

Commercial Industrial Project (10,000 sq ft or more)

Reviewed by the TRC and the Planning Commission

Re-zoning Applications

All re-zoning applications are submitted to staff and reviewed by the Planning Commission and approved or denied by the County Commissioners.

Variances and Special Exceptions

Applications are submitted to staff, reviewed by the Board of Zoning Appeals. The Planning Commission reviews applications as well and advises the BZA.

Comprehensive Plan

The plan guides development philosophy, revision of zoning and subdivision code and zoning map. Plan is prepared by the Planning Commission with technical assistance staff. It is adopted by the County Commissioners and reviewed every 6 years.

◆ Process varies within municipalities and Ocean Pines.

*** The Worcester County Planning Commission** is a 7-member appointed body which makes recommendations on developments, planning regulations, and zoning. The commission writes the comprehensive plan for the county and is charged with insuring development is compatible with the community and the comprehensive plan.

****The Board of Zoning Appeals** is also an appointed body of 7 members which makes decisions on variance and special exception applications

*****The Technical Review Committee** is made up of county staff, a Planning Commission member, and other agency personnel who review development proposals to make sure they meet legal requirements. The TRC has approval authority over minor site plans (10,000 square foot or less).

Stormwater management

Worcester County law states that any clearing or grading which exceeds 5,000 square feet in area, or filling exceeding 100 cubic yards, is subject to the county's Stormwater Management Regulations. A project meeting these criteria is required to have a stormwater management plan and a sediment and erosion control plan. An applicant must submit the plans to the Worcester Soil Conservation District at (410) 632-0939 for approval. Stormwater Management Plans are valid for a period of two years. Sediment and erosion control plans are valid for two years. For more information call Development Review and Permitting at (410) 632-1200.

Piers and shoreline stabilization

Pier or shoreline stabilization construction on any tidal waters, including the coastal bays, is regulated by federal, state and county agencies. Worcester County Shoreline Commission evaluates and approves requests for the construction of all piers, docks and boathouses, and the installation of shoreline stabilization structures such as stone riprap and bulkheads. Projects extending more than 125 feet channelward of mean high water, or exceeding more than one half the distance from the mean high water line to the center line of the body of water upon which the structure is situated, require action by the Board of Zoning Appeals in the form of a special exception. While local permits are issued in accordance with the county's regulations through the Department of Development, Review, and Permitting (410) 632-1200, the US Army Corps of Engineers (410) 962-4500 and Maryland Department of the Environment (410) 901-4020 are also involved in the process. In addition, the Maryland Department of Natural Resources, Shore Erosion Control Program, (877-620-8DNR, extension 8531), can provide technical assistance, loans and/or grants to shorefront property owners for shoreline stabilization.

Sensitive areas in Worcester County

Sensitive areas are places or features in the landscape that have ecological, economic and/or public health values, and receive protection during the development process. The following natural resources are sensitive areas in Worcester's Comprehensive Plan. For more information call 410-632-5651.

1. Threatened and endangered species and their habitat
2. Steep Slopes
3. Stream Corridors
4. 100-Year Floodplains
5. Wetlands
6. Forests
7. Coastal Bays



WHAT ARE YOU PROTECTING?

WORCESTER COUNTY SPECIES



REPTILES AND AMPHIBIANS

Ringneck snake
Corn snake
Worm snake
Scarlet snake
Racer
Rat snake
Eastern hog-nosed snake
Common king snake
Milk snake
Northern water snake
Rough green snake
Brown snake
Red-bellied snake
Eastern ribbon snake
Common garter snake
Smooth earth snake
Copperhead
Red-bellied water snake
Eastern spadefoot toad
Bullfrog
Green frog
American toad
Southern leopard frog
Wood frog
Eastern narrow-mouthed toad
Northern cricket frog
Gray treefrog
Green treefrog
Spring peeper
Carpenter frog
New Jersey Chorus frog
Pickerel frog
Red-spotted newt
Marbled salamander
Tiger salamander
Dusky salamander
Two-lined salamander

Red-backed salamander
Snapping turtle
Mud turtle
Stinkpot
Painted turtle
Red-bellied turtle
Atlantic green sea turtle
Spotted turtle
Diamondback terrapin
Eastern box turtle
Atlantic Ridley turtle
Atlantic hawksbill sea turtle
Loggerhead sea turtle
Leatherback sea turtle
Northern fence lizard
five-lined skink
Broad headed skink
Ground skink
Hoary bat
Evening bat
Eastern cottontail
Eastern chipmunk
Woodchuck
Gray squirrel
Fox squirrel
Red squirrel
Southern flying squirrel
Beaver
Striped skunk
Red fox
Gray fox
Raccoon
Long-tailed weasel
Mink
Coyote
White-tailed deer
Sika deer
Otter

MAMMALS

Virginia opossum
Masked shrew
Southeastern shrew
Short-tailed shrew
Least shrew
Eastern mole
Short-nosed mole
Marsh rice rat
Eastern harvest mouse
White-footed mouse
Southern red-backed vole
Meadow vole
Woodland vole
Muskrat
Southern bog lemming
Black rat
House mouse
Meadow jumping mouse
Little brown myotis
Silver-haired bat
Eastern pipistrelle
Big brown bat
Red bat



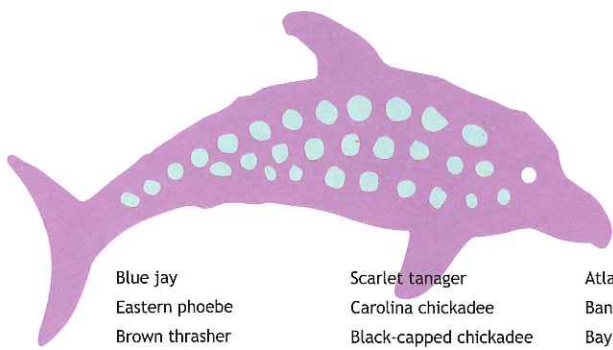
BIRDS

Parasitic jaeger
Black-legged kittiwake
Lesser black-backed gull
Great black-backed gull
Roseate tern
Royal tern
Least tern
Black skimmer
Gannet
Brown pelican
Horned grebe
Red knot
Dunlin
Sanderling
Black-bellied plover
Ruddy turnstone
Purple sandpiper
Western sandpiper
Piping plover
Wilson's plover
American oystercatcher
Fish crow
Laughing gull
Herring gull
Black-headed gull
Little gull
Bonaparte's gull
Common tern
Double-crested cormorants
Snowy egret
Great egret
Louisiana heron
White ibis
Glossy ibis
Willet
Short-billed dowitcher
Long-billed dowitcher
Greater yellowlegs
Black-necked stilt
Clapper rail
Black rail
Boat-tailed grackle
Little blue heron
Great blue heron
Least bittern
Yellow-crowned night heron
Black-crowned night heron
American bittern
American avocet
Common gallinule
Virginia rail
King rail
Common snipe
Short-billed marsh wren
Long-billed marsh wren
Red-winged blackbird
Green heron
Spotted sandpiper
Short-eared owl
Marsh hawk or northern harrier
Swallow-tailed kite
Peregrine falcon
Barn owl

American kestrel
Screech owl
Barred owl
saw-whet owl
Cooper's hawk
Broad-winged hawk
Red-shouldered hawk
Red-tailed hawk
Black Vulture
Turkey Vulture
Long-eared owl
Great horned owl
Sharp-shinned hawk
Merlin
Bald Eagle
Osprey
Mallard
Redhead
Canvasback
Common merganser
Wood duck
Ring-necked duck
Tufted duck
Lesser scaup
Greater scaup
Hooded merganser
Canada goose
Whistling swan
Red-necked grebe
Common loon
Red-breasted merganser
Old squaw
Common goldeneye
Bufflehead
Surf scoter
White-winged scoter
Common scoter
Red-throated loon
Black duck
Snow goose
Ross' goose
Brant
Common teal
European widgeon
Ruddy duck
Pintail
American coot
Gadwal
Blue-winged teal

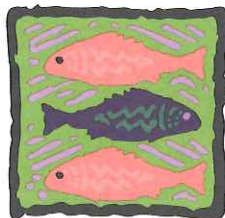
Mute swan
Pied-bellied grebe
Seaside sparrow
Sharp-tailed sparrow
Swamp sparrow
Tree sparrow
Field sparrow
Grasshopper sparrow
Henslow's sparrow
Savannah sparrow
Vesper sparrow
House sparrow
Chipping sparrow
Song sparrow
White-throated sparrow
White-crowned sparrow
Fox sparrow
Palm warbler
Yellow Warbler
Blue-winged warbler
Prairie warbler
Chestnut-sided warbler
Prothonotary warbler
Hooded warbler
Kentucky warbler
Black and white warbler
Pine warbler
Yellow-throated warbler
Yellow-rumped warbler
Cattle egret
Killdeer
Bobwhite quail
Common nighthawk
Eastern meadowlark
Loggerhead shrike
Eastern Kingbird
Eastern bluebird
Water pipit
Snow bunting
Horned lark
American robin
Mockingbird
Gray catbird





Blue jay
Eastern phoebe
Brown thrasher
Cedar waxwing
Brown-headed cowbird
Starling
Common grackle
Common crow
Cardinal
Tree swallow
Rough-winged swallow
Bank swallow
Belted kingfisher
Barn swallow
American goldfinch
Baltimore oriole
House finch
Dark-eyed junco
House wren
Yellow-breasted chat
Common yellowthroat
American redstart
White-eyed vireo
Rufous-sided towhee
Indigo bunting
Blue grosbeak
Willow flycatcher
Carolina wren
Black-billed cuckoo
Yellow-billed cuckoo
Mourning dove
Rock dove
Purple martin
Chimney swift
Red-headed woodpecker
Common flicker
Downy woodpecker
Hairy woodpecker
Pileated woodpecker
Ruby-throated
hummingbird
American woodcock
Turkey
Whip-poor-will
Chuck-will's-widow
Brown creeper
White-breasted nuthatch
Yellow-throated vireo
Orchard oriole

Scarlet tanager
Carolina chickadee
Black-capped chickadee
Red-eyed vireo
Warbling vireo
Acadian flycatcher
Eastern wood pewee
Great crested flycatcher
Veery
Wood thrush
Ovenbird
Louisiana waterthrush
Red-breasted nuthatch
Brown-headed nuthatch
Evening grosbeak
purple finch
Red crossbill
Northern parula
Solitary vireo
Philadelphia vireo
Gold-crowned kinglet
Ruby-crowned kinglet
Winter wren
Pine siskin
Rusty blackbird

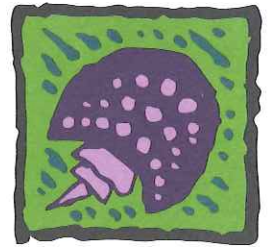


FISH

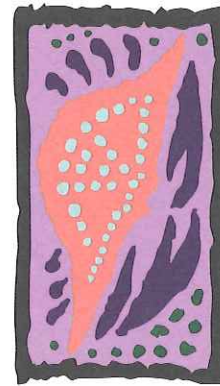
Alewife
American eel
American sand lance
Atlantic croaker
Atlantic herring
Atlantic menhaden
Atlantic moonfish
Atlantic needlefish
Atlantic pollock
Atlantic silverside
Atlantic spadefish

Atlantic thread herring
Banded killifish
Bay anchovy
Black drum
Black sea bass
Blackcheek tonguefish
Blueback herring
Bluefish
Bluespotted cornetfish
Bullnose ray
Butterfish
Clearnose skate
Cobia
Common trunk fish
Conger eel
Cownose ray
Crevalle jack
Cunner
Dusky pipefish
Dwarf goatfish
Feather blenny
Fourspine stickleback
Fourspot flounder
Gag
Gizzard shad
Gray triggerfish
Great barracuda
Green goby
Halfbeak
Harvestfish
Hogchoker
Horse-eye jack
Inland silverside
Inshore lizardfish
King mackerel
Ladyfish
Lined sea horse
Lookdown
Mosquitofish
Mummichog
Naked goby
Northern kingfish
Northern pipefish
Northern puffer
Northern searobin
Northern sennet
Northern stargazer
Orange filefish
Oyster toadfish

Permit
Pigfish
Pinfish
Planehead filefish
Rainwater killifish
Red drum
Red hake
Red snapper
Rough scad
Rough silverside
Round pompano
Sand shark
Sandbar shark
Scup
Seaboard goby
Sheepshead minnow
Shorthead redhorse
Skilletfish
Smallmouth flounder
Smooth butterfly ray
Smooth dogfish shark
Southern puffer
Southern stingray
Spanish mackerel
Spiny dogfish
Spot
Spotfin butterfly fish
Spotfin mojarra
Spotted hake
Spotted sea trout
Striped anchovy
Striped bass
Striped blenny
Striped burrfish
Striped cusk eel
Striped killifish
Striped mullet
Striped searobin
Summer flounder
Tautog
Threespine stickleback
Weakfish
White catfish
White mullet
White perch
Windowpane flounder
Winter flounder



Mud crab 1
Mud crab 2
Mud crab 3
Mud fiddler
Mud snail 1
Mud snail 2
Mulinia lateralis
Mysidopsis almyra
Narrow mud crab
Oyster drill
Panopeus
Physa sp.
Panderous ark
Portunid crab
Portunidae
Rock crab
Sand fiddler
Sand shrimp
Sea nettle
Shortspined brittlestar
Snapping shrimp
Solen sp.
Spider crab 1
Spider crab 2
Tellina agilis
Transverse ark



OTHER AQUATIC SPECIES

American oyster
Atlantic surf clam
Blood ark
Blue crab
Blue mussel
Boring sponge
Brown shrimp
Channeled whelk
Comb jelly 1
Comb jelly 2
Common sea cucumber
Ensis directus
Ensis sp.
Eupleura caudata
Flat mud crab
Forbes asterias star
Grass shrimp
Haminoea solitaria
Hard shell clam
Hermit crab 1
Hermit crab 2
Horseshoe crab
Hydrobiidae sp.
Knobby whelk
Lady crab
Lion's mane jelly
Lobed moon snail
Long-finned squid
Mantis shrimp
Sea squirt
Tunicate
Moon jelly



WEB SITES



Assateague Coastal Trust
www.actforbays.org

Assateague Island National Seashore
www.nps.gov/asis/index.htm

Association of National Estuary Programs
www.anep-usa.org

Berlin
www.berlinmd.gov

Delaware Inland Bays Program
www.inlandbays.org

Farm Service Agency
www.fsa.usda.gov

Federal Emergency Management Agency
www.fema.gov

Maryland Coastal Bays Program
www.mdcoastalbays.org

Maryland Department of Agriculture
www.mda.state.md.us

Maryland Department of Environment
www.mde.state.md.us

Maryland Department of Natural Resources
www.dnr.state.md.us

Maryland Department of Transportation
www.mdot.state.md.us

Maryland Department of Planning
www.mdp.state.md.us

National Estuary Program
www.water.epa.gov/type/oceb/nep/index.cfm

National Oceanic and Atmospheric Administration
www.noaa.gov

Natural Resources Conservation Service
www.nrcs.usda.gov

Ocean City
www.oceancitymd.gov
www.ococean.com

Ocean Pines
www.oceanpines.org

State Highway Administration
www.roads.maryland.gov

University of Maryland Cooperative Extension
www.extension.umd.edu

United States Coast Guard
www.usda.mil

United States Department of Agriculture
www.usda.gov

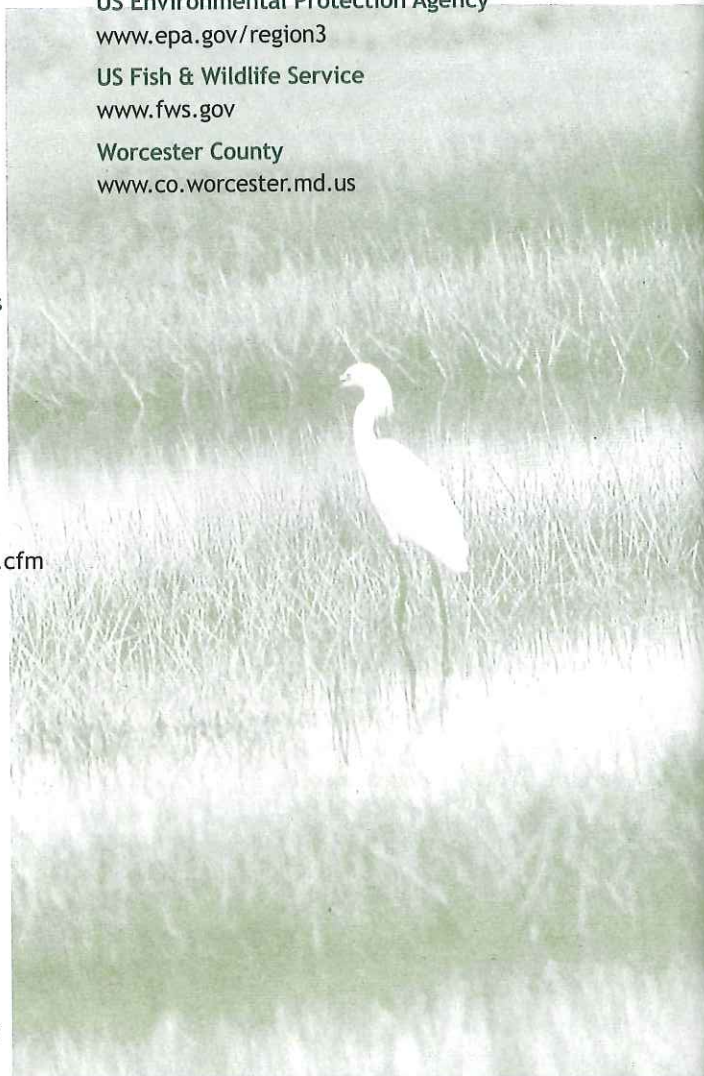
United States Geological Survey
www.usgs.gov

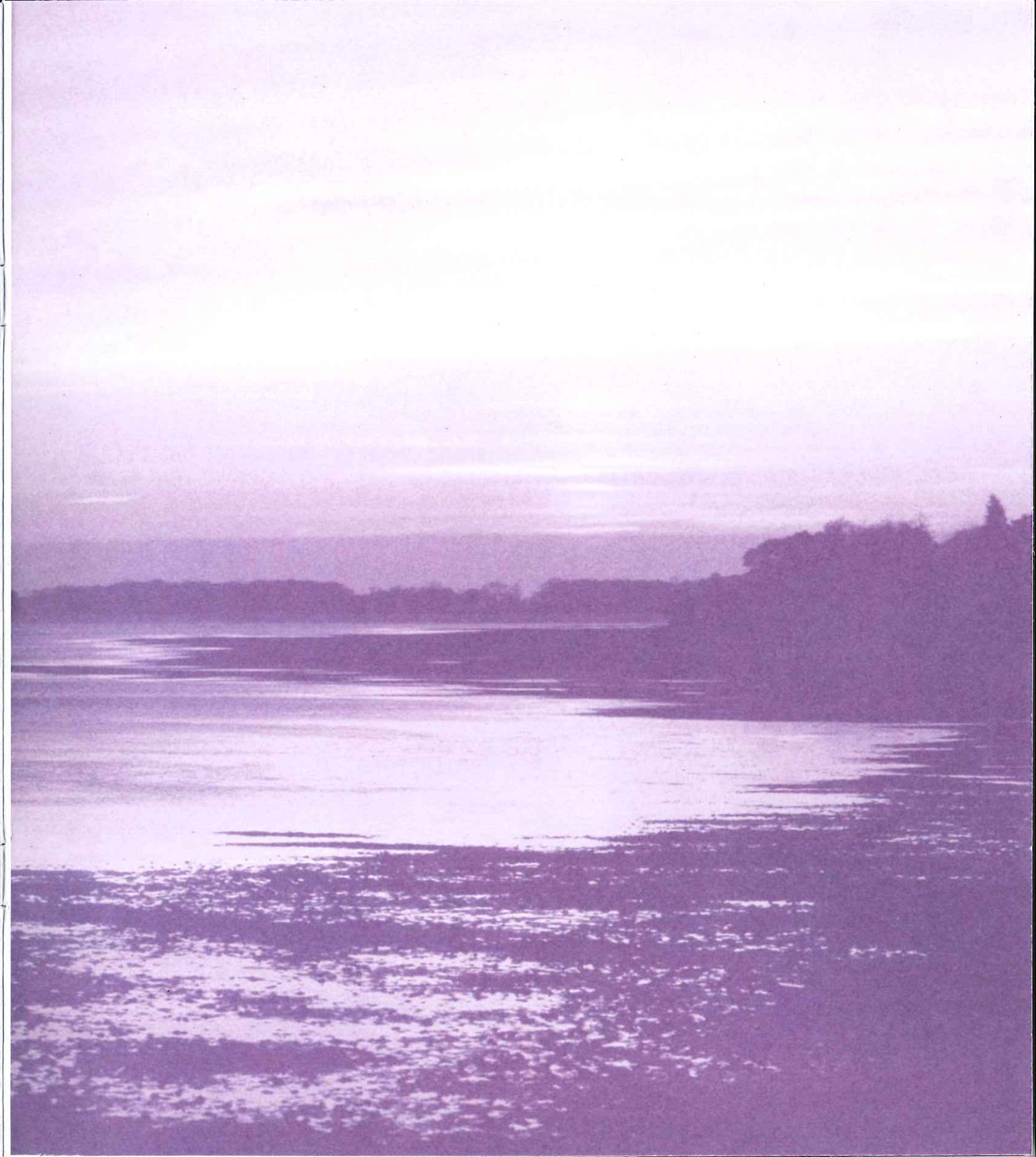
US Army Corps of Engineers
www.usace.army.mil

US Environmental Protection Agency
www.epa.gov/region3

US Fish & Wildlife Service
www.fws.gov

Worcester County
www.co.worcester.md.us







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