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Critters in the Garden

By Cleve Campbell | October 2017 - Vol. 3 No. 10



by Stephen Church

“What are you doing?” a neighbor asks as she pauses on her walk.

“Making a toad house,” I reply.

“Oh, no!” She recoils, wide eyed, saying “I have a phobia about toads.” She hurries away, and I return to the task.

Any mention of **toads**, **snakes**, **bats**, **spiders** and other generally less-than-popular critters often elicits a reaction similar to that of my neighbor’s. So why would we want these organisms in our yard? First, their presence is a sign of a healthy ecosystem. If they are able to survive and thrive in our yards, we are doing something right. Second, they are helpful. These animals control pests for free and in an ecologically responsible fashion. That means less work for us, and fewer chemicals. Third, they are fascinating to watch.

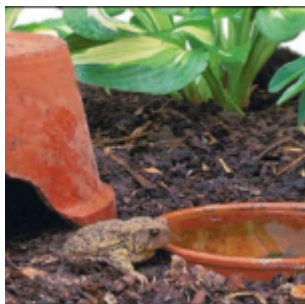
Habitat gardening is increasingly important in our world. As gardeners, we can provide the necessities for

many organisms with a little thought and effort. As gardeners, we can help foster an appreciation for these creatures and the vital roles they play in nature and in our yards.

AMPHIBIANS — Toads and Frogs

So, what good are toads in the garden? It turns out they play an important role in pest control. According to [Penn State](#), a toad's diet consists mostly of garden pests — in fact, "88% of their prey are invertebrates that are classified as agricultural pests. In a three month season, a single toad will consume just under 10,000 insects and, thus, has a significant economic value for farmers and gardeners."

Of the nearly 100 species of toads in the United States, many live in the southeastern states, where they eat flies, crickets, locusts, grasshoppers, bees, wasps, beetles, spiders, caterpillars, earthworms, slugs, and snails. They also eat mosquitoes, pill bugs, and cutworms, and, along with frogs, they are "essentially the only beneficial creature that will eat cucumber beetles." (other predators shy away from cucumber beetles because they become bitter-tasting after they've dined on cucumber and squash vines). Toads are "sit and wait" predators, doing just that to capture their prey with their lightning fast tongues.



Toads generally find shelter in the heat of the day by **hiding** under leaves, brush, logs, or in burrows. We can **encourage toads in the landscape by providing shelter and water for them**. Toad houses — also known as **toad shelters** — are easy to make. One easy approach is to carefully break out a portion from the rim of a clay pot to use as an entrance. Invert the pot and press the rim into the ground. Another approach is to break a clay pot in half (from top to bottom) and press the broken edges into the soil, forming a toad "Quonset hut." Place the toad shelter in a shady area with water nearby. Use a small bird bath dish or just a clay pot saucer as a water source.

Frogs are similar in value to toads. Tadpoles of both species eat mosquito larvae, and adult frogs can help control adult mosquitoes. Although bullfrogs can be noisy, they do eat small rodents.

Frogs require more water than toads but are easy to attract. If you have or build a pond, they'll come. Providing for these animals is increasingly important, as amphibians are under tremendous stress for a variety of reasons, not all fully understood. Frogs and toads are very sensitive to chemicals. Avoiding their use encourages them to hang around.

Despite the myth, toads have "warts" but don't cause them. Toads do have glands behind their eyes that secrete substances that are unpleasant and toxic to predators, but not to humans. Pets can become ill if they eat a toad. If you handle a toad, wash your hands afterwards and avoid touching your eyes or nose.

REPTILES

Snakes. Just the word makes some people's skin crawl. Any list of most feared or hated animals features snakes. Many people have a visceral fear of these animals, but, as gardeners, we should be in the forefront of their defense. As a reminder, it is illegal to kill a snake in Virginia and many states, unless it's a threat to health or property.

- How many snakes are native to Virginia? There are [thirty-four](#) species of snakes in Virginia, only three of which are poisonous. The **cottonmouth**, or water moccasin, lives only in Southeast Virginia. The **rattlesnake** lives in western Virginia and some have been seen on the Blue Ridge in Nelson County. The **copperhead**, which is found in central Virginia, is the least venomous of Virginia's snakes. It is a pinkish to tan snake with brown hourglass bands on the back and a white belly with black spots.

• **How do I know if it is a poisonous snake?** Look at their eyes and their heads. Non-venomous snakes have round pupils. Poisonous snakes have vertical ones. Poisonous snakes have a small hole between the eye and the nostril on each side of the head, thus the name pit viper. The heads of Virginia's venomous snakes are wider than their necks, but this **broad head** is also a characteristic of some nonvenomous snakes and is **not a reliable yardstick**. Another difference, of somewhat dubious value, is that venomous snakes have a single row of scales on the underside of the tail, while nonvenomous snakes have a double row. All of Virginia's venomous snakes bear their young live. **Snake eggs come from non-venomous snakes** and do not pose a danger.

• **So what good are snakes?** First of all they don't eat plants and what they do eat, often does: moles, voles, mice, slugs, grasshoppers, and other invertebrates that can plague our gardens. Beyond the damage to plants that these animals do, some often carry ticks. The white footed mouse is a major carrier of the blacklegged tick (also known as the deer tick), a primary vector of Lyme disease. The white footed mouse is also a carrier of the Hantavirus, a scary respiratory disease found mostly in high-altitude states in the West. www.psu.edu/dept/nkbiology.

What are some **snakes commonly found in this area?** The **brown snake** is a 15-inch long snake whose diet includes slugs. **Two snakes are often referred to as "black snakes."** The **black rat snake** is jet-black and shiny, while the **black racer** is grayish black and less shiny. But both eat insects and rodents. The king snake has black coloring as well. It eats mice, lizards, and other snakes, including venomous ones. These reptiles also eat some desirable animals, like birds and toads, but there is a cost to all things.

Turtles are a sign of a healthy ecosystem. Turtles that live in Central Virginia include the snapping turtle, the Eastern painted turtle, the spotted turtle, the Eastern mud turtle, the Eastern river cooter, and the woodland box turtle. This last turtle — the woodland box turtle — is the one with which you are probably most familiar. It eats slugs among other things. It has a life cycle and span similar to humans, reproducing at about 20 years of age and living 50 plus years, unless it tries to cross a busy road. Turtles are among the species with the largest conservation needs due to loss of habitat among other things.

Virginia's lizards are primarily skinks of various types. Most are small, under eight inches, although the broad-headed skink grows to a foot or more. They live under leaf debris or in cracks in concrete or masonry. The skink's diet is a good one for the garden. They primarily eat small invertebrates, like grasshoppers, stinkbugs, millipedes, snails, and wood roaches.

AVIAN PREDATORS

Songbirds are well known for their prowess at catching insects in mid-air or on the ground, but they are not equipped to handle the larger prey of **hawks and owls**.

At least **seven species of owls are native to Virginia**, including saw-whet, barred, screech, barn, horned, long eared, and short eared owls. These predators are excellent at controlling rodents. They eat rats, mice, voles, rabbits, squirrels, and gophers among other prey. Of course, they also eat some other birds as well as other beneficial animals. Owls are attracted to sites that offer a good food supply and nesting sites. They will nest in old trees or nesting boxes. Nesting boxes may be purchased or built. Plans to build boxes are available on line at various sites, including: Kentucky Department of Fish and Wildlife and rain.org.

Hawks are another helpful avian predator. Central Virginia is home to the red-shouldered, the broad-winged, the red tailed, the sharp-shinned, and Cooper's hawk. Most of these eat mice, voles, chipmunks, and other small mammals. They also eat some things we want around like frogs, snakes, and small birds, but the tradeoff is worth it, especially when we spot one circling in the air or perched in a tree in the yard, a majestic sight.

While not a predator, the **vulture's role** as a scavenger is a beneficial one. Most mammals do not die as the result of predation. Cars, illness, love triangles, lack of food, and parasites are major causes of death. Vultures clean up nature's messes. In doing this job, they help us. Dead animals can harbor diseases. Vultures' stomachs are acidic and sterilize the remains. If they don't eat these things, something else will, usually maggots or bacteria, an ugly and smelly process. One unusual characteristic of turkey vultures is their sense of smell, something few birds have. They also have excellent eyesight. When they fly, their wings form a "V", and they tip from side to side. This movement can give them a silvery appearance.

INSECTS

As anyone who has read Douglas Tallamy's *Bringing Nature Home* can tell you, **insect diversity is of fundamental importance to our gardens and to our world**. Insects provide food for many of the animals mentioned in this article, and they are important predators in their own right. The vast majority of insects are either benign or beneficial. However, the few bad ones wreak havoc in our gardens and landscapes, giving a bad name to all insects. And we must remember that most insects are our allies, and that some function as **both allies and adversaries**, to borrow the terminology James Nardi uses in *Life in the Soil*, a book well-worth reading, by the way.

We know that assassin bugs, wasps, spiders, mantids, minute pirate bugs, lady bugs, centipedes and other predatory insects eat garden pests, but they also eat "good" insects. Caterpillars are "bad" — until they turn into pollinators. We cannot easily discriminate between the "good" and the "bad." Nature is amoral.

Welcoming these insects involves a number of steps. Insects and pesticides are, largely, mutually exclusive. Many of these insects can tolerate the occasional use of a narrow spectrum pesticide, but many bees and butterflies are often very sensitive to even this practice. The predators discussed here can go a long way towards controlling these pests without chemicals.

What we plant is another key to attracting these predator allies. Large lawns don't help, while shrubs and trees do. Food, water, and shelter, along with a diversity of plants, preferably at least some native, will help attract and retain these beneficial insects. These practices benefit most of the organisms identified in this article.

MAMMALS

As humans encroach more and more on wilderness areas, habitats for many wild mammals are continuing to shrink. We have to learn to get along with wild animals in the back yard, including skunks, foxes, opossums, bats, etc.

Skunks? But they stink! They carry rabies! They tear up my lawn! Yes, but skunks can be highly beneficial to gardeners. They are omnivores, eating both plants and animals, but in the summer, they eat more animal matter. Their favorite foods include crickets, beetles, grasshoppers, and grubs. They also eat mice, mostly in the winter, and, when food is scarce, they will go after rats and rabbits. In the vegetable garden, they can be particularly useful as biological controls of white grubs. Just be on the lookout for odd behavior and other symptoms of rabies because skunks are common carriers.

With skunks and lawns, it's pick your poison. Skunks eat grubs. In the lawn, this can be harmful because the skunks tear up sections of grass to get at the grubs, but these grubs will eventually damage that very area. Also, the adult forms of these larvae are often harmful to flower and vegetable gardens, including Japanese beetles which, as we all know, can wreak havoc. Other white grubs can be May beetles, June beetle, chafers, and other scarab beetles. You can read all about white grubs at "White Grubs in Vegetable Gardens,"

Va.Tech Entomology/pubs.ext.vt.edu

Pub.No. 3104-1570.

Bats



Bats not only gobble up insects that eat our crops but are also valued pollinators. This bat is covered in pollen. Photo Credit: USGS

Iconic Halloween animals, bats have long suffered a spooky reputation. They've been accused of harboring vampiric spirits, making nests in piles of ratty hair, and are often associated with witches, warlocks and Halloween. Few other mammals seem to spook us with so many misunderstandings. But bats, because of their incredible echolocation abilities, **rarely fly into or touch people**, and serve amazing and essential ecological roles in our gardens.

First, let's examine some common [bat myths](#). Yes, there are vampire bats—exactly three species out of more than 1,200 species of bats worldwide. And yes, they do drink blood, but they are far—far—more likely to get it from cattle or other mammals than from you. And rather than sinking long fangs into an unguarded neck, the vampire bat will usually slice a small section of skin away and lap up the blood, using an enzyme in their saliva to keep the blood from clotting, an enzyme, by the way, that is used to treat stroke victims. Currently, **the range of vampire bats found in North America is limited to South America and Mexico, with one exception:** one single specimen has been recorded in the United States. That single rare event occurred in the extreme [southwest tip of Texas](#). So one can only conclude that the likelihood of being attacked by blood thirsty bat is highly unlikely.

Another myth is that bats will fly into your hair and become entangled. Possible, yes. Likely, no. Bats are highly evolved **not** to run into things, especially not some big, potentially dangerous, slow-moving mammal. Bats are not flying mice. Not even close, except that both are mammals.

A very common myth is that bats are deadly because they are all infected with rabies. In truth, [less than one percent](#) of bats are rabid. Let's look at the numbers. There is an average of **one death per year due to rabies transmitted by bats**. Compare that to deaths from other causes. About 50 people die each year from lightning; bees kill more than 50 people annually; and dogs kill about 30. It is true that bats are four times more likely to kill people than elephants, which kill 0.25 people annually in the U.S. on average. A bat would only fly into your hair if its prey did, a good argument against beehive hairdos, if one were really needed. In addition, bats are afraid of humans and avoid contact. Bats are not dirty; they groom themselves like cats do. And yes, bat droppings (also bird droppings) can carry histoplasmosis, a fungal disease that primarily affects people with weak immune systems, but this is uncommon. Transmission of the disease is most common when the spores are disturbed, usually by construction or demolition projects.

All bats in this part of the United States are insectivores, which says it all about why they are beneficial to the gardener and those of us who enjoy sitting outside in the evening. A bat eats insects **as it flies**, using echolocation, reflected sounds that locate prey or obstacles. It may catch the insects in its open mouth or in its wings or tail. As it approaches the insects, it rears up slightly, spreading its wings and curling its tail into a barrier that catches the prey, which it eats on the fly.

There are **16 species of bats in Virginia**, with the Virginia big-eared bat (*Corynorhinus townsendii virginianus*) being the state bat, despite the fact that it's rare, found only in a handful of western counties. Species commonly found in this area include: Eastern red bat (*Lasiurus borealis*), Eastern Pipistrelle (*Pipistrellus subflavus*), hoary bat (*Lasiurus cinereus*), Northern Myotis bat (*Myotis setentrionalis*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and the silver-haired bat (*Lasionycteris noctivagans*). Of these species, two — the little brown bat and the big brown bat — are the ones most likely

to take up residence in a building.

Bats are the only major predator of night-flying insects; [one big brown bat](#) can consume between 3,000 and 7,000 mosquitos in a single evening, while a little brown bat eats up to 600 mosquitos per hour. Bats also eat large numbers of harmful forest and agricultural pests, including moths, beetles, flies, and leaf hoppers.

To attract bats, we can do a couple of things. One is to build or buy bat houses. Another is to let dead trees stand if possible. Bats need a source of water nearby as well. [The Community Bat Programs of BC](#) and [National Wildlife Federation](#) both offer free online bat house plans.

[Foxes](#) are another predator with an undeserved bad reputation. A healthy fox poses little to no threat to people, although cats may want to steer clear of them. Foxes are crepuscular, active mostly at dawn and twilight, but in suburban and urban environments they are more prone to be out and about at other times because a food source may be nearby. Just because you see a fox, it does not mean it is sick. If it is bold and approaches you, it may be sick. Unnatural movement or confusion are other signs of illness.

So what good are foxes for our purposes? Much of their diet makes them an ally. They feed mostly on rabbits, mice, bird eggs, insects, native fruits and, sometimes carrion. And again, healthy ecosystems require predators of all sizes.

Last come the **opossums**. The only native American marsupial, it would win no beauty contests, but its usefulness outweighs its ugliness. So what do they do for us? They are immune to many toxins in nature. Scientists hope to find what substance in their blood causes this immunity. This trait allows them to eat rattlesnakes, which we may see as a plus. Other parts of their diet are beneficial to gardeners for the most part. They eat virtually anything, including fruits and vegetables in our gardens, but they tend to like the decaying things, thus helping us keep our gardens clean. The rest of their diet includes garden slugs, insect pests, rodents, toads, snakes and even dead animals. Best of all, opossums kill ticks by the thousands. Researchers have found that one opossum can kill up to 4,000 ticks in a week. Opossums rarely carry Lyme disease and are very clean. During their grooming, they kill and/or eat many ticks. This is good news with the increasing worries surrounding tick-borne disease. And if you really can't stand them, be patient. They are transient animals, staying in a place only a few days and then moving on, although a female with pups may hang around longer.

Diversity is a hallmark of a balanced ecosystem. As gardeners, we seek to understand and use the interrelationship of plants, animals, and abiotic factors. These "critters" are a sign of ecological health in our yards. They help keep that balance. They may not be attractive to look at, and they may not be without flaws, but they are valuable to us and to the environment and, as such, deserve our help and respect.

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The Ornamental Garden in October

By Patsy Chadwick | October 2017 - Vol. 3 No. 10



It's October and ornamental gardens everywhere are at their most spectacular. Fall foliage is at its peak and late-blooming perennials are putting on a last glorious show before the arrival of cold weather. There's a lot to do at this time of year to prepare the garden for winter. But before you get started on those chores, take a look at what's in bloom and think about where you might add more color in next year's garden.

WHAT'S IN BLOOM IN OCTOBER?

The first frost can occur in the central part of Virginia as early as mid-October. Unless they are protected from the cold, our precious flowering annuals and perennials can be wiped out with the first chilly night. However, if temperatures remain mild, lots of plants will continue to bloom until late October or early November. Examples include: Chrysanthemums, asters, various salvia species (*azurea*, *angustifolia*, or *leucantha*), grasses, morning glories, zinnias, lantana, globe amaranth, verbena, dahlias, goldenrod (*Solidago*), *caryopteris*, annual milkweed (*asclepias curassavica*), *Boltonia asteroides*, turtlehead (*Chelone*), Joe Pye weed (*Eupatorium*), sneezeweed (*Helenium*), perennial sunflowers (*Helianthus* species), tall sedum, Japanese anemone, tall phlox (*Phlox paniculata*), tickseed (*Coreopsis*), and monkshood (*Aconitum*).



October Floral Display in Author's Garden

WHY LEAVES CHANGE COLOR

As the days shorten and temperatures cool, the vivid colors of autumn transform the landscape. The transformation starts in the cooler, higher elevations and gradually spreads to the warmer, lower-lying valleys. Meanwhile, the veins that transport fluids into and out of leaves gradually close off at the base of each leaf. The clogged veins trap sugars in the leaf, which promotes the production of anthocyanins.

Three types of pigments are involved in autumn color:

- **Chlorophyll**, which gives leaves their green color, is present in the chloroplasts of leaf cells throughout the entire growing season.
- **Carotenoids**, which produce yellow, orange and brown colors, are also present in the chloroplasts of leaf cells throughout the growing season but are masked by chlorophyll. Once the leaves stop producing chlorophyll, the carotenoid pigments become visible.
- **Anthocyanins**, which produce reds, pinks, and purples, are typically not present during the growing season. Anthocyanins are only produced in the fall and are manufactured from the sugars that are trapped in the leaves. They are water soluble and appear in the watery liquid of leaf cells. Their purpose is to protect leaves from being eaten or from getting sunburned.

Many of us are puzzled by the fact that fall colors are vibrant some years and subdued in other years. The intensity of color is influenced by temperature, sunlight, and soil moisture levels before and during the time chlorophyll is dwindling in the leaves. The most brilliant autumn colors are generally produced in years with a warm wet spring, favorable summer weather with adequate rainfall, and warm sunny fall days with crisp, cool nights. See US Department of Agriculture Forest Service publication for more information on [Why Leaves Change Color](#).

Not all pigments are present in the leaves of all trees in the summertime, which is why the foliage of some trees, such as hickory nuts and tulip poplars, turns yellow while the foliage of maples and sour gums turns red. Look at your own property for the colors represented by your plantings and make a list of colors you would like in future gardens. Not enough red? A few suggestions include red maple, sweetgum, blackgum, or scarlet oak trees. Need more orange or yellow? Try growing sugar maple, birch, hickory, ginkgo, sweetgum, yellow poplar, or sassafras trees. Memory is not always reliable, so, while the autumn colors are at their peak, take photos of your garden to study over the winter months.

MIGRATORY BIRDS

October is when migratory birds gear up for their long journeys to warmer climates for the winter. Help them out by providing both nectar-rich and seed-bearing plants in your ornamental garden.

Nectar drinkers: Hummingbirds are the best known of the nectar drinking birds. Although your local hummingbird population may be long gone, migrating hummingbirds from other areas may visit your yard looking for a tasty meal on their journey southward. Leave your nectar feeder in place and filled until about 2 weeks after you spot the last hummingbird in your yard in case any late stragglers happen by. For other nectar drinkers, try to include some of the late-blooming perennials and annuals listed at the beginning of this article. Our avian friends will appreciate the meal as they wing their way south.

Seed eaters: As you clean up your flower beds, leave seed bearing plants, such as ornamental grasses, Echinacea or Rudbeckia in place. Not only will the seeds feed migratory birds, they will be a good source of protein for non-migrating birds.

GENERAL FALL TASKS

Plant containers with spring-blooming bulbs for forcing indoors. Fill a pot with good quality, well-draining potting soil. Plant the bulbs twice the depth of their circumference. If you're planting bulbs of different sizes, plant the large bulbs first, cover them with potting soil, and then plant the smaller bulbs on top. As you cover the bulbs, remember to leave about half an inch of space from the top of the container for ease of watering. Spring bulbs typically need to be chilled for about 3 months at 35°F to 55°F in order to bloom. After you have planted the bulbs, place the container in an unheated basement, storage cellar, cold frame, or garage for that purpose. While the bulbs are chilling, keep the soil moist but not soggy. See Virginia Cooperative Extension Publication HORT-76NP [Fooling Mother Nature: Forcing Flower Bulbs for Indoor Bloom](#) for more details on forcing bulbs. University of Missouri Extension Publication G6550 [Forcing Bulbs for Indoor Bloom](#) is another good source for information on the subject.

Dig up, clean, and store tender tropical bulbs, such as canna, caladium, dahlia, tuberous begonia, shamrock, and elephant ear (*Colocasia*). Wait until after the first frost causes the foliage to turn brown. Then, using a shovel or garden fork, carefully dig up the underground tubers or rhizomes (bulbs). To the extent possible, avoid damaging the bulbs. Some tender bulbs may survive in the ground if given protection from the cold. For bulbs that you don't plan to dig up, such as gladiolas, cut back the foliage and cover the plants with a layer of mulched leaves to help protect them from freezing over winter.

Rake leaves out of flower beds. If left in place, they may harbor pests and possibly certain diseases. Plus, if they mat down, they can prevent moisture from getting to the soil. Collect the leaves in a wire bin or other mesh structure so they can gradually decompose and be used as leaf mold next year. Alternatively, after raking them up, chop them up and redistribute them in flower beds so that they can decompose over winter. Chopped leaves make a great organic mulch.

Start cleaning and storing any breakable lawn ornaments or structures that a hard frost might harm.

Divide peonies. Left to their own devices, peonies seldom need to be divided unless, of course, they have outgrown the space originally planned for them. Another good reason to divide a peony is to propagate new ones. Here's how to divide a peony easily without doing much harm to its roots:

- Carefully dig around the plant at approximately the drip line. Peony roots are very brittle. The goal is to dig them up with as little breakage as possible. The best way to do that is to avoid digging close to the root ball.
- Gently loosen the soil around the roots until you can lift the plant from the soil.
- Rinse off the roots so that you can see the crown buds.
- Using a sturdy sharp knife, cut the roots back to within 6 inches of the crown. As you divide the roots into the crown, make sure each piece contains a minimum of one bud and preferably three.
- Plant the new divisions so that the crown buds are no more than 2 inches below the soil.

Overwinter some of your favorite annuals rather than allow them to succumb to frost. Either dig them up and pot them if you have room indoors for the full-size plant or take cuttings and root those instead. Geraniums, lantana, begonias, ornamental sweet potato vine, coleus, and New Guinea impatiens are just a few plants that can be overwintered indoors and then planted out again next spring. For best results, place the annuals in a south-facing window. An east-facing window is a good second choice.

Do not prune shrubs and trees in autumn unless you are removing damaged, dead, or diseased limbs. Pruning now may trigger new growth that cannot harden off before winter. The vast majority of woody plants should be pruned in winter when the plant is dormant. But, this rule of thumb does not apply across the board. Check the Virginia Cooperative Extension's Publication 430-462 [Shrub Pruning Calendar](#), Publication 430-460 [Deciduous Tree Pruning Calendar](#), and Publication 430-461 [Evergreen Tree Pruning Calendar](#) for a listing of common woody plants and the best time to prune them.

INSECTS AND OTHER UNINVITED WINTER HOUSE GUESTS

Around mid-October, the adult **Lady Beetle** (or Ladybugs as they are more commonly known) begins moving out of the garden and into nooks and crannies under tree bark, leaves or other sheltered spots that will afford them protection from winter's cold weather. As they search for winter lodgings in earnest, they often enter our homes through tiny cracks around windows, doors, attic vents or any other opening available to them. Often, they find shelter within the walls of our homes. VCE Publication ENTO-102NP on the [Asian Lady Beetle](#) in Virginia offers tips for keeping them out of your house or dealing with them once they have found their way indoors.

The **Brown Marmorated Stink Bug** is another insect that often tries to overwinter in your home. Fortunately, the stink bug population seems to have dissipated somewhat over the past year. However, if you see them gathering on the south or west-facing side of your house, chances are very good that they will try to seek entry into your home for the winter. Check out VCE Publication 2902-1100 on [Brown Marmorated Stink Bug](#). It offers advice on how to prevent them from entering your home and how to control them once they get inside.

Insects aren't the only creatures seeking a warm place to spend the winter. **Rodents** often look for entry points into the home. To prevent access to your home, seal all potential entry points to keep them out. Leaving the garage door up is an open invitation to a mouse or rat. Make sure there's no food available to attract rodents. This means storing grass seed or other edible seeds in rodent-proof containers.

INTERESTING FACTS ABOUT "EVIL" PLANTS

In the spirit of Halloween, it's fun to think about **plants that have a reputation for being evil or wicked**. Some plants are not necessarily evil or wicked but have bad reputations nonetheless, like crabgrass and kudzu.

Carnivorous plants (Think "Audrey" in "Little Shop of Horrors"): Carnivorous plants thrive in wetland soil that has very little nutrient value. Given such a hostile environment and needing a source of nutrition, they evolved to do something other plants can only dream about - eat the bugs that land on them. Some, like the sundews (*Drosera* species), are quite ominous looking. Others, such as the pitcher plants (*Sarracenia* species), are quite beautiful if somewhat odd in appearance. The Venus flytrap (*Dionaea muscipula*) is the best known of the carnivorous plants.

Poisonous plants: Lots of plants are poisonous - Jimson weed (*Datura stramonium*), castor beans, and oleander — just to name a few. White Snakeroot (*Eupatorium rugosum*) is certainly one of the most notorious of this category. As European settlers made inroads into the middle part of the United States, they brought cattle along with them. The cattle ate the snakeroot flowers and humans, in turn, became ill soon after drinking the cow's milk. This plant is most famous for causing the death of Abraham Lincoln's mother in 1818.

Here's a sampling of other poisonous plants:

- **Daffodils, tulips and other spring-blooming bulbs**, while lovely to look at, contain toxins that are poisonous to both humans and animals. The highest concentration of toxins occurs in the bulb, which can be mistaken for an onion. Ingestion of the bulb can result in a range of symptoms, including dizziness, nausea, vomiting, abdominal pain, diarrhea, convulsions, and coma.
- **Buttercups**, while also quite charming and lovely in their own way, are toxic to horses and can cause oral and gastrointestinal irritation and blistering. These innocuous-looking little yellow bloomers are just one of many plants toxic to animals. See VCE publication [2907-1398](#) for information on other poisonous plants of concern to livestock.
- **Pokeweed** roots, leaves, stalks and berries are poisonous to both humans and animals. Interestingly, tender young pokeweed leaves may be eaten without ill effect in early spring provided they are boiled for about 20 minutes, rinsed in cold water, and then boiled again several times. Don't try this at home if you don't know what you are doing. The attractive purple-black berries are the least poisonous part of the plant. Nevertheless, they should not be eaten. Birds, on the other hand, don't seem to be bothered by the berries and happily chow down on them with no noticeable ill effects.
- **Rhubarb** stalks are perfectly safe to eat but the leaves contain oxalic acid, which is poisonous to both humans and animals. All parts of the leaves must be trimmed from the stalks prior to consuming them. If the leaves suffer frost damage, they should be removed and discarded because the oxalic acid can migrate into the stalk rendering it unsafe to eat.

Non-poisonous plants with bad reputations:

- **Poison Ivy** - While this plant is not poisonous itself, it contains a sticky, long-lasting substance

called urushiol. This substance causes an itchy, blistering rash after it touches your skin. The rash consists of patches or streaks of raised red blisters, which usually form within 24 to 72 hours of contact and may last up to 3 weeks. Although this plant has a very bad reputation, it does have some merits. Deer can eat its leaves without ill effect and the berries feed approximately 50 species of birds.

- **Goldenrod** -- For centuries goldenrod (*Solidago*) was thought to be the cause of fall allergies in humans. But it turns out that **ragweed**, which spews pollen at the same time goldenrod is in bloom, is the true culprit.
- **Black Walnut** — Some plants just seem antisocial, like the black walnut tree. This tree is well known for producing a highly toxic allelopathic chemical called juglone. The presence of juglone in the soil deters other plants from growing nearby. Some plants can tolerate it but most can't. Black walnut isn't the only tree that's antisocial. According to VCE Publication 430-021 [Black Walnut](#), other common landscape trees also have allelopathic properties, including sugar maple, tree-of-heaven, hackberries, southern wax myrtle, American sycamore, cottonwood, black cherry, red oak, black locust, sassafras, and American elm.

Plants believed to ward off evil spirits: Betony (*Stachys officinalis*) - During the Middle Ages, this lovely purple-flowering herbaceous perennial was considered to have properties thought to be protective against harm. It was planted in churchyards and worn in amulets to ward off evil spirits.

Plants that protect against “the evil eye”: Dried dillweed (*Anethum graveolens*) was worn in a bag over the heart during the Middle Ages as protection against witchcraft and the “evil eye.”

FALL HOUSEPLANT CARE

Now that you've moved all your houseplants indoors, keep a close watch for unwanted hitch hikers, such as spiders, spider mites, white fly, scale, and mealy bug. They may not show up for days or even weeks after you've moved the plants indoors.

Houseplants may go through a period of adjustment to lower light levels. If they are getting sufficient water but dropping leaves, they may not be getting enough light. If that's the case, try relocating them to a brighter location.

With the arrival of cooler weather, make sure the air in your home is sufficiently humid to keep your houseplants healthy and happy. A pebble tray beneath your houseplants is a good way to raise the humidity.

Landscaping With Ferns

By Patsy Chadwick | October 2017 - Vol. 3 No. 10



Ferns are some of the oldest members of the plant kingdom. Existing long before the dinosaurs roamed the earth, fossil evidence indicates they have been around at least 300 million years. Along with club mosses, spikemosses, horsetails, and quillworts, ferns belong to the *Pteridophyte* family, which accounts for some of the most diverse plants on earth. Ferns do not bloom, yet they are the most ornamental of plants. Their lush foliage, diverse textures, and complex forms make them an excellent choice for a wide variety of landscapes.

Once established, ferns are undemanding and require very little care. They grow in shady environments that would discourage fussier plants. Most fern species prefer slightly acid, woody soil, with regular moisture. The accompanying photo is of a fern garden that has existed since the 1930s and possibly longer. For the past 23 years, the current property owner has left the ferns alone to grow as they please. Despite their benign neglect, they are quite healthy and happy as well as extraordinarily beautiful in their woodland setting.



Fern Species in Natural Setting

FERN BOTANY

Ferns have no flowers, but the beauty, variety, and graceful presence they lend to the garden make up for any lack of floral display. The nature and botanical structure of ferns is actually much more complicated than can be expressed within the scope of this article. However, to understand the unique nature of ferns, it's useful to consider a few basics regarding their botanical structure.

Roots. The roots of ferns are produced by underground structures called **rhizomes**. The rhizome may be one of two types, creeping or clumping. Creeping rhizomes grow from several inches to one foot per year and form a large colony. Clumping rhizomes are slow growing and form a tight clump. Knowing whether a fern is a creeper or a clumper is an important fact to take account when incorporating these plants into your landscape.

Stems. A fern stem arises from the growing tip of an underground rhizome. The portion of the stem just above ground and below the leafy structure is called a **stipe** (stalk). The stipe, which bears scales, hairs or glands, acts as a support structure and connects the root to the leafy part of the plant. The upper part of the stem or mid-rib (main axis), bearing the leafy structure, is called a **rachis**.

Fronds. The leafy structure of a fern is called a **frond**. Its complete "leaf" is made up of two parts, a stipe and a more or less triangular **blade** (leafy part). Reduced to very basic terms, a blade is either simple (undivided) or compound (divided into leaflets called **pinnae**). As a new frond emerges from the crown of the plant, it is tightly coiled into what is known as a **crozier** (similar in appearance to a shepherd's crook) or **fiddlehead** (similar in appearance to the head of the musical instrument).



Fern Fiddleheads Emerging in Spring

Reproductive structures. Ferns are fundamentally primitive plants that reproduce by microscopic one-celled reproductive units called **spores**. This distinguishes ferns from flowering or cone-bearing plants. The spores are produced in sac-like structures called **sporangia**. The sporangia are aggregated in groups called **sori** (or sorus, singular) on the underside of the frond. Sori contain both egg cells and sperm cells. The arrangement, location and number of sori are used to help identify fern species.

NATIVE FERNS COMMONLY GROWN IN THE MID-ATLANTIC AREA

Approximately 12,000 fern species are scattered worldwide. Ferns are native to every part of North America, from the hot, dry desert regions of the Southwest to the humid, moist swamps of the South to the cold mountainous areas of the North. The United States National Arboretum website states that more than 500 kinds of hardy ferns can be grown in American gardens. About 100 species inhabit the northeastern part of the country alone. The list below includes a sampling of ferns that are native to the Mid-Atlantic area. The actual list of native ferns is far too extensive to include in this article.

Ebony Spleenwort (Asplenium platyneuron) is an erect, strongly vertical fern species averaging 8" to 22." Native throughout the entire eastern half of the United States, this evergreen clumping species prefers light shade and basic or slightly acidic soils. It has alternate pinnae that overlap the rachis. Reputed to cure disorders of the spleen and liver, it was named by Pliny the Elder and comes from the Greek (*a* = without and *splen* = spleen).

Christmas Fern (Polystichum acrostichoides) is an easily recognized evergreen species commonly found in shaded woodland settings in the wild. It produces 1' to 2' long glossy, deep green fronds and has a slightly coarser texture than most ferns. It provides a bit of much needed color in the winter landscape although it may mat down from the weight of snow on the fronds. In spring, pewter-colored fiddleheads emerge from the crown and the old fronds fade away as the new ones mature. Christmas fern is one of the most shade- and drought-tolerant ferns for this area of the country. While it prefers a shady setting, it will take some sun if the soil is moist.

Cinnamon Fern (Osmunda cinnamomea), one of the tallest of the native ferns, grows in full sun or light shade in ordinary garden soil and will grow even taller in consistently moist, even wet, soil. Give it plenty of space in the landscape because it can get to be quite large. This clump-forming beauty gets its name from the cinnamon-color shaggy sporangial (spore-bearing) cases on the ornamental fertile fronds. Hummingbirds

sometimes use the shaggy “wool” for nesting material. The 3’ to 5’ long pale green fronds turn a darker green color during the summer. In autumn, the green fronds fade to a bronze-yellow hue.

Hay-scented Fern (*Dennstaedtia punctilobula*) gets its name from the sweet, hay-like scent it gives off when the foliage is bruised. It spreads by shallow rhizomes that sprout new 3’ long fronds approximately every 3 inches. This fast-growing creeper can rapidly form colonies and can become invasive in certain settings. In fact, it is considered a nuisance plant in some northern states where impenetrable stands of it cast dense shade on the forest floor reducing plant and wildlife diversity. It is generally not a good choice for the mixed shade garden where it might crowd out other species. However, if planted in the right setting, it can be a very effective ground cover for sun or shade and a useful way to suppress weeds. In fall, the foliage turns pale yellow or copper.

Interrupted Fern (*Osmunda claytoniana*) grows in an upright spreading-vase form and looks similar to cinnamon fern but is lighter green in color and has broader pinnae. Interrupted fern normally grows about 2’ to 4’ tall, but it can stretch up to 5’ tall in fertile, consistently moist soil. This fern gets its name from the location of the spore-bearing pinnae that develop in the middle of the frond, thus “interrupting” the pinnae formations. The pinnae fall off in mid-summer, leaving the stem bare in the middle. *Osmunda* fern species grow from heavy rhizomes and are the source for *Osmunda* fiber, the material used to pot orchids. Like many ferns, this species may take several years to become established.

Lady Fern (*Athyrium filix-femina*) has delicate, lacy 3’ long fronds that unfurl pale green and turn darker green as the season progresses. Lady fern often mutates, creating various semi-crested or ruffled variations. It has also been crossed with some of the Asian *Athyrium* species to create interesting new hybrids. This North American deciduous species is one of the easiest of the native species to grow. It grows from slowly creeping rhizomes and is capable of adjusting to sites with varying degrees of sun or shade provided the soil is reasonably moist. This fern, widely distributed throughout North America, is also common in Europe. In fact, about 200 species of *Athyrium* are distributed worldwide.

Maidenhair Fern (*Adiantum pedatum*) is one of the most elegant and graceful of our native species. A clumping species, it typically spreads slowly by creeping rhizomes in well-drained organic soil. Its bright green, 12” to 20” long, bright green, fingered fronds cascade in layers on shiny, black stems. While maidenhair fern thrives in bright light, it cannot tolerate direct sun. Once the fronds wilt from heat or drought, they cannot recover and the plant must produce new fronds. Don’t confuse this species with *Adiantum tenerum* or *A. capillus-veneris*, both of which are grown as houseplants.



Well-Established Maidenhair Ferns

Marginal Wood Fern (*Dryopteris marginalis*) is an attractive, sturdy, evergreen clumper that forms from a single crown. The 1' to 2' long fronds are dark green, leathery, and somewhat formal in appearance with their erect to arching growth habit. Although quite graceful, this species is a bit of a prima donna regarding moisture. It likes humus-rich, acidic, well-drained soil but it doesn't like for the soil to dry out. As a result, it may require a little more attention than most ferns to hit that sweet spot.

Ostrich Fern (*Matteuccia struthiopteris*) is one of the tallest and most impressive looking of the native fern species. Topping out at 4' to 6' tall, it has bright green, upright deciduous fronds that circle a narrow base. The brown, spore-bearing fronds, which are separate from the green fronds, harden and persist through cold weather, lending an architectural element to the winter landscape. This is the fiddlehead fern that restaurants and home cooks prize for its grassy, asparagus-like flavor. A deciduous species, ostrich fern thrives in average to moist soil and dappled sunlight. This creeper spreads by shallow, string-like rhizomes, which produce new clumps a foot or two away. It can easily naturalize in sites with dappled sunlight. In northern parts of the country, it will grow in full sun as long as it has moist soil.



Ostrich Fern Display at Historic Welkinweir Estate in Pottstown, PA.

Royal Fern (*Osmunda spectabilis*) is a tall, stiffly erect, regal-looking fern species commonly found in moist woods throughout much of the Mid-Atlantic region. It adapts well in moist-to-wet areas allowing it to tolerate bright shade to full sun. With constant moisture, this clump-forming species can reach 6' or more. Like the other *Osmunda* species, royal fern has good fall color, turning a soft golden shade. The fiddleheads are quite elegant but are believed to be carcinogenic and should not be eaten.

NON-NATIVE FERN SPECIES

As some of the oldest plant species on the planet, many of the ferns we consider native also grow in other parts of the world, the same species overlapping between eastern North America, western Europe, and eastern Asia. A few non-natives and hybrids that have grown in popularity in this country are listed below.

Autumn Fern (*Dryopteris erythrosora*) is common in the temperate forests of Asia. It emerges in the spring bearing shiny, red foliage, which fades to 2' to 3' long glossy green fronds in summer. The green is punctuated throughout the growing season with the appearance of new red fronds. Once established, this fern is very drought tolerant. 'Brilliance', one of the better known autumn fern selections, produces brighter red growth than the species and lasts longer into summer.

Japanese Painted Fern (*Athyrium niponicum 'pictum'*) received the Perennial Plant of the Year Award in 2004 from the North American Perennial Plant Association. The first fern to be so honored, this popular outstanding Asian selection is highly versatile due to its blend of silvery green and burgundy colors on 12" to 18" fronds. One of the most colorful of ferns, it shows up well in partial shade and blends well with other fern species.



Japanese Painted Fern 'Pictum'

Japanese Holly Fern (*Cyrtomium falcatum*) gets its name from the resemblance of the pinnae to holly leaves. Introduced in various southern states, including Virginia, this Asian species has naturalized in many areas of the world. Often used as a houseplant, its lustrous, bold, arching, leathery foliage is very dramatic, planted either as a single specimen or in large swaths. Although somewhat evergreen, it often looks quite tattered in the winter months.

Ghost Fern (a hybrid of *Athyrium niponicum* var. '*pictum*' and *Athyrium filix-femina*) is a slow-growing clump-forming deciduous hybrid that typically grows about 30" tall. It has a bushy, vertical habit composed of fronds that are a soft grayish-green color. This hybrid combines the elegant, upright growth of our North American native lady fern with the ghostly silvery gray coloring of Japanese painted fern. Contrasting dark maroon midribs heighten the effect. The silver color is best in the spring, its fronds becoming more grayish-green with the onset of hot weather.

Crested Lady Fern (*Athyrium filix-femina 'Dre's Dagger'*) is a unique, dwarf form of our native lady fern. It has dark green fronds that are symmetrically split into a three-dimensional, criss-cross pattern. Use it as a feature at the front of an evenly moist, shady border where you can appreciate such a distinctive and intricate leaf structure.

CULTURAL REQUIREMENTS OF FERNS

Soil - In general, ferns prefer moist but well-drained soil that has been amended with a generous amount of organic material. Most ferns can tolerate poor soil and a pH of 4 to 7.

Light Requirements - Although partial to shade, some species, such as lady fern (*Athyrium filix-femina*) and hay-scented fern (*Dennstaedtia punctilobula*) can tolerate some sun provided the soil is somewhat moist.

Water Requirements - In general, ferns prefer consistently moist soil, but some species can tolerate wet soil while others can tolerate drier conditions.

Pests and Diseases - Slugs may attack ferns in late spring but, in general, these plants are free of pests and diseases. Deer, rabbits, and other mammals don't normally bother them.

Spring care - Divide and transplant ferns as soon as new growth appears. Ferns may need to be divided if the fronds appear to be smaller than in previous seasons or if a dead area develops in the center of the clump. To divide the clump, dig up the entire plant and cut the most vigorous parts into sections. Replant the divisions at the original depth. Keep the divisions moist until they are well established.

Summer care - Provide supplemental water if there's not enough rain to keep the soil moist.

Fall care - After a killing frost, cut the dead foliage of deciduous species back to the crown.

LANDSCAPING WITH FERNS

Ferns are quite useful all year round in the landscape. The exotic-looking, bright green "fiddleheads" of many fern species add instant texture and interest to the spring landscape. The lush, dark-green foliage provides a cool, calming presence in the summer garden. In fall, some fern species turn golden yellow or coppery brown, blending in with all the various autumn hues of woody and herbaceous plantings. In winter, a few hardy fern species provide color and texture to an otherwise dull landscape.

There's a fern for every need. Upright ferns such as royal fern, cinnamon fern or ostrich fern offer height and drama. Lady fern, ebony spleenwort, and some of the wood ferns (*Dryopteris* species) provide a round or mounded shape. Maidenhair fern, Japanese painted fern, or autumn fern lend a pleasing cascading or draping effect.

SOURCES

Armitage's Native Plants for North American Gardens (Armitage, Allan M. 2006)

Native Plants of the Southeast, A Comprehensive Guide to the Best 460 Species for the Garden (Mellichamp, Larry, 2014)

The Plant Lover's Guide to Ferns (Steffen, Richie and Olsen, Sue, 2015)

"Ferns of the Blue Ridge," U. S. Department of Agriculture Forest Service General Technical Report SE-15 (Krochmal, Arnold and Connie, 1979)

"Rain Garden Plants," Virginia Cooperative Extension Publication 426-043, Va.Coop.Ext.vt.edu

Piedmont Virginia Native Plant Database, [Ferns Native to Albemarle County](#)

The United States National Arboretum, [FAQs on Ferns](#)

Crispy Sweet Potato Fries

By Cate Whittington | October 2017 - Vol. 3 No. 10



Who doesn't love crispy French fries fresh from the deep fat fryer, loaded with salt, and served in a paper cone! As we all know, such fries should be consumed in moderation. Don't despair. You may "fry" your favorite carbs in the oven and enjoy them with minimal guilt.

Sweet potatoes have reigned as superfoods in recent years, replacing the white potatoes on many a health-conscious plate. Are sweet potatoes really more nutritious for us than other potatoes? In researching the health benefits of sweet potatoes vs. the standard Idaho Russet potato of my youth, an article in The Huffington Post by John Berardi, founder of [Precision Nutrition](#), convinced me that both have a place in any healthy diet. Berardi says that the way we eat potatoes is more important than the type of potato itself; in other words, stay away from processed chips and tater tots and stop slathering on the ketchup, mayo, and sour cream. A [comprehensive comparison](#) of the two by *Precision Nutrition* describes starches and sugars, fats and proteins, glycemic index and carbohydrate types, discusses "high carb" myths and realities, and shows why potatoes in general "stick to your ribs" and provide a satisfying, full feeling.

Botanically, most potato varieties belong to the same family (*Solanaceae*) as tomatoes, peppers and eggplant. But not sweet potatoes; they share their family tree (*Convolvulaceae*) with morning glories! Russets, reds, and Yukon golds sit side-by-side with countless varieties of sweet potatoes on produce aisles every fall. Plentiful in October, they all make wonderfully nutritious additions to fall and winter stews. And, they are delicious roasted in the oven all by themselves! Two types of sweet potatoes are pictured above, one a drier white variety and the other, the more common orange variety. (Did you know there are about 5,000 sweet potato varieties?!)

For years, I have cut sweet potatoes into sticks to mimic French fries, tossed them with a little olive oil and salt and popped them into the oven to bake just before dinner. Easy and yummy. But, not always terribly crispy. This year I turned to my computer for answers to making a crispy fry without a deep fryer. Some sources contend that baking the potatoes on parchment paper makes the difference. According to the [Kitchn website](#), the key to crispy oven fries is the addition of starch—plain cornstarch, potato starch, rice, tapioca—whatever you have on hand. And so, I chopped potato medallions, dusted them with a few tablespoons of cornstarch, added salt and oil, spread them on parchment paper, and waited for the results. The best yet!

There is no recipe to follow this month. Experiment to discover your own perfect fries. Slice varietal potatoes into sticks or discs. Dust the potatoes with 2-3 Tablespoons of starch, toss them with a little olive oil, add salt, and perhaps an additional spice or two. Allspice, cinnamon, and ginger pair nicely with sweet potatoes, as do Middle Eastern spices like cumin and coriander. Mark Bittman of NYTCooking combines salt, garlic powder, black pepper, and paprika to create a delightful spice mix. Bake/roast the potatoes in a preheated hot oven (at least 400 degrees for crispness) for 20-30 minutes. Delicious.

Resources:

<http://www.thekitchn.com/how-to-make-baked-sweet-potato-fries-241843>

http://www.huffingtonpost.com/john-berardi-phd/potatoes-health-benefits_b_7010712.html

