

Larger,
Newer,
Improved
and Online

Greener

By The Yard

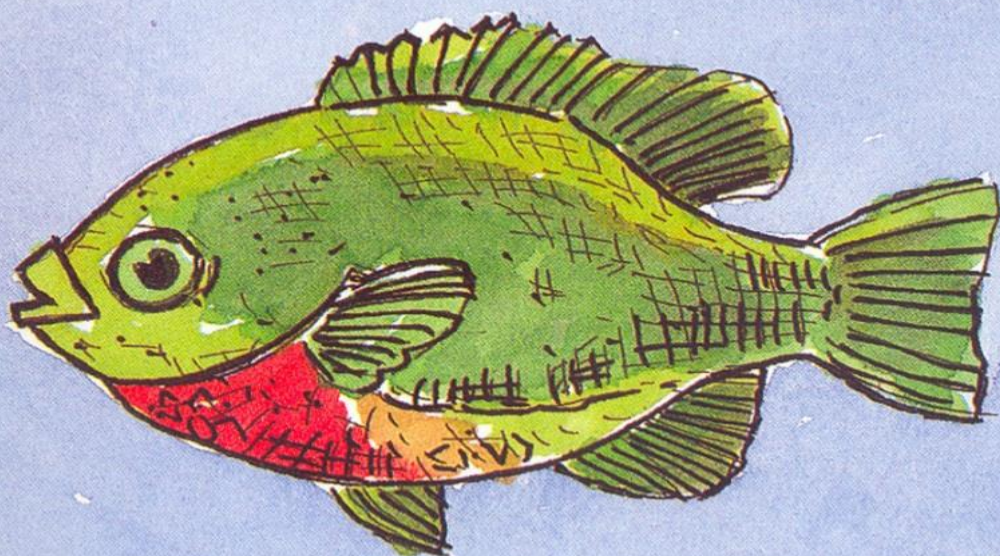


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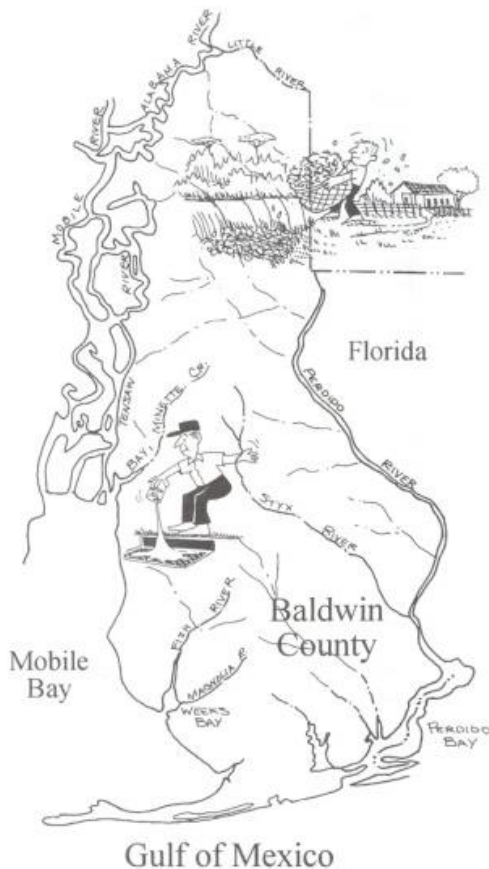
GREENER BY THE YARD

A clean environment is important to us;...

...and we all value clean water with the aesthetic, health, recreational and economic benefits it provides. Unfortunately, many of the ways we use our environment affect water quality. There are a number of simple practices each of us can adopt to improve the quality of our ground water, rivers, bays, and estuaries. Individually, the contribution of these practices may seem small, yet if enough people take these steps, the effect can be significant.

Water pollution originates from either a known single source or from the broader landscape...

...but what does this mean? Some pollution comes from specific locations like manufacturing or processing operations and wastewater treatment plants that discharge waste materials directly into surface waters. These sources are regulated and monitored by the facility operators and state and federal environmental agencies.



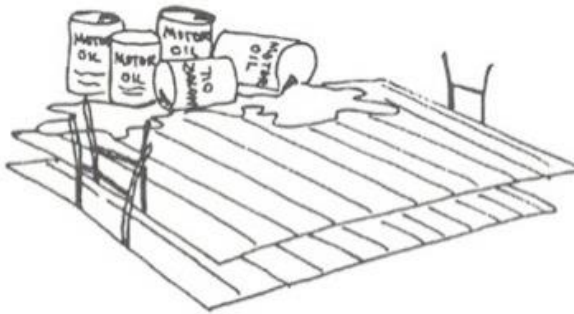
Far and away most of the pollution entering our rivers and bays and even our groundwater originates from the broad residential, urban and farming landscape. Harmful things like dirt, chemicals, oil, fertilizer and even bacteria are carried by rainfall runoff. This runoff moves over the ground or pavement or off rooftops into drains and ditches then into creeks, rivers and bays. Even from around our homes and yards a variety of toxic and damaging pollutants may runoff; more than you realize.

This handbook describes simple practices that can be adopted by homeowners to protect our water resources. Residents use these practices to reduce the amount of stormwater produced and reduce the pollution in the runoff washing from their property. In addition, this booklet lists resources, publications and websites for more information on each of these practices. Do your part to make our county “greener by the yard.”

POLLUTION IN STORMWATER RUNOFF

Just about everyone is familiar with the storm drains...

...located in urban areas and along the edges of paved streets. Ditches and swales serve as storm drains in rural areas. These drainage systems rapidly remove excess water from roadways, parking lots, and other paved or unpaved areas. Stormwater that runs off into these drainage ways does not undergo treatment, but instead it flows straight into a local body of water, such as a stream, estuary, lake, or bay.



Many pollutants on the ground or road that can be moved by storm runoff...

... are washed into our waterways. Runoff from parking lots and roads picks up harmful substances like motor oil, toxic metals and fluids dripping from vehicles. Unfortunately, a widespread source of water contamination also comes from the

waste oil deliberately poured down a drain or onto the ground. The five quarts of motor oil from your car is capable of making an oil slick the size of two football fields or polluting a million gallons of drinking water. Properly dispose of waste motor oil by placing it in a sealed metal or plastic container, and then taking it to a recycling center or auto repair shop.

Also, common pollutants...

... that enter local water bodies through storm drains and ditches are pesticides. Pesticides are chemicals that kill plants (herbicides), kill insects (insecticide), and kill fungi (fungicides). The correct application of these chemicals will prevent them from leaving your property. Follow label instructions carefully and dispose of these products as recommended. Offer excess amounts to friends and neighbors, who may need them. You will find more on disposal and pesticide alternatives in the "Lawns and Lawn Care" chapter of this book.



Seemingly harmless...

... lawn fertilizers, leaves, and grass clippings cause problems if they enter storm drains or are carried by ditches into waterways. Fertilizers contain nitrogen, phosphorus and other chemicals that together are called **nutrients**. Nutrients in the food you eat are good; nutrients washed into our waterways by rainfall runoff are a big problem. In leaves and grass clippings, nutrients are locked away in the plant material and are released into the water when they decompose. Many fertilizers mix easily with water and can cause rapid algal and aquatic weed growth. As the algae or aquatic weeds use up all the excess fertilizer, they begin to die off. Bacteria present in the water in turn consume dead algae and plants causing oxygen levels in the water to be depleted and harmful ammonia released. This can kill fish and other aquatic organisms. Decomposing leaves and grass clippings when washed into waterways can cause the same problems.



Sometimes the rapid growth of certain algae caused in part by fertilizer pollution results in more than just low oxygen levels. You may have heard of toxic “red tides,” but there are other harmful algae present in our coastal waterways. Many types of algae produce toxins when they grow or “bloom” into vast numbers. These toxins, not as deadly as “red tides,” can still kill fish, contaminate seafood making it unfit for consumption and render areas unsafe for swimming or recreation. Learn more about harmful algal blooms at the Centers for Disease Control website: <https://www.cdc.gov/habs/index.html>.

Stepping in pet waste is bad enough,...

...but your best friend's poop is loaded with potentially harmful bacteria. *E. coli* and other bacteria that are threats to human health are found in fecal material. Parasites and viruses are lurking there waiting to be washed away by rainfall runoff into local waterways. Many households in coastal Alabama keep dogs and cats. That is a lot of pets doing their business on the ground. Pet waste needs to be picked up and disposed of either in the garbage or down the toilet. Also, check your local pet ordinances. Pet waste should not be mixed with other compost. For more tips, go to http://adem.alabama.gov/moreInfo/pubs/CWP_Pet.pdf.

Muddy water is a dirty word...

...when it fills our coastal waterways and bays. Even small amounts of clay and silt can have damaging effects. Sediment input makes the water cloudy or turbid. Turbidity caused by sediment has dramatic effects on the health of waterways. It blocks sunlight necessary for aquatic plant and beneficial algal growth reducing oxygen for fish and other creatures. Sediment covers fish spawning areas and the places that baby fish hide from bigger fish trying to eat them. Many fish hunt by sight. Cloudy water limits these fish species' ability to get food.

Water stays hotter for a longer time when it is filled with sediment. Cloudy water heated by the sun or from hot water running off blacktop parking lots increases the temperature of waterways. Many fish only thrive in a narrow range of water temperatures. Also, sediment gradually fills in water bodies making them too shallow for certain types of wildlife, for boating and for many recreational uses.

Runoff water moves faster and there is more of it...

... as our landscape becomes covered with hard and paved surfaces. A reason more pollutants find their way to our waterways and more flooding occurs is that rainfall cannot soak into the ground. Farm fields and forests are becoming roadways, housing developments and shopping centers. With development comes hard surfaces that cover the soil. Rainfall runoff has to go somewhere, usually into the ditches and storm drains then into our waterways. More water moving faster results in flooding, erosion and property damage.

Along the coast,...

...streams do not have rocky bottoms; they have sandy bottoms. Fast moving flood waters erode the banks and bottoms adding more sediment to downstream waterways. Property can be lost and roadways, and culverts can be washed out. Emergency funds that might have gone to other important city or county programs now have to be diverted to repairing erosion and flood damage. Increasing coverage of hard surfaces results in rainfall runoff becoming the pollutant.

The best way to stop polluted runoff...

...is to prevent harmful chemicals, fertilizer, leaves, grass clippings, bacteria or eroded soil from entering storm drains or other drainage ways. Proper storage, use, and disposal of chemicals and other garden products are essential. Always consult the manufacturer's instructions and do not exceed manufacturer's application rates.



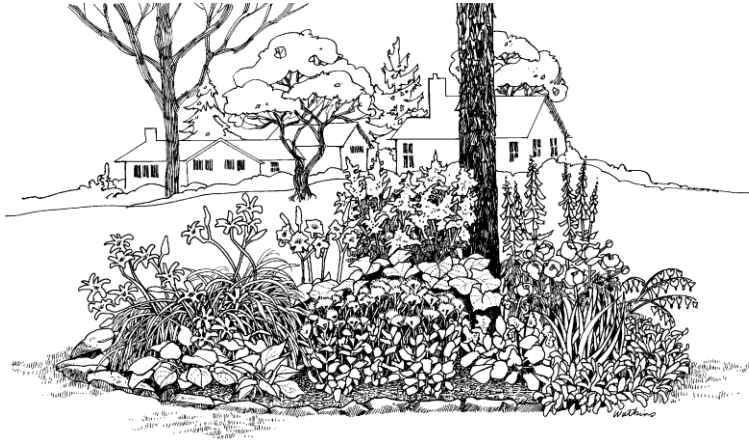
In addition to minimizing pollutants,...

...take steps to reduce the amount of water runoff. Decrease runoff by following these suggestions:

- Mulch and plant trees, shrubs, and other ground cover in eroding places in your landscape,
- Maintain a healthy lawn,
- Direct gutter downspouts away from paved surfaces to vegetated areas,
- Use porous materials for walkways, driveways and patios,
- Construct terraces on sloping ground,
- Divert runoff away from erosion-prone areas, and
- Use home irrigation practices that reduce direct runoff from paved areas.

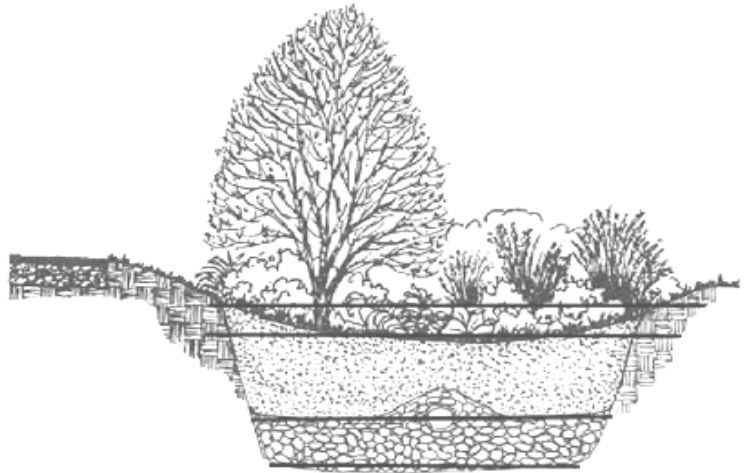
What about a rain garden...

...that contains colorful plants to drink up rainfall runoff? Rain gardens are a residential landscape amenity that collects rainfall running off rooftops, driveways and walks. You customize the design of the rain garden to fit your site and landscaping tastes. Rain gardens serve to temporarily trap runoff and allow the water over time to soak into the ground. As a rule, your rain garden should not be located in a place that already ponds water. The soils in a location like that do not allow water to infiltrate.



A percolation test or “perc” test is used to check on how fast water can soak into the soil. Dig a 12 inch deep hole, fill it with water and time how fast the water soaks in. A good rate of percolation is 1 inch per hour for a standard rain garden.

You are landscaping anyway, so you can select the appropriate plants that you like for your rain garden. Always pick plants that are native to your area. Upstate natives should be used for upstate rain gardens. Coastal native plants are best for coastal rain gardens. In addition, plants need to withstand being flooded for a short time. Alabama Cooperative Extension Service has a list of plants that prosper in rain gardens. Be prepared to put some maintenance into your rain garden until plants are well established, just as you do with other newly planted beds. In no time, the plant roots of the garden plants convert that water into foliage and flowers. To learn more about rain gardens, plant selection, benefits and design see: <http://www.aces.edu/natural-resources/water-resources/watershed-planning/stormwater-management/rain-gardens/documents/2014residentialraingardensTI.pdf>.



Use a rain barrel...

...to collect rainwater for use when you need it most. Rain barrels are simple contraptions that trap water as it leaves your roof or as it falls directly from the sky. A benefit of collecting rain running off your roof is that it can reduce the chance for erosion around your foundation or around the base of your downspout. Use the saved rainwater during dryer times to water plants or gardens. Rain barrels are great for storing rainfall to fill a watering can for use on container or raised bed gardens.

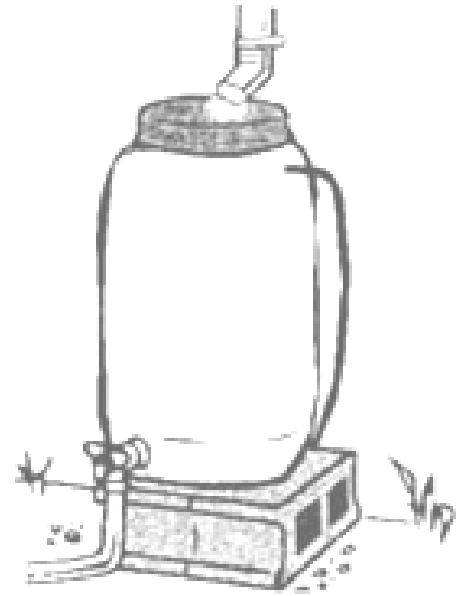
There are many designs for homemade rain barrels. Commercial rain barrels are available at many home and garden stores and online. A popular design connects a rain barrel to a gutter downspout. For this type of design, you need to know how much water is cascading off the roof. To calculate the amount of water running off your roof, follow these steps:

- Take the dimensions of the footprint of your roof that drains to the downspout and convert feet to inches,
- Multiply the roof dimensions by the number of inches of rainfall, and
- Divide by 231 to get the number of gallons.



About 623 gallons of water runs off a 1,000 square feet of roof area in a 1 inch rainfall event.

A simple design involves cutting a large hole or many smaller holes in the top of a trash can lid and collecting rain as it falls. No matter which design you select, always use household screen over openings to prevent mosquitos from entering. Do not let your barrel be a maternity ward for mosquitos. Learn more about rain barrels at <http://www.aces.edu/natural-resources/water-resources/rainwater-conservation/rainbarrel.php>.



HOUSEHOLD HAZARDOUS WASTE DISPOSAL

According to USEPA, the average household produces more than 20 pounds of hazardous waste annually. Thousands of common household products contain toxic substances: bleach, paints, paint removers, motor oil, drain cleaners, ammonia, and pesticides, just to name a few. This material, if not stored and disposed of properly, can pollute our water.

An excellent approach to the elimination of hazardous waste is to decrease the amount that you have in your home. Don't buy excess amounts of household products and, when possible, replace the toxic items with safe, nontoxic alternatives. Considering the vast number of materials that could be hazardous, no single method of disposal can be recommended. Contact your town or county solid waste department to get details on proper disposal or possible recycling of household chemicals.

Here are some easy recommendations to follow:



- **Automotive-Related Materials**

Take to a local recycling center or an auto service station

- **Pesticides**

The best way to get rid of pesticides is to use them properly until they are gone. Give leftover product to a neighbor to use. If that is not an option, follow label instructions for safe disposal. Contact your local solid waste department in your town or county. They will have detailed instructions for you on disposal or recycling. ***Never rinse or flush waste pesticide down a drain or toilet.***



- **Aerosol Cans**

Never discard when under pressure. Use the product contents until pressure is released, and then discard with household refuse.

- **Paint**

Small amounts of latex paint should be allowed to evaporate until dry, and then discarded with household trash. Oil paints should be taken to a recycling center.



- **Swimming Pool Chemicals**

Buy only the amounts of chemicals you need. Store them properly and use them until they are gone. Consult the manufacturer's guidelines. When you must drain your pool, pump the water slowly onto a large expanse of lawn. *Never drain your pool directly into a waterway or street.*

- **Fertilizers**

Buy only the amount you need and use it properly until it is gone. Give what you do not use to your neighbor. Take the opportunity to help them understand that proper use keeps yards looking great while reducing the potential for water pollution.

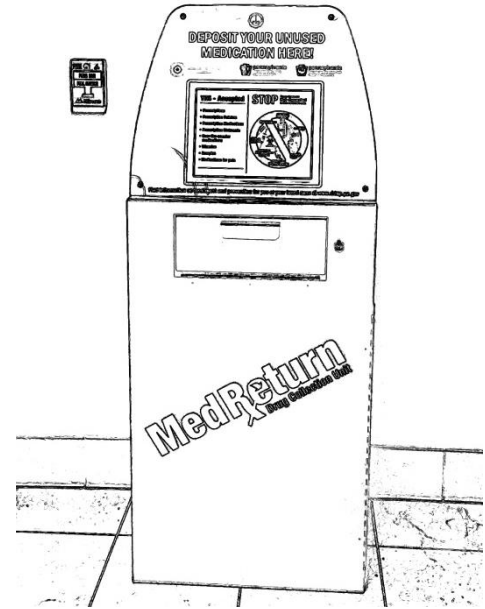


- **Electronics**

Consumer electronics become obsolete rapidly in our technological world. Many municipalities do not accept electronics in the garbage anymore. Recycling old electronics allows for the recovery of valuable metals and other elements. Donation is another way to get rid of that old cell phone, TV or computer. Find out how best to get rid of those electronics by contacting your city or county landfill. Check out the USEPA recycling website to learn more and to find certified recycling businesses and organizations: <https://www.epa.gov/recycle/electronics-donation-and-recycling>.

- **Unused Medicines**

Many of us do not think about medicines as household hazardous waste. When used as prescribed, medicines cure or treat ailments and symptoms. All medicines should be taken as prescribed by a qualified medical professional and should be taken until the medicine is used up. Sometimes, products end up in medicine cabinets because prescriptions change, dosages change or other treatment options are used. Unused medicines can be a disposal nightmare. It is important to dispose of these products properly to reduce harm caused by accidental exposure or intentional misuse. In the past, we flushed unused medicines down the toilet. Neither our septic systems nor our wastewater treatment plants treat some medicines. The drugs pass through treatment systems and end up in groundwater or creeks and rivers. In 2004, the U.S. Geological Survey identified 100 different pharmaceuticals in rivers and streams. These drugs can find their way into fish and drinking water.



Many local law enforcement agencies and fire departments offer drop off boxes for safe disposal. Some drugstores and pharmacies will take back unused medicines. Call your local police or fire department and your pharmacy to see if they provide this service.

The US Food and Drug Administration (FDA) and the US Drug Enforcement Agency offer these methods for safe disposal of medicines in the household trash:

- **Mix medicines (do not crush tablets or capsules) with an unpalatable substance such as dirt, kitty litter, or used coffee grounds;**
- **Place the mixture in a container such as a sealed plastic bag;**
- **Throw the container in your household trash;**
- **Scratch out all personal information on the prescription label of your empty pill bottle or empty medicine packaging to make it unreadable, then dispose of the container.**

There are medicines that can be safely flushed down the toilet into the wastewater stream. The FDA publishes the list here:

<https://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/UCM337803.pdf>

WASTEWATER FROM YOUR HOME

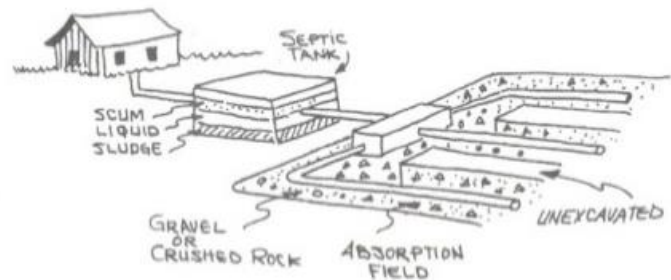
When you flush the toilet, the wastewater goes to some type of treatment: a sanitary sewer operated by a utility or private company or a septic tank. Failures or overflows caused primarily by breakages in pipes or clogs from grease or plant roots result in the release of harmful bacteria and waste that pollute our waterways causing swimming beach closures and in extreme events, fish kills. Whether your home is attached to a sanitary sewer system or a septic tank, there are things you can do to prevent wastewater treatment problems.

Most sewer system...

...problems are caused by the wrong things going down the drain or toilet. These things include paper towels, diapers, vegetable and meat waste and the biggest culprit, GREASE. Contributions of these things from the many homes hooked to a sewer system cause clogs in pipes. With nowhere to go, wastewater backs up into homes or overflows from manholes. Do not flush anything but the paper designed to go in the toilet. Limit the amounts of kitchen waste that goes down the sink or garbage disposal. DO NOT DUMP GREASE DOWN THE SINK. Put it in a metal can to cool, reuse or put in the trash. Your town may have a grease recycling program; call them and find out.

Septic systems...

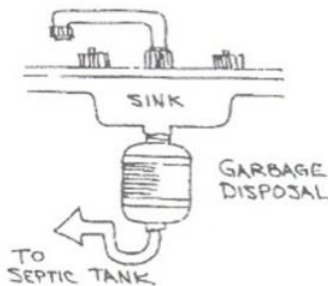
...are in use in many households to treat and dispose of wastewater. A typical septic system located near the house consists of two components - a tank and a drain field. Wastewater from the home flows into a septic tank, where most solids settle and are biologically converted to liquids and gases. When everything is working well, the liquid leaving the tank will contain very few solid materials. The liquid then flows to the drain field, a network of buried perforated pipes, to be absorbed by the surrounding soil. Organisms in the soil remove most of the bacteria and some suspended solids and nutrients. Treatment of the wastewater in the soil takes time and the right soil conditions. Use only a licensed contractor to help you size and install your system correctly. Your county's Health Department is ready to help you keep your system working.



Septic tank problems and solutions

Poor design, construction, or maintenance will cause your septic system to fail. Maintenance is critical in making sure your septic system works well over time. Recommended maintenance includes the following:

- Pump out your tank regularly (every three to five years depending upon usage) to remove accumulating sludge. Keep a record of your pumping schedule.



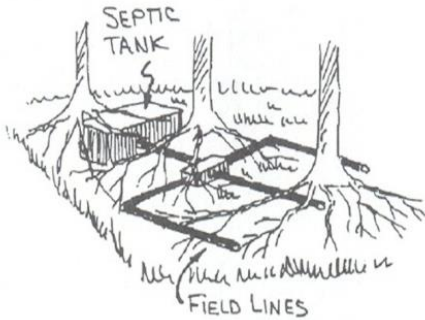
- Do not use a garbage disposal; it adds grease and solids to the system, which shortens its life and requires more frequent pump out.

- Keep the hard working bacteria in your tank and drainfield healthy and thriving. Avoid concentrated bleaches, drain cleaners, paint thinners, and medicines from entering the system. Use biodegradable soaps and detergents.



- Distribute laundry washing throughout the week to balance water use and prevent overloading the system.
- Do not flush solids such as cigarette butts, feminine products and paper towels.

- Protect the drain field from heavy vehicles which may result in soil compaction or a crushed drain pipe.

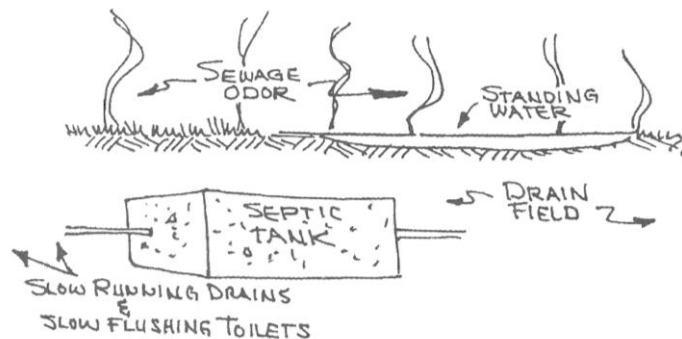


- Protect the system from expansive plant roots. Drain fields should have good surface drainage and should be covered with grasses, not deeper-rooted shrubs and trees.

● ● ● **WARNING** ● ● ●

KNOW THESE SIGNS OF SEPTIC TANK FAILURE:

- Slow running drains/slow flushing toilets
- Sewage odor near septic tank or drain field
- Sewage on the ground over drain field
 - Standing water or sewage



LANDSCAPE AND LAWN CARE

As the population along Alabama's coast increases, development converts more and more of the land to homes, lawns and driveways. Most of the rain that falls on our property eventually finds its way into the Bay. The things we do on our land directly affect the quality of our waters.



Getting Started...

Appropriate Plants for Coastal Alabama Landscapes

All plants have different needs. Matching landscaping plants to site specific soils, thermal patterns, shade levels, and nutrient requirements reduces the amount of irrigation, fertilizer, and pesticides needed to keep them healthy. Plants native to coastal Alabama tend to require less maintenance and to be more resistant to diseases.

Since a grassed area is likely to be part of your landscape, turf grasses that grow well in the warm climate of south Alabama are recommended. The right grass for you will depend upon the conditions present on your property.

Proper turf care...

...can make a big difference. Grass can occupy a large portion of the landscaped area around most homes. There are several things you can do to keep the manicured look many homeowners want while reducing the potential for pollution.

Here are some common turf grasses and some practices to use to keep lawn low maintenance. More information is available through *Alabama Smart Yards* <http://www.aces.edu/pubs/docs/A/ANR-1359/ANR-1359.pdf> and Florida Cooperative Extension http://hort.ufl.edu/yourfloridalawn/lawn_maintenance.shtml.



Know the grass in your yard...

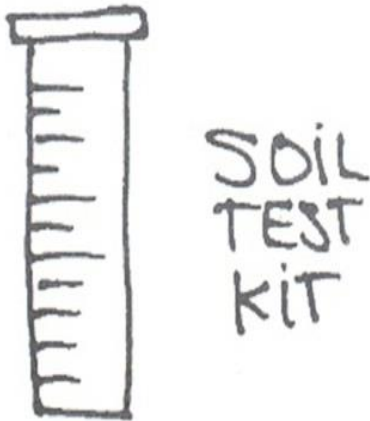
Bermuda grass and its hybrids are adapted to many soil conditions and make a good turf if fertilized and mowed properly. This grass thrives in hot weather, but performs poorly in shade. It spreads rapidly with above and below ground runners, but is difficult to control around garden plots, walkways, etc. It requires frequent mowing and fertilization, and is easily established. **Mowing height recommendation is 0.5-1.5 in. and frequency is every 3-5 days.**

Centipede is the ideal grass for the homeowner who wants an attractive lawn with minimum care. Compared to other warm season grasses, centipede grass requires less fertilization and mowing. This grass is somewhat shade tolerant and resistant to most insects and diseases, however, it takes longer to become established than Bermuda grass and St. Augustine. **Mowing height recommendation is 1.5-2.0 in. and frequency is every 10-14 days.**

Know the grass in your yard...

Zoysia grass produces an excellent turf when properly established and maintained. It grows well in full sun and partial shade. It is slow to become established (and thus more costly), less drought tolerant than Bermuda grass, hard to mow (because of leaf stiffness), and is only recommended if you are willing to carry out a high level of maintenance. **Mowing height recommendation is 1.0-2.0 in. and frequency is every 10-14 days.**

St. Augustine is the most shade-tolerant warm season grass known. Unfortunately, it is susceptible to winter cold injury, the ravages of the chinch bug, as well as numerous diseases. Before embarking on a treatment, consult with your local Extension Office (see page 26 for information). **Mowing height recommendation is 2.5-4.0 in. and frequency is every 7-14 days.**



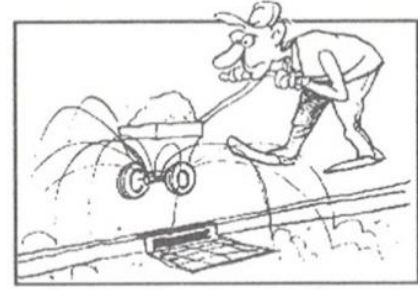
Before you can have a happy lawn,...

...you need happy soil. One of the main factors in developing a successful lawn is soil preparation. Each type of grass has its own nutritional and pH requirements. The Soil, Forage, & Water Testing Laboratory at Auburn University will perform a soil analysis to reveal the nutritional requirements and pH of your soil. Test kits are available at most lawn and garden stores for a modest fee.

Find out more at the Lab's website: <http://www.aces.edu/anr/soillab/>. You can find the test kit form and sampling recommendations in ACES publication - <http://www.aces.edu/pubs/docs/A/ANR-2307/ANR-2307.pdf>.

There are other practices...

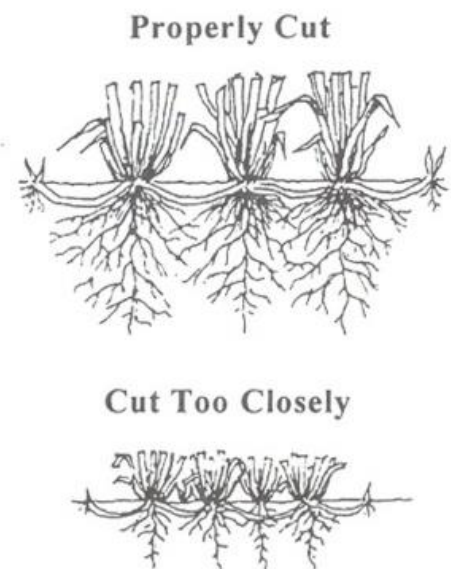
...that make for a healthy lawn requiring less fertilizer, pesticides and watering. Using these practices goes a long way to reduce the likelihood of contaminated runoff. Other ways to improve water quality and reduce the amount of runoff include:



- Minimize the area of lawn around your landscape,
- Strictly follow instructions stated on the package of fertilizer or pesticide,
- Apply fertilizers only when needed. The wrong fertilizer at the wrong time can cause disease, weeds or excessive top growth. Use slow release fertilizer,
- Sweep fertilizers from walks and driveways in order to prevent them from entering storm drains,
- Do not over water the lawn. Lawns need watering only when you can detect a bluish cast, or when you can see your footprints after walking across them. Water established lawns only during very dry periods and moisten soil to a depth of 4 to 6 inches, and
- Leave clippings on grass after mowing. Sweep stray clippings from sidewalks and driveways back into the grass.

Mowing height affects...

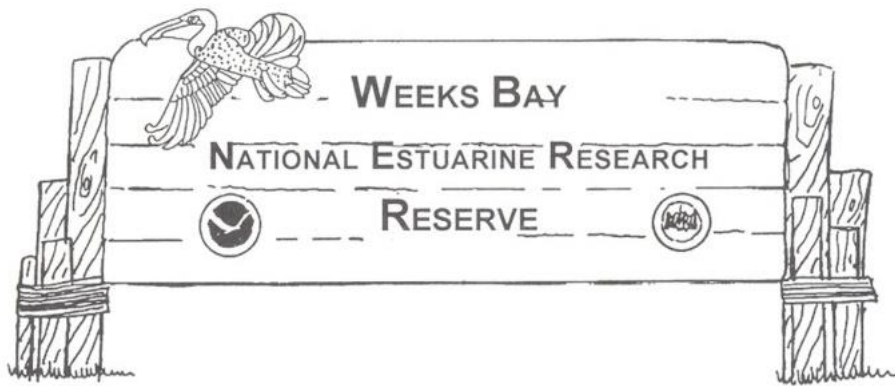
...drought resistance and reduces weeds. Proper mowing helps develop deep roots. Mowing too closely encourages shallow rooting, making your lawn susceptible to damage by drought and invasion by weeds. Taller grass better shades soil, reducing soil temperatures and water loss. Follow mowing height recommendations for your grass to reduce water use and those pesky weeds.



LAWN HABITATS

A walk through a wilderness area in coastal Alabama...

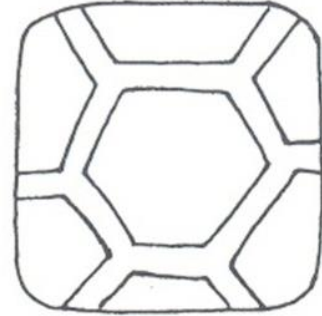
...such as Blakeley Park, Weeks Bay National Estuarine Research Reserve, Gulf State Park, 5 Rivers Delta Resource Center or many others, instantly reveals that there is no lack of plants growing wild. But who tills the soil in the spring, applies herbicides, and waters during droughts? No one does, of course. What we are seeing is a no-work garden that consists of plants that are perfectly adapted to their environment. This is a stark contrast to some of our carefully nurtured home gardens that require a lot of time, effort and investment.



It makes perfectly good sense to allow at least a small portion of your yard to be "wild" or "natural". Landscape architects often incorporate such areas within their garden plans - not only to introduce contrast, but also to provide a site for local and migratory birds and animals. It is particularly important to leave a vegetation buffer along stream banks and shorelines to avoid excessive runoff and erosion. See the plant list in the APPENDIX for recommended plants for landscaping.

Help out your lawn habitat...

...by using paving surfaces that let rainwater pass through. Installing these products will reduce the amount of runoff from your landscape. Bricks, interlocking pavers, or flat stones are recommended for walkways and patios. If placed on a well-drained soil or on a sand or gravel bed, these will allow rainwater infiltration. New porous materials, such as porous asphalt, are similar to nonporous pavement in durability and cost. Use porous asphalt on your driveway and encourage its use on streets and parking lots in your community.



PERMEABLE
PAVING SURFACE

Wooden decks can also serve as a form of porous pavement. Redwood, cedar or treated pine are as durable as most other paving surfaces. Maintaining the distance between the soil surface and the decking recommended by the county building department will minimize wood rot.



Avoid the use of landscaping plastic beneath decorative rock or mulch. Solid plastic sheeting prevents water from entering the soil. Instead, try woven materials or even newspaper that control weeds while still permitting water penetration.

Check out the long list of practices you can use to reduce runoff and pollution in the *Alabama Smart Yards* publication: <http://www.aces.edu/pubs/docs/A/ANR-1359/ANR-1359.pdf>. Contact your local building officials to see what is approved for your locality. There are many helpful methods and tools for you and your community.

Plant native plants...

...for their beauty and their value to backyard habitats. Native plants can provide shelter and forage to insects, animals and bird so use them around your house. When well established, native plants require less maintenance. Here is a list of native or non-invasive alternatives to some common exotic landscape plants. See the Appendix for a larger list of native plants.

Ornamental Invasive Exotics	Native/Noninvasive Exotic Alternatives
Privets, <i>Ligustrum sinense</i> ; <i>L. lucidum</i> ; <i>L. japonicum</i>	Dahoon Holly, <i>Ilex cassine</i> ; Yaupon, <i>Ilex vomitoria</i> ; Wax Myrtle, <i>Morella cerifera</i> ; Sasanquas, <i>Sasanqua spp.</i> ; Camellias, <i>Camellia spp.</i> ; Evergreen Azaleas, <i>Rhododendron spp.</i>
Thorny, Autumn, Russian, <i>Eleagnus spp.</i>	Wax Myrtle, <i>Morella cerifera</i> ; American Snowbell, <i>Styrax americana</i> ; Witchhazel, <i>Hamamelis virginiana</i>
McCartney, Multiflora, Cherokee Rose, <i>Rosa spp.</i>	Sweet Pepperbush, <i>Clethra alnifolia</i> ; Southern Crab Apple, <i>Malus angustifolia</i>
Blood Grass (Cogongrass), <i>Imperata cylindrica</i> Japanese Silver Grass, <i>Miscanthus sinensis</i> Pampas Grass, <i>Cortaderia selloana</i>	Love Grasses, <i>Eragrostis elliottii</i> , <i>E. spectabilis</i> ; Muhly grass, <i>Muhlenbergia capillaris</i> ; Indiangrass, <i>Sorghastrum nutans</i> ; Sugarcane Plumegrass, <i>Saccharum (Erianthus) giganteum</i>
Japanese Honeysuckle, <i>Lonicera japonica</i> English Ivy, <i>Hedera helix</i> Sweet Autumn Virginsbower, <i>Clematis terniflora</i>	Coral Honeysuckle, <i>Lonicera sempervirens</i> ; Cross Vine, <i>Bignonia capreolata</i> ; Carolina Jessamine, <i>Gelsemium sempervirens</i> ; <i>G. rankinii</i> ; Climbing Hydrangea, <i>Decumaria barbara</i>
Chinese, Japanese Wisteria, <i>Wisteria sinensis</i> , <i>W. floribunda</i>	American Wisteria, <i>Wisteria frutescens</i>
Glory Bower, <i>Clerodendrum bungeii</i>	Virginia Iris, <i>Iris virginica</i> ; Phlox, <i>Phlox divaricata</i> , <i>P. pilosa</i> ; Purple Coneflower, <i>Echinacea purpurea</i> ; Stoke's Aster, <i>Stokesia laevis</i>

More native and non-invasive plant alternatives for you to use in your backyard habitat...

Ornamental Invasive Exotics	Native/Noninvasive Exotic Alternatives
Popcorn Tree, <i>Triadica sebifera</i>	Red maple, <i>Acer rubrum</i> ; Sourwood, <i>Oxydendrum arboreum</i>
Air Potato, <i>Dioscorea bulbifera</i>	Passion Flower, <i>Passiflora incarnata</i> ; Virginia Creeper, <i>Parthenocissus quinquefolia</i> ; Trumpet Creeper, <i>Campsis radicans</i>
Water Hyacinth, <i>Eichornia crassipes</i> Water Lettuce, <i>Pistia stratioides</i> Water Clover, <i>Marsilea spp.</i>	Pickeralweed, <i>Pontederia cordata</i> ; Fragrant Waterlily, <i>Nymphaea odorata</i> ; American Lotus, <i>Nelumbo lutea</i> ; Alligator Flag, <i>Thalia geniculata</i> ; River Oats, <i>Chasmanthium latifolium</i>
Heavenly Bamboo, <i>Nandina domestica</i> Coral Ardisia, <i>Ardisia crenata</i>	Florida Leucothoe, <i>Agarista populifolia</i> ; Yaupon, <i>Ilex vomitoria</i> ; Winterberry, <i>Ilex verticillata</i> ; Mountain Laurel, <i>Kalmia latifolia</i>
Bradford Pear, <i>Pyrus calleryana</i> "Bradford"	Serviceberry, <i>Amelanchier arborea</i> ; Fringetree, <i>Chionanthus virginicus</i> ; Two-Winged Silverbell, <i>Halesia diptera</i>
Silktree (Mimosa), <i>Albizia julibrissin</i>	Redbud, <i>Cercis canadensis</i> ; River Birch, <i>Betula nigra</i> ; Loblolly Bay, <i>Gordonia lasianthus</i>
Camphor Tree, <i>Cinnamomum camphora</i>	Red Bay, <i>Persea borbonia</i> , <i>P. palustris</i> ; Sweetbay, <i>Magnolia virginiana</i>
Wild Taro, "Elephant Ear," <i>Colocasia esculenta</i>	Canna Lily, <i>Canna flaccida</i> ; Pickeralweed, <i>Pontederia cordata</i> ; Duck Potato, <i>Sagittaria latifolia</i> ; Virginia Iris, <i>Iris virginica</i>

Use alternatives for Garden Pest Management...

... to make for a better lawn habitat. Chemical pesticides can have many side effects when used improperly: poisoning wildlife, contaminating water and soil and harming children and adults. Make chemical pesticide use a last resort. Knowing your pest can assist in its control. Identify the insect or disease, and learn about its lifecycle. Here are some simple, natural methods we can use in our yards and gardens to minimize pests:

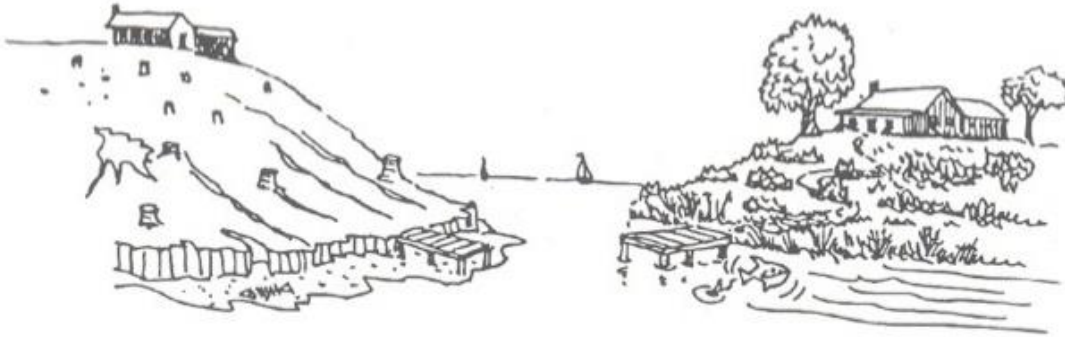
- Introduce or provide habitat for natural predators (i.e. toads, garter snakes and beneficial insects),
- Remove eggs, larvae, cocoons, and adult forms of destructive insects by hand,
- Apply insect hormones that prevent the insect from growing into a mature adult that can mate and make more pests,
- Plant beds with a variety of plant types. Mixed plant beds are less susceptible to insect damage. Use native plants that are resistant to local pests,
- Avoid planting and harvesting when insects are most abundant and damaging,
- Try horticultural oil sprays and organic pesticides first. Use synthetic pesticides that do not hang around in the environment, apply only as needed and during the correct part of the insect's life cycle,
- Use insecticides specifically labeled for the pest you want to control.

Use pest management practices that focus on long-term prevention. The ecosystem of your garden or landscape can aid in warding off harmful insects. Learn more at the ACES website: <http://www.aces.edu/home-garden/lawn-garden/pests/>.

Termites are a serious problem in the warm, moist climate of the Alabama coast. Professional help is needed to protect the home from subterranean and Formosan termites while still minimizing pesticide use. Good rules of thumb: do not locate plants immediately next to structures, never store wood against the house and fix leaks in plumbing quickly. For best possible protection, use only licensed termite control professionals for inspection and prevention.

BUFFERS AROUND WATERWAYS AND WETLANDS

Thanks to abundant rainfall and generally low-lying countryside, large portions of coastal Alabama's settled areas are either adjacent to or near streams, estuaries, bays, and wetlands. Human activities often result in the pollution of these nearby waters unless proper conservation procedures are followed during and after site development.



Most construction requires at least partial clearing. Exposed soil can be eroded and washed into nearby waters. Erosion can be reduced by the use of temporary ground cover and sediment barriers. Moving the construction site as far as possible from the waterbody and minimizing the removal of trees and other vegetation prior to and during construction also helps. Use seed, sod or mulch to stabilize on any area in which the soil is disturbed.

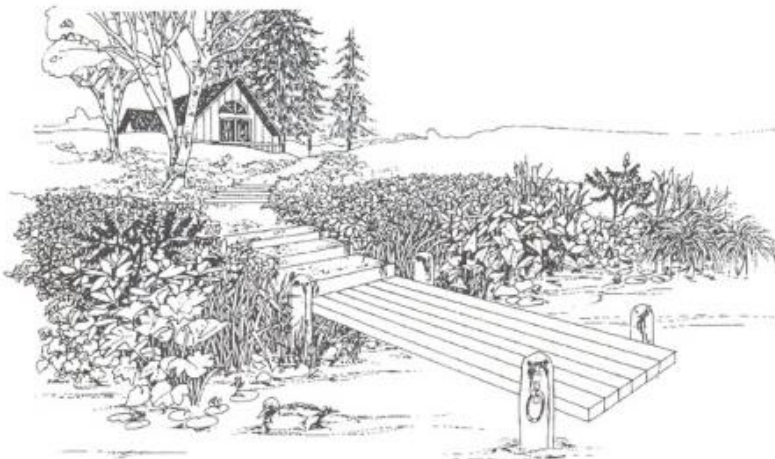
It is common to see shoreline property with manicured lawns extending to the water's edge. This approach should be avoided as it encourages the movement of fertilizers and pesticides into nearby waters. The pollution hazard can be greatly reduced by leaving a wide (the more, the better) buffer zone of unmowed turf or natural vegetation along the shoreline. Grasses will grow 1 to 2 feet high before going to seed. The inland end of this zone and access paths can be mowed to produce a natural-looking curve.

Many cities in coastal Alabama have ordinances in place requiring buffers or setbacks around waterways and wetlands. Consult your city's building department for details prior to starting any work.

Homeowners can beautify the buffer zone by plantings ground cover, shrubs, and trees. Recommended Plant lists are included in the Appendix. Trees and shrubs can frame good views and screen out poor views. Such plantings will gradually form a woodland setting with openings for visual and physical access to the water.

SOURCES FOR MORE INFORMATION

Alabama Smart Yards: Introducing Environmental Consciousness and Practical Management Options to Our Yards and Neighborhoods, Alabama Cooperative Extension System, <http://www.aces.edu/pubs/docs/A/ANR-1359/ANR-1359.pdf>



Booth, Laura B. 2005. "Household Wastewater: Septic Systems," CRD-81, Alabama Home*A*Syst, Alabama Cooperative Extension System.
<http://www.aces.edu/pubs/docs/C/CRD-0081/CRD-0081.pdf>

Zehnder, Geoff and Wheeler Foshee. 1998. "Be Smart - Be Safe: A Pesticide Safety Guide For Home Gardeners," ANR-1097. Alabama Cooperative Extension System,
<http://www.aces.edu/pubs/docs/A/ANR-1097/ANR-1097.pdf>.

Hairston, James E. and Leigh Stribling. 1993. "Protecting Water Quality: Controlling Runoff from Your Yard," ANR-790-1.2.6, Alabama Cooperative Extension System,
<http://www.aces.edu/pubs/docs/A/ANR-0790/WQ1.2.6.pdf>.

Scanlan, Jody A., Eve Brantley and Richard K. Wallace. 2001. "The Citizen's Guide to Reducing Polluted Runoff in Coastal Alabama," ANR-1215. Auburn University, Fisheries and Allied Aquacultures, <http://www.aces.edu/pubs/docs/A/ANR-1215/ANR-1215.pdf>.

Hairston, James E. and Leigh Stribling. 1993. "The Water Quality and Pollution Control Handbook", Circular 790, Alabama Cooperative Extension System.
<http://www.aces.edu/pubs/docs/A/ANR-0790/ANR-0790.pdf>.

Contact your local Extension System Office or look online for more information on these subjects and other helpful publications.

Where to go for help...

...when you have questions about the environment. Contact your county or municipal departments for help with local issues and planning. There are several state and federal environmental service agencies that have regulatory authority, provide technical assistance or offer useful information to residents living in coastal Alabama.

For information on estuaries, watersheds, water quality, adult and youth education programs, boardwalks and trails, plants, animals, fish and just about anything environmental:

Weeks Bay National Estuarine Research Reserve
11300 US Highway 98
Fairhope, Alabama
(251) 928-9792

For information on coastal permitting and planning contact:

Alabama Department of Conservation and
Natural Resources, State Lands Division, Coastal Section
Coastal Stewardship Office
5 Rivers Alabama's Delta Resource Center
(251) 621-1216

For information on federal wetland regulations, jurisdiction, permitting and mitigation:

US Army Corp of Engineers, Mobile District
109 St Joseph St
Mobile, Alabama
(251) 690-2658

For information on environmental laws including Clean Air Act, Clean Water Act, Safe Drinking Water Act and federal solid and hazardous waste laws contact:

Alabama Department of Environmental Management
Mobile Field Office
2204 Perimeter Rd
Mobile, Alabama
(251) 450-3400

For technical assistance on matters pertaining to agriculture programs, farming practices, erosion control, gully restoration, and wildlife habitat contact:

U.S.D.A. Natural Resources Conservation Service

Baldwin County:

207 Faulkner Dr
Bay Minette, Alabama
(251) 937-3297

Mobile County:

1070 Schillinger Rd
Mobile, Alabama
(251) 441-6505

For information on solid waste disposal contact:

County Solid Waste Departments

Baldwin County:

15140 County Road 49
Summerdale, Alabama
(251) 972-6878

Mobile County:

205 Government St
Mobile, Alabama
(251) 574-3229

For information on agricultural crops, pesticide application, horticulture, home economics, and environmental outreach:

Alabama Cooperative Extension System

302 Byrnes St
Bay Minette, Alabama
(251) 937-7176

For information on residential plants and grasses and plant pests and diseases:

Master Gardener Helpline

(877) 252-4769
Monday-Friday 10:00am-4:00pm
Staffed during growing season only

For assistance with septic system permitting or other public health matters contact:

Public Health Departments

Baldwin County:

23280 Gilbert Dr
Robertsdale, Alabama
(251) 947-3618

Mobile County:

251 N Bayou St
Mobile, Alabama
(251) 690-8158

APPENDIX

RESIDENTIAL LOW MAINTENANCE PLANTS

All plants listed here grow in average yard conditions with full sun unless otherwise noted. Also given are general sizes and expected growth rate.

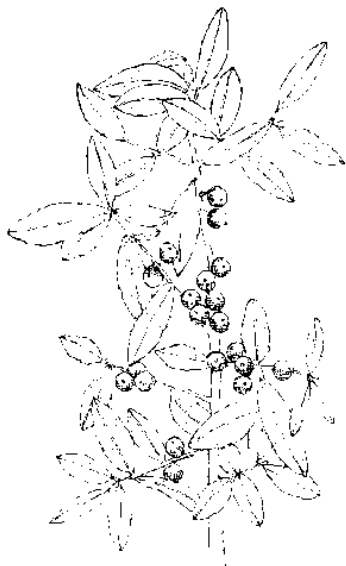
TREES

Long leaf pine (<i>Pinus palustris</i>)	large, moderate
Shumard oak (<i>Quercus shumardii</i>)	large, fast
Sweetbay (<i>Magnolia virginiana</i>)	medium-large, moderate, tolerates wet, shady conditions; evergreen
Tulip poplar (<i>Liriodendron tulipifera</i>)	large, fast tolerates wet sites
Black tupelo (<i>Nyssa sylvatica</i>)	large, moderate tolerates wet sites
Atlantic white cedar (<i>Chamaecyparis thyoides</i>)	medium-large, slow; tolerates wet sites; evergreen
Red maple (<i>Acer rubrum</i>)	medium-large, fast tolerates wet sites, some shade
American holly (<i>Ilex opaca</i>)	medium, moderate tolerates some shade
River birch 'Heritage' (<i>Betula nigra</i>)	medium, fast tolerates some shade
Silverbell (<i>Halesia spp.</i>)	small, moderate tolerates some shade
Fringe tree (<i>Chionanthus virginicus</i>)	small, slow tolerates wet sites

MORE RESIDENTIAL LOW MAINTENANCE PLANTS

SHRUBS

Agarista (<i>Agarista populifolia</i>)	to 20 feet, evergreen sun or shade, wet or dry
Florida anise (<i>Illicium floridanum</i>)	to 15 feet, evergreen needs at least partial shade, moist site
Yaupon (<i>Ilex vomitoria</i>)	many shapes and sizes, evergreen, sun or shade; wet or dry
Buckwheat tree (<i>Cliftonia monophylla</i>)	to 30 feet, evergreen tolerates wet conditions
Highbush Blueberry (<i>Vaccinium corymbosum</i> spp.)	6-15 feet, deciduous sun to partial shade
Viburnum (<i>Viburnum obovatum</i>)	many shapes and sizes, evergreen, tolerates wet conditions, sun to partial shade
Dwarf wax myrtle (<i>Morella cerifera</i> "pumila")	3 feet, evergreen, sun or shade, wet or dry

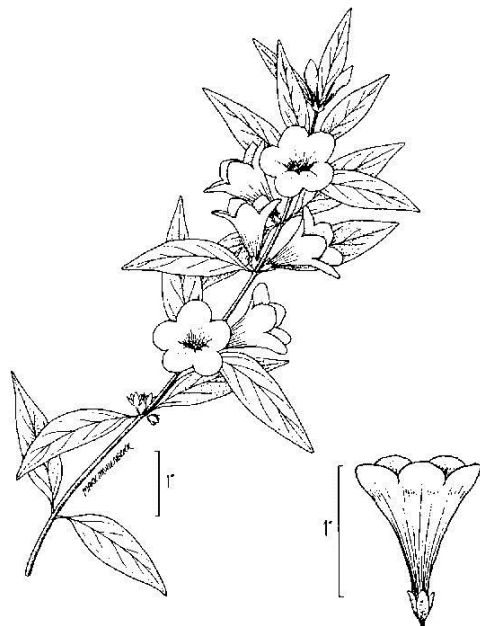


MORE RESIDENTIAL LOW MAINTENANCE PLANTS

PERENNIALS AND GROUNDCOVERS

Green and gold (<i>Chrysogonum virginianum</i>)	partial to full shade
Carolina jasmine (<i>Gelsemium sempervirens</i>)	full to partial sun
Verbena (<i>Verbena canadensis</i>)	full sun, dry conditions
*Mondo grass (<i>Ophiopogon japonicus</i>)	well adapted to dense shade
*Common periwinkle (<i>Vinca minor</i>)	tolerates shade
*Bugleweed (<i>Ajuga reptans</i>)	partial to full shade
*Dwarf gardenia (<i>Gardenia jasminoides radicans</i>)	full to partial sun
*Creeping juniper (<i>Juniperus horizontalis</i>)	full sun, dry condition

*non-native species



MORE RESIDENTIAL LOW MAINTENANCE PLANTS

SHORELINE PLANTS FOR FRESH TO BRACKISH WATERS

TREES

Bald cypress (*Taxodium distichum*)
Pond cypress (*Taxodium ascendens*)
Red maple (*Acer rubrum*)
Atlantic white cedar (*Chamaecyparis thyoides*)
Sweet bay (*Magnolia virginiana*)
Loblolly bay (*Gordonia lasiantha*)
Swamp chestnut oak (*Quercus michauxii*)
Slash pine (*Pinus eliotti*)
Swamp tupelo or Swamp black gum (*Nyssa biflora*)
Tulip poplar (*Liriodendron tulipifera*)
Fringe tree (*Chionanthus virginicus*)
Silverbell (*Halesia spp.*)
River birch (*Betula niger*)
Parsley hawthorne (*Crataegus marshallii*)
Titi (*Cyrilla racemiflora*)



SHRUBS

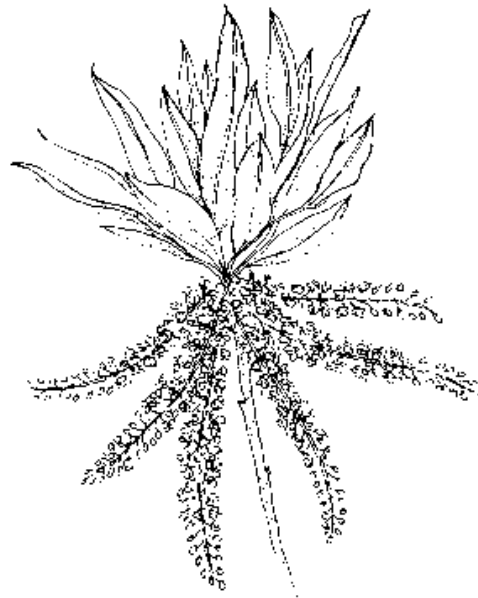
Buckwheat tree (*Cliftonia monophylla*)
Groundsel (*Baccharis halimifolia*)
Yaupon (*Ilex vomitoria*)
Dahoon holly (*Ilex cassine*)
Possomhaw (*Ilex decidua*)
Buttonbush (*Cephalanthus occidentalis*)
Possomhaw viburnum (*Viburnum nudum*)
Highbush blueberry (*Vaccinium corymbosum*)

MORE SHRUBS

Swamp azalea (*Rhododendron viscosum*, *R. serulatum*)
Mountain laurel (*Kalmia latifolia*)
Sweet pepperbush (*Clethra alnifolia*)
Virginia sweetspire (*Itea virginica*)
Chokeberry (*Aronia arbutifolia*)
Doghobble (*Leucothoe axillaris*)
Fetterbush (*Lyonia lucida*)
Dwarf palmetto (*Sabalpametto*)

PERENNIALS AND GROUNDCOVERS

Carolina jessamine or Carolina jasmine (*Gelsemium sempervirens*)
Ribbon grass (*Phalaris arundinacea*)
River oats (*Chasmanthium latifolium*)
Switch grass (*Panicum virgatum*)
Palm sedge (*Carex muskingumensis*)
Cattail (*Typha latifolia*)
Blueflag (*Iris virginiana*)
Louisiana iris (*Iris giganteaerulea*)
Spiderlily (*Hymenocallis spp.*)
Swamp lily (*Crinum americanum*)
Native canna lily (*Cannaflacida*)
Obedient plant (*Physostegia virginiana*)
Cardinal flower (*Lobelia cardinalis*)
Cinnamon fern (*Osmunda cinnamomea*)
Royal fern (*Osmunda regalis*)
Arrowhead (*Sagittaria spp.*)
Lizard's tail (*Saururus cernuus*)
Pickerelweed (*Pontederia cordata*)



MORE RESIDENTIAL LOW MAINTENANCE PLANTS

COASTAL PLANTS

These plants are tolerant of moderate amounts of salt, wind and drought.

TREES

- Live oak (*Quercus virginiana*)
- Laurel oak (*Quercus hemisphaerica*)
- Southern magnolia (*Magnolia grandiflora*)
- Cabbage palm (*Sabal palmetto*)
- Southern redcedar (*Juniperus silicicola*)
- Redbay (*Persea borbonia*)
- Persimmon (*Diospyros virginiana*)
- Wax myrtle (*Myrica cerifera*)



SHRUBS

- Groundsel (*Baccharis halmifolia*)
- Yaupon (*Ilex vomitoria*)
- Inkberry (*Ilex glabra, compacta*)
- Wild rosemary (*Conradina canescens*)
- Dwarf Wax myrtle (*Myrica cerifera pumila*)
- Woody goldenrod (*Chrysoma pauciflosculosa*)
- Saw palmetto (*Serenoa repens*)

PERENNIALS AND GROUNDCOVERS

- Sea oats (*Uniola paniculata*)
- Giant dune grass (*Elytmus racemosus*) 'Glaucus'
- Beach panic grass (*Panicum amarum*)
- Muhly grass (*Muhlenbergia capillaris*)
- Common reed (*Phragmites australis*)
- American beach grass (*Ammophila breviligulata*)
- Virginia creeper (*Parthenocissus quinquefolia*)
- Carolina jessamine or Carolina jasmine (*Gelsemium sempervirens*)
- Muscadine grape (*Vitis rotundifolia*)



VISIT WEEKS BAY NATIONAL ESTUARINE RESEARCH RESERVE

Find us between Fairhope and Foley, Alabama at 11300 US Highway 98. Locate the Weeks Bay Reserve Visitor Center west of the bridge over Fish River. Look for our sign on the south side of the highway.

- Visitor Center with boardwalks and trails
- Pitcher plant bog
- Open 9am - 5pm, Monday through Saturday
- (251) 928-9792 for more information

