



Trumpet Vine

Knowledge for the Community From Loudoun County Extension
Master Gardeners

Summer 2019

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LOUDOUN COUNTY EXTENSION MASTER GARDENER LECTURE SERIES

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July 11. Offsite. A Visit to Watermark Woods, Loudoun's only Native Plant Nursery, located at 16764 Hamilton Station Road, Hamilton, VA. Owner Julie Borneman will discuss Incorporating Native Plants Into Your Home Landscape.

August 1. Rust Library. Deb Dramby, head gardener at Banshee Reeks Nature Preserve, will discuss Composting at Home.

September 5. Please check the website for information on the September lecture.

For more information, visit our website at loudouncountymastergardeners.org.

Visit us on Facebook:
Extension Master Gardeners of Loudoun County, Virginia.

Observations in the Garden

Since the conventional "normal" season is a thing of the past, we are left to wonder if there will be a new "normal" or just continuous change. With rainfall last year 24 inches above normal, I had expected a large number of plants to drown or rot, but some of the wettest parts of the native garden came roaring back this spring. Some plants disappeared but no more than normal. Neighbors have lost evergreens to wet conditions (see Help Desk Insights p. 30). I have also had some new native plants magically appear in the naturalized area--trout lily (wow) and partridgeberry. On the flip side I've had lesser celandine pop up all over the neighborhood for the first time in more than 30 years here. This is a very aggressive invasive plant that grows in a stream valley about a quarter mile away.

So the lesson is, things are changing, but it's hard to know what or to predict how. Keep a close eye on your garden and note changes. Monitor the number of birds, bees, butterflies, and other insects, note when various plants bloom, and gauge the overall health of your plants and trees. Compare notes with other gardeners and then do the same next year.

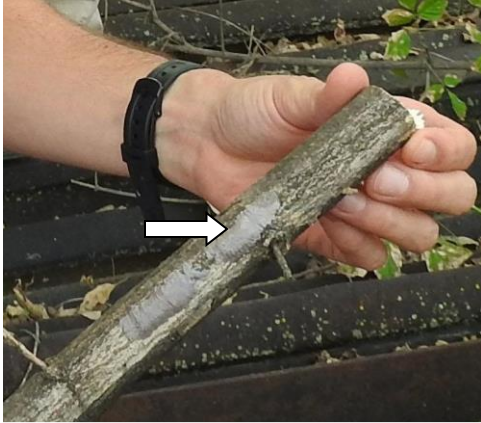
I think the new word for gardening in the time of climate change is agility.



Photos in the Demonstration Garden. by Normalee Martin.

Tree Stewards Help County in Spotted Lanternfly Control

On May 28, Virginia's spotted lanternfly (SLF) quarantine was put in effect for Frederick County and the city of Winchester to try to stem the spread of this insect. Despite an eradication effort in Winchester in 2018, SLF increased its distribution from about 1 square mile to 16 square miles. This year, the overwintering eggs began their hatch on April 27, earlier than last spring. This



Smooth grey spots on wood are SLF egg masses. These should be scraped off and crushed. Photo by Beth Sastre.

insect threatens to be a major pest of fruit crops, forest trees, and other plants in Virginia. In eastern Pennsylvania, where it has been established since 2014, it has ruined orchards and vineyards and is a disgusting backyard pest. The SLF traveled to Pennsylvania from China on a shipment of landscaping stones and then to Winchester the same way. These insects are hoppers and depend on hitchhiking on vehicles and products to travel from one locality to the next.

The preferred host plant for the SLF is the tree of heaven, a member of the *Ailanthus* genus. While the SLF feeds on all types of trees and crops, the tree of heaven appears to play a critical role in its life cycle and survival.

The Loudoun County Master Gardener Tree Stewards are working under the guidance of Beth Sastre, commercial horticulturist; Chris Kenney, arborist, Loudoun County Parks and Recreation; Kyle Dingus, Arborist – County Forester, Natural Resources Division; and Matt Shaffer, GIS Specialist, Dept. of Mapping & Geographic Information, to educate county residents and to identify the location of tree of heaven in high-risk areas. High-risk areas are those likely to have vehicles from the Winchester area, such as Loudoun County Park and Ride lots, and also from areas with fruit crops attractive to the SLF. Tree Stewards and county staff members are using a phone app built especially for the purpose of gathering data on tree locations and size. A few trees in each area are banded with a very sticky tape that will capture the insects as they crawl up the tree, providing positive evidence of an infestation.

The long-term strategy is to remove 90 percent of all tree of heaven including all the female trees on properties and use the remaining 10 percent as trap trees that concentrate the insect. Then the trap trees will be treated with a systemic insecticide to kill the SLF.

Killing tree of heaven requires more than simply cutting it down. Tree of heaven is a very strong stump and root sprouter so cutting down one tree may produce five trees in its place. Trees should be treated with an herbicide as part of the removal process. Details for treating tree of heaven with an herbicide can be found in this publication:

http://www.dof.virginia.gov/infopubs/Control-and-Utilization-of-Tree-of-Heaven-2019-03_pub.pdf.

For more information, see <https://www.loudoun.gov/5101/Spotted-Lanternfly>.

Report sightings as soon as possible through [this online form](#).

Carol Ivory, Loudoun County Extension Master Gardener, Tree Steward

The Vegetable Trifecta Easy, Tasty, and Healthy Swiss Chard

In the sweltering heat of June when most lettuce, spinach, and other leafy greens are wilting and bitter and the summer veggies are just starting to show their blooms, the Swiss chard stands tall and ready to appease. Easy to grow, generous, reliable, and full of vitamins and minerals, the lesser known Swiss chard is a great addition to your garden and your table.

Some grow Swiss chard for eating and others for its beauty. Swiss chard is a member of the amaranth family, which includes the more famous quinoa, spinach, and beets. The most popular varieties of chard are Fordhook Giant (1934) with large dark green leaves, rhubarb chard (1857) with dark red leaves and bright red stalks, and five color silverbeet or rainbow (1970) bearing five stem and vein colors--yellow, orange, white, red, and crimson. Rhubarb chard is what we know as rhubarb. Its stalks are edible, but its leaves are not.

Often underrepresented at the American table, Swiss chard has been renowned for its health-promoting properties since the time of the ancient Greeks. A very popular vegetable in the Mediterranean region, chard is one of the most nutritious vegetables. Containing only 35 calories in one cooked cup, Swiss chard is an excellent source of Vitamins K, A, C, and E, as well as magnesium, potassium, iron, and fiber.

Planting and Harvesting

- If you haven't done so already, it is not too late to plant Swiss chard in this area. Swiss Chard can be planted spring through mid-summer. Some garden stores sell seedlings, but most experts do not recommend this method. Seedlings can be challenging to transplant with their very thin stems. Planting seeds directly into the ground is more effective and they sprout quickly, as early as seven days after planting. A testament to the fact that this vegetable is tolerant and easy to grow is the broad guidance on planting, maintaining, and harvesting. Just follow the directions on your seed packet. Some basic guidelines for success follow:
- The soil should be at least 50 degrees to allow the seeds to germinate in the spring. A slightly warmer soil will increase your chance of success and minimize diseases. Plant one-half to one inch deep throughout the summer up to two weeks before the first fall frost.
- Plant in full sun to partial shade in well-drained soil, rich in organic matter that has a PH of around 6.5.
- Sow seeds one inch apart. For best results and a higher yield, thin plants to four to six inches apart when they are six to eight inches tall. These young, tender leaves are delicious. Include them in your salad mix.
- Harvest leaves at any time once they are developed and at least eight inches tall. To keep your plant producing abundantly, harvest the outer leaves first and regularly. Once Swiss chard starts to bolt, the leaves become bitter and not as tasty. You can enjoy them for their beauty or cut them down to within two inches to start fresh.
- Water regularly, especially during periods of extreme heat. Soil should be moist but not constantly saturated, which encourages



Swiss Chard ready to harvest.
Photo by Theresa Hutton-Sherman.

disease.

Swiss chard is affected by very few pests or diseases compared to other vegetables. The most frequent problems are aphids, leaf miners, and leaf spot. You can find out more about insects and diseases that infect Swiss chard at <https://www.pubs.ext.vt.edu/456/456-018/456-018.html>.

In the Kitchen

As a relative of spinach, you can substitute Swiss chard leaves for spinach in almost any recipe. It is best to cut chard early in the morning before the heat of the day begins. If not using right away, store in the refrigerator and wash just before using. Chard stays fresh in the refrigerator for about one week.

In addition to using raw young leaves for salads, I regularly use Swiss chard in soups, pasta sauce, and eggs for a vitamin boost and some green color. Swiss chard leaves are also very good when simply wilted down with some olive oil, garlic, and a bit of red pepper if you are so inclined.

Did you know that you can also eat the stems? That's right; the stems can be eaten and are a great conversation starter as some at your table may not have ever eaten the stem. I find most people in my circle like the stems or really dislike them. If using in a soup, add them when you add other vegetables that require a bit more time to soften like peppers or small diced carrots. When using the stalks, they should be sautéed for three to four minutes before adding the leaves.

Swiss Chard Bruschetta

Swiss chard is featured in this simple bruschetta that is great as an appetizer or to accompany a summer pasta dish.

Ingredients:

- 1 loaf of Italian bread cut into ½-inch-thick slices
- 2 tablespoons extra virgin olive oil (plus some for coating the bread)
- 1 tablespoon of unsalted butter
- 4 garlic cloves (1 whole, 3 minced)
- ¼ teaspoon crushed red pepper flakes
- 8 cups Swiss chard leaves
- Sea salt
- 2 cups of mild cheese, shredded (examples: gruyere, fontina, Swiss)



Bruschetta.

Photo by Theresa Hutton-Sherman.

Directions:

Preheat the oven to 400 degrees. Arrange bread slices on a baking sheet and coat with melted butter. Bake until light golden (about 8 minutes). Cool slightly and then rub with one garlic clove. Set aside while preparing the topping. In a skillet, heat olive oil over medium heat and add minced garlic and pepper flakes. Cook for 30 seconds. Add half the Swiss chard and stir until it begins to wilt (about 3 minutes) then add the remaining chard and cook for another 2 minutes. Add salt to taste. Place the chard mixture on your garlic toasts and sprinkle with cheese. Bake for an additional 5- 6 minutes until cheese is melted.

Theresa Hutton-Sherman, Loudoun County Extension Master Gardener

The Three Amigos: Early Blight, Late Blight, and Septoria Leaf Spot

Every summer, throughout Virginia, attentive gardeners check their plants for signs and symptoms of early blight, late blight, and septoria leaf spot in their gardens. Early detection is crucial because these are major fungal diseases that can spread rapidly and infect tomatoes, potatoes, and other night shade plants in gardens. Many common cultural controls can aid in the prevention and spread of these fungal diseases. Here's information on how you too can be on the lookout for the three amigos in your garden.



Lesions with yellow halo on foliage.

Photo: U. of Maryland Extension.

Early blight is caused by the fungus *Alternaria solani* and appears as dark brown or black spots on the lower leaves, closest to the ground and usually after a heavy fruit set. Optimal conditions for early blight are high humidity and temperatures above 75 degrees (like August in Loudoun County?!). Concentric rings develop within the spot, forming a bull's eye. The area around each target spot turns yellow and forms a halo, and soon the entire leaf turns yellow

and drops. Early blight can also infect stems and may produce stem cankers. It occasionally attacks the fruit, producing large sunken black target spots on the stem end of the fruit. Infected fruits often drop before they mature. This disease is most common late in the growing season. The fungus overwinters on old tomato vines and weeds in the nightshade family, so it's very important to remove all plant debris at the end of the growing season.

Late blight, is the most serious of the three amigos and is the disease that was responsible for the Irish potato famine in the mid-nineteenth century. It is caused by the fungus-like organism *Phytophthora infestans*, whose name is derived from the Greek: *Phyto*, meaning plant, and *phthora* meaning destroyer, and indeed, it is a plant destroyer. One of the main reasons why this disease is so devastating to tomatoes and potatoes is that the fungal spores are spread between plants by wind and rain. It can infect and destroy the leaves, stems, fruits, and tubers of potato and tomato plants. Late blight can occur at any time during the growing season when conditions are favorable with high humidity and temperatures between 60 and 80 degrees. First signs appear on younger leaves, closer to top of plant and migrate down the plant. In humid conditions, a fuzzy mold appears on the undersides of leaves. In wet weather, the spots may have a downy, white growth on the lower leaf surface near the outer portion of the spot. Spots may also develop on the fruits. Virginia Tech's Virginia Cooperative Extension has a very informative video that is well worth viewing: [Late Blight on Tomato--Common Plant Diseases in the Landscape](#).



Images of late blight. Photos: Cornell University.

The USDA also has a very interesting national website: www.usablight.org, which acts as an information portal on late blight occurrences, in real time, throughout the United States.

Septoria leaf spot is caused by the fungus *Septoria lycopersici*. The disease is particularly destructive in conditions of abundant rainfall, high humidity, and temperatures between 60 and 80 degrees. It usually appears on the lower leaves after the first fruits set, then spreads up to younger leaves. All the leaf loss reduces fruit yield and quality, and exposed fruits are more susceptible to sunscald. The fungus is spread by splashing water and by working among the plants when they are wet. It overwinters on tomato and weed refuse.



Septoria leaf spot on tomatoes. [Jude Boucher, U. Conn Extension.](#)

Little can be done to control foliar diseases on tomatoes in the current growing season. However, good cultural practices can help prevent foliar diseases from reoccurring in future years.

Best Cultural Practices to Keep the Three Amigos Out of Your Garden

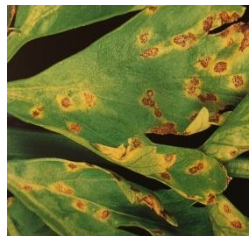
1. Purchase healthy seedlings and buy disease resistant varieties.
2. Know and inspect your plants on a regular basis. Early detection is crucial!
3. Sanitize your garden tools after each use.
4. Rotate crops every three to four years.
5. Provide adequate spacing to increase air circulation and remove all suckers that emerge from the plant base.
6. Keep plants well mulched to minimize soil splashing.
7. Water your plants around their base. Avoid wetting foliage.
8. Prune off the lowest three or four leaf branches once plants are well-established and starting to develop fruits.
9. Remove infected leaves during the growing season and remove all infected plant parts at the end of the season.
10. Apply a synthetic fungicide or an organic fungicide (fixed copper) according to label directions, early in the season, before symptoms appear. This may be helpful where the disease causes severe blighting each year leading to reduced yields.

Pop Quiz: Can you identify which amigo is in each of the photos below?

A.



B.



C.



Luisa Grant, Loudoun County Extension Master Gardener Intern

A. Early blight. B. Septoria leaf spot. C. Late blight.

Plant Nectar and Host Plants

Even if you have not been reading all the articles about the crash of insect and bird populations, you have likely observed it firsthand. My backyard used to be full of bees, butterflies, and birds. So far this year, in my backyard, I have seen a total of two butterflies and a few bees, and this is the first time in many years I have no occupants in my nest box. This is so disturbing, and I have no real understanding of the problem. There's the vague "loss of habitat and overuse of pesticides," but I'm not sure that explains the recent precipitous plunge in numbers. The only thing I know to do is to double down and plant more native plants, try to educate my neighbors and help them select native plants, ensure that our landscape contractor uses no pesticides, and reduce the amount of turfgrass in our neighborhood.

Insects are critically important as food for baby birds and the overall web of life that makes up a healthy environment. Studies have shown that yards with fewer than 70 percent native plants cannot provide enough insects to support a nest of chickadees. Anyone with a small plot of garden or even some flowerpots can make a positive contribution to creating a landscape that provides food and shelter for native species. Both the Audubon Society of Northern Virginia and Loudoun Wildlife Conservancy promote planting the "Super Nine" to make the greatest environmental impact. These are all perennials.

Using these nine perennials will provide blooms from early spring through fall.

1. **Golden Alexander**, *Zizia aurea*, has lacy foliage and yellow spring flowers. It is a host plant for the black swallowtail butterfly and provides nectar for native bees, butterflies, and other insects. This is a very attractive plant that readily spreads from seeds and grows up to 2.5 feet. It will do well in full sun to shade. This photo, taken in our demo garden, shows how bug friendly it is. There's even a small black swallowtail larva (see arrow) feeding on the plant to the left of the soldier beetle.



Photo by Becky Anzelone.

2. **Golden Ragwort**, *Packera aurea*, is a profuse spring bloomer with evergreen basal leaves. Plant this eager spreader in difficult places on the margins where it will outcompete Japanese stilt grass and garlic mustard. It is valued for its ability to thrive in moist shady locations, naturalize rapidly, provide early spring nectar, and produce a long and profuse spring bloom. Flowering stems typically rise one to two feet tall from basal clumps of long-stemmed, heart-shaped, toothed dark green leaves that often have a purplish tinge beneath.



Photo by Carol Ivory.

3. **Swamp Milkweed**, *Asclepias incarnata*, is an excellent milkweed for a home garden. It prefers full sun, moist areas or frequent watering and is very attractive to monarch butterflies looking for a place to lay eggs. It can grow four to six feet tall but does well when cut back. Pink flowers bloom May through June. Monarch caterpillars will strip the plant of leaves, but the plant is not harmed and will come back the following year. Both milkweed plants, *incarnata* and *tuberosa*, are hosts for the monarch butterfly and provide nectar for butterflies, native bees, and other insects.



Photo by C. Ivory.

4. **Butterfly Weed**, *Asclepias tuberosa*, prefers drier areas than the swamp milkweed does. This is a lower growing plant, one to three feet with bright orange flowers.



Photo by C. Ivory.

Monarch caterpillars prefer tender leaves; cut back *incarnata* and *tuberosa* by one third in mid-June and again by one third in mid-July to promote the growth of bushy, tender foliage to draw more egg-laying monarchs.

5. **Mountain Mint**, *Pycnanthemum spp.*, attracts a wide variety of nectar-loving insects. A patch of mountain mint buzzes with native bees of all kinds, wasps, butterflies, and moths. Several varieties of locally native mountain mint exist. All of them have fragrant leaves and attract all kinds of pollinators. This mint spreads readily via rhizomes. It flowers July through September.



Photo by C. Ivory.

6. **Carolina Wild Petunia**, *Ruellia caroliniensis*, is probably the least well-known plant in this list. Wild petunia is a low-growing, erect perennial wildflower. Its flowers range in color from purple to lavender to pale pinkish-white. Flowers remain open for only a day, but plants have a high yield and a long blooming period, May through August. It's the host for the buckeye butterfly and provides nectar for butterflies. This is a tough plant that seeds easily.



Photo by Kristen Gillpin.

7. **Black-Eyed Susan or Orange Coneflower**, *Rudbeckia*, is host for the silvery checkerspot. It provides nectar for butterflies and native bees and insects. This is an easy and trouble-free plant.



Photo by Missouri Botanical Garden

8. **Aster**, *Symphyotrichum*, is host for the pearly crescent butterfly and is an important fall source of nectar for butterflies, native bees, and insects. Asters come in a wide range of colors and sizes. They may be cut back until early July to keep them at a reasonable height and to prevent them from flopping over.



USDA Photo by G A Cooper

9. **Goldenrod**, *Solidago*, provides a very important source of fall nectar for butterflies and native bees. There are many species of goldenrod, tall and short, and some will grow in the shade. When you buy goldenrod, make sure you know the mature size and the light requirement.



Goldenrod Fireworks Photo by C. Ivory.

In addition to these "Super Nine" there are so many other excellent pollinator plants: bee balm, New York ironweed, blazing star, hyssop, thistle, coreopsis, and penstemon to name a few. The following are some good resources for pollinator plant lists:

- [The Xerces Society Mid-Atlantic Plant List.](#)
- [Pollinator Friendly Plants for Northeast US - NRCS - USDA.](#)
- [Bringing Nature Home.](#)

For native plants, buy from local native plant nurseries:

- [Watermark Woods](#) in Hamilton.
- [Nature by Design](#) in Alexandria.
- [Hill House Farm and Nursery](#) in Castleton.

Or attend a native plant sale with multiple vendors. <https://www.plantnovanatives.org/local-native-plant-sales>.

Carol Ivory, Loudoun County Extension Master Gardener

Ida Lee Demo Garden Turf Plots

In order to provide visitors to the Demo Garden examples of some of the grasses and ground covers found in this region, we have planted nine turf plots, each measuring 8 feet by 7 feet, on the east border of the garden.

Bed 1 on the southern end is a new planting of the type of grass typically used in new housing developments. It contains Frontier Perennial Rye and ryegrass, Montana tall fescue, Taos tall fescue, Tonto tall fescue, and deep blue Kentucky bluegrass.



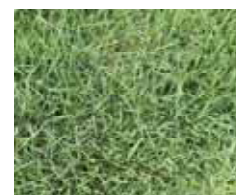
Bed 2 contains **fine fescue**, a cool season grass. Species include creeping red, hard fescue, chewing fescue, and sheep fescue. All varieties are drought tolerant, require less fertilizer, develop a deep root system, and are ecofriendly.



Bed 3 contains **Bermuda grass**, a warm season, fine-bladed grass that creeps by both belowground shoots (rhizomes) and aboveground shoots (stolons). It is well suited for athletic fields and golf course fairways as it is tolerant of cutting heights of ½ inch. It is best planted by two-inch diameter plugs, 12 inches on center, of sod or plugs. Plugs will provide 95 percent coverage in one growing season.



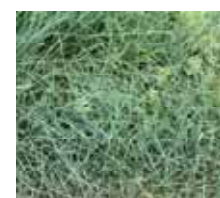
Bed 4 contains **zoysia grass** (*Zoysia matrella*), a warm season grass. This grass turns brown after the first hard frost and regreens in mid-May. It spreads by both rhizomes and stolons but is a very slow creeper. Using 2-inch plugs, 12 inches on center, it will take two to three seasons to provide full cover.



Beds 5 and Bed 8 contain **tall fescue**. This is a cool season grass that has many of the same traits as fine fescue but looks and grows like a clump grass. This is the most popular lawn in this area as it is very tolerant of a wide range of soil types and climates and can be established by seed or sod. Bed 8 is a rhizomatous tall fescue that produces rhizomes and spreads. It is excellent when used to fill in damaged or bare spots. The photo shows bed 5.



Bed 6 contains **Kentucky bluegrass**, which is a fairly aggressive creeper, having an extensive rhizome system. It is a desirable cool season grass for heavily trafficked turfs but may require irrigation in summer to keep it from going dormant. Tall fescue and Kentucky bluegrass mixtures are best adapted for mostly sun conditions.



Bed 7 contains **microclover** designed to attract pollinators to our garden. The clover also fixes nitrogen in the soil and therefore does not need any additional fertilizer. Clover was once a common part of grass seed. It stays green in the summer little or no watering, needs little or no mowing, it attracts beneficial insects (like bees) to your yard which, in turn, help pollinate your garden, and it grows well in poor soil.



Bed 9 is an example of **liriope** (*Liriope muscari*) used as ground cover often referred to as lilyturf. It is a perennial grass-like evergreen foliage with lilac-purple flowers. Lilyturf is deer resistant and can be used as a ground cover or in borders. It is easily grown in average, medium, and well-drained soil in full sun to part shade. If you are looking for a native alternative, *carex plantegenia*, *carex platyphylla*, and *carex flacosperma* are nice wide-leaved sedges to replace liriope. But not all low growing native grasses can take full sun.



Visit our turf plots at the [Ida Lee Demonstration Garden](#). The attached photos don't show the subtle color differences. You must see and touch the grass to appreciate the differences.

Mark Mobley, Loudoun County Extension Master Gardener

Switchel A healthy drink for hot, outside work

Switchel was also known as Haymaker's Punch, because colonial farmers used it to quench their thirst out in the hot, sun-baked fields. It's easy to make with just a few ingredients—apple cider vinegar, ginger, water, and a sweetener.

Think of it as "Nature's Gatorade." It will give you an energizing electrolyte boost better than any energy drink or soda. All the ingredients (except water, of course) are actually sources of the electrolyte potassium. Switchel is known as a health tonic that boosts the immune system, too. Apple cider vinegar even helps you to detoxify!

Old-Fashioned Switchel Recipe

- 1 gallon water
- 1 ½ cups molasses
- ⅓ cup apple cider vinegar
- 1 tablespoon freshly grated ginger

You may replace molasses with maple syrup, honey, or another natural sweetener. You could reduce the sweetener, also. Find the right balance for you. Remember to start with less—as you can always add more. Switchel shouldn't coat your mouth; it should taste refreshing. Another variation is to add a teaspoon of fresh lemon or lime juice for zing.

Normalee Martin, Loudoun County Master Gardener

Backyard Ponds

Many of us have a desire to look out our back doors or off our decks and see wildlife. Ponds are a great way to attract wildlife and add beauty to a yard, deck, or patio. You might think that you don't have the space for a pond, but ponds come in all shapes and sizes and there is one that will work for most every space.

There are many kinds of ponds--each with unique characteristics. The characteristics of the pond will determine the kind of wildlife you can attract and the maintenance needed. This article will discuss various pond characteristics that can attract wildlife, and it will give ideas about possible pond design based on space available.

Having a pond with fish in it is a very popular option. However, some people may not know that fish ponds need to be at least 80 centimeters or 2.6 feet deep. This depth will allow the fish a safe place to hibernate in the winter. There should also be rock shelter areas for the fish so they have a place to hide from predators. Fish generate many wastes, so a strong pump is needed to aerate and cleanse the water. Typically, fish ponds do not have an abundance of plants, partially due to the fact that many fish are herbivores and will eat any plants put in the pond. Additionally, plants often do not do well with the suction of the pumps, so it is usually best to leave your plants in the shallower areas. Choose native fish for your pond because they will be better adapted to the climate and also less likely to become prey for predators.



Small pear-shaped pond with koi. Photo by Mame Ward.

Frogs are a fun addition to your pond. If both frogs and fish are desired, you will need to create two separate areas. Fish will eat the frog eggs and tadpoles. So, there will need to be a deeper section for the fish and a shallow area for the frogs, where the fish cannot go. If you want bullfrogs, they need deeper water--up to three feet deep. Frogs need cover, so vegetation is a must for the frog portion of your pond. Do not purchase tadpoles, snails, or any other live organisms; they can carry disease. If you build a pond, these organisms will be naturally attracted. Typically, frog ponds do not require a pump, but a circulating pump can be installed to help keep down the mosquito population.

Birds love water, and virtually any amount will attract them. Most birds prefer shallow water—no more than two or three inches. Birds also like dripping water features. Dripping water can be added by simply placing a hook with a bottle that has water dripping from the bottom, or you can use more elaborate drippers like small waterfalls. You will need to create a safe place where the birds can drink, so using small shrubs and plants is recommended to help them feel more secure. If you have cats in your yard, make sure that your bird pond area has a good view where cats cannot sneak up on the birds.

Shallow still water will also attract many good insects. Damselflies, water striders, and dragonflies are good predators and eat many undesirable insects. Insect larvae also provide food for frogs and fish.



Pond with frog ramp. Do you see the frog in the water?

Photo by Sue Russell.

When designing a pond, it is important to consider the space available. Ponds can be as small as two or three feet across. They can even be inside! If there is no naturally running water to fill the pond, a ready source of water will be needed to refill it when the water evaporates. Miniature ponds are small portable and decorative ponds. They can fit on balconies, terraces, and in small backyards. Several miniature ponds can be placed throughout a yard, each having a different wildlife focus.

If there is more space and a larger pond is desired, there are several options. First, any free-flowing water can be dammed up to create an embankment pond. Sometimes the dammed area forms a pond naturally.

However, a pond liner can be used if no free-flowing water source is available to create an excavation pond from a preformed pond or a pond liner. A pond liner will allow a greater degree of freedom whereas the preformed pond size and structure is fixed.

Often a pond sounds great, but what kind of maintenance does it need? Dissolved oxygen is very important to the wildlife in a pond. Both plants and animals use oxygen. Therefore, plants should never cover more than 25 percent of the pond surface. Algae, fungus, and bacteria also use oxygen, so use them as little as possible. Practices that can cause weed problems include erosion and fertilizer runoff. There are several methods useful for controlling weeds. If you have a large pond, one way to limit weeds is to dredge and deepen the pond. Weeds cannot grow in the deeper water. For all ponds, mechanical removal of the weeds is very effective. Draining the water down a bit allowing the edges to dry out will kill many water plants. Another method is to use shade or water dye. To shade the pond, black plastic can be used to cover the surface or you can add water dye to block out the sun. The pond needs to be shaded for at least a week, sometimes longer. If all else fails, chemical controls can be used to eliminate weeds. These should be used sparingly, and the label carefully read to be sure no harm is caused to the environment. Pond maintenance may feel a bit overwhelming, but if the pond is carefully designed and native plants are used, it may be many years before maintenance is needed.

Once it is decided what kind of wildlife to attract, that will determine what size pond is needed. It is important to design the pond on paper before starting the project. Researching the important components--especially the pump if one is to be used, the liner, as well as the planned plants is essential. It is important to remember that ponds with pumps require a power source, either electric or solar, to run the pump. Planning and listing the items needed to complete the project will save time and money. Whether a pond is small or large, it will be a joy to watch as the wildlife comes to live in and near the water.

Desiree Voegele, Loudoun County Extension Master Gardener Intern

Birdbaths: Important Things to Know

The birdbath you are interested in buying may be aesthetically pleasing to you, but it could be dangerous for the birds in your yard. Birds have a critical eye when judging whether they will use a certain birdbath.

The most important aspects of a birdbath to remember are the pitch of the slope and the depth of the water. Many birds have a healthy fear of deep water. Birdbaths that drop suddenly to depths of several inches can be dangerous to small birds and especially to their young. The ideal birdbath should have a gentle incline that provides sure, secure footing. The best type of bottom would be cast stone with a roughened bottom, not the slick surface of plastic. While plastic baths are typically the least expensive, they are also often the least attractive. Baths made of terra cotta or glazed ceramics come in a wide range of colors and designs yet may not be the best choice for winter use as they sometimes crack during hard freezes. The most appealing, in many cases, are made from natural materials. Birdbaths can be handcrafted using metal such as copper, aluminum, or cast iron, or you can choose from baths made of concrete or natural stone.

Most songbirds feel safest with shallow water and solid footing, so sturdy baths that gently slope to the center depth of no more than three inches are best. If the surface is smooth, it can be roughed up with sandpaper before filling, or bathtub decals can be placed on the bottom. Deeper baths can be made bird friendly by adding a few partially submerged rocks or branches to serve as perching platforms. Any shallow receptacle can be used as a birdbath.

Songbirds prefer a water source that is in a sunny open area within 10 to 20 feet of shelter. Then they have time to make a quick escape to nearby cover if they spot a predator. When choosing where to place a birdbath, don't consider just the birds' needs. Pick a convenient spot so you can fill and clean the bath with ease. And pick a location that allows you to watch the birds drink and splash in the water.

Wet birds are vulnerable; they need a secure place to dry their feathers before they can fly well. This means the birdbath should be placed near bushes and shrubs, so the birds are protected from predators including hawks and cats. However, the location of the birdbath shouldn't be directly beside a shrub or tree. It should be just close enough to provide birds with a safe area in which to dry and preen. Another reason to keep it away from overhanging trees is the fact that the leaves fall and will quickly dirty the water.

Birds like a water drip, the sound of burbling water appeals to them. These bubbling apparatuses can be bought inexpensively, and they are easy to install. They can also be made at home using a hanging 12-quart metal pail slowly dripping into the bath. A small hole can be drilled and increased in size until it emits from 20 to 30 drips per minute. The pail can be covered to keep insects and leaves out.

The birdbath must be kept clean. This is even more important if it is a popular bath site for many birds. It must be cleaned regularly because birds will drink the water and bathe in it. For this reason, avoid chemicals and cleaning solvents. The birdbath just needs to be scrubbed regularly to keep it free of algae. Algae, feathers, bird droppings, and garden litter dirty the water, and dirty water can spread disease. How often a bath needs replenishing can vary--from every day to once a week depending on its location and size as well as the weather conditions. Water in a small birdbath can quickly evaporate during summer months.

Birds need birdbaths in the winter months when it's cold and unforgiving for birds in northern climates. Deep freezes keep birds from drinking and preening. Submersible heaters can be added to any birdbath. These range in price from an inexpensive flat-coil type to a more expensive variety with a built-in thermostat. A submersible, thermostatically controlled water heater must be specifically designed for outdoor birdbaths. They are generally sold at garden and home improvement centers as well as farm stores and bird supply stores. The heater will keep the water from freezing so resident songbirds can enjoy fresh water at any time. Having a heater will mean the birdbath will have to be checked every few days because the heater will burn itself out if the water has evaporated. It should not be used in sub-zero weather because the birds will be enticed to the warmer water to bathe and their feathers could ice up after leaving the warm water.

The birds don't need a birdbath just for the summer heat; they need a birdbath in which to preen and keep their feathers in top flight condition. Preening is essential maintenance for the birds. Regular preening is necessary to fly, repel water, and retain body temperature. It also serves in keeping feathers flexible and waterproof and helps to fight fungus and bacteria. Before preening, birds like to have a good bath, which will remove dirt and debris from their feathers. The weather determines how often a bird needs to bathe. Chickadees, for example, may bathe up to five times a day in hot weather, taking advantage of both birdbaths and small puddles. Bathing helps to reorganize their plumage and spread oil from their preening gland.

All birds care for their bodies, and, for all species, daily maintenance of feathers is critical. Because feathers are inert and do not have internal nourishment, they can become brittle with age. Birds condition their feathers with a waxy secretion from the uropygial gland, which is located at the base of the tail, on the rump. This oily secretion, which may also repel feather lice, is made up of waxes, fatty acids, fat, and water. As it preens, the bird applies the oil to its feathers with its bill. Sometimes birds preen as often as once every hour. In addition to feathers, bills, legs, and feet require regular attention.

Most land birds and water birds bathe. Bathing methods are consistent within the different bird families. Different birds have different approaches to bathing. Robins and jays squat in shallow water, ruffling their feathers, rolling from side to side, and flicking their wings to spread water over their backs. Swifts and swallows, which spend most of their time flying, dip quickly into the water from the air, bathing on the wing. Some small birds, such as sparrows, will wet down by flying through damp foliage. Woodpeckers prefer a shower, standing in the drizzle with wings spread open, while some parrots hang upside down in the rain to get a thorough soaking. Terns plunge into the water from above and wash themselves vigorously. Ducks, gulls, and other aquatic birds bathe by dipping their heads and bodies under the water, then rocking back and forth until they are almost completely wet. Many forest birds dip their wings delicately into small pools in trees or leaves. After a bath, birds will shake themselves or spread their wings in the sun to dry. Some species, such as sparrows, will follow a bath with a roll in the dust, coating their wings with grit. It is believed the sparrows do this dust bathing to protect against lice. Dusting may help control ectoparasites such as feather mites and remove excess oil from feathers.

Make sure your bird bath is for the birds!

Heather Swanson, Loudoun County Extension Master Gardener

The Garden of Good and Ego

Just as diet and exercise can dramatically affect our health and vitality, the right gardening tools will enable us to do the same for our gardens. Here are a few tips and suggestions that can work for you.

- If you have many gardens to care for (as I do) and feel overwhelmed by the amount of work they need, consider starting each gardening session by spending a short amount of time completing a task you loathe before working on one you enjoy. You will be amazed by how quickly you will be able to go from one to another.

For example, just weeding or edging part of a walkway adjacent to a garden and then finishing by sweeping up the debris makes any garden look finished and it will be less painful to complete the rest of the walkway on another day.

- Take regular breaks. When gardens are in full bloom, just taking the time to observe the health of your plants and to evaluate whether or not they need to be added to, divided, or relocated will get your creative juices flowing.
- I make mental notes and write them down when I'm done for the day. Other gardeners never leave the house without a pen and notebook. Some take photos to remind themselves of how each garden looks in different stages of growth. Photos have the advantage of showing where plants are located before they have died down. In the spring, you won't place a new plant on top of an existing one or mistakenly assume an existing plant is a weed.
- Don't worry about making changes immediately. You can do it during the summer when a few days of cool temperatures and rain are predicted, in the fall, or next spring.

Transplanting and Planting Tips in Hot Weather

- Buy a bolt of burlap. Cut short narrow pieces you will soak in water just before placing them around the base of a new transplant. You will also need to cut pieces in a size large enough to cover the top of the transplant to protect it from the sun until it has adjusted to its new environment.

Dig a hole wider and deeper than the plant and fill it with water. When the water has been absorbed by the earth, set the transplant in the hole. Gently fill with soil. Tap the soil around the base of the plant. Place one wet strip of burlap around the base of the plant leaving a few inches of space away from its stem. Water again, then loosely place a dry piece of burlap wide and long enough to cover the plant to shield it from the sun. Water the next day and continue to do so until the plant looks happy. Remove both pieces of burlap and mulch around the plant's base. Water again. You can reuse the burlap after washing it in soap and water and letting it dry in the sun.

- Walkways are easier to weed with the right tools and a comfortable seat. When weeding garden borders and walkways, rather than



Old office chair used for weeding. Photo by J. Eck.

kneeling or standing, I sit in an old desk chair whose seat is set at the lowest setting. This allows me to bend over without strain, reach farther, and easily move about in any direction in total comfort.

If I will be using the chair the next day, I cover it with a large black garbage bag with built-in ties that can be pulled taught to hold the bag in place and keep out any surprise showers.

Weeding Tools for Walkways and Garden Borders

- The right tool narrow enough to fit easily between pavers is crucial for the removal of weeds and their roots on walkways and garden borders. This handheld tool with a sharp, elongated tip works well. Its L-shaped design offers the option of using it backwards, forwards, or sideways to remove a weed, root and all!



Cape Cod weeder. Photo by J. Eck.

- **Long-Handled Tool for Weeding Inside a Garden and Weeding Close to Walkways**
This tool is fantastic for digging up individual plants and their roots. It can also be used to gently break up soil without disturbing other plants.



Korean hoe. Photo by J. Eck.

Garden Hygiene and Hard-Cooked Eggs

Keep your tools clean, sharpened, and oiled. This is really important because dirty tools spread disease. Clean, sharp tools also make every job easier.

There are many videos on the Internet that will walk you through the process. You will need: a hose, a bucket filled with water, a small amount of dishwashing detergent, steel wool pads, a stiff brush, a two-sided metal hand file, clean cloths, and olive or vegetable oil.

To prevent another source of disease in your garden, don't forget to wash eggshells from a raw egg with a little dish detergent before you crush and add them to your composter. The easiest way to remove eggshells from a hard-cooked egg is to do the following:

Place a steamer basket in a pot. Add water to the pan to a level just below the bottom of the basket. Place the eggs in the basket. Cover the pan. Bring the water in the pan to a boil, then turn the heat down and allow the steam to cook the eggs for 15 minutes. Turn the heat off. I leave the eggs in the pan to cool, but if you need them sooner, remove the cooked eggs from the pan and immerse them in cold water or an ice bath.

These may be the easiest eggs you have ever peeled, and you'll have eggless shells to crush!

An Update on Deer and Rabbit Repellents

- After years of separating bags of garlic bulbs into cloves to scatter in my gardens to repel rabbits and make the stinky deer deterrent I wrote about in our spring issue, I recently discovered a method that separates them in seconds!
- Place whole garlic bulbs in a plastic bag. Twist the top of the bag to close it loosely. Place the bag on the floor. Using your heel, push down on each bulb until they all separate. Voila! The debris separates from the cloves so you can easily remove it from the bag and you will now have individual cloves to add to stinky solution or to scatter throughout your garden to deter rabbits from eating the buds on your plants!
- If you can access horsehair left over from grooming, take it to your garden, pull it apart into small clumps, and wrap it loosely onto plants to keep it from blowing away. Both deer and rabbits hate the smell! Pet hair and human hair work well, too.

For the Birds

- Save the lint from your dryer and scatter small pieces in your gardens for birds to add to their nests. Obviously, this should be done when rain is not forecast.

Protection from irritating insects

- A citronella candle or two (the ones in a "bucket") will repel gnats, mosquitoes and fly's while you garden. A long-handled lighter makes it easier to reach in to ignite.

Jeanne Eck, Loudoun County Extension Master Gardener

Public Gardens Near and Far

"Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display, and education."¹ This rather dry definition cites the important roles fulfilled by botanic gardens but fails to mention the fun part of visiting one--namely the fascination and awe that comes from viewing beautiful plants in a variety of settings. Visitors also enjoy a variety of health benefits--the physical activity of strolling through the paths and trails and the stress relief and improvement in mood that comes from reconnecting with nature and taking a break from busy schedules. This summer, treat yourself and your family by visiting a public garden in the Washington, D.C., area, or if you are willing to travel, several spectacular gardens can be found in nearby states. Let's take a quick look at two of those gardens--one near and one far.

One of the closest public gardens to our area is Meadowlark Botanical Gardens, in Vienna, Virginia, (<https://www.novaparks.com/parks/meadowlark-botanical-gardens>). This little gem is widely known for its Winter Walk of Lights. However, a visit to Meadowlark anytime of the year is a delight. Operated by the Northern Virginia Regional Park Authority (NOVA Parks), Meadowlark is open year round and encompasses 95 acres of Virginia Piedmont "...with large hills dropping off to small streams, forested hollows, and expansive views."² While dedicated to the principles of a botanic garden, Meadowlark is also a "...pleasure garden for strolling and relaxing..."³

The entry to the gardens is through a beautiful Visitor Center with soaring ceilings, a welcoming fireplace, educational exhibits, and a gift shop. From the Visitor Center, a variety of trails take you past three lakes, perennial planting beds, several gazebos, and interesting sculptures along the way. The summer blooms in the garden are spectacular with daylilies, the Wildflower Meadow, the Butterfly Garden, the Perennial Garden, and the Potomac Valley Collection (one of three native plant collections).



Photo by Donna Kiffe.



Photo by Maura Kennedy.

A relief from our stifling heat in Northern Virginia can be found in the Hosta Garden with its welcoming shade and wide variety of hostas in all sizes and colors. Lake Caroline features a walk to a gazebo over the lake where visitors can look down and view koi and turtles. And don't miss the Toddlers' Tea Garden with its whimsical characters scattered throughout.

Entrance fees are \$6 for adults and \$3 for those aged 55 and over. Children under the age of 6 can enter free, and it is \$3 for those aged 6 through 17. An annual pass is \$50 for a family and \$35 for singles.

A truly unique public garden well worth the investment in travel time is Chanticleer located in Wayne, Pennsylvania, an approximate three-hour drive from Northern Virginia (www.chanticleergarden.org). It is located

¹ Botanic Gardens Conservation International <https://www.bcgi.org/resources/1528/>.

² <https://www.novaparks.com/parks/meadowlark-botanical-gardens/history>.

³ <https://www.novaparks.com/parks/meadowlark-botanical-gardens/gardens>.



Photo by Jeanette Martino.

at 786 Church Road in Wayne, 28 miles southwest of the more famous Longwood Gardens in Kennett Square, Pennsylvania. Chanticleer is situated on the former Rosengarten estate, built in the early 1900s on the Philadelphia Main Line. However, the gardens are relatively new as they were designed and planted in the 1990s and opened to the public in 1993.

At the time that the property was transferred from the Rosengarten estate to the Chanticleer Foundation, it was primarily wide open lawns with mature trees. Since that time, the garden designs that we see today were created by the horticulturalists on staff. At present, there are seven horticulturalists who are responsible for the design, planting, and maintenance of the various areas of the garden. Unlike other botanic gardens where plants are labeled, Chanticleer dispenses with labels and encourages visitors to speak with the gardeners and reference plant lists.



Photo by Jeanette Martino.

It is hard to capture in words the creative design and unique beauty of Chanticleer. Located on rolling hills, it is a relatively compact garden, and easily walkable. Gardens surrounding the house include the Teacup and Entry Gardens and the Chanticleer House Terraces, which are spectacular in spring with blooming daffodils and tulips. The bulbs are planted in intricate designs that are captivating to the eye. This area is also decorated

with unique container plantings. Chanticleer horticulturalists are

known for their creativity with container plantings, which provide inspiration to anyone who wants to go beyond the usual “filler, thriller, and spiller” method of planting in containers.



Photo by Jeanette Martino.

Lower down on the property away from the house, a stream runs through the Asian Woods, the Pond Garden, and the Stream Garden. Each features a mix of native shade trees and Asian plants and trees.

Following the path upward out of this area, one finds an Iris Meadow with perennials that bloom from May through August. Another interesting Chanticleer feature is The Ruin garden that incorporates a portion of the foundation of one of the Rosengarten’s houses. It is modeled on a folly, a small structure used in 18th century English gardens meant to be fanciful and to spark the imagination. The Ruin has a “dining room” where the table is a reflecting pool, and the “library” includes books titled “Moss” and “Erosion.”

These are just a few of the many fascinating areas in the garden at Chanticleer. Check the website for up-to-date information on hours the garden is open and admission fees.

When looking for a fun and different adventure this summer, try a visit to a public garden—a great way to reconnect with nature, relax, and get your steps in at the same time.

Jan Lane, Loudoun County Extension Master Gardener

Native Bees

Bees pollinate one third of our food supply. Historically, we have relied primarily on the troubled honeybee for this job. As science works to help this stressed bee, we can increase the population of gentle-natured, nonstinging, solitary bees like mason and leafcutter bees. These amazing pollinators are a great supplement to the honeybee and have proven to increase various crop yields.

Protecting our food supply with more diverse bee pollinators is an easy thing we can all take part in. In particular, we can be focused on increasing the mason bee population for spring fruit, nuts, and plant pollination. That's one part of the solution to our food pollination challenges.

Bees by Season

Spring pollinators are Blue Orchard Mason Bees. Females live about six weeks, (males live two weeks) and are one of the first bees that fly in spring. They only need mid 50s °F to emerge and begin nesting. A spring mason bee pollinates 12 pounds of cherries vs. 60 honeybees. You might mistake the blue orchard bee for a fly due to its size, coloring, and furry body.



Honey bee.

Mason bee.

Photos from Crown Bees--Native Bee Guide.

The female will nest in existing holes, occupying up to four nesting tubes and laying up to 24 eggs. She gathers a pea-sized mound of pollen, lays an egg and creates a chamber within the tube, and then seals the tube with mud. There can be up to eight egg chambers. By the end of the summer, the new eggs feed off the pollen that they were laid on. The larvae spin cocoons in which they hibernate during the winter months as pupae.

Summer Alfalfa Leafcutter Bee is the perfect pollinator for summer vegetables or any other flowering plant. It flies best when temperatures are 70° and higher. About two thirds the size of a honeybee, it is black with yellow stripes on its abdomen.

The leafcutter bee gets its name from the way it collects nesting material. She will cut a semicircle from a plant leaf (nonfibrous), about $\frac{3}{4}$ inch in diameter. At the nest, the cuttings are cemented together with leaf liquid and bee saliva to form cocoons for the eggs. The cocoons develop into bees the next summer.



Leafcutter bee.

Photo from Crown Bees--Native Bee Guide.

Nesting Hole Options

- Easy-tear cardboard tubes or natural lakebed reeds. Both are easy to open for harvesting your bees and can be purchased from a supplier or garden center.
- Guard tubes with easy-tear inserts.
- Reusable wooden trays. They are easy to harvest from and to clean. It will retain its bee scent, which is a bee attractant.

Things to Avoid Using

- Harmful pesticides or chemicals.
- Bamboo nesting tubes as they are difficult to open. The bees may suffer from pest build up.
- Drilled blocks of wood that cannot be harvested or cleaned. Mites and pests can move in, making the bees vulnerable.

House or Bee Hotel Placement

- The house or hotel should be placed so it is accessible to warm sunny mornings. Make sure there is an overhang over the houses to help protect from rain.
- Place close to eye level so you can watch the bees' activity, as they don't mind being observed.

Moist Claylike Mud

- Mason bees seal their egg chambers with mud. They prefer a clay type with a moderate moisture content. You can make your own clay mud, or it is available at garden centers.
- Leafcutter bees differ in that they use plant material for cocoons and not mud.

Harvesting and Storing Your Cocoons

- Bee production for the next season can be increased by collecting cocoons from the nesting holes. In the fall, harvesting the spring and summer cocoons reduces pests from invading the nests while insuring greater survival through winter hibernation.
- Store the cocoons in the refrigerator in a humidifier or "Humidibee" so they don't dry out. The mason bees can be released when pollen is available in the spring. Summer leafcutter bees can be released in May to begin developing into adult bees.

Protecting Your Bees

- Providing clean nesting holes each year prevents mites from invading.
- Mason bees are tasty treats for birds and squirrels. Place a piece of hardware cloth ($\frac{1}{2}$ -inch to $\frac{3}{4}$ -inch) over the front of the bee house, leaving a 3-inch space between the nesting holes and the cloth.
- Earwigs love pollen. Roll up a wet newspaper and place it under or on the bee house. Earwigs will find their way into the trap. Discard the whole thing after several days.

- While vegetable gardeners welcome parasitic wasps during tomato growing time, the wasps can also infest all bees through multiple lifecycles. Remove mason nesting holes in early June to prevent wasp intrusion. Place them in a fine mesh bag for storage in a shed or garage. For summer leafcutters, place cocoons in a mesh bag a month before you want them to fly. Once the first bees emerge, it is safe to put all cocoons on top of or behind the nesting holes.

I have ordered summer leafcutter bees for my bee hotel from Crown Bees (crownbees.com), and they will arrive in a fine mesh bag called BeeGuardian.

One other common pest you'll see with leafcutter bees is pteromalus (teromalus). This pest waits for the nesting female to finish laying its egg, gets in the hole and lays its eggs in the newly laid leafcutter egg. Pteromalus will overwinter with leafcutters and emerge before the leafcutter bees, which is the dangerous part. The pteromalus will deposit eggs while the leafcutter is in mid development and produce another batch of pteromalus.

While the leafcutter cocoons are in the mesh bag in the spring you may start to see tiny black bugs in the bag—those are pteromalus. Dispose of them. If you see them flying around the nesting bees, spray a fine mist of water to knock them out of the air and then dispose of them.

Here are pictures of my bee hotel. I used three Mason jars that I put nest tubes in, plus one set of wooden trays and one house shaped like a tube that has nesting tubes in it. I gathered tree branches and pieces of bark to give them other areas to explore.



Photos by Normalee Martin.

Native bees are gentle natured and are vital pollinators for our fruits and vegetables. Commercial growers have relied primarily on the honeybee. This non-native social bee is in trouble. The overlooked solitary native bee is an excellent supplement and is easy to raise in your backyard. It doesn't have to be a bee hotel, but a single Mason bee house is a help for our environment.

Normalee Martin, Loudoun County Extension Master Gardener

Our (Imperiled) Maritime Forests

Maritime forests are coastal treasures that protect our shorelines from the ongoing movement of the coast. They are shoreline forests that grow along coastal areas of the mainland and form on the sandy soils of coastal barrier islands, where they help stabilize shifting sands, act as a protective barrier for the salt marsh ecosystem, and support a great diversity of plants and animals. Although we still have maritime forests that remain largely untouched by commercial development--closely resembling the woodlands where Native Americans lived and early colonists settled hundreds of years ago--they are too few, due, in no small measure, to coastal development. Historically, maritime forests, based on the climate in each area, rimmed our coasts. Our southeastern maritime forest once extended from southern Virginia all the way to Florida. Trees, bushes, and other plants in maritime forests and estuaries withstand strong winds, periodic flooding, and salt spray. Many species of mammals and reptiles make these forests their home, and thousands of birds migrate to maritime forests each year.

Maritime forests dominated by broadleaved evergreen trees and shrubs occur in a discontinuous narrow band along the barrier islands and on the adjacent mainland from North Carolina to Florida. The flora and fauna of maritime forests typically consist of a distinctive subset of the regional biota that is particularly well adapted to survive the elevated salt content, limited availability of freshwater, soil erosion and dune migration, periodic seawater inundation, and wind damage associated with oceanic storms. Maritime forests cover the more stable portions of barrier islands and coastal dune ridges. They function as a refuge for wildlife, provide storage capacity for groundwater, and help stabilize the soil. Recent recognition of the relatively greater physical stability of maritime forests compared to the beachfront has, very unfortunately, resulted in intensified urban development within them.

The plants and animals of maritime forests are a hardy lot, having adapted to the drying effects of wind, salt spray, and sunshine. Maritime forests grow on the leeward side of sand dunes, where plants have some protection from the elements. In return, the forests help keep the land from being washed into the ocean, and they produce nutrient-rich soil from dead leaves and other organic matter. Live oaks, red cedar, and loblolly pines are common trees in maritime forests, but each forest is as unique as the individual leaves that make up its canopy and understory. The location and environment of a maritime forest and the activity in and around it determine the types of plants found in it. And if the maritime forest is on a barrier island, then the plants in it are determined also by the age of the island, how it was formed, its distance from the mainland, as well as how much people or natural events have disturbed the forest.

A variety of hardy trees make up each forest. When the forest thrives, the surrounding ecosystems do as well. Strong root systems help prevent much of the soil around them from washing away during storms. Those same roots also help to purify and contain groundwater. The tree canopies slow down winds that could damage understory trees or man-made structures, and they, together with the understory trees, provide a resting place for migrating and breeding bird populations. Larger, more robust trees, such as loblolly pine and American holly, shield smaller trees, like dogwoods, and create a more dense and diverse environment.

One often sees maritime communities near the ocean on exposed bluffs, the back or inland side of dunes, interdunal areas, and salt marsh borders, in mosaics of vegetation structure and species mixes. Strong winds, shifting sands, and flooding with saltwater create a dynamic system that

maintains a variety of stages of early successional vegetation. The maritime forest has a mixture of deciduous and evergreen trees in the canopy that is lower than is typical in more inland areas, averaging only about 20 to 30 feet tall within the salt spray zone near the ocean. Many trees tend to be multiple stemmed and contorted from pruning by winds carrying salt and sand. They tend also to have a relatively smooth canopy, which helps to shield the interior plants from coastal winds and salt spray. Soils are usually sands with a surface layer of organic material that can slow moisture infiltration and keep the areas moister than more exposed surroundings. In addition, groundwater may be close to the surface in some low interdunal areas. Such low interdunal areas may be quite mesic and support relatively high species diversity. Where groundwater is lower, plant species are limited to those with deep-delving root systems. While sandy soils are generally acidic and low in nutrients, these soils may have higher pH and nutrient levels than expected due to the accumulation of leaf litter, fragments of sea shells, and input from salt spray (which can, of course, produce conditions too salty for many plants).

A strong chain of barrier islands with maritime forests helps create and maintain a unique ecosystem. One of the most distinctive features of many maritime forests is the live oak, *Quercus virginiana*. As one enters a maritime forest, one is often greeted by the memorable sight of the twisting and turning branches of a vast forest of live oak trees. These dense collections of live oaks are part of a major ecosystem that constitutes the maritime forest, frequently surrounded by dunes on one side and salt marsh on the other. Live oak gets its name from its marcescence—it retains its leaves throughout the winter, long after other oaks have lost theirs. It drops most of its leaves in spring and begins replacing them almost immediately. Sir Walter Raleigh and some of our earliest settlers wrote of the live oak's great beauty and dense canopy. It is a truly magnificent tree. With widespread and twisting limbs, its horizontal reach often exceeds its height. Typically festooned in Spanish moss, it gives many a coastal landscape a dreamy look.

While relatively fast-growing, many live oaks are very old. There is one in Hampstead, North Carolina, off US Highway 17, reputed to have shaded George Washington when he stopped for lunch during a 1791 tour of the southern states. The wood of live oak trees was used in shipbuilding for a time because the natural twists and turns in their branches made them perfect for the angles needed in shipbuilding. The USS *Constitution*, a.k.a. *Old Ironsides*, is the world's oldest commissioned naval vessel still afloat. Named by George Washington, she is a wooden-hulled, three-masted heavy frigate of the United States Navy. Wood from live oaks was used in several areas of this legendary ship, including the ribs of her triple-layered hull. While she's had many repairs through the years, some estimates suggest that between 10 and 15 percent of the original wood is still part of the ship, which is nothing to sneeze at in a frigate launched in October 1797! One can't speak of live oaks and not mention Spanish moss, *Tillandsia usneoides*, which one often sees swaying from its branches, and which, its name notwithstanding, is neither Spanish nor a moss, but rather native to the southeastern United States, and a perennial in the bromeliad, or pineapple family. It hangs in independent swags from tree limbs in the coastal plain, contributing a picturesque aspect to groves of live oak and other trees. Though it produces tiny yellow-green flowers in the spring, in other ways it is quite unlike most plants. An epiphyte, it has no connection to the ground or roots in its host tree. Its ever-branching tendrils, which can grow to 25 feet in length, are covered with scales called trichomes. These trichomes trap moisture and nutrient-laden dust particles from the air. Spanish moss is a rare plant that needs no soil; it harvests the wind. Thus, while Spanish moss may grow on live oaks, this epiphyte causes no harm to its gracious hosts in the process, as it obtains all its essential nutrients from

the air. Spanish moss has been used for various purposes through the years. The moss has been brewed into teas to treat a variety of ailments. It has been woven into blankets and mats, used as mulch, and even used to stuff car seats and mattresses.

Peer closely into the moss and you may see a nesting painted bunting (*Passerina ciris*), one of the most striking birds of North America. Mature males are the most distinctive, displaying bright blue, green, yellow, and orange plumage. Even with the vibrant colors, painted buntings can be easy to overlook, as they are smaller than the eastern bluebird. Though adults may reach 5½ inches in length, they are hard to spot because they build their nests in dense cover, often in clumps of Spanish moss. The female is a dull green (as is the young male) and has the distinction of being the only green member of the finch family. Listen for their short chirps or the high-pitched songs of males. Painted buntings nest and breed in the spring and summer along the coast and spend their winters in Florida and the Caribbean. They are listed “Near Threatened” under the federal Endangered Species Act. The destruction of maritime forests, a necessary habitat for them, and capture for sale as pets have contributed to a decline in wild populations.

True to its name, the eastern glass lizard (*Ophisaurus ventralis*) can “shatter.” If captured, this limbless reptile thrashes around wildly until its tail breaks off and continues wiggling to distract predators and give the lizard a chance to escape during the confusion—a fragility that’s part of its defense strategy and is repeatable, as the tail will eventually grow back. Unlike snakes, which they—being legless—resemble, but are not, glass lizards have movable eyelids, external ear openings (snakes do not have eyelids or external ear openings), and rigid jaws, which they cannot unhinge while eating, which restricts food sources to what can fit between their jaws—grasshoppers top the menu. Bones embedded in their skin, called osteoderms, reinforce their scales. A groove in this scaly armor along each side of the body allows the lizard to accommodate a big meal or carry eggs. They can be brown, yellow, or green. Look for the eastern species in maritime forests, both coastal and on barrier islands.

With its smooth, bright-green-to-olive skin, the green tree frog (*Hyla cinerea*), sometimes called a rain frog because one of its several distinctive calls heralds rain, is a striking ornament in its moist forest habitat at the water’s edge. Although small, 1¾ to 2½ inches long, this tiny creature can leap distances of up to 10 feet using legs that are 1½ times the length of its head and body. They are not easy to spot, as they are nocturnal, concealing themselves in shady areas of the forest, such as the underside of leaves, during the day. Unlike frogs that spend most of their lives in the water, the green tree frog’s toes are not webbed. Instead, the end of each toe has an adhesive pad, which it uses for climbing. In May and June, listen for the nocturnal chorus of male frogs serenading the females, which is thought to resemble the sound of a cowbell!

Maritime forests are themselves on the decline, due to both natural and man-made processes, and, in addition, they are habitats necessary for the survival of many species of wildlife, among which are species that are nearly threatened or have only recently recovered.

Like all forests, maritime forests have three different levels: the canopy, the understory, and the forest floor. Each level is home to different plants and animals that are adapted to survive there. In a maritime forest, plants have to adapt to constant exposure to salty conditions.

The canopy is the highest section of a forest, and in the maritime forest, live oaks tend to be the dominant canopy trees. Their branches are often covered not only with Spanish moss, but also resurrection ferns cascading down, as well as different types of fungus. Other common canopy

trees are laurel oak (*Quercus laurifolia*) and red cedar (*Juniperus virginiana*). The maritime forest has a mixture of deciduous and evergreen trees in the canopy that is lower than is typical in more inland areas, within the salt spray zone near the ocean. While the canopy section of the forest gets the most sunlight, it also gets the most exposure to wind and salty air, which results in a lack of apical dominance. Thus, tree growth is stunted, causing dense lateral branching branches, creating a thick canopy. This process is called salt pruning, and it gives live oaks on barrier islands and some coastal maritime forests a unique look that visitors come to know and love, as their twisted branches sprawl throughout campgrounds, trails, and even the main road. Forests that are farther away from the ocean are taller (20 to 40 feet, as opposed to less than 20 feet) and exhibit a more open canopy that is structurally more diverse. Loblolly pine is a dominant member in this community, along with live oak and American holly.

Many trees tend to be multiple stemmed and contorted from pruning by winds carrying salt and sand and have relatively smooth canopies, thereby shielding interior plants from coastal winds and spray. Insects, squirrels, and various migratory birds find habitat in the woodland canopy. If you pause while standing beneath the canopy of the maritime forest, you will see it come to life, with birds flitting from branch to branch and squirrels running up and down trees.

The canopy of our imperiled maritime forests also provides protection from hurricanes. The tops of trees in the forest protect homes and nature from wind shear. Forest roots hold the soil together similar to rebar in a concrete foundation. Without the maritime forest, barrier islands would be much more susceptible to the damaging effects of storms. The 200- to 300-year-old live oaks and some half-century-old laurel oaks help sustain coastal areas during battering coastal storms.

The canopy connects to the next section of forest, the understory, by vines such as grape, poison ivy, crossvine, and Virginia creeper. Vines play an important role in the maritime forest. Vines and herbaceous plants intertwine, further developing the structural integrity of the forest and forming pockets of vegetation that provide a base for songbirds to build nests. Vines twist around the canopy and are a secret to wind protection. They weave together the canopy so blowing winds don't penetrate through the top layer and protect plants and animals below.

One can actually identify the predominant direction of the wind by looking at the trees. Smaller trees and shrubs along the edge of the forest closest to the ocean and along the ocean-facing side of openings in the canopy demonstrate how the smaller growth helps to direct the winds up over the taller trees so that they are not damaged by wind and salt.

As the understory receives much less sunlight because of the dense canopy, more shade-tolerant plant species are found here. These plants create an abundant source of food for animals such as white-tailed deer and birds. The understory can grow to be extremely dense, which provides impeccable camouflage for these same animals. One might see a white-tailed deer walking along the main road only to see it quickly dash into thick understory not to be seen again. It is here that one generally finds diverse and rich plant life and thus also a larger variety of animal species. For example, the Palamedes swallowtail butterflies, several species of dragonflies, yellow-rumped warblers, green tree frogs, Carolina anole, grey fox, and white-tailed deer are all denizens of maritime forests that have direct relationships with the understory layer of the forest. Understory plants also enrich the soil through decomposition and in maritime forests, they serve also as wind-buffers at a lower level.

Our southern maritime forests can have an understory dominated by wax myrtle (*Morella cerifera*), American holly (*Ilex opaca*), black cherry (*Prunus serotina*), yaupon holly (*Ilex vomitoria*), hudsonia (*Hudsonia tomentosa*), dahoon Holly (*Ilex cassine*), sparkleberry (*Vaccinium arbureum*), beautyberry (*Callicarpa americana*), saw palmetto (*Sereona ripens*), laurel cherry (*Prunus caroliniana*), red buckeye (*Aesculus pavia*) and sassafras (*Sassafras albidum*) under a high canopy of live oak (*Quercus virginiana*), sycamore (*Platanus occidentalis*) laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), pignut hickory (*Carya glabra*), sweetgum (*Liquidambar styraciflua*), sabal (cabbage) palm (*Sabal palmetto*), hickory (*Carya*), southern magnolia (*Magnolia grandiflora*), red cedar (*Juniperus virginiana*), and several types of pine. In areas that are more sheltered from salt spray, red maple (*Acer rubrum*) and hackberry (*Celtis*) are quite common. The highly beneficial environment created by these trees requires a long time to develop, though it can be destroyed quite quickly. The soil in the forest is very moist and needs to be more fertile to support the canopy trees, which distinguish maritime forests from shrub forests, which lack canopies that shade out shrub forest plants. It may take up to a century for these types of soil conditions to develop. The understory of maritime forests that can survive the low light environment is critical because it is this understory that creates the fertile soil and maintains an appropriate level of moisture for the canopy trees. Trees mature living in a certain topography and with a particular understory. Changing it can kill trees. While they may not die immediately, they will over a period of five or ten years. Understory trees are an essential component of a functioning ecosystem as they offer not only habitat for numerous wildlife species but also influence stand development. Maritime forest trees grew up in their forest, supported by other trees when strong winds came. When we isolate these trees by cutting the ones around them, we are inviting disaster.

The last section of the forest is certainly not least. The ground floor of the maritime forest supports both the canopy and the understory by providing a place of support and by recycling forest nutrients. Limbs and other dead wood are decomposed by insects and wood borers. Mold and bacteria break down leaves and dead animals. The nutrients are then returned to the soil and used by the plants, perpetuating the nutrient cycle, though the sandy soil of the maritime forest does not hold nutrients well. Water leaches nutrients from the well-drained soil. The shallow layer of nutrients leads to many plants having shallow, spreading root systems.

Research has demonstrated that what happens around the roots is just as important as what happens above ground, as mycorrhizal networks (symbiotic associations of the mycelium of a fungus with the roots of a tree) process the minerals and water that the trees need and enable trees to communicate and distribute nutrients to one another.

The maritime forest has been important for different groups of people throughout time for the high value placed on its live oak timber. Today, maritime forests hold a different value. Visitors marvel at the beauty of their incredible oak canopies with their gnarled branches draped with Spanish moss. Maritime forests also play a pivotal role in reducing erosion caused by storm surge and wave action. Other benefits include protection of loose sandy soils from wind erosion; accumulation and storage of fresh water; mineral iron filtration; production of soil by trapping blowing sand; deposition of humus; and provision of wildlife habitat.

Loudoun County Master Gardener Tree Steward

Southern Catalpa—A Native Tree

If you drive along South 32 Street in Purcellville in June, you will notice many southern catalpa trees, *Catalpa bignonioides*. They are characterized by large heart-shaped leaves about ten inches long and panicles of white flowers in late spring. The catalpa is a fast grower with a maximum height of about 50 feet. Attractive flowers appear in May and June and are especially important as a source of nectar for honeybees.



Catalpa flowers. Photo by Betty Hedges.

In the spring the flowers attract many bees. In the summer the catalpa moth caterpillar may completely defoliate a tree, but the catalpa has the remarkable ability to grow a new crop of leaves. The caterpillars grow about two inches long and are popular as fish bait and, of course, food for birds. After pupation, the caterpillar transforms into a hawk moth.

In the fall the catalpa produces long narrow seedpods, which resemble long cigars, giving it the nickname cigar tree.

The natural range of the catalpa is streambanks in the southeastern United States. However, it is very adaptable to drier and colder areas down to hardiness Zone 5 and is found across the country.

The wood is soft but resistant to rot, so it was cultivated for fence posts and railroad ties. Catalpa wood can also be used to make furniture, cabinets, and household moldings.

The catalpa can be propagated from seed or cuttings. It has very few insect or disease problems and provides nectar for bees and butterflies. One drawback of the tree is the large leaves and seed pods, which cover the ground in the fall, but I believe its beauty and ecological benefits outweigh any negatives.

The northern catalpa, *Catalpa speciosa*, is very similar to the southern catalpa, but its flowers are slightly different. Other varieties of catalpa are native to tropical climates.

There is a project in Bulgaria that propagates and sells southern catalpa trees to beekeepers.

During the Civil War Battle of Fredericksburg, Union soldiers lined up behind a row of catalpa trees. Those trees are still standing at Chatham Manor.

Catalpa trees can be purchased from mail-order nurseries. I encourage anyone with a large yard to plant a catalpa for its beauty and for its benefits to wildlife.



Catalpa tree. Photo by Betty Hedges.

Betty Hedges, Loudoun County Extension Master Gardener

Help Desk Insights

HEADS UP FOR CONIFERS: Last spring and summer were exceedingly wet seasons. Many of our perennials and shrubs showed the effects of so much rain with various fungal diseases. It appears that this summer, however, our conifers are the plants that are now showing signs of stress as a result of these excessive rains.

According to Purdue University, "feeder roots 'drown' in the anaerobic conditions present in saturated soils caused by prolonged wet periods." Spruces and many other conifers including Leyland cypress have shallow root systems. When the trees stand in water, their roots may suffocate if there is not sufficient drainage. The spring and summer rains did not allow for much drainage even if the trees were planted in reasonably well-drained locations. Additionally, our clay soil does not provide much drainage especially when the amount of rainfall is excessive.

As a result, conifer trees are now showing signs of stress. It may take conifers up to one or two seasons before they start showing dieback in the form of brown needles and branches, wilting, and loss of needles. Since the needles of conifers have a waxy coating, that coating prevents transpiration of water. So the tree may actually look green throughout the very wet season. It is not until the following season that the tree begins to show signs that its roots are dead.

Another environmental factor in conifer dieback could be from salt damage. Many conifers are planted near roads to create a screen for a house. The liquid chemicals used on roads to prevent them from icing up during the winter are salt solutions like sodium chloride or magnesium chloride. Some of this salt will wash off the roads and into the soil near the conifers, killing the roots.

If your conifers are showing signs of dieback, there is not much you can do. If there is any way to improve the drainage around your tree, it may help with waterlogged areas. Possibly doing deep core aeration may also help. Unfortunately, when trees have "wet feet," there is a greater chance of being susceptible to a root rot disease such as *Phytophthora* for which there is no cure.

Resource: Purdue Plant and Pest Diagnostic Laboratory, Purdue Extension, www.extension.purdue.edu/extmedia/ID/ID-477-W.PDF.

WHEELS UP: A client contacted the Help Desk inquiring about insects he spotted on one of his



trees. He was concerned about the spotted lanternfly and was patrolling his property in case he might see one. He took a picture of the insects and sent it to us wanting to know if he should kill the insects or not. It did not take long to research the egg mass and the insects. These spindly legged almost spider-looking insects with a bright red to orange abdomen were the immature nymphs of the wheel bug. It is a fascinating picture. We were able to tell the client to let the insects live because wheel bugs are a good assassin bug that eats harmful insects. Caution: wheel bugs do bite. Do not pick them up!

Beth Checkovich, Loudoun County Extension Master Gardener

Shenandoah University at Cool Spring Battlefield

Nestled just over the Loudoun County line in Clarke County, Virginia, is a fascinating place now known as the Shenandoah River Campus at Cool Spring Battlefield. From the Leesburg, Virginia, area, head west through Loudoun County, cross the Blue Ridge Mountains, and at the base of the mountain, just before the Shenandoah River Bridge, take a sharp right turn (F709, Parker Lane). Make sure you slow down as you approach the bridge so you don't miss the turn. There's a historical marker on the right as you turn titled The Retreat. The Retreat, built in 1799, was home to three generations of the Parker family. Richard E. Parker served in the House of Representatives and, as a federal judge, presided over the trial of John Brown. Currently, The Retreat is in private hands and can be seen from the Cool Spring Campus. After turning off Route 7, proceed about one and a half miles to the clubhouse where there is ample parking.

Prior to Shenandoah University purchasing the property, the Virginia National Golf Course operated a golf course here from the 1990s to 2012. Around that time, the Civil War Trust offered funding and organized a partnership to purchase the property. The National Park Service's American Battlefield Protection Program, along with additional federal and state grants and support from various landowner donations, made the purchase possible. In April 2013, the 195-acre site was deeded to Shenandoah University, as part of a conservation easement, by the Civil War Trust, and is now known as Shenandoah University River Campus at Cool Spring Battlefield.



Remnants of the golf course. Photo by S. Wolz.

On this site, July 18, 1864, 5,000 Union soldiers and 8,000 Confederate soldiers fought the Battle of Cool Spring. The battle resulted in more than 800 casualties and was a prelude to the final struggle to control the Shenandoah Valley. The university now holds classes in outdoor leadership, environmental studies, ecology, and history programs at this site. In addition to preserving the battlefield and providing learning and recreation opportunities, the university protects the Shenandoah Valley ecosystem. Today, the prior plantation area (The Retreat), the battlefield, and the golf course are being returned to their natural state. Cool Spring will remain undeveloped, native plants and animals will be protected, and the university is taking steps to return the golf course to a more natural state.

Two asphalt golf cart paths, which were for the upper and lower nine holes, remain from the old golf course. Each path winds its way through the grounds and is approximately 2.6 miles long.

Throughout the site, the ecological communities are quite diverse, starting with the Shenandoah River running along one side of the entire property (*side note*: the Shenandoah River is one of only a few rivers in the world that flow south to north; the Nile River is another). Much of the former course sits on an alluvial plain (river-deposited silt and sand). Along the river bank, giant sycamores (*Platanus occidentalis*) more than 100 years old grow. The bur oak (*Quercus macrocarpa*), a rare tree in Virginia, can also be found. These trees have large distinct mossycup



Nest on the left, eagle on the right. Photo by S. Wolz..

acorns in the fall. If you peer at the island in the river about halfway up the “upper nine” section, you may see the large heron rookery (nesting colony). You may also catch a glimpse of the bald eagle nest and perched eagles. Beautiful Virginia bluebells (*Mertensia virginica*) can be spotted along the river bank nestled among red, white, and swamp oaks (*Quercus* species), red maples (*Acer rubrum*), silver maples (*Acer saccharinum*), dogwoods (*Cornus florida*), persimmon (*Diospyros virginiana*), pawpaws (*Asimina triloba*), and towering yellow tulip poplars (*Liriodendron tulipifera*).

Moving away from the river are vast meadow areas. The driving ranges are still visible but have been overtaken by vegetation. As part of the meadow restoration, the university has planted a number of native grasses such as: little bluestem (*Schizachyrium scoparium*), deer tongue (*Dicanthelium clandestinum*), Indiangrass (*Sorghastrum nutans*), purpletop (*Tridens flavus*), and Virginia wild rye (*Elymus virginicus*). Legumes have been added such as partridge pea (*Chamaecrista fasciculata*) and perplexed tick trefoil (*Desmodium perplexum*). A number of wildflowers have been planted such as New England aster (*Symphotrichum novae-angliae*), bergamot orange (*Citrus bergamia*), brown-eyed Susan (*Rudbeckia triloba*), evening primrose (*Oenothera biennis*), and blue vervain (*Verbena hastata*). More than three dozen other spring wildflower species grow on the property. You can also find buttonbush (*Cephalanthus occidentalis*) and spicebush (*Lindera benzoin*).

Other fascinating features of the meadows are the ponds, marshes, and mountain stream. Red-



Newly planted saplings in tubes. Photo by S. Wolz.

winged black birds are plentiful along the ponds, as are various finches, wrens, swallows, martins, and ducks, just to name a few. The marshy area is loaded with cattails, frogs, and turtles. The university is in the process of planting (or has planted) many young trees and saplings. It’s also working to improve the riparian buffer along the stream that flows down from the mountainside through the property on its way to the river.

As you move from the meadow areas up the mountainside (opposite the river), many trees (forest) can be observed. The upper nine holes of the former golf course become rather steep as the path winds its way up the mountainside before returning back down. You’ll pass through a mountain swamp forest, into the boulder field forest, then through oaks, ash, and hickories before returning downhill.

As part of the restoration and maintenance, the meadow areas have been recently tilled with bush hogs to keep invasive trees from taking root. The grasses will return along with the milkweed, lizard's tail (invasive species--*Saururus cernuus*), and many, many more. If you're fortunate to visit during the summer, hundreds of butterflies (monarchs, swallowtails, etc.) flutter about.

If you plan to visit, Cool Spring is open dawn to dusk, seven days a week. However, the lodge is normally open only Monday through Friday. The only restrooms are in the lodge. In addition to the paved paths, there are mowed paths for exploration. Feel free to wander off the paved paths. It's a great place for young kids to ride bikes or walk dogs. Bring your own water and snacks. There are no trash receptacles so visitors need to remove their trash and pet waste. There is also a small Civil War information area in the lodge, and information kiosks throughout the property discuss the battle and ecological topics. Cool Spring is a place where you can experience all four seasons; it is definitely worth more than one visit.

For more information about Cool Spring, go to www.su.edu/coolspring. Special thanks go to Gene Lewis, Shenandoah University at Cool Spring site manager, for providing information for this article. Other sources: USDA.gov (plant guide); USNPS.gov.



Eagle high in sycamore. Photo by S. Wolz.

Scott Wolz, Loudoun County Extension Master Gardener Intern



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