We have three squirrel species in Connecticut, the gray squirrel (Sciurus carolinensis), the red squirrel (Tamiasciurus hudsonicus) and the southern flying squirrel (Glaucomys volans). All three species are common throughout the eastern United States where suitable habitat occurs. While squirrels can sometimes be a nuisance, they are a lively and sometimes entertaining part of our local landscapes and ecosystems. All three have keen senses of sight, smell and hearing and are always on the alert for the approach of a predator. Let’s consider each species and some of their unique characteristics.

The gray squirrel is the largest and most common of our native species. The most common coloration is medium gray with a white or pale gray underside. This species, however, has quite a bit of coloration variability. Some have a bit of a reddish tinge to their fur while others are black. Black individuals are all black, even on the underside. It’s kind of interesting that there are more black squirrels in the north than in the south. Albinism is also seen in the gray squirrel. The tail is broad and bushy and about the same length as the body including the head. This squirrel prefers to live in hardwood forests but has adapted well to treed urban and residential areas. Given the choice, they would prefer to spend their time in tree tops where they are best protected from predators.

Gray squirrels feed on a variety of nuts, berries, mushrooms and seeds. Nuts are buried randomly in the fall to prepare for winter and reportedly, they are found later using both memory and smell. When pregnant and nursing, females may feed on insects, meat or bones for extra protein. Young squirrels also sometimes feed on insects. Conversely, squirrels have a number of predators in the northeast. These include owls, hawks, coyotes, foxes, bobcats, and weasels.

Mating occurs in late winter and again in the summer, so two litters of young are produced each year. Litters average 2 to 4 young with up to 8 being possible. Gray squirrels are weaned at about 3 weeks of age. In the wild, the gray squirrel may live up to 12.5 years but in captivity there is one report of a female exceeding 20 yrs. old. Populations tend to fluctuate over time and population growth declines tend to be associated with food supply. In 1933, a migration of over 1000 gray squirrels swimming across the Connecticut River occurred between Hartford and Essex. It is not known for sure, but it is suspected that a lack of food drove them to migrate.

Related gray squirrels may share a territory. Males may compete to mate with females and females may mate with multiple males. Once the female is pregnant and then lactating she nests alone and may be aggressive. Communication between gray squirrels is via vocalizations, scent and postures (ie flicking of the tail).

The gray squirrel is considered a pest species in Great Britain, where it has been introduced from North America. In its native range, it has historically been a food source for Native Americans and colonists and are still hunted by some for food or pelts.
The red squirrel is noticeably smaller than the gray squirrel and the tail is more slender and not quite as long as the body. The fur is a rusty reddish brown in summer and more grayish brown in winter, with a white underside. This species will nest in trees like the gray squirrel (cavities and leafy nests) but sometimes nests in the ground.

Their diet consists of seeds, nuts, and fruits with a preference for the seeds of cone-bearing conifers. Because of this, the red squirrel is most abundant in mixed hardwood and conifer forests. Unlike the gray squirrel, food is stored for the winter in large underground holes, but some may also be stashed randomly. The red squirrel has an interesting habit of ‘tapping’ sugar maples for their sweet sap. A hole is chewed through the bark until sap starts to flow. The wound is left until water evaporates and then the squirrel returns to feed on the syrup.

Despite their diminutive size, the red squirrels are non-social, quite territorial and aggressive. They have solitary territories and spend time alone except for mating and a mother and her young. Red squirrels are known to be very noisy. Different sounds are used to defend territory, drive away competing males during the mating season, or alert others to predators. Like the gray squirrel, this species is most active in the morning and late afternoon, avoiding the hottest part of the day during the summer. The local population of the red squirrel can be affected by loss of preferred coniferous trees to timber harvest, land clearing or pests and diseases but it is still considered common in the state overall.

And last, but not least, we do have flying squirrels in Connecticut! The most common is the southern flying squirrel, which can be found throughout the state in mature deciduous or mixed forests, especially those with plenty of nut bearing trees. In addition to nuts and seeds, the flying squirrel eats mushrooms, moths, beetles and even small birds or their eggs. Another species, the northern flying squirrel (G. sabrinus), is found in the higher elevation parts of the northwest corner of the state.

Flying squirrels are seldom seen because they are nocturnal. They are smaller than the red squirrel and have gray-brown fur with a white underside. The tail is flattened rather than bushy and they have large, dark eyes suited to night vision. Two litters of young are produced each year like the gray squirrel, in late winter and summer. Litters have 3 to 4 young and they are able to forage on their own as soon as six weeks of age. Nests are in tree cavities or even sometimes bird houses.

How do they fly? They don't, really, they glide. A loose fold of skin connects the wrists to the ankles and this acts as a sail when the legs are extended, stretching it out. They can glide from elevated positions up to about 150 feet depending on air currents and can even steer, making abrupt turns to navigate around trees in their path. They land on trees and as the landing site is approached, the tail is tipped up and the body held back to slow down and get into landing position. Immediately after landing, the squirrel scurries up or around the tree, presumably to escape any predators observing its flight.

Flying squirrels are quite sociable and often feed and nest together in groups. There are reports of them even nesting with other species including screech owls and bats.

This is a little bit about the squirrels of Connecticut. They are really pretty fascinating. In spite of this, they can cause problems when they invade birdfeeders, find their way into attics or homes, or scavenge in your garden. There are a number of great strategies and products to help keep squirrels off of birdfeeders. One of the best solutions is to place the feeder on a pole at least six feet high a good distance from nearby trees and shrubs. Put a baffle (cone- or dome-shaped) on the pole to prevent climbing. Prevention is the best strategy when it comes to home invasion. Make sure to seal or block any openings around vents, etc. If squirrels do get it, be sure they are all out before blocking access because adults will cause extensive chewing damage in an effort to get to young left behind. If a squirrel gets into a chimney, do not try to get it from the inside. You do not want a frantic, panicked squirrel running around the house. Put a long rope (long enough to go down the chimney and down to the ground on the outside) in the chimney so the squirrel can just climb out on its own. The long rope is just so you can easily pull it out when finished.
Fall should be the time of relaxation and enjoyment as far as lawn care goes. Grass is a beautiful green during the late summer and fall, perhaps the best color the grass gets all year. Green grass provides a beautiful floor for accenting gardens and is pleasant overall when viewed from afar or up close.

As the soil temperatures cool and sunlight hours shorten, grass slows down its growth, putting out just enough leaf area to allow for the production and ultimate storage of carbohydrates in the roots. Lawn fertilization should be done by mid-October, especially if fast-release nitrogen is used. Organic slow-release fertilizers need warmer temperatures to break down, as a rule, and are ideally applied in September to early October for best results. Limestone, if needed, can be put down any time the ground is not frozen, but wait a couple of weeks if a fast-release nitrogen fertilizer was applied.

Any seeding to repair of establish lawns should be completed by October 4th to ensure optimum germination of seed. As soil surface temperatures fall to the 50s, germination takes longer, so be sure to seed as soon after Labor Day as possible. This will allow good germination and grass seedlings have time to establish a good root mass and necessary upper leaf growth before frosts and cooler day and night temperatures slow growth. Late summer and early fall seeding will allow the new grass time to develop deeper roots before the next summer heat, and grass will be better able to withstand heat and drought conditions the next year. Seeding too late and then having to rake fallen leaves may result in new seedlings being uprooted. Blowing seeded areas lightly may be a better option to ensure leaves are removed but the grass seedlings are safely secured. Or simply bag leaves if the mower has that attachment. Sodding a lawn can be done as long as soils are not frozen, so that is another option for early fall lawn repair. Usually one can begin mowing about three weeks after putting down sod.

Many people wonder about mulching shredded leaves on lawns as the leaves start to senesce and cover lawn areas. Leaves can be finely chopped with a mower and left on the lawn safely if the leaf layer is not too thick. The blades of grass should be visible. One approach to take if soils are low in organic matter in one part of the lawn is to rake leaves there and mulch finely with several passes of the mower. Over time, soils may improve, and an added bonus is the possibility of stopping weeds from getting a foothold as the mulch provides a cover to small bare spots where weed seeds may not be able germinate.

Seeding first and then mulching over the seed with either compost or finely chopped leaves will help keep grass seed moist and weeds at bay in the future.

Winterizing fertilizers are available which consist of slow release nitrogen along with some extra potassium. These are perhaps the least important lawn applications for most residences, and should be applied well after the last lawn mowing when grass has stopped growing. Keep in mind that fertilizing late in the year with fast release nitrogen may encourage snow mold development if we get enough snow during the winter. While most winterizing fertilizers have higher levels of potas-
Grass can be cut lower for the final mowing to help prevent it from becoming matted down under heavy snows. This may help prevent severe snow mold incidences as the development of these diseases increases under heavy snows. And try to avoid shoveling snow that contains road salts on the lawn. Certain grasses, like Kentucky bluegrass and ryegrasses, are very susceptible to salt damage and may be killed by salt buildup. Fescues are more salt tolerant and recover better from salt injury.

After the lawn has stopped growing and the leaves are raked, the time has come to relax and enjoy the fruits of your labor. When chores in the garden or on the lawn have ended for the year, it is a good feeling to admire the results of your hard work. Hopefully the time and effort spent on lawns and gardens have been rewarding and will make for a better landscape next year.

Don’t Guess, Soil Test!
By Dawn Pettinelli, UConn Home & Garden Education Center

Fall is the perfect time for testing your garden and lawn soils. A soil test determines what the pH and nutrient levels are in your soil and whether or not limestone or fertilizer is necessary.

The pH level of your soil will affect the availability of plant nutrients. Soil pH is a measure of the acidity of the soil with 7 being neutral. A soil pH below 7 is acidic and above 7 is alkaline. Native Connecticut soils usually have a pH ranging from 4.0 to 5.5. Most of our garden plants, however, are not native so the soil pH often has to be adjusted.

Although fertilizers are often referred to as plant food, remember plants make their own food (proteins and carbohydrates) through the process of photosynthesis. To do this the plant needs air, water, sunlight and certain nutrients found in or added to the soil including nitrogen, phosphorus, potassium, calcium, magnesium, sulfur and several micronutrients.

Taking a soil sample involves several easy steps. To determine the number of samples for testing take into account whether the soil looks different in various parts of the yard and whether it was limed or fertilized at different rates. For instance a vegetable garden that had lots of amendments added to it would be tested separately from a lawn area with few amendments. Areas of noticeably poorer growth might also be tested separately.

For each area to be sampled, collect a representative sample. Do this by taking small samples from the top to about 6 inches down in several spots throughout the sample area. Place each of these subsamples in a clean container and mix them up. Then remove one cup of this mixture for testing. This would be more representative than if soil was only collected from one hole. The results you receive will indicate the pH and amounts of nutrients present in the soil and what if anything needs to be added for optimum plant growth.

Before you invest in your plants, invest in your soil! For more information go to: www.soiltest.uconn.edu or call us at (860) 486-4271.
Have you ever wondered what is happening below ground and how that affects the plants that grow above ground in your garden?

Healthy soil is an essential component of a fertile landscape. Composed of mineral solids, organic matter, water, and air, soil anchors and supports plants. Alive with bacteria, fungi, nematodes, and larger organisms, soil plays an important role in supporting a vital living ecosystem. Take the necessary steps to improve and maintain this living natural resource while providing a good foundation for vigorous plant growth.

Soil testing is an easy way to assess the fertility of your soil. Fall is the best time to collect samples. Get your soil tested now (www.soiltest.uconn.edu) and bring your results to the conference to better understand the recommendations (optional).

Presentations

Soil Sustainability (45 minutes)
Dawn Pettinelli, Extension Instructor in the Department of Plant Science at UConn

Making Sense of Soil Tests (45 minutes)

Soil Ecology and Health – Making Links (1 hour)
Ray Covino, District Conservationist, USDA, Natural Resources Conservation Service

Building Soil Carbon for Healthier Gardens (2 hours)
Jack Kittredge, Soil Carbon Program Coordinator & Editor of The Natural Farmer MA chapter of NOFA and

Julie Rawson, Executive Director of the MA chapter of NOFA

For more information or to register call 860-439-5020
email arbor@conncoll.edu
visit arboretum.conncoll.edu
October Gardening Tips:

1. Remove, bag and trash any gypsy moth, bagworm, or eastern tent caterpillar egg masses or spray them with a commercial horticultural oil to smother them. Do not get oil on tree bark.
2. Replace spent annuals with frost tolerant hardy mums, asters, pansies or kale.
3. Bring houseplants back inside before the first frost. Scout for insects and rinse the foliage and containers to remove any hitchhikers.
4. Mulch perennial beds using a loose organic material such as bark chips or leaves to keep down weeds, preserve moisture and give roots a longer time to grow before the soil freezes.
5. Renovate the lawn by thatching or aerating if needed. Keep any areas that were seeded in September well-watered.
6. Plant garlic from October 1st to November 15th. Place each clove pointed-side up at a depth of 2 to 4 inches deep and about 6 inches apart.
7. Outwit hungry squirrels and chipmunks by planting bulbs in established groundcovers. Lift and store tender bulbs, i.e. cannas, dahlias and gladiolus after first frost.
8. Cut asparagus ferns to the ground once they have been hit with a frost and turned brown.
9. As tomatoes end their production, cut down plants and pick up any debris and put in the trash or take to a landfill. Many diseases will over-winter on old, infected leaves and stems so these are best removed from the property.
10. Keep herbaceous or woody foundation plants a few feet away from the house to eliminate hiding places for insects and mice, which could wind up indoors as temperatures plummet.

November Gardening Tips:

1. Avoid the spring rush and get your soil tested for next year’s garden before the ground freezes. Information can be found at the UConn Nutrient Analysis Laboratory.
2. Mulch garlic beds with 6 to 12 inches of straw or pine needles to avoid frost heaving.
3. Clean bird feeders and stock them with birdseed and suet. Consider providing sunflower hearts instead of whole seeds. It will provide a better source of calories for the birds and eliminates hull waste beneath the feeder. A clean, heated water source will also be appreciated.
4. Protect grafted roses with mulch or soil by mounding it 10 to 12 inches around the base of the plant after leaves fall and temperatures stay in the 30s. Then top with a foot of straw or leaves when the ground has frozen.
5. Keep mowing the lawn as long as the grass is still growing. Do not leave fuel in the mower or other gas-powered lawn tools over the winter. Run engines until the fuel is spent.
6. Once the ground has frozen (but before it snows), mulch fall planted perennials by placing 3 to 5 inches of pine needles, straw, chopped leaves around them.
7. Inspect your fruit trees. Remove any mummified remaining fruits, and rake up and dispose of old leaves.
8. Do not to store apples or pears with root vegetables. The fruits give off ethylene gas that speeds up the breakdown of vegetables and will cause them to develop a strange taste.
9. Clay and ceramic pots can crack over the winter if they fill with rain or melted snow that subsequently freezes and expands. Empty pots and place upside down under a tarp or store them in a shed or the garage.
10. Trim asparagus foliage to the ground after the first hard frost and mulch the beds.

December Gardening Tips:

1. Continue to harvest Brussel’s sprouts even if they are buried in a snowdrift.
2. Store your opened bags of fertilizer in a sealed plastic bag or plastic waterproof container with a snugly fitting lid in a dry location to avoid caking.
3. Label newly planted perennials and bulbs before they become covered in snow to help you identify plants in early spring.
4. Houseplants can provide cleaner air indoors. Clean the foliage of large-leaved houseplants such as dracaena, philodendron and ficus while checking for insect pests.
5. Keep holiday poinsettias away from heat sources and drafts. Poinsettias should be consistently moist but not soggy.
6. Consider gardening gifts for the holidays. Books, gloves, hand tools, weather instruments and fancy pots are some fun ideas for fellow gardeners.
7. Avoid using salt or fertilizer to melt snow on driveways or walks. Use a non-salt ice melt product, sand or kitty litter so as not to harm plant roots or pets.
8. Recycle live Christmas trees by using the cut branches as insulation over perennials, chipping the branches in the spring to use as mulch or simply setting it outside near a birdfeeder to provide shelter from the winds.
9. Use garden notes, photos and sketches to plan out your garden for the upcoming season. Check out our Vegetable Garden Basics and Plant Suggestions for ideas.
10. Amaryllis bulbs may be started now. If they are established bulbs in old pots, two inches of soil should be removed from the surface and replaced with a good, rich mixture.
Copper in Connecticut
By Dawn Pettinelli, UConn Home & Garden Education Center

Copper is an essential element for both plant and animal life. In animals, copper is used in the formation of bone and red blood cells, is critical in brain and memory functioning and important in a number of other essential processes. Food sources of copper include nuts, molasses, oats and liver.

In plants, copper is needed for both photosynthesis and respiration along with other processes. It was determined to be an essential plant nutrient in 1931. Plants require only very small quantities of copper so it is classified as a micronutrient or trace element. On average, crops just remove 0.1 pounds of copper per acre each year. Depending on the crop, some may remove 50 to 150 pounds of nitrogen per acre per year, a considerably larger amount.

A number of commercial crops including lettuce, spinach, sunflowers, tomatoes, beets and onions have relatively high copper requirements with medium amounts desired by alfalfa, corn, small grains and many other plants.

Plants deficient in copper may be light green to yellow in color and often a decline in vigor is noticed. It is usually not until the deficiency becomes more severe that symptoms become more well defined. In broadleaved plants the growing point may die or not unfurl, upper leaves can turn a bluish-green color and the tips or edges of lower leaves may turn brown. Sometimes in grain plants and other grasses the leaf tips are light-colored and twisted.

Because copper deficiency symptoms are not always distinct, soil and plant tissue testing are often employed to confirm a diagnosis. Soil testing is especially informative as the amounts of available copper in the soil are affected by soil pH, soil texture and the amounts of organic matter in the soil.

As the soil pH increases, the amount of copper available to plants decreases. Only apply enough limestone to raise the soil pH into the mid-6’s. Once the soil pH hits 7.5, be on the lookout for copper and other nutrient deficiencies. While the opposite holds true – a decrease in soil pH will increase the solubility, hence availability of copper, one need not worry a great deal about copper toxicity to plants in our Connecticut soils. The primary reason for occasional instances of copper toxicity is over application of copper-based fungicides. These fungicides are often used on tomatoes and other crops as an acceptable organic means of disease prevention. We had one other instance of copper toxicity caused by copper flashing and gutters.

Sandy soils are more likely to be deficient in copper than finer-textured loams or silt loams. Much copper in soils is stored in organic matter. In fact, in many soils up to one-half of the copper occurs in organically bound forms. Small organic acid molecules can solubilize copper so it would be in a form available to plants. So moderate amounts of soil organic matter can add nutrients to the soil, including copper. Highly organic soils such as peats and mucks, however, tie up any copper and make it unavailable to plants. For most gardeners, the bottom line regarding copper availability is that if the pH is where it needs to be for the crop grown and if the soils have moderate amounts of organic matter, there should be adequate copper for plant growth. Also, copper as well as many other trace elements are present in small amounts in natural organic fertilizers and amendments.

Copper is fairly widespread, making up about 5 percent the earth’s crust and adequate supplies for plants are present in most of Connecticut’s soils. In fact, copper is relatively abundant in many of the soils and geological formations in the state, enough so that Connecticut was home to the first commercial copper mine by the Europeans which opened in East Granby (then part of Simsbury) in 1705. Copper comes in many forms and two of the most common ores in Connecticut are chalcocite and bornite. Chalcocite was primarily found at the East Granby mine. Mining continued until the 1750’s but there was a problem smelting the ore locally and it was not cost effective to ship it to England.

In 1773, the mine became Newgate Prison, named after London’s Newgate Prison, and the first state prison in Connecticut. For 55 or so years, it served as a prison. Prisoners were at first expected to continue mining operations but the same tools needed for mining served well when creating escape tunnels. The high cost of maintaining the prison combined with many escape attempts, riots and deplorable conditions forced the closure of the prison in 1827. Now Newgate Prison is a historic site that is occasionally opened to the public as it now is undergoing restoration and renovation efforts.

In 1728, Samuel Higley, a medical doctor and blacksmith skilled in metallurgy and mining, purchased 143 acres not too far from the Newgate...
mine and began to mine for copper. It seemed to be a profitable venture up until Higley’s death in 1737 while accompanying a load of ore to England. Curiously, what Higley is most famous for are bootleg copper coins he purportedly had a hand in making.

Three types of copper coins had no date, one was marked 1737, the year of his death, and a fifth dated 1739. It is thought that since he was quite skilled in making steel dies that most likely he created the originals and perhaps his brother, John Higley Jr. made the latter ones.

Word of mouth from Colonial times support Higley’s coin-making ventures. Stories claim that Higley liked his liquor and would pay the local innkeeper with his copper three pence coins. At one point the innkeeper refused the original coins and Higley recast the remaining copper coins to say “Value Me As You Please” with “I Am Good Copper” on the reverse. As it turns out, it is doubtful the innkeeper would refuse the copper coins as they were treasured by goldsmiths who used them for alloying gold. Few are in existence today but there are displays at the Connecticut State Library, the Connecticut Historical Society and the Simsbury Historical Society.

Another copper coin, this time, legal tender authorized by the state of Connecticut, reputedly has was minted using copper from the Tallman mine in Hamden. Sometime before 1776, David Tallman discovered 2 outcroppings of ‘Peacock Copper Ore’ bornite and began digging a mine shaft and horizontal tunnels. Years later in 1854, Charles Munson deepened the shafts and legion has it that some of the copper from this mine was used for the first Connecticut minted coin, the Connecticut Cent. Two years later, the Fugio was the first copper coin authorized by the U.S. Congress in 1787. It was also believed that the copper for the Fugio penny originated from the Tallman mine. Mining operations ended sometime before 1837 as the mine did not yield anticipated amounts of copper.

The Bristol copper mine was worked intermittently from about 1837 until 1953. Some exemplary specimens of chal-cocite and burnite were distributed to museums and private collectors but the mine was never exceptionally profitable. The same can be said for the Cheshire, Golden Parlour, Stevenson and Wyllys copper mines. The words of Charles Rufus Harte in his 1944 Annual Report of the Connecticut Society of Civil Engineers can be used to sum up copper mining in this state, “Thar’s copper in them thar hills, but unfortunately, although the total amount is probably very large, it seems to be too thinly spread out to pay for its recovery.”

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**An Old New-Gate Halloween.**

**October 27 & 28.**

The Old New-Gate Prison & Copper Mine, a National Historic Landmark and State Archaeological Preserve will be open the last Friday and Saturday in October for this Special Event. Presently the Museum and Grounds are being renovated.

With the advent of fall’s cooler temperatures and shorter days the growth of most of the plants here in New England slows down but there is still plenty of action out in the landscape. Birds and butterflies are migrating, fruit and nuts are ripening, and native bees remain active as late as November. Each year is different so what we have one year in abundance may be scarcer the next. Insect activity, while certainly slowed down, may still have some surprises.

Last year cedars lacked much fruit so migrating birds that normally ate cedar berries, like the yellow-rumped warblers, went for less preferred food sources. This year though, cedars have produced an abundance of berries so if you see bird activity on these trees, look for some warblers, robins or cedar waxwings among them. Last year hawthorn fruits were eaten early on by robins and cedar waxwings. This year because of the abundance of more favored food sources so far, they have left them alone.

Squirrels normally eat seeds of many maples in the fall, but in 2016, because of spring snow and a deep freeze that followed, many maples produced few or no seeds. So squirrels ate crabapples instead in the fall. Winter is the time when many birds rely on crabapples for food, so the feeding by squirrels limited the number of crabapples available for birds later in the winter.

And speaking of squirrels, it is always a mystery as to what they find appealing to their little squirrel palate. This year, for
instance, a squirrel ate nearly every leaf off a newly planted coneflower. It would have been blamed on a woodchuck, but the gardener noticed the gray menace eating a leaf in the landscape and saw it was a coneflower leaf. The three new plants all had some leaves nipped off, waiting for the squirrel to finish eating the last leaf before picking up the next one. Rascal is too kind a word…

If you have Montauk daisies or coneflowers and notice their petals are chewed and browning, see if there is a cucumber beetle lurking nearby. These insects are pests even after vegetables are winding down. While they do eat pollen, on goldenrods, for instance, they can attack flower petals on many composites. If you use ornamental cabbages or kale, the imported cabbage worm butterfly may have laid eggs on them. The green caterpillars can make dozens of holes and ruin the ornamental value. Check plants that are stored outdoors at garden centers for these caterpillars before buying.

Insects may swarm at any time trying to get in your nice warm house. Boxelder bugs, Asian multicolored lady beetles and brown marmorated stinkbugs are typical home invader wannabes as cold weather becomes the norm. Look for them on sunny sides of buildings, especially light-colored ones. Keep doors and screens shut tight to keep them out.

Of course, color changes in our foliage are always eagerly awaited. Last year was a banner year for fall color, and it was really a pleasure after a horribly hot, dry summer that made the landscape scorched and brown. Virginia creeper and sassafras are vibrant red and orange, respectively, and following them, the black gum is equally beautiful. Tulip tree and ginkgo splash yellow among the reds and oranges of maples, and lastly come the oaks. While oaks are often not especially colorful, last year the white oaks were a blaze or deep reds and yellows. One wonders what this autumn will bring. If you are near a katsura tree when its leaves are turning brown, or have already fallen, take up a handful and take a whiff. Some people liken the smell of these leaves to cotton candy or burnt sugar.

This year there are caterpillars developing very late in the season. In late September there were spicebush and tiger swallowtail caterpillars that were very small for that time of year. And some of the giant silkworm moths had a second generation of caterpillars in a race against leaf drop. Monarchs were also late, but should have time to become butterflies and migrate safely south while nectar is still available. There were giant swallowtails, red banded hairstreaks and common buckeye butterflies all over the state this year, the last two not seen in the northern part of Connecticut since hurricane Sandy hit while they were migrating south in 2012. They are considered vagrants here, meaning they drift up from the south where their normal breeding grounds are. They are not known to survive winters here. The James L. Goodwin State Forest in Hampton had three giant swallowtails, and Harkness State Park also had several, so next year there may be more. Early fall is also the time of year when the beautiful white-M hairstreak is found nectaring on goldenrods and other late-blooming flowers near or in open fields and gardens.

Gray tree frogs may be found perching on trees, shrubs and perennials that still have some leaves left on them. While normally mottled gray, black and white, the very young, small frogs are light green and blend in well with the foliage they rest on during the day. They are active until leaves are gone and sometimes are hitchhikers in potted plants brought indoors for the winter. They will hunker down under the soil or leaf litter when cold temperatures arrive. Check around the base of potted plants before bringing any in for the winter. If you find a tree frog indoors after freezing weather has arrived, just leave the frog alone and it will sleep in the pot for the winter.

Dusk and dawn in fall and winter can bring inspirational color displays in the sky. So, look up, down and all around this autumn. There is really something for everybody at this time of year.

Notable Quotable

“Look deep into nature, and then you will understand everything better.”

— Albert Einstein (1879-1955)
As dusk approaches on a summer’s evening in Connecticut, bats leave their daytime roosts to head out in search of the insects that sustain them. Unlike other mammals such as flying squirrels, gliding opossums and the South African tree-dwelling colugo that are capable of gliding long distances, bats are able to maintain true sustained, powered flight. It is this ability to fly that has enabled them to spread to every continent on the earth, except for Antarctica, where they require only a place to roost or hibernate and a food source.

Taxonomically bats are in the class Mammalia, magnorder Boreoeutheria, just like mice and rats but they are not ‘flying rodents’. Bats are in the superorder Laurasiatheria, the name given to the group of placental mammals that originated 99 million years ago on the supercontinent of Laurasia, a land mass that combined most of the Northern hemisphere. Other mammals included in this superorder are shrews, moles, dogs and cats.

The next level of scientific classification brings us to the order Chiroptera, which originated from the ancient Greek words ‘cheir’, meaning hand, and ‘pteron’, meaning wing. Looking at a bat’s wing it is easy to see where that name came from. The wing structure is very similar to a human hand in that it has four digits and a thumb. The digits, or fingers, are long, thin, and contain more bones than a bird’s wing. This gives the bat a greater amount of maneuverability during flight than most birds are capable of. This is easy to believe if you have watched a bat swoop through the air only to abruptly redirect its flight path in search of prey.

There is another sensory signal that allows those changes to their direction. It comes from the small touch-sensitive receptors that are on the surface of the very thin membrane that extends from the bat’s abdomen and connects the digits. These bumps, called Merkel cells, may also be found on human fingertips but on a bat they also have a hair at the center of each bump which increases the sensitivity. Additionally, some bat species use their wings to catch insects and the bumps are concentrated in areas on the wing membrane that are most likely to encounter insects.

Speaking of insects, since three quarters of the world’s bats are insect eaters we can only imagine what would happen to the insect populations were the bats to disappear. Each bat can eat one-third of its body weight each night, which might not sound like a lot but when you tip the scales at 0.5 oz. that one-third could be 2800 mosquitoes!

Contrary to popular belief, no species of bat is blind. Although visual acuity may not be their strongest sense they do use vision to navigate. Sight, echolocation (active use of ultrasonic sonar), and even their sense of smell allow bats to detect their prey or target food in darkness. Only Microchiroptera (Microbats) use echolocation and their diet consists of insects, fish, frogs, small mammals, animal blood, fruit, nectar, and pollen. Megachiroptera (except for the insect-eating genus Rousettus), also known as Megabats, eat mainly fruit, nectar, and pollen. Among the foods that we enjoy that are pollinated by bats are almonds, avocados, bananas, dates, figs, and peaches. These and many other desert and rainforest plants also reap the benefit of having their seeds dispersed by bats that have consumed their fruit.
Bats can be solitary or may live in caves with up to one million of their fellow creatures. These larger communities can unfortunately open them up to the increased risk of disease. White-nose syndrome, *Pseudogymnoascus destructans*, was first detected in 2006 in a cave in the county of Schoharie, southwest of Albany, NY. In just 10 years it has spread to caves and mines in 29 states, mostly in the eastern half of the United States and in 5 provinces in eastern Canada. The cold-loving WNS fungus can infect 90-100% of some bat colonies. The fungus causes massive casualties by using up the limited amount of energy that a hibernating bat has available. The fungal growth appears on the muzzles and wings of infected hibernating bats and can also subsist in a cave’s environment. Humans visiting a cave can actually transfer the fungus into another cave and as such they are encouraged to decontaminate their clothing and equipment after spelunking.

White-nose syndrome is not the only danger to bats. The recent flooding in Houston, Texas as a result of Hurricane Harvey meant that thousands of bats that normally live under the Waugh Bridge were in danger of drowning. The bridge normally has up to 250,000 Mexican free-tailed bats that roost there and people gather each evening to watch them head out into the night. As the water reached dangerous levels many people attempted to rescue the bats using whatever was at hand, including umbrellas and tree branches. Bats can’t swim although they may tread water. Many bats were saved thanks to those Good Samaritans and a rescue team from Bat World, a non-profit bat rehabilitation and conservation group that is located in Weatherford, Texas. The Houston area is going to need those bats as the mosquito population increases due to all of that standing water.

Bat World is not the only organization that is currently involved in bat rehabilitation and conservation. The National Speleological Society maintains an up-to-date page for cavers and spelunkers, The US Fish and Wildlife Service collects extensive data on affected sites, and many states have their own conservancies in place. The State of CT Department of Energy and Environmental Protection has a great fact sheet that contains extensive information on exclusion (keeping bats from roosting inside of human dwellings), disease transference (such as rabies and histoplasmosis, a fungal disease that is associated with bat droppings), and conservation (including plans for building bat houses). Check one or all of these sites for to find out what you can do to help these amazing creatures!

Always remember that you are absolutely unique. Just like everyone else.

Margaret Mead
Timely Plants for the Season
By Carol Quish, UConn Home & Garden Education Center

The outdoor gardening season is mostly over for now, but there are some plants which remind us of the coming holidays during the three final months of the year, October, November and December. Timely indoor plants and plant materials can keep gardeners satisfied during these quieter months.

October brings Halloween with thoughts of ghosts and candy corn. This year I grew an ornamental vine outdoors with the common name, candy corn vine. The Latin name is *Manettia luteorubra*. Its flower resembles the orange and yellow confection only found in stores during the early fall for trick or treaters or to fill our candy dishes. And, this plant is like candy to hummingbirds as they are really attracted to the small, tubular flowers which continue for flower through light frosts. Hummingbirds migrate south during September and October when many nectar sources have already gone by making candy corn vine a valuable food source for them. Cut back the vine before hard frost, dig it up and plant it in a pot to bring inside for the winter. Treat it as a houseplant on a sunny windowsill until next May when it can be planted outside once again.

Candy corn vine - an fun annual. Photo by Pamm Cooper.

Ghost plant conjures up scary thoughts of ghouls and goblins and Halloween. Another name it goes by is Indian pipes, and its Latin name is *Monotropa uniflora*. It is commonly mistaken for a mushroom, but actually is a white plant that lacks the green color of chlorophyll. It takes its nutrients through a mutually beneficial relationship between its roots and a fungus in the soil. Indian pipes grow primarily in forested areas. The plant has one single bell-shaped flower hanging down from the top of its scaled stem. As it develops its fruit and seedpod, the hanging bells turns upright and straighten out. Curiously, it does not require sunlight and will grow even in the dark. Kind of spooky!

November brings Thanksgiving and thoughts of harvest. Why not gather evergreens and dried plant materials from your yard and nature to create natural ‘flower’ arrangements. Let your creativity fly with cuttings of ornamental grass seed heads, juniper branches and cedar berries. Winterberry, a deciduous holly, holds its berries long into the winter. Variegated evergreens are striking when matched with solid green holly leaves. Dried crabapples and smaller gourds can be attached to picks to add to arrangements. Be on the lookout for interesting seedpods from trees such as sweetgum or honey locust. Even open milkweed pods add a bit of whimsy to a design.
Thanksgiving cactus is another November plant to keep our green thumbs happy. The Thanksgiving cactus is *Schlumbergera truncata* and a different species than the Christmas cactus (*Schlumbergera bridgesii*) or the Easter cactus (*Rhipsalidopsis gaertneri* syn. *Hatiora gaertneri*). Thanksgiving cactus can be identified by its claw-leaves with longer points. Christmas cactus has shorter points on its leaves. Easter cactus has no points, instead rounded edge serrations on the leaves. Bloom time is a partial indicator of the identity as blossoms are triggered by length of day and colder temperatures. If plants are left outside until just temperatures are just above 40 degrees F, less light and colder temperatures will happen naturally. To provide plants with the same requirements inside a home, move the plant to a cooler room or basement and reduce the amount of light during the day. If a plant is in a room where lights are turned on in evening, it will still be receiving some light and may not trigger the plant to set buds.

All three of these cacti are epiphytic plants that naturally grow on other plants like tropical trees for their support. They receive all of their nutrients from rainwater and air, and love high humidity, which may explain why they are unhappy in our dry, heated homes. Place them in bright, filtered light and keep the soil evenly moist, most of the year, except when trying to encourage them to bloom. Then, reduce the amount of water also.

Nothing signals Christmas quite like the sight of poinsettias filling the shopping plazas and grocery stores. The large red bracts surrounding the center, yellow flowers are ubiquitous. It is a native of Mexico, where it is a perennial shrub growing 10 to 15 feet tall. *Euphorbia pulcherrima* is its Latin name. Euphorbias exude a milky sap when stem or leaf are broken, given them a bad taste. Poinsettias are non-toxic despite old wives tales that tell of their poisonous nature. An Ohio State University study proved a child weighing 50 pounds would have to eat more than 500 leaves to have any harmful effect. Animals may chew on the plant causing contact with the sap and may cause them to vomit. The sap can also cause a rash on the skin, especially if someone has a latex allergy. As a general rule, do not let animals, kids or adults eat any houseplant.

Care for your poinsettia by watering the plant when the top inch of soil is dry. Let the water drain out of the bottom of the pot and empty the saucer. Do not let the pot sit in a pool of water. Keep poinsettias in bright, indirect light and away from heat and drafts. They like temperatures of 60 to 70°F during the day and nighttime temps of no lower than 55°F. Fertilize plants once per month with an all-purpose houseplant fertilizer.

Most folks will toss their poinsettias into the compost pile once the colored bracts start to fall but those liking a challenge may want to keep plants for the next year’s holiday season. Once the bracts fall off, prune back your poinsettia to about 8 inches. New growth will begin shortly as long as plants are watered and receive adequate amounts of light and fertilize. Let plants grow all summer, pinching back occasionally. To get the plant to turn its bracts red again the following winter, provide complete darkness to plant for 12 full hours until bracts begin to color which may take up to 10 weeks. Put it in a dark closet with no light as soon as the sun sets. Give it lots of light after the days of darkness for the plant to produce the most vibrant color.
Much climate change research has been focused on how it will affect weather and temperature patterns. Scientists have started examining how increasing carbon dioxide (CO2) levels would affect plants. Preliminary studies have concluded that plants may grow more vigorously as CO2 levels climb if no other growth limiting factors are present. This would make sense as most people are aware that through the process of photosynthesis, plants use CO2 and water to create the sugars and other carbohydrates that sustain them and promote growth and development.

Now researchers are looking at how the increasing CO2 levels may affect the nutrient levels in plants. One study concluded that as a plant’s carbohydrate levels increased, its mineral content decreased. This means that the same size serving of a plant grown in a high CO2 environment would have less mineral nutrients than one grown in a low one. A second study from Harvard looked at how increasing CO2 levels would affect the nutrients in major human food crops such as rice, wheat, maize and soybeans and found decreases in zinc, iron and protein in all.

Presently more than 70% of the world’s population get most of their protein from rice and wheat and concluded. “By 2030, 148.4 million people worldwide may become at risk of protein deficiency from rising CO2.”

From: http://neatlas.com/carbon-dioxide-atmosphere-food-nutrition/51416/

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**UConn Department of Animal Science Activities**

**88th Little International Livestock Show**
Saturday, October 21, 2017 • 8:30 am

Horsebarn Hill Arena, UConn Storrs campus.
The show will feature showmanship classes for poultry, beef and dairy cattle, horses, sheep and pigs. Students will show off their animal handling skills with a species they have been working with for the past 2 months.

**17th Annual Fun Horse Show**
Saturday, October 28, 2017 • 9 am.

Horsebarn Hill Arena, UConn Storrs campus.
Presented by Animal Science Department’s UConn Morgan Drill Team.

**2017 UConn Beef Auction**
Sunday, October 22, 2017

10 am • Animal Preview 12 noon • Auction.
Cattle Resource Unit (Heifer Barn), Horsebarn Hill, UConn Storrs campus.

For information on these or other Dept. of Animal Science events, go to

[www.animalscience.uconn.edu](http://www.animalscience.uconn.edu)
Dear Subscribers to the UConn Home & Garden News,

We are sad to inform you that this will be our last issue of the UConn Home & Garden News. Staffing and monetary shortages have finally caught up to us. We have made a valiant effort since 2004 to keep the newsletter appealing and educational. This was due to the efforts of Department of Plant Science & Landscape Architecture and Department of Extension faculty and staff, UConn Master Gardener and UConn Master Composter volunteers, UConn students and some ardent supporters.

Thank you all for your years of support. We will continue to be there for you at the Center answering your calls and emails. You can drop by with your questions or samples, check out our fact sheets on our website (www.ladybug.uconn.edu) and read our weekly blog (www.uconnladybug.wordpress.com). Also, please sign up for our monthly electronic newsletter (email us at ladybug@uconn.edu to be put on mailing list) with timely tips and advice along with other interesting or pertinent horticultural or College of Agriculture, Health and Natural Resources information.

UConn Home & Garden Center Staff
Dawn, Joan, Carol, Pamm and Susan

Thank you!
Fairy Gardens
Text and Photos by Matthew Lisy, Ph.D., Science Teacher

I honestly never thought I would have been writing an article entitled ‘Fairy Gardens’! The concept seems like something, well, out of a fairytale! When I first started seeing these many years ago I did not think it would catch on. Originally, fairy garden supplies were mostly seen at high-end garden centers and were very expensive. More recently, larger craft stores started carrying these types of supplies at a much more affordable price. Creative in-store displays get your imagination going.

I knew fairy gardening hit the mainstream when a big orange box store was selling kits and accessories this past spring. This micro-hobby reminds me of the large ‘G’ scale railroads people were putting in their yards during the 1990s. A big difference, however, is that fairy gardens are much more affordable and accessible to all. Many decorations can be made using sticks, stones and other natural items found in the yard. Part of the mystique and interest of fairy gardening is spurred on by the popularity of certain cartoons and large theme parks. Anything that gets kids to put down their phone, get off the couch, turn off the TV and videogames, and get outside is something I think should be encouraged.

Fairy gardens are limited only by one’s imagination (see Photo 1). They can be created with houseplants and kept inside, or with outdoor plants and placed in new or existing parts of the landscape. First, consider whether the fairy garden will be set in the ground or constructed in a pot. Each option has its advantages and disadvantages. Decide where you want the fairy garden and then think about how much light it will receive.

Fairy gardens look quite charming in the ground. You will not be as limited by space requirements and the garden can sprawl out as your hobby grows. It is also easier to create vertical elements like lights and overhanging ornaments as there are often overhanging limbs nearby. They have a more natural appearance as it seems as if the garden (or village) is integral to the landscape. Use fairy gardens as a way of adding points of interest into a traditional garden. A visitor never knows when a fairy garden may pop up – maybe just around the corner or under a sheltering woody shrub.

There are some disadvantages to siting fairy gardens in flower or shrub beds or in other parts of the outdoor landscape. First of all, it is difficult to control foot traffic – either human or animal. The little fairy garden accessory pieces used may get lost or washed away by heavy rains. Frost heaving during the cold winter months may further disrupt the garden as a whole. The entire project will most likely need extensive rejuvenation each spring. For taller observers or the elderly, it may be hard to see the garden. Getting down on the ground to look may be difficult.

Planting a fairy garden in a pot or other container is another option, and the one for which my family opted (see Photo 2). I liked this option better as it avoids the disadvantages of ground planting. The only real limitations are a smaller planting space and the potential to dry out quickly in hot weather. What is nice about this method is it allows a close up view of the fairy garden. Depending on placement, it can be viewed from above or at eye level.

While limited space initially seems like a disadvantage, it is usually less expensive to construct. When the gardener is out of space, simply add another pot. Planting in containers also allows for the additional of vertical elements as well as the creation of separate and different themes. Pots can be nested inside one another or pots of different heights can be used to mimic a mountain or hillside setting. Bridges can be constructed between pots to add interest and connect the areas/villages together. In the winter, move the pots inside or at least under cover as soggy soil subjected to freezing weather can easily crack a flowerpot. Some folks just start from scratch each spring.
Whether planted in the ground or in a pot, fairy gardens are best constructed with a specific plan in mind. Set the potted plants and some of the larger decorations in the given area to get a look at the arrangement and adjust as needed (see Photo 3). The plants should be set in first, followed by the placement of larger decorations like houses and equipment. Next, larger stone and decorations are added. Gravel paths and small accent decorations are placed last. A really unique effect for night time is the use of LED mini lights that can be placed over your fairy scene by dangling from an overarching tree branch (not shown). If you do not have trees nearby, simply cut a curved branch and anchor the large end in the back of the pot.

Maintenance is fairly low key. Keep your garden watered according to the needs of the plants. Watch out for hot, sunny days if your garden is in a pot as they can dry out rather quickly. Both styles of gardening will benefit from some general all-purpose fertilizer (follow manufacturer’s directions). One final piece of advice would be to regularly redecorate.

Add new or recycled pieces or elements to hold interest and create new views. That special ornament or a second fairy garden pot can add a whole new theme or element. My daughter added a playground scene using her second pot (see Photo 4). Future plans include a bridge between the two pots and overhead lighting. For boys, maybe scenes can be made using some cars, farm animals, or small action figures. The craft stores also have multiple themes that can please almost anyone. This can be a great way for parents and children to spend some fun quality time together. I guarantee your kids will fondly remember creating these wonderful pieces of living art.

Photo 3: Placing the plants and larger design elements helps give the designer a preview of the final product.

Photo 4: The Fairy Garden playground pot. This pot and the one seen in Photo 1 will be connected together using a yet-to-be-made bridge of natural sticks.
Growing Your Vocabulary

**Albinism** noun: al-bə-ni-zəm

Definition: the condition of an albino, a hereditary, congenital disorder characterized by the complete or partial lack of pigmentation production in plants, animals, or humans.

Origin: Latin albus (white)

First Known Use: 1836

From: http://www.biology-online.org/dictionary/Albinism
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