

Productive Farms

Less Maintenance

Healthy Waterways



**Learn how to convert
high-maintenance mowed
areas to low-maintenance
pollinator meadows.**

The Nanticoke River Watershed

The Nanticoke River is the largest tributary to the Bay in Lower Delaware and is also one of the cleanest rivers to flow into the Chesapeake Bay. The Nanticoke River has the most biologically diverse watershed on Delmarva and is home to many of this region's important family farms. The small ditches and streams that drain this land connect our homes and communities to the larger Nanticoke River. Any pollutants on our land will get picked up by stormwater runoff and pollute the Nanticoke River and then the Chesapeake Bay.

The Chesapeake Bay is the nation's largest estuary. As an estuary, the bay is a mix of fresh and salt water which creates a special home for many creatures that cannot live anywhere else. Along with the wildlife it supports, the Bay also provides an EPA-estimated 33 billion dollars a year in economic and recreational resources. With all the resources that the Bay provides for us, it's important that we respect it and do what we can to keep it healthy.

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MAP OF THE
NANTICOKE RIVER
WATERSHED



Chesapeake Bay

Nanticoke

Farmington

Greenwood

Gum Branch

Ellendale

Marshyhope Creek

Bridgeville

Gravelly Branch

Federalsburg

Nanticoke River

Georgetown

Seaford

Deep Creek

Blades

Hurlock

Bethel

Laurel

Galestown

Sharptown

Broad Creek

Vienna

Mardela Springs

Delmar

Nanticoke River

Hebron



Stormwater Best Management Practices

Poultry farms on the Delmarva Peninsula already must follow a set of practices called **Best Management Practices** or **BMPs** for short. BMPs for poultry farmers are a specific set of practices used to reduce the amount of soil, nutrients, pesticides, and microbial contaminants entering surface water and groundwater while maintaining or improving the productivity of agricultural land. This guide helps poultry farmers enhance existing BMPs. Many of the practices outlined in this brochure increase the environmental value of your property, while decreasing the amount and cost of maintenance, such as mowing.

One of the best ways we can help the Bay is by improving our stormwater practices. It's important to recognize that anything we do to the land will impact our local waterways. Stormwater runoff has many negative effects on water quality, such as:

Pollution

As rain or snow travels across rooftops, driveways, lawns, sidewalks, and streets, it picks up numerous contaminants. Eventually, this dirty water finds its way to local creeks and rivers, causing harm to fish and other wildlife.

Local Flooding

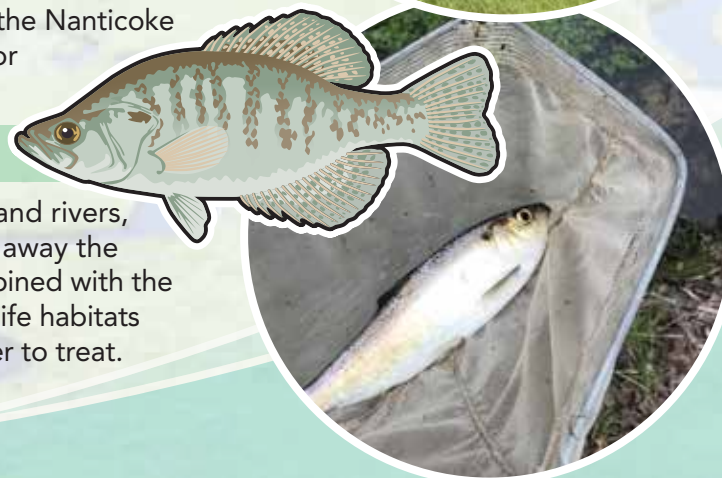
When the ground can't absorb water, storm drains and roadside ditches fill up too quickly with excess runoff, and flash flooding can occur in streets, farm fields, and other places. This can cause damage to homes, businesses, and natural spaces like river banks.

Human Health Impacts

Stormwater runoff can carry toxic metals, bacteria, viruses, and sometimes untreated sewage. This pollution drains directly into the Nanticoke River and Chesapeake Bay which makes it costlier for downstream communities to clean.

Threats to Fish

As stormwater overflows and empties into streams and rivers, unnaturally high volumes of rushing water can wear away the stream bottom and cause stream bank erosion. Combined with the impact of pollutants, this water damages natural wildlife habitats and degrades drinking water quality, making it costlier to treat.



Pollinator Swales

When it rains, gravity pulls water downhill into the lowest areas, usually streams, rivers, or ditches, which then flow into a larger body of water and eventually the ocean. As rain or melting snow travels across rooftops, driveways, lawns, or streets, it picks up numerous contaminants. **Swales**, which are shallow, broad and vegetated channels, are designed to store or convey stormwater runoff and remove pollutants. Swales are an effective way to remove excess nutrients and trap soil, seeds, and other organic matter before entering a larger body of water. Currently, Best Management Practices (BMPs) in both Maryland and Delaware require an 8-foot wide, flat bottom, grass swale between poultry houses.

Swales planted with native wildflowers, grasses, sedges, or rushes play a major role in the effectiveness of a swale. Their extensive fibrous root systems are better suited to anchor soil, slow down water flow, and increase groundwater replenishment. When planting the swales with native plants, the immediate area around the houses should remain open so as to not create harborage areas for rodents.



Canada Geese do not like taller grasses. Planting these grasses will keep them away. Areas close to the houses will not be planted, so rodents will not be a problem either.

Benefits of Native Plant Swales:

- Captures dust and excess nutrients in stormwater runoff
- Reduces water flow
- Increases groundwater replenishment
- Provides food for vital local pollinators and endangered species like Monarch Butterflies
- Requires less mowing





Swales planted with a pollinator meadow, trees, or native shrubs require less maintenance, and provide many benefits to the environment.

A typical poultry farm swale planted with grass, which will require higher maintenance efforts and regular mowing.



Monarch butterflies are beautiful, but they cannot survive without native plants. Their larvae can only eat one type of plant: milkweed. Fortunately, several types of milkweed are native to this area. This phenomenon is true for many types of insects, so a wide variety of native plants is the best way to help the environment.



To be a farmer is to be a caretaker, steward of the land, and a shrewd business person. Creative swale plantings are not only aesthetically pleasing, but they help improve water quality downstream, support the local pollinators, and reduce grounds keeping costs/labor. That's a Win-Win-Win if ya ask me.

Matthew Trivits
Poultry Grower,
Trivits Farm

An aerial illustration of a poultry farm with several large, grey-roofed buildings. The farm is surrounded by various green spaces and landscaping. A swale with native trees is located near the top right building. A pollinator meadow is situated between the top and bottom left buildings. A smaller area of mowed grass is shown near the bottom right building. A large native wildflower meadow occupies the bottom right corner. A dirt path winds through the property.

Poultry Farm with Enhanced Environmental BMPs

Swale Planted with Native Trees

Tree planting tips on page 8.

Swale Planted with Pollinator Meadow

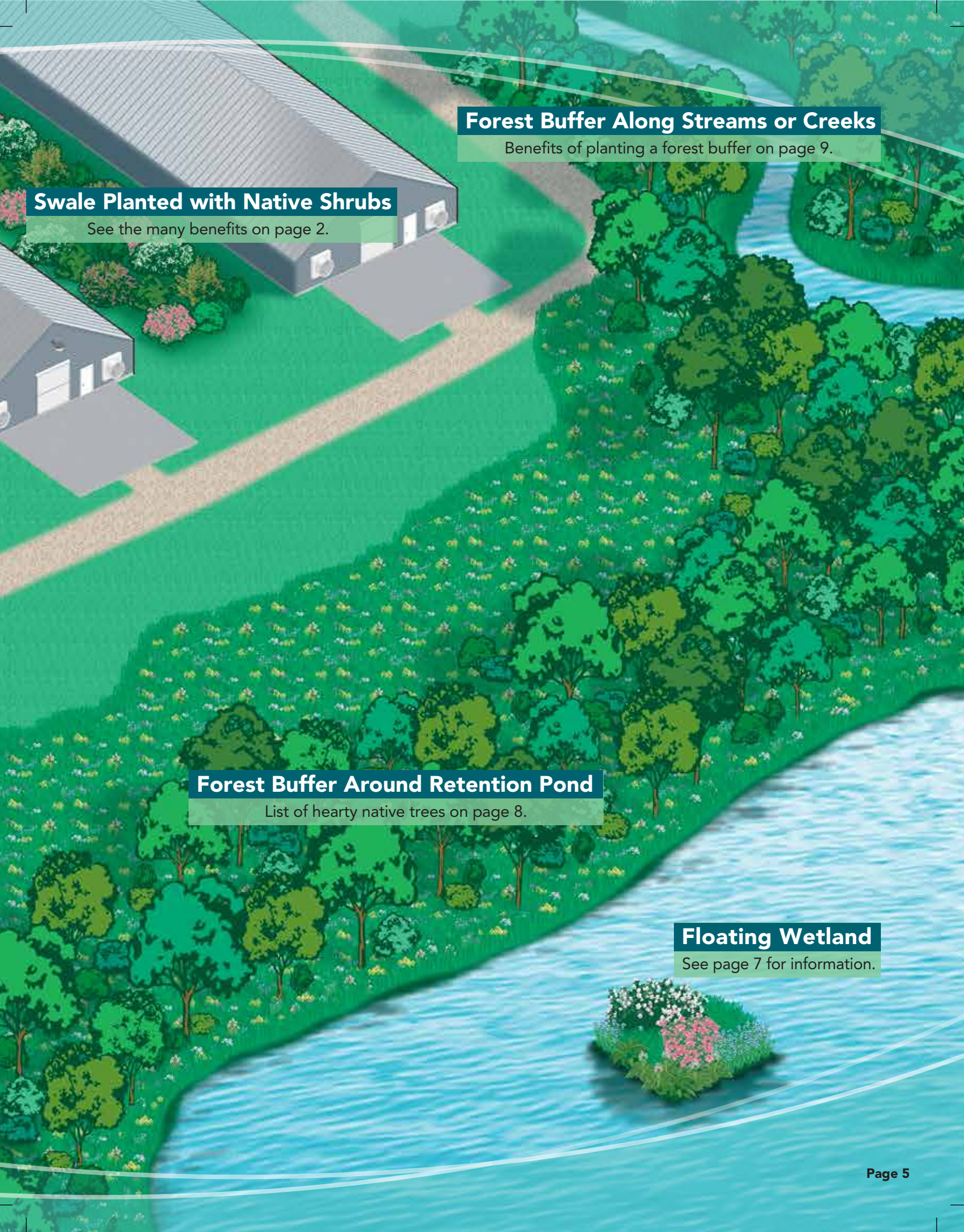
See the many benefits on page 2.

Smaller Areas of Mowed Grass

Many benefits of reducing mowed areas throughout this booklet.

Native Wildflower Meadow Instead of Mowed Grass

Learn how to transition from lawn to meadow on page 7.



Swale Planted with Native Shrubs

See the many benefits on page 2.

Forest Buffer Along Streams or Creeks

Benefits of planting a forest buffer on page 9.

Forest Buffer Around Retention Pond

List of hearty native trees on page 8.

Floating Wetland

See page 7 for information.

Native Wildflower Meadows



Native plants provide a rich habitat for important local bees and other pollinators. Pollinators, like butterflies and bees, help humans grow many foods, like fruits, vegetables, and nuts. Here on Delmarva, pollinators are important to many family farms, and they keep our beautiful home gardens alive and well.

Native plants offer benefits that non-native plants do not, such as:

- Grow longer root systems that better reduce erosion,
- Provide habitat and food for local bees and butterflies,
- Conserve water,
- **Require fewer chemicals, and can even**
- **Reduce the amount of mowing!**



Currently, Best Management Practices in Maryland require a minimum of a 20-foot grass buffer around the site perimeter of poultry houses. In Delaware, a 25-foot perimeter must be maintained. Large areas of grass take a lot of time and money to sustain, but they have limited environmental benefits. There are many ways to make your grass areas more environmentally-friendly, one of which is to turn part of your lawn into a native meadow. **Wildflower meadows** are complex, interactive communities of plants that provide essential ecosystem services. Wildflower meadows serve as valuable habitat, providing pollen, nectar, and seed resources, nesting sites, and a protected environment for our native bee and butterfly species. Meadows also aid in the absorption and filtration of stormwater, prevent erosion, and store carbon.

How to Start the Transition from Lawn to Meadow

■ **SELECTING A PLANTING SITE** – When choosing a site for your meadow, start with areas that are difficult to mow or areas that require frequently costly mowing. Make sure to maintain proper open spaces around the poultry house to reduce rodent harborage areas.

■ **PREPARE YOUR PLANTING AREA** – To start the transition from lawn to meadow, start by removing existing vegetation. Mow the lawn as short as possible and then use an herbicide to kill the grass down to its roots. It is important to remove or kill grass and other plants that would compete with the germinating wildflower seeds for light, water, and nutrients. Next, loosen the top few inches of soil with a tiller, power rake or by hand to create an ideal environment for the wildflower seeds to germinate. You will need to till or turn the soil two to three times to exhaust seed banks before the site is ready to be seeded. Lastly, rake the area flat to prepare the soil for sowing.

■ **SEEDING** – Choose a native/regional wildflower seed mix.

■ **SOWING THE SEED** – Choose a windless day to begin seeding. Place half your seeds in a bucket or hand-crank seeder. Begin to evenly scatter the seeds by walking back and forth in roughly parallel rows, doing your best to portion this half of the seed evenly over the whole planting area. Repeat this process with the remaining half of seed. After you're done seeding, begin compressing the seed onto the soil surface. This can be done by walking over the area or renting a lawn roller/cultipacker. Wildflower seeds should be planted in the winter to allow for natural cold stratification of the seeds so that they germinate. If the seed mix is primarily native grasses they should be planted in April through September.

■ **MAINTENANCE** – The first year, mow three to four times, setting the mower to a height of 6". This will cut down weedy species, while allowing natives, who tend to put first-year energy into roots, to thrive. After that, mow your meadow once or twice a year, preferably once in the spring. This prevents shrubs and trees from colonizing the area, while giving pollinators time to emerge from their winter homes. Keep an eye open for invasive plant species, and remove them as you find them.



Aquatic Plants

All poultry farms are required to have a retention pond, which filter out excess nutrients from stormwater run-off. To further improve water quality in your retention pond, consider the addition of a floating wetland. **Floating wetlands** can help reduce algae by absorbing excess nitrogen and phosphorus, improving water clarity. They also create habitat for aquatic critters, such as frogs and turtles.

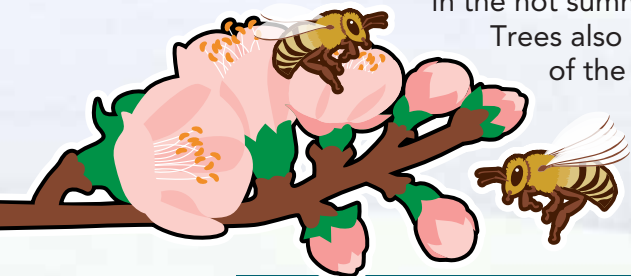


A floating wetland in a retention pond.

Plant More Trees

Trees are invaluable resources and are important to both the environment and human well-being. Planting more trees around your farm can lower air temperatures and shade your houses in the hot summer months, saving you money.

Trees also improve water quality; the roots of the trees help stabilize soil, which reduces erosion. They also reduce the amount of runoff that flows into streams and rivers.



Large trees can shade chicken houses in the summer to reduce cooling costs. Trees also block wind, capture dust, absorb ammonia, and can reduce heating costs in the winter too.



Tree Planting Tips:

- PICK THE RIGHT TREE** – Plant only native trees that will not get too large for the space you have chosen for them. These trees will thrive in our environment.
- GIVE YOUR TREES A GOOD START** – Be sure to water young trees regularly to help establish a good root system.
- HELP ENHANCE DIVERSITY** – Select several different types of trees to create a better habitat. A variety of trees will also mean a beautiful array of fall colors, blooming times, and fruits!

Recommended Trees for the Delmarva Peninsula:

* flowers ° fall colors

SMALL TREES – Under 30'

American Hornbeam – *Carpinus caroliniana* °
 Fringetree – *Chionanthus virginicus* *°
 Dogwood – *Cornus florida* *°
 Redbud – *Cercis canadensis* *°
 Serviceberry – *Amelanchier arborea* *°

MEDIUM TREES – 31-60'

Black Birch – *Betula lenta*
 Blackgum – *Nyssa sylvatica* °
 Honeylocust (thornless) – *Gleditsia triacanthos*
 Persimmon – *Diospyros virginiana* *
 Post Oak – *Quercus stellata*
 Sassafras – *Sassafras albidum* *°
 Sweetbay Magnolia – *Magnolia virginiana* *°
 Willow Oak – *Quercus phellos* °

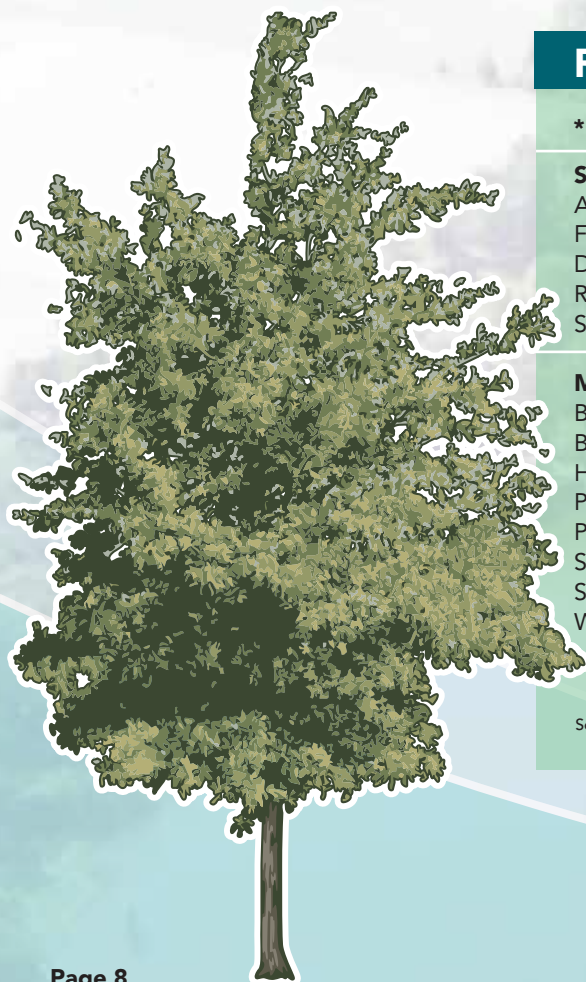
LARGE TREES – Over 61'

Bald Cypress – *Taxodium distichum*
 Basswood – *Tilia americana* °
 Beech – *Fagus grandifolia* *°
 Buckeye – *Aesculus glabra*
 Chestnut Oak – *Quercus prinus* °
 Hackberry – *Celtis occidentalis* °
 Shagbark Hickory – *Carya ovata* °
 Pecan – *Carya illinoensis*
 Red Maple – *Acer rubrum* °
 River Birch – *Betula nigra* °
 Silver Maple – *Acer saccharinum* °
 Sugar Maple – *Acer saccharum* °
 Tulip Poplar – *Liriodendron tulipifera*
 White Oak – *Quercus alba* °

EVERGREENS – 15-60'

American Holly – *Ilex opaca*
 Eastern Red Cedar – *Juniperus virginiana*
 White Pine – *Pinus strobus*
 Loblolly Pine – *Pinus taeda*

Source: <https://delawaretrees.com/publications/recommended-trees/>

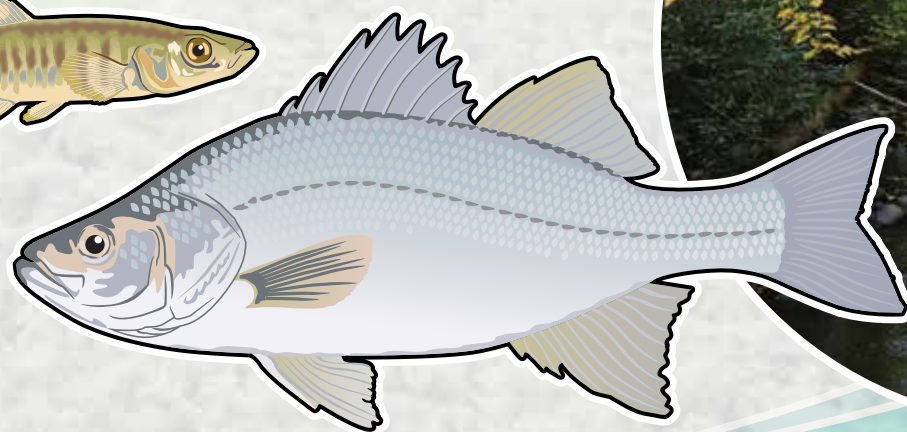
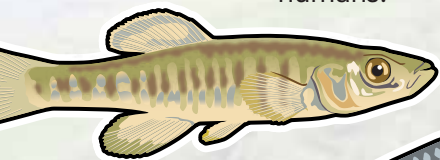




Do you have a creek, stream, or river on your property?

Consider planting a forest buffer along the sides of the waterway. They have many benefits including:

- **Improved Water Quality** – Woody plants and their roots help reduce streambank erosion, trap erosion sediments, increase water absorption, and absorb excess nutrients, pesticides, and other contaminants.
- **Reduced Flood Damage** – Woody buffers reduce floodwater velocity and erosive power and block stream debris from entering cropland, grassland, and urban lands. Roots hold stream banks and keep the soil in place. Buffers reduce peak storm flows by slowing surface runoff.
- **Provide Better Fish Habitat** – Woody plants in buffers can create habitat diversity, shade streams lowering water temperature which provides better habitat for fish and other creatures. The shade provided by trees and the nutrients they absorb also reduce the chance of toxic algal blooms which can be harmful to wildlife, dogs, and humans.





Nanticoke Watershed Alliance

113 Old Ocean Gateway

PO Box 111

Vienna, MD 21869

410-443-8878

www.NanticokeRiver.org



Planting tree and grass buffers on chicken farms help us in the chicken community be better neighbors, capturing dust, noise and odor – and at the same time, they can reduce heating and cooling costs for growers, all while conserving soil and improving water quality. Delmarva Chicken Association is proud to have helped hundreds of farmers add these buffers.

Jim Passwaters, Vegetative Environmental Buffers Coordinator, Delmarva Chicken Association

Native Plant and Tree Planting Project

**If you are a poultry grower and are interested,
please visit NanticokeRiver.org/chicken/ to apply.**

**We are more than happy to come out and provide some suggestions
and let you know what funding is currently available for projects.**

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