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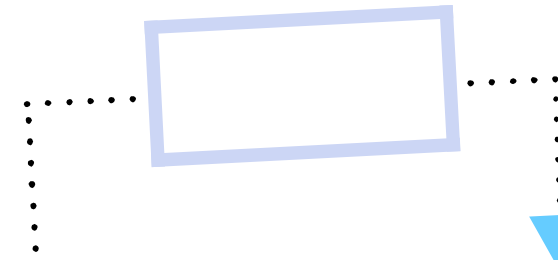
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Watershed Friendly Property Management Guide



PRESERVING WATER QUALITY AND QUANTITY

- 20 Water Saving Tips
- Living Next to a Waterway
- Using Fertilizers and Chemicals Wisely
- Avoid Menacing Mosquitoes!
- Benefits of Native Plants



This
Watershed Friendly Property Management
 guide is designed to help residents of Monmouth,
 Middlesex and Ocean Counties improve and maintain
 water quality and quantity, protect streams and
 waterways, enhance wildlife habitats and improve
 the ecosystem.

You Can Make a Difference!

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 Environmental Protection,
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Wildlife in your yard

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Your backyard can be home to many different types of birds, butterflies, beneficial insects, bats, and other wildlife. Trees, shrubs, and plants provide both food and shelter for wildlife. The types of plants used will determine the wildlife species attracted to your yard. Consider native plants first. Plant a variety of species and select plants that flower and bear fruit at different times of the year.

Attracting Birds & Wildlife

Flowers and fruits from some plants attract birds, butterflies, and other wildlife. Be sure to find out the plants best suited for your area.

Shrubs

Common juniper	Hollies
Highbush blueberry	Spicebush

Trees

American beech	Balsam fir
American holly	Apple
Flowering Dogwood	Oak

Flowers

Aster	Coneflower	Bee Balm
Coreopsis	Sunflower	Phlox
Salvia	Fuchsia	Columbine
Zinnia	Azalea	Aster
		Lupine

(These are only a few examples of plants important to wildlife.)

Shelter for Wildlife

Bird houses, placed in appropriate locations, can become homes for our feathered friends, and provide you the opportunity to bird watch.

Dead, dying, and hollow trees, as well as fallen logs, provide homes for birds, mammals, and amphibians. Fish, plants and fungi also benefit from dying trees.

Don't forget bees and bats

Bees pollinate many different kinds of plants, and play a critical role in your garden. Some 30% of our diet is the direct result of bee pollination.

Bats can be a beneficial species in your yard. A single little brown bat can catch up to 600 mosquitoes in an hour. As with all wildlife, watch, but don't touch!

Water, clean fresh water, is also important to birds, bats, butterflies, and other wildlife.

A final hint: Most wildlife are vulnerable to pesticides and chemicals, so be sure to follow label instructions.



A Green Lawn, A Green Lake?

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Every year the garden centers are full of well meaning people who want the best for their lawns. The greener the better, right? Well, actually, a green lawn doesn't necessarily mean a healthy lawn. A healthy lawn is one that can withstand drought and be resistant to disease and pests. Throwing large amounts of fertilizers, pesticides and water at the lawn doesn't always make it healthy. Too much watering causes the roots to be shallow and weak. Too much fertilizer or pesticide will wash off the lawn and into the streets and storm drainage system ending up in the local streams and lakes. The pesticides might harm the sensitive aquatic life and the nutrients can cause algae to bloom. Algae will turn a lake "grass green," and that isn't healthy either!

What Can You Do?

- ☒ Choose the right grass for your location. Some varieties are best in full sun, while others are best for shady spots. Drought tolerant strains are best for sandy soil. In the toughest spots substitute ground cover.
- ☒ Don't mow the grass shorter than 2 inches. The height helps block the sun from sprouting weeds and keeps the soil from drying out.
- ☒ Leave the clippings in place to keep moisture in the lawn.
- ☒ Before you fertilize, have your soil tested to determine what nutrients you really need.
- ☒ Use environmentally-friendly organic or time-release fertilizers.
- ☒ Fertilize in the fall when your lawn needs nutrients the most.
- ☒ Don't apply chemicals when it is windy or rain is expected, and carefully follow directions to be sure you use the right amount.
- ☒ Optimum soil pH is between 6.0 and 7.0. If your pH is too low, add lime before you apply the chemicals and they'll be more effective.
- ☒ Consider reducing your lawn size. You'll have less to mow and more time for the hammock!

For soil testing contact Rutgers Cooperative Extension
Monmouth County (732)431-7260
Middlesex County (732)745-3443
Ocean County (732)349-1246

Watershed Friendly Property Management

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Water Conservation

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Many of us think that tap water is an unlimited resource, but in reality only 1% of the Earth's total water is drinkable. Quite frankly, many of the ways in which we use water are wasteful. We often see sprinkler systems watering grass while it is raining, homeowners cleaning their driveways, sidewalks and windows with the garden hose, and water running down the street for no apparent reason.

A growing concern about drinking water supplies led to the construction of reservoir systems designed to provide the region with adequate water supplies. But the reservoirs may have provided us with a false sense of security about water supplies. Once the reservoirs were in use, concerns about water supplies evaporated and development and expansion continued at an unprecedented rate.

During the drought of 1999, use of lawn sprinkler systems and outdoor watering was prohibited. New Jersey-American Water Company, an area water purveyor, reported

a 30% reduction in water demand, revealing the alarming amount of water dedicated to our lawns and gardens.

While a significant portion of drinking water is provided by reservoirs, many people still depend on underground aquifers for their water. Aquifers are recharged by rainwater that penetrates the soil and seeps through soft underground formations. Depending on the depth of the aquifer, it can take many years for rainwater to actually reach the aquifer. If your water comes from an aquifer, you may be drinking water from rainstorms that occurred more than 100 years ago. With each new development, more land is paved over, preventing the rain water from reaching the aquifer and reducing the available water supply.

We must protect our water supplies, and plan land use accordingly. The following suggestions are conservation measures that we can all follow to protect our water supplies.



What you can do!

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- * Promote responsible landscaping practices by learning about native plants
- * Do not use invasive exotic species in your landscaping, erosion control, or land restoration projects.
- * When landscaping with native species, match the plants with the site condition. Consider using plants that occur together in natural habitats.
- * Control invasive plants by either removing them or managing them to prevent spreading.

A Partial List of Invasive Plants, Shrubs & Trees

(Note: This is not an 'official' list and some are controversial)

Autumn olive	Burning bush	Bush honeysuckles
Butterfly bush	Climbing euonymus	Japanese barberry
Japanese spirea	Multiflora rose	Norway Maple
Russian olive	Tree-of-heaven	Phragmites
Asiatic bittersweet	English Ivy	Japanese wisteria
Butter and eggs	Canada thistle	Dame's rocket
Dustymiller sagewort	Garlic mustard	Grape hyacinth
Japanese knotweed	Purple loosestrife	Privet

Composting: Put Waste to Work

You can make compost yourself from kitchen scraps, like vegetable peels, coffee grounds, yard clippings, leaves and shredded newspaper. Composting is simply the natural decaying of waste that creates a rich organic soil amendment. Compost is free, easy, and works wonders on all kinds of soil and provides vital nutrients for plant growth. Call the Monmouth County Planning Board Solid Waste Section at (732)431-7460, Middlesex Department of Planning at (732)745-3013, Ocean County Solid Waste Management Hotline at 1-800-55-RECYCLE, or your local Rutgers Cooperative Extension Office at www.rce.rutgers.edu/sitemap.html for more information on composting.

Benefits of Native Plants

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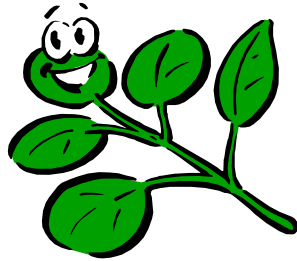
Do you know what's growing in your yard?

What is a “native” plant?

Native plants are defined as plants that occurred naturally in a specific locale before European settlement.

What is an “invasive” plant?

Well, the definition has not been agreed upon yet by New Jersey's technical experts, but Webster's defines “invasive” as ‘the onset or appearance of something harmful or troublesome, as a disease.’ Generally, an invasive species is one that displays rapid growth and spread, usually at the expense of native vegetation.



Why are native plants best?

Native plants help sustain native wildlife like butterflies, birds, mammals, reptiles, beneficial insects, and other fauna. They also require less maintenance because they are typically better suited for the area.

Are all non-native plants invasive?

No. Non-native plants are called “exotics” or “aliens” and are not necessarily “invasive.” It is better to use a native species wherever possible because these plants usually provide maximum benefit for wildlife and the environment.

“Invasive” sounds serious. Should I be concerned?

Invasive plants can be aggressive and can take over your garden and other areas such as nearby fields, farms, and parks. The benefits they provide in flower, foliage or color may be overshadowed by their ability to choke out other plants and dominate the landscape. Also, they may be replacing native plants that are more beneficial for wildlife and the environment.

For additional information on plants visit the USDA National Plants Database at <http://plants.usda.gov/> or the Native Plant Society of New Jersey at www.npsnj.org/.

Water saving tips

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Conservation tips for your home, lawn and garden

In the Garden

- ☒ Follow drought restrictions when in effect
- ☒ Water during early morning hours to minimize evaporation
- ☒ Plant during the spring or fall when less water is needed
- ☒ Use a layer of organic mulch around plants to reduce evaporation, promote plant growth, and reduce weeds
- ☒ Collect and use rainwater in your garden
- ☒ Plant drought tolerant species
- ☒ Direct downspouts or gutters toward trees, shrubs & pools
- ☒ Choose water-efficient drip irrigation for flowers, shrubs & trees

Lawn Care

- ☒ Mow your lawn as infrequently as possible to help retain moisture
- ☒ Adjust your mower to a higher setting. Longer grass will reduce the loss of water to evaporation
- ☒ Only water as needed. If you leave footprints when you walk on the lawn, it's time to water. One inch per week is plenty. More frequent watering leads to shallow root systems making lawns susceptible to disease and insects
- ☒ Aerate your lawn to allow water to percolate into the soil
- ☒ Plant ground cover and shrubs in place of grass
- ☒ Wash your car on the grass
- ☒ Don't hose down the driveway. Just use a broom.

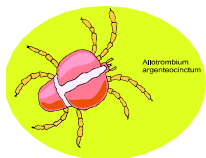
In Your Home

- ☒ Turning off the faucet while brushing your teeth saves 4 gallons a minute. That's 200 gallons each week for a family of 4.
- ☒ Keep showers under 5 minutes and save 1,000 gallons a month
- ☒ Install low-volume toilets and low-flow shower heads
- ☒ Fix dripping faucets or leaking toilets
- ☒ Run dishwashers and washing machines only when full and save 1,000 gallons a month

Encourage your friends, family, neighbors, schools, and government to be part of a water-conscious community!

Tick, Tick, Tick

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See woods, think ticks? Concerned about Lyme disease? Ticks are part of life in this area, but the following information may help you put the risk in perspective and provide some protection from exposure.

Unlike mosquitoes (see *Menacing Mosquitoes* on page 10), ticks do not need water for their life cycle. Like mosquitoes, different species of ticks prefer different habitats. For example, the American dog tick likes full sun and high grass. The deer (or black legged) tick, which is the principal carrier of Lyme disease in New Jersey, is found in wooded areas with dense shrub/leaf litter and in old field habitat. The tick life cycle has 4 stages: egg, larvae, nymph and adult. Larvae and nymphs need a blood meal to grow into the next stage and the adult female tick needs blood to produce eggs. Larvae and nymphs live in leaf litter and low vegetation; therefore, they seek hosts at ground level: mice, squirrels, and chipmunks. Adults climb up higher shrubs and wait to latch on larger mammals that pass by. Ticks do not “drop” from trees above. After feeding on an infected animal, the tick can become infected and transmit the disease to another animal or human.

Not all ticks carry the Lyme disease bacteria; the number of ticks that do varies locally. One area may be infested with ticks, but have a

low rate of infection, while another area could have a lower number of ticks with a higher rate of infection.

If you are infected by a tick bite, a red circular rash may appear 3 days to one month after the bite; however, not everyone will exhibit a rash. Early stages of Lyme may include fatigue, chills and fever, headache, muscle and joint pain and swollen lymph nodes. Consult a physician if you notice any symptoms.

You can reduce tick habitat by removing leaves and by cutting back brush and tall grasses along paths, around your house, and at the edges of gardens.

You can take a few personal precautions by limiting your exposure in tick infested areas, especially in May-July when nymphs are most active and difficult to see. Wear light colored clothing, long pants and tuck pants into socks and boots. Stay on trails and avoid brush. Insect repellent containing 30% DEET is effective. After being outdoors carefully inspect for ticks and remove any attached ticks properly. For more information about the diagnosis and treatment of Lyme disease, contact your local health department or personal physician.

Additional information can be found at www.visitmonmouth.com/mosquito/tick.html.

A mosquito bites an infected bird, then bites another bird and infects it, thus amplifying the amount of virus in the wild as the mosquito population increases throughout the season. When a large number of the birds are infected the mosquitoes have a higher chance of biting an infected bird. They then carry the virus to mammals such as horses and humans. This type of mosquito is called a “bridge” vector.

At this stage (usually mid-August through September) there is an increased risk that an infected mosquito could bite a human. At this time, a mosquito control agency would consider using a pesticide in a localized area to kill adult mosquitoes with hopes of breaking the transmission cycle.

Mosquitoes

All mosquitoes need water to support their life cycle. Similar to butterflies, the stages of a mosquito's life include egg, larvae (like a caterpillar), pupa and adult. Eggs hatch, larvae grow through 4 stages, and pupa molt into adults in water. Mosquitoes can be divided into two categories: those who lay eggs directly on the water's surface and those who lay eggs just above the water line of a temporary water habitat, like a puddle that dries down. For the latter, eggs hatch when the water returns after a rain. These two strategies have allowed mosquitoes to thrive in all kinds of “water” habitats including buckets, old tires, bottle caps and tree holes as well as shallow ponds, marshes and woodland

pools.

Different mosquitoes are active at different times of the year, starting in early spring when larvae grow in woodland pools formed by snowmelt. The time it takes to transform from eggs to adult depends on the weather; during a cool spring, the life cycle can take upwards of a month. In the heat of summer, adult mosquitoes can emerge after about a week. The average life span of an adult mosquito can last from several weeks to several months, depending on environmental conditions.

Taking precautions

You can take precautions to reduce mosquito bites.

- ‡ Avoid the outdoors at dusk and dawn when mosquitoes are most active.
- ‡ Wear long sleeves and pants
- ‡ Use insect repellents; 25% DEET are most effective
- ‡ Consult a pediatrician for child safe products

If you are concerned about mosquitoes breeding in stagnant water near your property you may contact your local mosquito control agency. An inspector will check the site and treat accordingly. In Monmouth County contact the Mosquito Extermination Commission at (732)542-3630 or visit www.visitmonmouth.com/mosquito. In Middlesex County call (732)549-0665 or visit www.co.middlesex.nj.us/mosquito. Ocean County residents call (609) 698-8271 or visit www.ochd.org.

Menacing Mosquitoes

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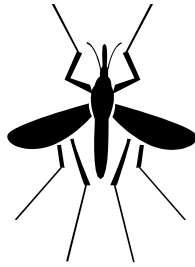
Concerned about West Nile Virus? See water, think mosquito breeding? Mosquitoes are part of living in New Jersey. Hopefully, the following information will help you put the risks in perspective and provide ways to protect yourself and your family.

Preventing Pesky Pests

Living near water does not necessarily mean you will have a mosquito problem. Mosquitoes prefer still, shallow water. Most species breathe through snorkel-like siphons at the water's surface and eat organic material like decaying leaves. They must be able to swim from the surface to their food and back. The larvae will not thrive in deep water (2 feet or more). Mosquitoes will not live in flowing or open water where wind disturbs the surface, and they are vulnerable to fish and other aquatic predators. Fish and dragonflies can keep the mosquito population in check. Bats and birds also help, but since they eat many different types of insects, not just mosquitoes, they are not effective at controlling severe mosquito problems.

If you are being eaten alive, do not necessarily blame the stream or wetland. There are many things a homeowner can do to reduce the mosquitoes that

breed in your own backyard. Look around your property and neighborhood for sources where larvae could live. Empty any container that might hold water where mosquitoes will flourish. Empty pool covers, kiddie pools or sand boxes. Check tarps for pockets of water and clean gutters that hold water and leaves. Do not over-water your lawn. Do not put grass clippings or leaves down stormdrains. Do not put brush, debris or firewood near a waterway. Water trying to drain to the waterway can become trapped, or the debris can wind up in the waterway, block flow and create a stagnant water habitat that mosquitoes love.



Only Females Bite

Only female mosquitoes bite. They need a "blood meal" to obtain protein to produce eggs. Some mosquitoes will bite both birds and mammals. This is how the mosquito can transfer disease-causing organisms to animals and humans.

It is believed that West Nile Virus is maintained in nature by a bird-mosquito cycle.

(continued on next page)

Toxic Cars!

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Motor oil, battery acid, gasoline, engine cleaners, antifreeze and car wax, are examples of automotive products that usually have toxic chemicals in them. Of course, you would never drink them, would you? One quart of motor oil can contaminate one million gallons of drinking water! Pouring your old oil into a storm drain sends that oil right to local streams, reservoirs and lakes. Washing your car with harsh detergents puts phosphates into the water, too.



Some commercial car washes collect and treat their waste water. Phosphate-free detergents are available for home use. Keep your car well maintained to prevent continuous leaks of toxic fluids. Leaks can be cleaned up with sawdust or absorbent materials that can then be properly disposed of, rather than washing them out of your driveway and into the storm drains. Disposing of old motor oil and batteries at proper collection sites is the best thing to do. Household hazardous waste collection days are held in Monmouth, Middlesex and Ocean Counties throughout the year. Remember to care for the environment while you care for your car.

Try carpooling, walking, bicycling, or public transportation to reduce pollutants. It's healthier for both you and the environment!

Household Hazardous Waste Programs

☞ In Monmouth County call (732)431-7460 or visit <http://www.visitmonmouth.com/health/environmental/HHW/hhw.htm>

☞ In Middlesex County call (732)745-4170 or visit www.co.middlesex.nj.us/planningboard/solidwaste_county.asp#house

☞ In Ocean County call 1-800-55-RECYCLE or visit www.ochd.org/env1.htm

Living Next to a Waterway

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Perhaps it was the natural look and sound of the babbling brook that made you decide to buy your property. Or maybe the brush and weeds around that drainage ditch were so overgrown that you did not realize it was there until winter. In either case, living next to a waterway makes you part of a complex system where water meets land, bringing many benefits as well as challenges.

Streams and their surrounding corridors are part of nature's plumbing system. They are part of a dynamic system to handle fluctuating levels of water. A natural stream corridor is made of the stream channel, its banks, floodplain and transitional uplands. Under normal conditions, the water flow is contained within the stream channel. When it rains, runoff from surrounding land eventually flows to the stream and the stream level rises. With enough rain, the stream reaches a "bank-full" level and overflows onto the floodplain. This is nature's way of handling the extra volume of water and dissipating its energy. Eventually, the water level drops back to normal and the floodplain dries down. A stream naturally changes shape and direction in response to the amount of



water, speed of the water, type of soils and vegetation it encounters. Over time the stream migrates laterally across the floodplain like a snake moves across the ground.

A natural stream corridor is a mosaic of ecosystems that reflect various plants and animals adapting to live in periodically wet and dry environments. Areas that are inundated with water once in a blue moon or more frequently are considered wetlands. Wetlands are commonly referred to as swamps, marshes, or bogs. However, many wetlands in New Jersey are forested or farmed and do not fit the classic picture of a swamp or marsh. Previously considered as wastelands, wetlands are now recognized for their vital ecological contributions.

From small "weeds" to mighty trees, plants are very important players in the stream corridor system. Year round, their roots prevent soil from washing away. During the growing season, plants absorb water and reduce flooding.

Maintain Your Stream

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The water, land, animals and plants are interwoven; if one component changes, the entire system changes to find a new equilibrium. Putting in a bridge or blocking flow can cause water to back up. Covering vacant land with impervious cover such as a roof, driveway, or swimming pool, cause rainwater that used to soak into the ground now to run off into stormdrains, drainage ditches, and eventually creeks and streams. By increasing the amount of water that flows into a stream when it rains, the stream floods more often and the floodplain widens. What happens upstream of your property can affect you; what you do on your property will affect downstream properties too.

What can you do?

You, as a property owner, can maintain the natural stream corridor and protect and enhance your property. Basically, the key is to keep it natural, which often means less work and less money!



Keep It Basic

1. Don't place anything in the stream that does not belong there! This includes not only trash, like old tires, but cut brush, grass clippings, leaves and firewood.
2. Keep native plants intact. They soak up water and stabilize the soil. Unlike more expensive ornamental plants, native plants are adapted to live in wet conditions. If more vegetation is needed, plant native wetland vegetation. (See *Native Plants on page 12*)
3. Keep the stream clear of debris and snags. Some obstructions to flow are natural and healthy for stream life; however, some can block stream flow and lead to flooding. Maintain a balance that keeps water flowing and provides habitat. If your waterway has overhanging vegetation blocking the flow, selectively hand trim the vegetation to allow flow, but leave branches to shade the stream.
4. Allow the stream room to flood. Do not place sheds or outdoor toys or furniture near the flood area.
5. Consider "bioengineering" if you have an erosion problem. Bioengineering uses natural plants, fiber mats and logs to stabilize slopes and banks.

Because stream corridors and wetlands are so important, activities within are regulated by the NJ Department of Environmental Protection and permits may be needed. Visit www.state.nj.us/dep/landuse or call (609) 984-0288 for information. You should check with your municipality for local stream regulations and restrictions.