BUGS: THE GOOD, THE BAD AND THE UGLY / UNUSUAL

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WRITTEN BY GALVESTON COUNTY MASTER GARDENERS IN COOPERATION WITH THE GALVESTON COUNTY OFFICE OF TEXAS A&M AGRILIFE EXTENSION SERVICE

Insects: A Love-Hate Relationship

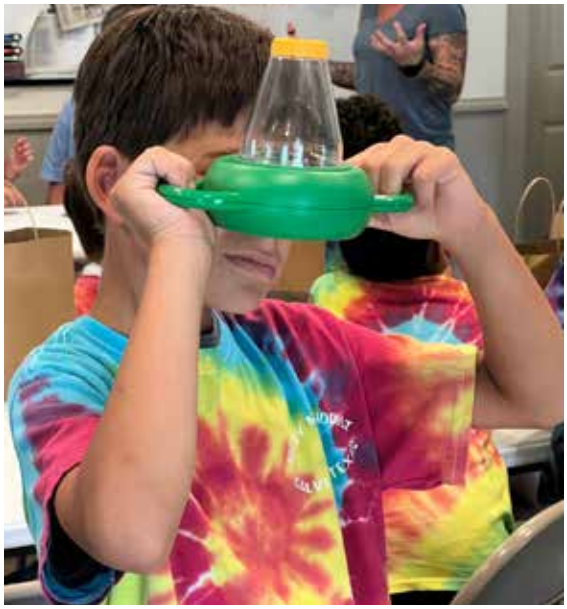
MG Kathy Maines

Most of us have a love-hate relationship with insects. We may not like 'bugs' but we realize they play a very important role in nature. The Audubon Society estimates that birds consume 400 to 500 million tons of insects every year. Insects either fascinate us, disgust us, or both, and they generate many questions. We love and understand the importance of bees, but hate wasps. We love fireflies and hate cockroaches. It's almost the time of year for lovebugs. According to extensionentomology.tamu.edu, lovebugs are medically harmless. Keep that in mind when you are trying to get them off your vehicle.

There is a fascination about insects. As part of our Master Gardener Outreach, we have insect viewers and trays. These are fun and always draw a crowd of kids and adults. And what about bug jars? There is no better use of empty (and washed out) mayonnaise, pickle and peanut butter jars. I remember putting bugs in jars and just staring at them watching as caterpillars turned into butterflies or moths. So, as the summer gets hotter and the insects get more numerous, remember that regardless of where we are in that love-hate relationship with insects, we cannot live without them.

"If all insects disappeared, all life on earth would perish. If all humans disappeared, all life on earth would flourish." Jonas Salk

Kathy Maines



An insect viewer (MG Karolyn Gephart)

Beware the Dog Days of Summer!

MG Karolyn Gephart

We are currently in the Dog Days of Summer (July 3-August 11, 2023) and with high temperatures, we can better understand the ancient Greeks and Romans' definition of this time as having sudden weather disturbances, periods of drought, a feeling of lethargy and fever, and all around bad luck. Based each year on the appearance of the dog star, Sirius, even dogs' behavior was said to change for the worst during this period. Now we approach the time by not spending large amounts of time outside. It is easier to remember to water gardens early or in the evening since we do not want to be outside any time in between. So sit in the air conditioning, and enjoy learning more about insects…they outnumber us and some are delightful to see cross our paths, specifically dragonflies and fireflies. While most of us do not want to see an insect jump, fly or walk on us, we do delight in capturing photos of them. What amazing and often colorful close up views they provide. In MG news, congratulations to the NEW GCMGs, Class of 2022. Welcome to the MG family. Stay hydrated and enjoy the summer season with heat tolerant flowers, insects that you will soon know more about and the summer sounds of buzzing….from bees and of course, lawn mowers!

Karolyn Gephart

Garden spider (Jon Yuschock, Bugwood.org)

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Cover Photo: Dragonfly by Brenda Barr Lightfoot

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Good, Bad AND Beneficial

Hedy Wolpa
GCMG 2018

All insects have an important role in keeping nature in balance, so it seems unfair to judge whether certain insects are "bad" or "good." Having beneficial insects in the garden is a sure sign of a healthy and balanced ecosystem, in which plants, flowers, and insects thrive without chemical control. Here are three insects that are always welcomed guests in any garden!

Praying Mantid

The praying mantid is a beneficial predator in the garden. Just to be clear... its common name, *mantid* with a *d* is the correct spelling because the word *mantis* with the *s* refers to a very specific genus within the species. The Carolina mantid (*Stagmomantis carolina*) is the species commonly found in Texas, belonging to the relatively small order Mantodea, and having a unique physical posture. These mantids' spiny forelegs are folded into a praying position and their small triangular heads, holding big, globular eyes, are often twisted to the side, giving them a curious but bold stare toward their prey. They have five forward-facing eyes that are adept at accurately measuring depth and distance. Their antennae are used for touch, and their hearing capacity mainly helps them avoid being prey for other animals. Seemingly slow and calm creatures, they are actually among the most ferocious predators in the animal world as they are solitary generalist feeders and will eat a large variety of insects, including their own species. Mantids' food choices include beetles, grasshoppers, butterflies and moths (and their larvae), spiders, flies, bees, crickets, even small mammals and reptiles. The menu depends on what is available in their locale. Gardeners appreciate the presence of mantids because of their predatory nature, even if it means that they sometimes eat other beneficial insects.

They are easily recognizable in the garden, if — that's right, if — you can spot them. They are masters of disguise, which helps them when tracking prey. The mantid range in color from pale green to muddy brown, and are about 1.5 to 3-inches in length. Most adult mantids have wings, and their triangular-shaped head can turn 180-degrees as they search for prey. The front legs, with their spiky protrusions, are meant for grabbing and holding their living prey as they devour it.

People are often captivated by the appearance and anatomy of the mantid's unusual egg case. Even its name *ootheca*, which is Latin for "egg container," will make you curious to know more about it. Each ootheca contains dozens, even hundreds of eggs that are encased in a soft, foamy substance produced by the female in the fall that hardens into a protective case for the eggs and lasting throughout the winter incubation period. The nymphs hatch out in spring (simple, incomplete metamorphosis) after a diapause in which their development pauses, or rests. They emerge looking like tiny mantids and are fully mature by late summer. The ootheca's length is about one inch, light brown or tan, and is usually found on a twig or vine. If you find one, and see fluffy sawdust-like flakes on one end, it has probably already hatched out. If it is still fully intact, take care not to move or damage the ootheca unless you can see it has completely hardened.

The life span of mantids is only about one year or less. Females die after laying eggs and creating their ootheca; the smaller males live slightly shorter lives.

Ambush bug is camouflaged as it grabs prey (MJ Hatfield)

Ichneumon wasp (Pixabay.com)

Milkweed assassin bug (MG Hedy Wolpa)

"Sure sign of healthy, balanced ecosystem..."

Assassin bug

The name alone conjures a scary image of a predatory massacre in the garden! Assassin bugs belong to the Reduviidae family, and while they are definitely hard working, beneficial insects, some can inflict a painful bite to humans. Here is information you need to know to both respect and tolerate this insect.

There are nearly 160 different species of Assassin bugs in North America, and more than 3,000 worldwide. They all have one distinguishing feature in common: a curved, dagger-like mouthpart called a rostrum, or proboscis, that they use to kill their prey. It is used to spear the victim, inject venom or other toxic enzymes to kill it, then suck on the prey to feed. The rostrum is also a defense mechanism against predators that might attack the Assassin bug. They have wings, but are poor flyers and rely on protruding, round, beady eyes to help spot their prey. Assassin bugs stalk a variety of insects, including bees, flies, beetles, caterpillars, and even larger insects such as grasshoppers.

Although some assassin bugs are dull brown, gray, or black, others are brightly colored. In our Discovery Garden, we often are thrilled to see distinctive orange and black Milkweed assassin bugs, *Zelus longipes,* eating aphids on our milkweed. We also see Wheel bugs, *Arilus cristatus,* one of the largest species of assassin bugs, which are gray and up to 1.5-inches in length. Their name comes from the cog-like crest on the top of its thorax that makes it one of the most unusual insects in the garden. A third species that we see with some regularity is the red, orange, or yellow Ambush bug (*Phymata* spp.), which can blend perfectly among flowers while stalking its prey.

Although most assassin bugs are highly beneficial, the Conenose bug, or Kissing bug (*Triatoma* spp.) is parasitic on humans and other mammals. Conenose bugs have an elongated head, but can be distinguished from Wheel bugs by their lack of a crest and by their orange and black markings. Gardeners with a natural approach who limit the use of pesticides consider Kissing bugs very beneficial because they consume many insects that are harmful to food crops.

Assassin bugs are found in orchards, vegetable gardens, flower beds, or anywhere they can hunt their prey. That is why they are so beneficial for natural pest control. They typically breed in the fall, leaving fertilized eggs to overwinter (tolerating even freezing temps) in leaf litter and mulch. The eggs hatch into wingless nymphs in the spring, and by summer they reach adulthood. They only reproduce once per year, but can live as adults for several years.

Assassin bugs are such indiscriminate predators that they eat beneficial insects as well as pests, including bees, lady beetles, and other pollinators. Still, it is important to attract and appreciate the work of assassin bugs to control pests naturally. To encourage their presence, a water source can be provided as well as mulch for protection from other predators. Vegetable gardens benefit from having flowers and herbs to attract beneficial insects like assassin bugs, which will also help reduce the use of pesticides.

Parasitoid wasp

Many gardeners prefer to let nature help manage unwanted

Ootheca on Pride of Barbados in Discovery Garden
(MG Hedy Wolpa)

Praying mantid's large eyes help locate prey
(MG Herman Auer)

Praying mantid devouring its prey
(Pixabay.com)

"Always welcomed guests in any garden..."

pests through biological control, and parasitic wasps are ideal for this purpose. Wasps are either loved or abhorred by humans, who fear their sting and are unaware of their importance as predators of other insects.

Parasitoid wasps are members of the Hymenoptera order, which includes many wasp species, as well as bees and sawflies. They are not harmful to humans, and should be welcomed in our gardens with a diversity of plants and herbs that flower throughout the year to help supplement the adult wasps' diet with pollen and nectar.

They range in size from a very tiny 1/100-inch or so, to two inches in length, and come in various colors and shapes. Some are metallic blue or green. They may have long antennae, either straight or bent, and a narrow waist. Most adults have two sets of clear or colored wings.

Parasitoid wasps seek out a host insect and either lay their eggs (singly or in clusters) inside the host, or paralyze them by stinging them with their ovipositor, and then lay their eggs on the outside. Eggs hatch inside the parasitized insect and the larvae feeds on the host. The larvae pupate, sometimes visible on the outside of the host, looks like grains of rice. The adult wasp emerges from the pupa and flies away; the parasitized host eventually dies. This process completes the lifecycle of the parasitoid wasp. The host insect can be any age: an egg, a caterpillar or nymph, or an adult. Examples of host insects are aphids, various beetles, caterpillars, mealybugs and flies. In our Discovery Garden, tobacco hornworms and other caterpillars, like cutworms, armyworms, cabbage loopers, and tent worms have been observed with egg-like white cocoons on their backs, indicating that they've been parasitized by wasps.

There are three notable families of parasitoid wasps: braconid wasps, chalcid wasps, and ichneumon wasps. Parasitoid wasps are considered solitary, so they have no queen and no hive. They are important as natural pest control agents and as pollinators in home gardens, and they save the agricultural industry millions of dollars by reducing pesticide use.

Parasitoid wasps are among our most beneficial group of predatory insects. To provide a habitat for them in your own garden, consider these suggestions:

Have a water source and plenty of consistently flowering plants and herbs in your garden, both annuals and perennials.

Tolerate the presence of some insect pests on plants to serve as hosts for larvae.

Limit pesticide/insecticide applications in your garden to avoid harming parasitoid wasps as well as other beneficial insects.

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Braconid wasp parasitizing a caterpillar (MG Herman Auer)

Wheel bug with prey (MG Herman Auer)

Braconid wasp (Pixabay.com)

Parasitized caterpillar (Texas A&M AgriLife)

A Dangerous Bedtime Kiss

Marilyn Haupt
GCMG 2019

When night falls, this insect crawls out from its hiding place in a crevice, mud, or piles of wood. It is in search of blood for its next meal. The sought-after blood will be obtained from a warm-blooded mammal such as a raccoon, opossum or dog. It may also feed on humans. This insect is an assassin bug, genus *Triatoma* of the Reduviidae family. It is commonly referred to as a Kissing bug. Kissing bugs can vary some in appearance but, in general, they have the following distinguishing features: they are 1 to 1.5-inches in length, have distinctive long, skinny heads, are brownish-black in color, have yellowish, orange, or red marks around the outer aspect of its body and have bulging eyes. Predominately found in rural areas of Latin American countries, they are also found in 29 states of the United States.

The Kissing bug is a vector that carries the parasite *Trypanosoma cruzi* in its gut. Kissing bugs tend to defecate while feeding. Due to the proximity of the feces to the bite site, fecal material and thus, the *T. cruzi* can easily enter the body of its victim. Because kissing bugs typically bite the faces of humans at night, the sleeping victim may accidentally rub infected feces into their eye, mouth, or nose.

Why is this significant? Infection with *T. cruzi* can lead to Chagas disease. There are two phases of Chagas disease in humans, acute and chronic. In the acute phase, individuals with this disease may have no symptoms or may experience fever, muscle pain, nausea, vomiting and diarrhea. These symptoms can last weeks to months. Another symptom when infected by *T. cruzi* is swelling of the eye. This is a cardinal sign commonly seen in a victim bitten by a Kissing bug. This swelling is known as Romaña's sign but it is not present in all those with Chagas disease.

Individuals in the chronic phase of the disease may not demonstrate any symptoms. This phase can actually last for decades. However, 20 to 30-percent of those in this group may develop significant symptoms such as gastrointestinal effects and potentially life threatening cardiac implications. The effects on the heart may include sudden death as well as structural and electrical conduction abnormalities.

Treatment and supportive care for Chagas disease is available but testing for the parasite must be conducted to identify the underlying problem. Antiparasitic medications are available for treatment but it is most effective when it is used early in the disease process.

The bite of a Kissing bug is not the only way to get Chagas disease. It may be passed to others through blood donations or organ transplantations. The parasite may also be transmitted from an infected mother to an unborn child during pregnancy. Lastly, uncooked food contaminated with *T. cruzi* may cause infection.

The majority of cases of Chagas disease are found in Latin American countries. It is estimated that eight million people have this disease, with many of them unaware that they are infected. Cases of this disease are now being found in the United States. Close monitoring for prevalence of this disease is being conducted.

Gardeners can do their part by looking for kissing bugs in their areas, reporting it, and killing it. Texans may reach out to their local county agent or entomologist for assistance with identification of insects and potential management programs.

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Triatoma sanguisuga
Kansas Department of Agriculture, Bugwood.org

Nymph
Sturgis McKeever, Georgia Southern University, Bugwood.org

Ouch! A Look at Asps and Red Velvet Ants

Marilyn Haupt
GCMG 2019

If you spend any time in a Southern garden, you're likely to come across insects who pack a painful sting. Those insects would include asps and red velvet ants.

Asps are slug caterpillars that are part of the Limacodidae family. The Puss moth caterpillar (*Megalopyge opercularis*) is very common in southeast Texas. These asps feed on the leaves of shrubs and a variety of trees such as oaks, elms, and sycamores. They are frequently found on rose bushes. Asps may feed in groups and can quickly defoliate greenery.

The Puss moth caterpillar is the larval form of the Flannel moth. Flannel moths spend the winter in cocoons and emerge in late spring or early summer. Mature moths are small and hairy. They are less than an inch and a half from wing tip to wing tip. They are active at night and can be seen flying near the area where they laid their eggs. The female Flannel moth will mate the first night she emerges from her cocoon and will lay eggs within one or two nights on the leaves of host plants. The life cycle of this asp is egg, larvae, cocoon, and finally moth. The span of time from egg to moth is five to six weeks. The larval stage is the most destructive. During this stage, asps feed on foliage and it is in this stage that they can cause harm if touched.

Asps are typically an inch in length and have long hair all over their body. The color of the hair varies. Most are yellowish-brown but they can also be gray and reddish in color. Embedded in the hair are groups of stinging spines that release venom. When contact is made with the hair and spines, it will result in irritation of the skin and severe, burning pain.

Awareness of their preferred food sources around your home and garden can help reduce the risk of coming into contact with this insect. It is also best to visually scan leaves, branches, and the bases of trees for these insects before you start to work. If asps are present, never attempt to handle them with bare hands. An organic option to kill asps is to spray them with *Bacillus thuringiensis* (Bt). Care should be taken when dealing with these insects. Protective gloves should always be worn when working near live or dead asps as their spines are very sharp. Dead asps should be properly disposed of to avoid continued risk for exposure to their venom. If large numbers of asps are present, an exterminator could be considered.

Another garden pest that can cause pain with its sting is the Red velvet ant (*Dasymutilla occidentalis*). It is part of the Mutillidae family. This insect is also commonly known as *cow killer*, although it is unlikely its venom can result in the death of a cow. Never the less, the venom packs an excruciatingly painful sting. They can be found all over Texas, the eastern seaboard, and throughout the southern areas of the United States. They inhabit sandy fields, meadows, crop fields, and deserts. They are active during the day and throughout the warm months of the year.

Puss moth caterpillar *(Megalopyge opercularis)*
James Solomon, USDA Forest Service, Bugwood.org

Flannel Moth *(Megalopyge opercularis)*
Rebekah D. Wallace, University of Georgia, Bugwood.org

"Early identification is always ideal…"

Interestingly, the Red velvet ant is not an ant. It is actually a wasp. Having a sturdy exoskeleton, it can grow to be three quarters of an inch to an inch in length. Females are usually larger in size than males. The female of this species has very short hair that is typically bright red and black with a velvety appearance. The female body is similar to that of an ant, hence the name. The females are wingless and use their legs to crawl around. It is the female red velvet ant that is commonly seen in the garden or open field. The female has a stinger at the end of her abdomen and will use it to protect herself. She will also generate a squeaking sound as a warning when confronted with danger. Male red velvet ants also have hair that has a soft, velvet-like appearance but in contrast to their female counterparts, they are typically more reddish-orange in color. In addition, males have black wings and no stinger. Their appearance is more like that of a wasp. Males can be seen flying low in search of a mate.

Adult red velvet ants feed on nectar from a variety of flowers but will also make a meal from other insects such as flies, bees, and other wasps. They are parasitic insects as the females lay their eggs on immature ground nesting wasps and bumble bees. The larva of the Red velvet ant will then feed on the host insects within their nests.

Fortunately, red velvet ants are fast moving solitary creatures. They are not found in large numbers. Allowing the female Red velvet ant to leave your area may be the best way to avoid being stung.

The physical response to a sting by an asp or a Red velvet ant can vary from person to person. Authorities suggest immediate medical attention should be sought for significant negative effects including difficulty breathing.

It is always good practice to survey the area in your garden where you plan to work before you get started. This will allow you to identify potential risks from stinging or biting insects. It is also a good idea to take the time to look under the leaves of plants that are at risk for other garden pests such as aphids or loopers. Early identification of problem insects is always ideal.

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Adult Female Red Velvet Ant *(Dasymutilla occidentalis)*
Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org

Adult Male Red Velvet Ant *(Dasymutilla occidentalis)*
Johnny N. Dell, Bugwood.org

Bugs: The Ugly / Unusual

Kathy Maines
GCMG 2017

According to the Smithsonian Institution there are 10 quintillion (10,000,000,000,000,000,000) insects. That's 19 zeros. I was asked to write about three ugly insects. What makes an insect ugly? Is it how they look, how they act or the amount of damage they cause? How do I choose three ugly insects out of 10 quintillion? Tough question. I decided on the Antlion (great name), Oleander aphid (Galveston is the Oleander City) and the Fall webworm (I have been unable to find anyone who likes webworms). My source for information on these ugly insects is texasinsects.tamu.edu

An antlion, Myrmeleon sp. (Neuroptera: Myrmeleonidae), adult.
Photo by Drees. https://texasinsects.tamu.edu/neuroptera/antlion/

Common Name: Antlion

Scientific Name: *Myrmeleon* sp.

Order: Neuroptera

The Antlion itself is not, in my opinion, an ugly insect. The adult is similar in looks to a Damselfly. They are flying insects about 1.5-inches long with clear wings. They lay their eggs in the sand and it is the larval stages that are ugly. They have round abdomens, flat heads, and piercing mandibles. The larvae burrow into the sand by going backwards in a circle. This makes a type of pit in the sand. Small insects such as ants fall into this trap, and the larvae throw sand on top of them so they cannot leave. They then use their piercing jaws to suck out their body fluids. The Antlion and its larvae are considered beneficial insects.

An antlion, Myrmeleon sp. (Neuroptera: Myrmeleonidae), larva.
Photo by H. A. Turney. https://texasinsects.tamu.edu/neuroptera/antlion/

Common Name: Oleander aphid

Scientific Name: *Aphis nerii*

Order: Homoptera

The Oleander aphid is bright yellow with black legs and black tubes, called cornicles, protruding from their abdomen. You very rarely just see one aphid, especially in the spring and summer. In Galveston County we see them largely on oleanders and milkweed. Aphids themselves

Oleander aphids (MG Kathy Maines)

"There are 10,000,000,000,000,000,000 insects…"

Fall webworm
Hyphantria cunea (Drury) (Lepidoptera: Arctiidae), caterpillar. Photo by C. L. Barr.
https://texasinsects.tamu.edu/fall-webworm/

Fall webworm egg mass
http://lubbock.tamu.edu/files/2015/05/Fall_webworm_2015.pdf

Fall webworm moth
http://counties.agrilife.org/kerr/files/2014/02/Fall-Webworm.pdf

do not normally injure plants; however, they secrete honeydew on leaves that form sooty mold, which can be really ugly. We have many insects that love to eat aphids. These include lacewings, lady beetles, hover flies, midges, big-eyed bugs, damsel bugs, soldier beetles, and blister beetles.

Common Name: Fall webworm

Scientific Name: *Hyphantria cunea*

Order: Lepidoptera

If you have pecan trees or mulberry trees you are very familiar with the fall webworm and their webs. They not only cover leaves and branches but their webs can get to be several feet in diameter. Webs will be full of one-inch long hairy caterpillars. Caterpillars are light yellow or green with dark heads and a stripe with black dots (called tubercles). If you look on the underside of leaves you can see egg masses that look like they are covered with hair. As soon as they hatch, caterpillars start eating leaves and spinning webs. The adult moth is white and can lay two to four generations of eggs per year. If you tear holes in the webs, wasps and other predators will help you by eating webworms.

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The Monarch Butterfly and OE

Chris Anastas
GCMG 2012

Most of you know what a monarch butterfly is but let's first do a quick monarch refresher. Monarch butterflies are found in many areas around the world with North America being their origin. Our North American monarch, *Danaus plexippus*, is the only monarch that migrates multi-generational, having a generation every year migrating from as far north as Canada — the farthest north milkweed grows — to their mountainous overwintering destinations in the trans-volcanic belt of Mexico.

Every year the first three generations of our monarchs have an average lifespan of one month. The last generation, being the fourth, born in the fall of the year, is the one that travels to overwinter in Mexico, living an average of eight months. They are non-breeding monarchs as they must save their resources for the long journey. They also must build up additional resources along the migration route as very few nectar sources are available in the overwintering areas. Those butterflies begin arriving in Mexico during November and begin leaving the first of March as spring is approaching. The over-wintered monarchs make their way to Texas and finally begin mating and laying eggs which will then become the first generation of the year. Their timing, leaving Mexico in March, coincides perfectly with the wildflowers blooming in mass which supply the needed nectar to replenish their spent resources. Further, the native milkweed is emerging from winter dormancy just in time for mom monarch to lay her eggs. Milkweed is the obligate host plant for the monarchs, so the tender spring leaves are perfect for eating by the tiny emerging caterpillars.

OE or *Ophryocystis elektroscirrha*, is a parasitic protozoan whose main host is the Monarch butterfly. Researchers believe that this parasite has been with the monarch for a long time but the infection rate has remained extremely low until recent years; it may be a significant factor in the decline of the monarchs' population. The lifecycle of this parasite is tied closely to that of the monarchs. There are two stages of this protozoan. One an inactive but viable stage, scientists call *spore*, with an outer shell of sorts — similar to that of a seed. The other stage of OE is an active replicating protozoan. The adult butterfly has no active protozoa inside its body but does have the spores, sometimes millions, concentrated and sticking on its abdomen and wings. When mom monarch lays her eggs, generally on the underside of the milkweed leaf, she uses her abdomen to place the eggs. They readily adhere because they are sticky, but regretfully the OE spores also adhere wherever her abdomen touches. When the caterpillar emerges from the egg the first thing it will do is to eat the eggshell and then the milkweed leaf around the egg. As the caterpillar consumes the spores on the eggshell and leaf, upon entering its digestive track, the enzymes of the caterpillar break open the shell of the spores and release the now-active protozoa. The active protozoa can only live inside of the caterpillar, not outside of its body. The protozoa begin reproducing as the caterpillar continues to feed itself on the leaf. The protozoa continue to multiply through the monarch's pupa/chrysalis stage. A few days before emerging from its chrysalis, the active protozoa produce spores on the butterfly's wings and abdomen. As the butterfly emerges, there are no longer active protozoa inside its body but does have the viable inactive spores on the outside of its body.

Butterflies feeding on pine needles
(C. Formanski, as an employee of the US National Park Service)

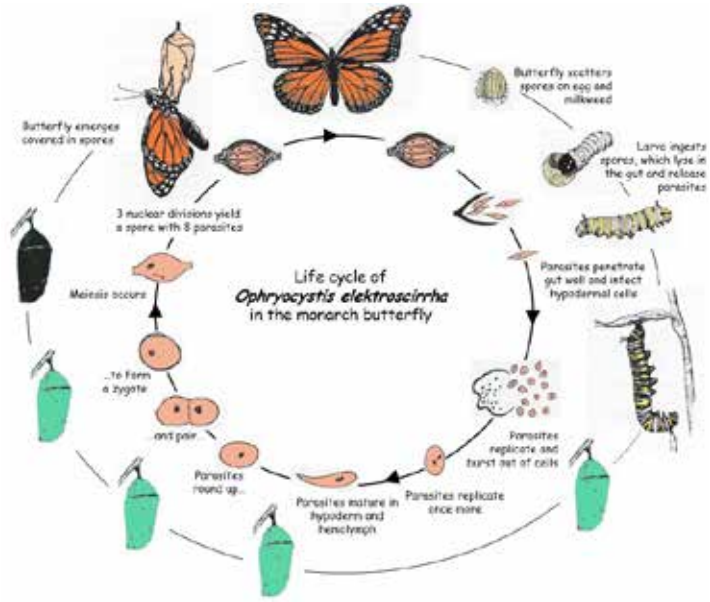
Deformed monarch.
Courtesy of Project Monarch Health

"Milkweed is the obligate host plant…

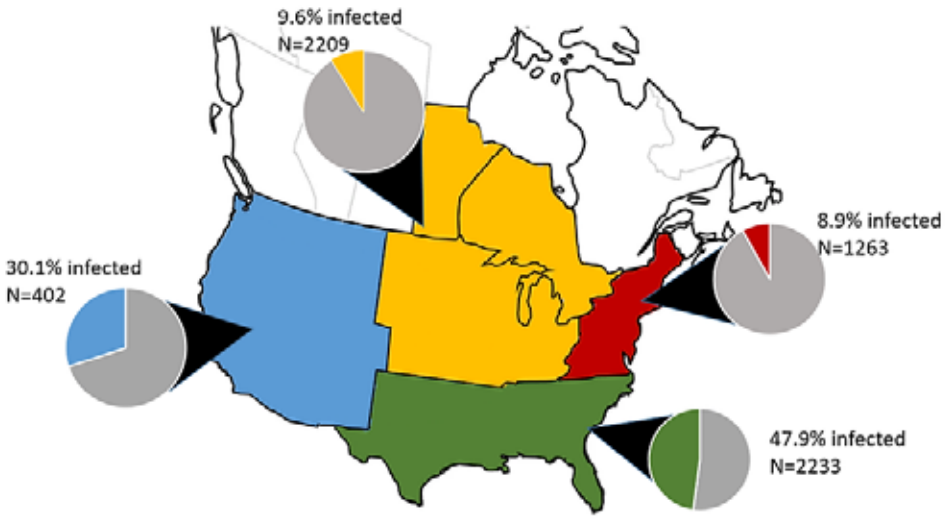
A caterpillar, whose mother was infected and began ingesting the spores as soon as it came out of the egg, will have a severe infection; however, a very late-stage caterpillar that comes across a leaf with some spores will have a lesser infection as the protozoa will have less time to reproduce. A severely infected butterfly may emerge from the chrysalis deformed or may even look perfectly normal. The infected butterflies often live their normal one-month lifespan, with the female having left spores on every single egg and the eventual outcome being that every caterpillar will ingest the spores.

Research documents even the diseased monarchs that look normal will have wings that are lighter and less sturdy than a healthy monarch and are susceptible to being easily torn, not being able to endure the rigors of a long-distance flight. This is likely the reason for the low OE infection rate at the overwintering sites and in northern states.

A recent study has shown the overall OE rate in the United States has gone from an average of 0.5 percent to 10 percent since 2006. That study also suspects, after looking at environmental changes along with human involvement with monarchs, the increase is most likely anthropogenic — caused by human interventions. The fad of growing exotic milkweed (usually *Asclepias curassavica*), the home-raising of monarchs, and the mass rearing of monarchs for sale to release at events, were noted as some likely causes. When native milkweed goes dormant in the fall any OE spores on the leaves will break down in the soil. Exotic milkweeds do not go dormant in the winter, allowing the OE-diseased monarchs that were unable to migrate to Mexico to have milkweed available all winter to unfortunately produce a population of diseased monarchs. Migrating monarchs arriving in the spring from Mexico can mate with those diseased monarchs already onsite and subsequently lay eggs on milkweed that likely had accumulated OE spores during the winter. Having few repeated freezes here on the Gulf Coast, we have a higher OE rate than the rest of the country, as all milkweeds, both native and exotic, farther north are either frozen or go dormant for the winter.



Monarch Lifecycle
Project Monarch Health



2020 Infection rates from Project Monarch Health

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Charlotte, the Garden Spider

Jan Brick
GCMG 2001

In general, spiders are avoided since some folks find them creepy, off-putting, or repellent. The web you might walk through can feel disgusting on your skin, but it is quite harmless and is only suspended there to enable a spider to move from one area to another that she may find more suitable. Garden spiders are not venomous. Typically, they are not aggressive and will avoid human contact unless disturbed, tampered with, or acting in self-defense.

The Yellow garden spider (*Argiope aurantia*), also known as the Golden garden spider or Golden orb-weaver, is often seen in summertime gardens. Quite attractive, being marked with black, yellow, and white on the abdomen, female black and yellow, the Yellow garden spider sport legs that are black with red or yellow bands near the point of attachment. She will spend most of her time with her head hanging down in the mid center of the web. Female Yellow garden spiders will usually remain in a limited area during their lifetime. Favorite prey for this Yellow garden spider (considered a beneficial insect) includes mosquitos, moths, wasps and mud daubers.

The black and yellow Argiope spider is one of the most conspicuous species of orb-weavers, not only because of its large size, females to over an inch, males 1/4 inch to 3/8 inch, but for the system that is utilized in spinning its web, a spiraling circle with bright white zigzagging forms hanging vertically in the center. These webs are snares for flying insects. In areas of abundant prey, the spiders can grow inches in diameter, provoking awe and unease in those who come across one on a wooded trail.

Constructing the web is a remarkable undertaking. Beginning with a stable initial point, a grass stem or a window eave, she lifts her abdomen to discharge several strands of silk from her spinnerets that merge into one thread which will then drift into the existing base she has begun fabricating. She will add bridge lines and scaffolding for the framework. Next comes the hub made with additional threads following a spoke-like design. The sticky silk that she employs for the spiraling strands will actually catch her prey. Once she completes this part of the construction, she will devour the center hub and its framework. One final step to completion will remain, the auxiliary *stabilimenta* (the white zigzagging), thought to provide structural stability. Only spiders that are active in the daytime use stabilimenta, weaving webs up to more than two feet in diameter with complex structures.

The black and yellow male is less colorful and smaller than the female. He will die shortly after mating and will be eaten by his mate, and for that reason is seen less often. The black and yellow Argiope breeds once a year. A male, after finding a female in her orb, will set up a small web of his own on an isolated portion of the female's web. From this position, presumably a sheltered location, he will court her by plucking and vibrating the web. Apparently, she finds this exciting and stimulating as she

Yellow garden spider
James Braselton, Bugwood.org

Zigzagging
Kevin Taylor, Bugwood.org

Black widow
Sturgis McKeever, Georgia Southern University, Bugwood.org

"Constructing the web is a remarkable undertaking

Brown recluse
Ed Freytag, City of New Orleans, Bugwood.org

Jumping spider
Joseph Berger, Bugwood.org

Wolf spider
Joseph Berger, Bugwood.org

moves quickly to capture him.

The female lays her eggs on layers of silk for protection, usually in the cover of night. She forms the sheet into balls that she suspends near the center of the web where she can protect them from predators. Each spider will produce several sacs with nearly a thousand eggs inside. The young spiders exit the sacs in the spring, with some remaining in the garden area while others will be carried away on a strand of silk to another suitable garden, a territory that is widespread across Galveston County.

The Argiope spiders are generally harmless but can be a nuisance if building over-sized webs in sites that may be inconvenient for humans. They are not aggressive, but are, in fact, beneficial to our environment. Since the temperatures have risen, I will be anxiously awaiting the return of "Charlotte."

Other spiders common to our area include:

The Black widow spider (*Latrodectus mactans*) is known for certain characteristics. It attacks only in self-defense, has an hour-glass-shaped marking on its abdomen in red or pink, and has a poisonous venom that can be fifteen times stronger than a rattlesnake, and reported to cause nausea, muscle aches, and difficulty breathing.

The Brown recluse (*Loxosceles reclusa*) spider has a dark violin pattern on a brown or tan body and six eyes instead of the eight seen on other spider. Its bite may cause severe lesions to the skin, but not necrosis (tissue death). It is rarely aggressive and attacks only if threatened.

The Jumping spider (*Sitticus* spp.), often mistaken for a black widow spider, may be black, brown, tan, or gray with white, blue, red or green markings. They do not build webs, but when jumping, they can emit a silk dragline to ride to safety. With well-developed eyesight, they use their vision to study and track their prey. These are most likely the webs that you encounter on your stroll through the yard.

The rabid Wolf spider (*Rabidosa rabida*) will chase and leap on its prey. It is hairy with a camouflage appearance, has orange-brown coloring with black and gray splotches or stripes, and only bites if provoked. The bite can be quite painful, but not lethal. Body size may be more than a 1/2-inch, while the largest species can have legs up to three inches or more and may resemble a tarantula.

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Dragonflies *(Anisoptera)*

Patty McElhaney
GCMG 2022

Magic is seeing the wonder in nature's every little thing, seeing how

wonderful the fireflies are and how magical are the dragonflies.

- Ama H.Vanniarachchy

Is there anything more beautiful and mesmerizing than a dragonfly? Their brilliant, iridescent, jewel-like colors make them a favorite of the young and old alike. They are almost magical in their appearance and in their flying ability.

Dragonflies are found all over the world and one of the oldest of the insect species. Some countries, such as Japan, represent the dragonfly in their art and culture. In almost every part of the world, the dragonfly symbolizes change, transformation, adaptability and self-realization.

Dragonflies are entirely beneficial insects. They do not bite or sting humans. They do no harm to crops, plants or pets. Most importantly, the dragonfly tells us about the health of an ecosystem. Their young are affected by water pollution and the flow of water. A healthy population of dragonflies indicates a healthy water ecosystem.

Dragonflies benefit your yard by eating many types of nuisance pests including mosquitoes, aphids, flies and gnats. An adult dragonfly can eat hundreds of mosquitoes in one day making them a natural pest control option for mosquito-infested areas.

So, if dragonflies are beautiful and beneficial to your yard and garden then how can you attract them to your yard?

First, install a water feature in your yard. Most of the life cycle of a dragonfly is spent underwater in the nymph stage for up to four years. Once they become an adult dragonfly they only live an average of six weeks. Adult females need water to lay their eggs and thrive. The nymphs grow and molt up to 17 times before surfacing and transforming into the adult dragonflies that we see. Dragonflies need sunny warm weather to fly. With the emergence of spring the nymphs crawl out of the water, shed their skin and emerge into a young adult. The best bodies of water for dragonflies are at least two feet deep with lots of plants and undisturbed soil where nymphs can hide from predators. Ponds without fish are perfect for the dragonfly garden.

Next, choose the right plants. What plants attract dragonflies? Choose plants with leaves and stems that can act as perches. Choose plants with colorful blooms such as Black-eyed Susan, meadow sage, yarrow and borage. Planting flowers such as these near a water feature will create an excellent ecosystem where dragonflies can thrive.

Finally, create a shelter for the dragonflies. Dragonflies are mostly active in the daytime and need somewhere to rest at night. Adult dragonflies like tall grasses, shrubs and reeds near water that give them spots to hide from predators like birds and amphibians while remaining close to their offspring. In addition to creating a natural habitat for the dragonfly you can also craft an insect hotel by filling a birdhouse with bark, straw and twigs and placing it near the water feature that you have created to give dragonflies a sanctuary to rest.

So with all this great information about such a beautiful and beneficial insect, let's start attracting dragonflies to our gardens and yards!

"...the dragonfly tells the health of an ecosystem..."

Fun Facts about the Dragonfly

They are incredible flyers

When it comes to flying there are few species in the animal kingdom that can compare to the dragonfly. Dragonflies can independently move and rotate each of their four wings. As a result of this unique ability, the dragonfly can fly backwards, sideways and up and down. They can turn on a dime and can hover in a single spot for a minute or more. They are fast as well with some species reaching speeds up to 18 mph. They are also known for their feats of endurance. One species, the Globe skimmer (*Pantala flavescens*) flies 11,000 miles across the ocean in what is considered the world's longest insect migration.

Dragonflies are all eyes

The head of the dragonfly is composed primarily of very large compound eyes, which contain 30,000 facets, each giving the dragonfly information about its surroundings. With nearly 360-degree vision this extraordinary vision is what allows it to zone in on one insect within a swarm without colliding with all the other insects.

Dragonflies are easy to recognize

The adult dragonfly can be mistaken for a damselfly: both have long, slender abdomens, stocky thorax and large eyes. Dragonflies are larger in overall size with two pairs of wings fixed like the shape of an airplane; damselflies can fold their wings back above their body. All adults come in dazzling colors, from red to blue, yellow to green and markings distinct to species.

Dragonfly nymphs breathe water through gills

Dragonfly nymphs live underwater, breathing water through gills located in their abdomen. They can squirt captured water with force to give themselves a quick, jet-propelled movement.

Dragonflies are fierce predators

Dragonflies can intercept their prey midair. They can judge the speed and trajectory of a prey target and are able to adjust their flight to intercept their prey with a 97 percent success rate. They have incredibly sharp mandibles. Dragonflies belong to the order *Odonata* meaning "toothed ones."

Some species of dragonflies can even produce offspring in saltwater environments

Certain species such as the Seaside dragonlet (*Erythrodiplax berenice*) can even produce offspring in environments saltier than typical seawater. Its habitat consists of salt marshes, mangroves and saline lakes. It is the only dragonfly species in North America that is restricted to salty habitats.

Dragonflies inspire us to create new technology

Because of their incredible flying abilities and vision, dragonflies are studied for technological advances in everything from drones to artificial visual systems.

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All photos by Brenda Barr Lightfoot

Firefly or Lightning Bug? Yes to Both!

Lisa Belcher
GCMG 2014

Each summer when our family vacations at the Frio River, the first night is special for us. We sit on our cabin porch at dusk, patiently waiting to see who can spot the first firefly of the night. It's tradition and an awesome sight to see them in the dark.

Fireflies, which are also known as lightning bugs and depending on where you live, are neither fly nor bug. They are actually beetles, just like ladybugs, and are nocturnal members of the Lampyridae family. Like most beetles, fireflies possess a pair of hardened wing cases, called elytra, in which the wings fold underneath. The elytra open to allow the wings free for flight. Dating back 130 million years from a common ancestor, fireflies carry an enzyme called luciferase, named from the Latin word *Lucifer* which means light bearer, causing them to glow and flash mid-flight.

With over 2,200 firefly species worldwide, their sizes, shapes and colors are many. They live in meadows, parks, backyards and prefer humid climes. In the United States and Canada, there are 170 species and if you look at Texas alone, we have over 50 species, 11 of which are only known to live here. Those that you are most likely seeing light up at night are more than one species. The most common firefly is *Phontinus pyralis*, commonly referred to as the Big Dipper. This is the firefly you see making the "J" movement as it maneuvers trying to find a mate. Each species has its own flashing light pattern to attract a female. If a waiting female on the ground or shrub likes the pattern, she answers with a flash of her own. The phenomenon of flashing is called bioluminescence which occurs on the underbelly of the firefly.

Often confused with fireflies, glow worms are not in the firefly family and do not have wings. They do not intermittingly flash. Glow worm females are wingless and wait for the night to come out. They will glow for hours until they find a mate. They live in caves unlike the firefly.

The lifecycle of the firefly is very interesting. During its complete metamorphosis eggs are laid in substrates that include wet or moist soils, crevices, leaves, and moss. Two weeks later the larva is born and they immediately crawl underground and stay for several months and sometimes years before pupating. They have a voracious appetite too. They inject a numbing chemical into their prey before eating. On the menu are snails and slugs, but the top favorite is the common earthworm. Larvae are born with luminescence to deter themselves becoming a meal. They also are born with a toxin which makes them deadly to predators, which are often frogs, toads and newts. Upon reaching adulthood, fireflies do not eat. They simply fly around searching for a mate. Their adult lifecycle only lasts a few weeks. Males offer, what scientists refer to as a "nuptial gift" during mating. This gift is actually nutrients that the male passes to the female, which not only extends her life but also encourages her to lay more eggs.

You may notice fewer fireflies in your own back yard in recent years. The top three threats to these flashing insects are the destruction of their habitat, light pollution (very disruptive in the courtship), and pesticides in the form of neonicotinoids. What can you do to encourage fireflies? Leave leaf litter next to your shed with a little woody debris. Scientists also suggest cutting back the hours of outside lights or dim your lights, if possible, during the summer months. Lastly, avoid lawn pesticides.

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Firefly big dipper

Fireflies mating

Firefly taking off

All photos: Francisco Corado Rivera Pixabay.com

Photo Gallery: Bugs

Capturing insects in action is like getting a look through a magnifying lens to see how the 10 quintillion live and thrive. Enjoy photos shared by people who allow us to look into these tiny worlds.

Seven spotted Lady Beetle (MG Marilyn Haupt)

Spicebush swallowtail (MG Larry Brizendine)

Crane fly (Brenda Barr Lightfoot)

Long tailed skipper (MG Marilyn Haupt)

May fly (MG Hedy Wolpa)

Plant of the Month: Kalanchoe and Cultivars, or Kalanchoe With a Twist

Karyl Mehlman
GCMG 2022

Kalanchoe blossfediana, commonly called Kalanchoe, also written Kalanchöe, is a particularly eye-catching plant due to its colorful blossoms and deep green, succulent leaves. Kalanchoe flowers appear in clusters that include varieties consisting of many colors of the rainbow: red, pink, salmon, and yellow. 'Calandiva,' a popular cultivar with rose-like flowers bred for larger blossoms, has most of the same characteristics as Kalanchoe but is not a variety.

Cultivars differ from varieties in that they are made by man and are not a freely occurring entity derived from the parent plant. A cultivar does not produce true-to-seed, whereas a variety usually produces true-to-seed. The naming of a cultivar differs from that of a variety. A cultivar name consists of the genus and species followed by the name of the cultivar in single quotation marks. The cultivar 'Calandiva' was developed in Norway.

The genus Kalanchoe contains about 125 species of tropical, succulent plants in the stonecrop family Crassulaceae, mainly native to Madagascar and tropical Africa. The genus was first described by the French botanist Michel Adanson in 1763. It was brought to Paris in 1927 and was discovered by Robert Blossfeld, a German seed merchant who introduced the Kalanchoe as a houseplant, and the species *bossfeldiana* has been named in his honor.

Located about 250 miles off the east coast of Africa, Madagascar is the world's fourth largest island with 226,756 square miles. A mountain range with altitude of greater than 9,000 feet runs down the center of Madagascar, and the Kalanchoe plant grows naturally in its cool, arid regions. Because of these rugged conditions, Kalanchoe adapts to many indoor and outdoor settings making it a popular house plant although it can survive outdoors if given plenty of sun and, like most succulents, infrequent watering. It can winter in Zones 10 to 12.

Kalanchoe *blossfeldiana*
Barbara H. Smith, HGIC, Clemson Extension

Calandiva Pink
Stephen Brueggerhoff

Kalanchoe was one of the first plants to be sent into space, sent on a resupply to the Soviet Salyut 1 space station in 1971.

CARE:

Both Kalanchoe varieties and cultivars like sandy, well-drained soil that is acidic and drains well. Plants should be allowed to dry out between watering. Feeding should be done during blooming periods.

Propagation is best done in spring or early summer using cuttings, leaves, or stems in a 50-percent peat moss and 50-percent perlite mixture. Allow the cutting to callus for several days before inserting into the rooting medium. Place the pot indoors in bright, indirect light and in a closed large plastic bag to maintain high levels of humidity. Cuttings should be established enough to transplant in 14 to 21 days. After flower buds are large enough to be seen above the foliage, day length is no longer crucial. Plants can be placed in any location regardless of night lighting. Plants exposed to naturally short-day lengths in early October should begin flowering by January, approximately 12 weeks from the start of long nights.

TOXICITY:

The entire plant is considered toxic. In common with other succulents, particularly of the Spurge plant family (Euphorbiaceae), it can be toxic to humans causing a rash if the sap touches the skin. It can be toxic to small animals such as dogs and cats and can produce nausea and vomiting. More severe and even fatal effects including cardiac or pulmonary failure have been reported. Toxicity has also been reported in grazing animals.

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Orange variety *(Kalanchoe blossfeldiana)*. Barbara H. Smith, HGIC, Clemson Extension

Meet a Master Gardener: Fran Brockington

Vickie Hall
GCMG Intern2023

On the last day of the Texas Master Gardener training class in April, Fran Brockington spoke to the group about how wonderful the Discovery Garden was and introduced us to her bulb garden. She spoke of the many different types of bulbs and how proud she was to have started this project. I immediately wanted to see her garden. I met with Fran recently to find out how she turned her love for bulbs into a Discovery Garden project.

Raised in South Carolina, she remembers the "old house" that had a large yard and many plants. Her mother grew daffodils as gifts for teachers. There were also passalong purple bearded irises from her great grandfather's house, silver maple trees, and azaleas. One of Fran's favorite childhood memories was interacting with nature running through the rows of sweet shrubs, touching the leaves, and smelling the amazing scents of the flowers. When her father built a new house, her grandmother took cuttings in old coffee cans to root so the new yard would have shrubs and flowers that were familiar. They included a blue Hydrangea, Tea olive (*Osmanthus fragrans*), camellias, and Sweet-Breath-of-Spring honeysuckle (*Lonicera fragrantissima*).

Fran's degree in Early Childhood Education allowed her to follow her dream of working with children. She worked as a pre-K and Kindergarten teacher and eventually became the director of childcare centers in Houston. In 2007 Fran visited childcare centers as a consultant and continued consulting for the next 10 years. Going into the neighborhoods, she noticed the landscaping near the centers could be better. After retirement, Fran volunteered at Armand Bayou Nature Center, piquing her interest in horticulture. She learned about native plants in the Houston area and assisted with plant sales, eventually entering the Texas Master Gardener program in 2018.

Fran realized during her Discovery Garden rotations, there was something missing. BULBS! Her family history and love of Milk-and-Wine crinum (C*rinum* x *herbertii*) soon sent her down the path to develop a bulb garden bed. A fellow master gardener, Lisa Davis, worked with Fran to research and develop a plan for a proposal to establish a bulb bed. The bed was approved in 2020, and work on the bed began in 2021.

Remembering the childcare centers, Fran's goal for the bulb bed was to demonstrate building better EarthKind® landscapes using heirloom bulbs that naturalize in our area. The proposal included a 4 x 40-foot bed. A call for help to build the bed went out to the master gardeners for volunteers. Fran was amazed at the response she received. Cardboard was used as a barrier for grass and weeds. Ground cover plants were used instead of mulch. The plants are dependent on rain for water. Fran developed a plant list of bulbs, rhizomes, and tubers. The bed was organized by season, color, and size. Plant name labels were added to educate visitors.

Fran hoped for blooms year one, but only the Tuberose (*Polianthes tuberosa*) bloomed. Squirrels were a problem. They love bulbs as much as Fran does. To protect the bulbs, Fran covered them with chicken wire to prevent the squirrels from digging. As the bed is entering its second season, the crinum blooms in their beautiful shade of pink is breathtaking.

Fran is energetic and has a passion for bulbs. Her tip to all gardeners is this: "Follow your passion. Enjoy all garden growth. Find joy in the work you do."

I think Fran is on to something.

Bulb gardening

Crinum

MG Fran Brockington

Fran during MG graduation

Sonnenberg Gardens & Mansion State Historic Park

Barbara Lyons
GCMG 2014

In July 2016 our travels took us to upstate New York, the Finger Lakes region to be exact, for my annual college reunion at a small, now defunct, liberal arts college on the western shore of Cayuga Lake. Since retirement I have made an annual pilgrimage to spend a weekend of fun and memories with my closest college pals, making several new friends along the way. Since we live in Texas, traveling to NY requires a visit of more than just a reunion weekend (full disclosure: I'm originally a Yankee.) This particular year we decided to rent a house on nearby Seneca Lake and make a full-fledged two-week vacation in the Finger Lakes and invited my sister and her husband to share in the fun. We filled our time visiting gardens and wineries and enjoying the beautiful lake vistas, gorges, and waterfalls in the area. On this trip we visited a few gardens on the AHS RAP program (see GCG May/June 2023) list. One was Sonnenberg Gardens & Mansion State Historic Park (www.sonnenberg.org) in Canandaigua, NY.

Sonnenberg (Sunny Hill) was the formal summer home of Frederick Ferris Thompson, a New York City banker, and wife Mary Clark Thompson, the daughter of a former NY governor, having purchased the 300-acre farmstead near Canandaigua Lake in 1863. They were among many wealthy elites of the time to establish a summer home outside of large business and industry hub US cities. By the end of 1887, the Thompsons replaced the farmhouse with a Victorian mansion. In memory of her husband who died in 1899, Mrs. Thompson, using ideas garnered from their trips to Europe and Asia, began revamping the farmland surrounding the mansion and established expansive diverse gardens.

The gardens were modeled after and used stylistic elements of traditional Italian gardens, English rose gardens, classical Japanese gardens, Roman baths, Victorian rock gardens, traditional kitchen garden, evening and night blooming garden, conservatory greenhouses, and more. Each type of garden was woven into a plan for the areas directly surrounding the mansion with many water elements of ponds, fountains, or waterfalls interspersed. Sculptures are artistically placed throughout the garden spaces. At one time there were several aviaries and many species of exotic birds on the property but only the peacock building remains today. One can just imagine the birds gracing the various gardens.

After Mary Clark Thompson's death, her heirs eventually sold the property to the federal government and a veteran's administration hospital was built on the grounds. Workers from the hospital used the mansion for their housing. Over the ensuing 50 years patients and staff did their best to maintain the gardens but over time the property deteriorated, the gardens were overgrown and vandalization worsened the conditions. In the late 1960s preservation-minded citizens began efforts to recoup the 50 acres of property containing the mansion and gardens to return it to its previous stately condition. In 1972 the mansion and gardens opened to the public once again. Eventually the State of New York purchased the property from the VA and deemed it part of the New York State Park System, only one of two gardens so named.

The mansion is in the Queen Anne style of architecture and boasts 40 rooms, stately spires, impressive fireplaces, and a

Italian Garden 1

Italian Garden 2

All photos by MG Barbara Lyons

"There is beauty in every season…"

large wrap-around veranda. While not as posh as the Newport, Rhode Island mansions, it is still impressive with interior woodworking among its best features. Unlike many mansions of the day which are open for touring, this mansion is self-guided and rooms on the tour are completely open for visiting. Some of the outstanding items of interest include a period piano and billiard table. Docents in Victorian costume are available to answer questions and provide a level of security for the displayed objects.

Japanese Tea House

Mansion

Sub-Rosa Garden

The gardens include various flowers, shrubs, and trees which give the place a three-season appeal. In the spring, when "nature's first green is gold," leaves appear on the bare tree and shrub limbs and perennials and bulbs peek through the warming earth after a cold winter. During summer flowers abound in the various gardens, complimenting the evergreen and formal garden structures, and vegetables are grown in some of the greenhouses to help supply local food pantries. Fall concludes the open season for the garden and features the changing colors of leaves of the different deciduous tree species. There is beauty in every season at Sonnenburg's gardens.

The nearby greenhouses, made in the traditional style of wood and glass, are utilized in providing native plants on the property and within other NY state parks where habitat restoration is ongoing.

At present six full-time workers, aided by 170-plus volunteers, run the property which now includes a wine center, exclusively featuring Finger Lakes wines, an independently run cafe, and well-appointed gift shop. The facilities are administrated by a nonprofit organization which cares for the home and garden on a five-year contract without any financial outlay from state funds. The organization is in its second 5-year contract currently showing the sustainability of this funding method. Financial support from admission fees, memberships, grants and donations, special public events, weddings, and proceeds from the wine center and gift shop fund the endeavor. As finances allow, various gardens which remain in a state of disrepair, such as the Roman baths, will be scheduled for restoration.

Sonnenberg is open for touring seasonally between May 1 and October 31 each year and closed during the winter months. Garden and home tours as well as the gift shop are open Thursday through Monday each week with cafe open from 11 am until 5 pm and wine tasting on weekend afternoons only.

Enjoy a picnic lunch on the lovely mansion's grounds and take the guided tour in the early afternoon. Self-guided tours are available during open garden hours with one guided tour per day at 1 pm. As the top tourist attraction in Ontario County, Sonnenberg Gardens is well worth a stop on your RAP garden tour adventure.

Reference: www.sonnenberg.org

All photos by MG Barbara Lyons

Discovery Garden Update

Tom Fountain
GCMG 2008

What a spring for the Discovery Garden! Although we have been a little behind on rainfall for the year our rainfall the past few months has averaged about an inch above normal with seasonal temperatures a little below normal. NOAA expects El Niño conditions to develop over the summer. As a result, the extended forecast indicates temperatures will likely become warmer than normal with rainfall continuing above normal. The HOT weather has just begun! So, when we are working outside, we all need to encourage each other to take frequent rest breaks and drink lots of water.

The spring wet weather pattern caused some loss in the potato harvest this year. Too much rain at the wrong time caused some of the potatoes to start to rot. In (Fig. 1) John Ely, Steve Holliday, Kevin Lancon and Dan Walker were digging, counting, and weighing the potatoes of each plant. The entire process was part of a study to see which potato varieties perform best in our area. You can't recommend what you don't know.

June was quite busy. The MG class of 2023 had a fun and well attended "tomato tasting" at the Discovery Garden. A nice farewell party was held for Sharon Zaal as she and her husband Tom (a Master Naturalist) are moving to northwest Harris County. As many of us, Sharon seemed a little emotional as she talked with Linda Barnett, Extension ANR Agent Phoenix Rogers and CMR Agent Julie Massey during the luncheon for her (Fig 2). They will both be missed. On another day we were treated to a fun "cantaloupe tasting." Home grown cantaloupes from the garden were selected for the tasting. Pictured in (Fig 3) are Pam Hunter and Sven Bors-Koefoed, while Ann Ross and Bettye Vogler oversees the process. By the way the winning cantaloupe was the Ambrosia.

It's always good to see gardeners in the Discovery Garden. The garden is always in need of a little TLC. Fortunately, the MG classes of 2022 and 2023 have been very active in the garden. I noticed Judy Anderson in the low water garden with interns Tina Fincher and Mary Gordon. She was explaining what she was going to try to get done in the garden that day (Fig. 4). If you haven't noticed there have even been


1


2


3

a few new faces on the tractor the past few weeks. Michael Reed and John Mitchner are some of the garden helpers that took the tractor safety course given by Phil Haught and have been operating the tractor under Phil's watchful eye.

During one of our scorching hot days Rachel Montemayor, Tina Fincher, and Becky Jaschek decided that it was time to fix up the break area out beside the barn by putting down a brick area and planting some flowers. In (Fig.5) the ladies have the brick down and moving some rebar to plant flowers. The finished product looks great and is just in time for the HOT weather and frequent water breaks. Way to go!

We are in hurricane season and it is expected to be an average season. That may be true but it only takes one. So, be prepared and stay safe. We hope to see you in the garden soon. Take care!


5


4

All photos by MG Tom Fountain

Annual Tomato Tasting Event

The MG class of 2023 organized the Annual Tomato Tasting Event May 25 at the Discovery Garden. A tomato and a salsa tasting were held with 11 different varieties of tomatoes involved and almost as many different salsas. People were asked to taste test the different tomato recipes and to drop a ticket in the container of the one they liked the best. There were 70 people who participated as judges. Also, an interesting group of tomato based hors d'oeuvres were provided. Pictured bottom left is part of the salsa tasting line up with Becky Jaschek, and Ralinda Fenton working the serving line. From bottom right picture first in line trying the tomato varieties is Sven Bors-Koefoed while Christie McGrath, Mary Gordan, Nancy Hiefner and Tina Fincher were serving. By the way the favorite salsa tasting tomato was the Bella Rosa variety and John Mitchiner won for Best Overall Salsa. (Nancy Hiefner won in the mild category and Mitchiner won in the hot category). Congratulations Class of 2023 on a job well done.

Tomato varieties included the following:

Tycoon	Amelia
4th of July	Goliath Pio
Bella Rosa	Big Zac
Red Snapper	Celebrity
Parks Improved Whopper	Celebration
Jolene	

And the winner was... Bella Rosa

Appetizers

MG Donna Merritt

Salsa Tasting

Sven Bors-Koefoed

All photos by MG Intern Sandy Klaud

Farewell to Sharon Zaal

This June we had a farewell party for Sharon Zaal as she and her husband Tom are moving to northwest Harris County. Sharon is our past President and has been a very active member of our Galveston County Master Gardener program and the Texas Master Gardener Association. Our President Kathy Maines, in (Fig. 1) just gave Sharon (on the right) the *Making a Difference Award* for 2023. She was talking about Sharon's many accomplishments during her time with us. Needless to say, Sharon and Tom, we miss you lots.

The buffet for Sharon was a spectacular food art display and it all tasted great. Phil Haught, Nancy Greenfield, Sue Bain, and Briana Etie, (Fig 2) are busy filling their plates with food. No one left hungry. The celebration was a wonderful feast organized by the kitchen crew and volunteers. In (Fig 3) Linda Barnett was taking pictures while Sharon thanked her, Debbie Brizendine, Ed Klein, Linda Steber, and Larry Brizendine for putting together the luncheon. Great job folks!

Sharon receives the *Making a Difference Award*

All photos by MG Tom Fountain

Seasonal Bites: Simply Delicious!

Sandra Gervais
GCMG 2011

Thank you, El Niño, for helping to raise summer temperatures worldwide to record dangerous highs. Here in South Texas, we've developed many ways to cope with the heat and humidity besides heading to the beach or the mountains. It's no surprise to learn that the first ever air-conditioned bus and office building were developed in San Antonio many years ago. So plan to take it easy this summer with good food that is simple and requires little cooking. It's just too hot!

Here are some simple, useful recipes for hot weather. The Cheddar Dressing is great on a simple salad but can easily be turned into a hefty main course with simple additions. The Texas Caviar recipe uses canned vegetables and bacon and goes well with any meat from BBQ to anything from south of the border.

Creamy Cheddar Dressing

2 tablespoons olive oil
2 tablespoons lemon juice or vinegar
1 1/2 teaspoons Dijon mustard
2 teaspoons minced garlic
1/2 cup sour cream
2 tablespoons mayonnaise
4 ounces grated good, sharp cheddar cheese (about 1 cup)
2 green onions, finely chopped
Salt and pepper to taste

Whisk together the oil, lemon juice or vinegar, Dijon mustard and garlic.
Stir in sour cream, mayonnaise, cheese and green onions.
Season to taste with salt and pepper.
Add red pepper if desired.
Refrigerate for an hour or so to let flavors meld.

This can be used on a wedge or vegetable salad or to make a tasty pasta salad meal.
Good additions to these salads include bacon bits, hard boiled eggs and various cooked meats, such as diced chicken, pork or beef. Leftovers also work quite well.

Makes 1 1/4 cups of dressing.
Note: Keep dressing refrigerated since it contains sour cream and mayonnaise.

Texas Caviar with Bacon and Avocado

Caviar:
2 cans (15 ounces) black eyed peas, rinsed and drained
1 cup corn kernels (drained if canned or thawed if frozen)
1 red bell pepper, seeded and diced
1/2 cup red onion, diced
1 cup halved grape tomatoes (or larger tomatoes cut to about this size)
3-4 slices crisp bacon, chopped
1/4 cup rinsed and chopped fresh cilantro

1 avocado, peeled and diced just before serving

Dressing:
1/2 cup olive oil
1/4 cup red wine vinegar
1 tablespoon lime juice
1 teaspoon sugar
1 teaspoon salt
1/2 teaspoon cumin
1/2 teaspoon black pepper (May use 1/4 teaspoon red pepper if desired.)

In a large bowl, stir together all ingredients listed for "Caviar" at top of recipe.

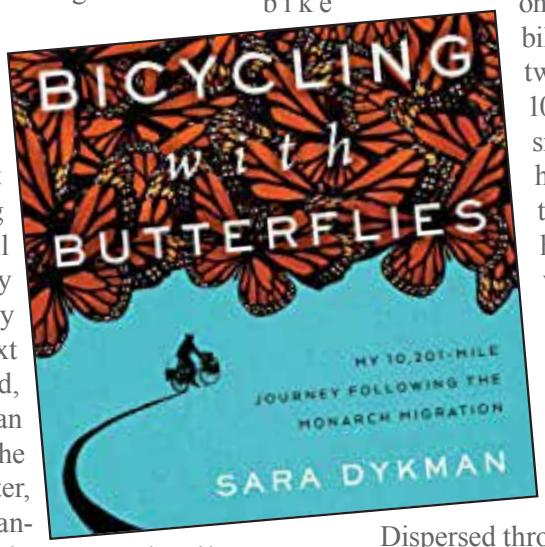
In a small bowl, whisk together all the ingredients for "Dressing."
Pour half of the dressing over Caviar ingredients in large bowl.
Mix well. Add more dressing to taste.

Gently stir in diced avocado just before serving.

Book Review: *Bicycling with Butterflies: My 10,201 Mile Journey Following the Monarch Migration* by Sara Dykman

Lisa Belcher
GCMG 2014

Who doesn't enjoy taking a moment to stop and watch a Monarch flitting around one's own backyard, all the while admiring its beautiful colors in the sunshine? Sara Dykman likes to watch butterflies, and she has a special adoration for the monarchs. An avid cyclist, Dykman had a quest to cycle the Monarch butterfly migration route. From the early age of 17, Dykman entered her first bicycle tour-pedaling up the East coast in a month-long, 40-mile day trek. Her mantra then, as it would be during her monarch quest, was simple: "A long trip is nothing more than a collection of miles."



She was inspired to bicycle with the monarchs when she first cycled into Mexico in 2013 to visit one of their overwintering sites, but arriving in April the monarchs had already embarked on their journey to Canada. Over the next few years Dykman dreamed, organized and devised a plan to not just return to visit the monarchs during the winter, but bicycle with them to Canada and back. In this book she details the year leading up to her trip in 2017, which included designing her own website, business cards, press releases, anything that would bring attention to her quest.

Dykman begins chronicling her quests as she visited all four monarch sanctuaries and shares how the forests of Mexico became smaller in past years due to forests being cut down. Having volunteered at one of the monarch sanctuaries from January through the beginning of the migration she became close friends with some of the workers. When the day came to begin her route, Dykman jumped on her 70-pound spare parts-put-together bicycle and began to follow the butterflies.

Not only did Dykman want to fulfill her special journey with the monarchs she wanted to share the Monarch plight with as many people possible on her route. This included sharing information with strangers who offered her an ice cream on a very hot day to the schools that she visited. It is almost unfathomable to read that she not only slept in cornfields, behind large bushes off the side of the road, and even culverts, but she highly valued sleeping outside to be closer to other wildlife.

One cannot imagine a 1,000-mile journey, let alone a 10,000-mile journey, but Dykman had the determination and mindset of: "If I could bike one mile, then I could bike two. If I could bike two, then I could bike 10,000." Not all was smooth cycling. The highs and lows of her travel are filled with humor and, at times, with quite unbelievable scenarios that would make some wanna-be cyclists gasp out loud at some of the predicaments she encounters.

Dispersed throughout the book is almost every fact about the Monarch's life, from the laying of the tiny egg to the metamorphosis from its chrysalis, all told in Dykman's own reverence and love of her sacred Monarch.

We also learn of strangers she meets along the way, many of whom Dykman keeps in contact to this day. When a kind stranger offers her a room, bed and warm shower, she paints a watercolor as a thank you. In her mind, "A stranger is a friend you have not yet met."

Note: Lisa Belcher organizes and oversees the Galveston County Master Gardener Green Thumb Book Club which meets monthly at the Texas A&M AgriLife Extension Office in La Marque.

The Green Thumb Book Club is happy to share the books selected for next year's reading! We will be reading seven books, the most our group has read in a single year. When you read and attend a book club meeting, the time spent counts towards Continuing Education hours. As of October, Green Thumb Book Club readers have logged 23 continuous education hours all the while enjoying interesting and lively discussions.

This year's books include a variety of gardening/nature topics as well as two garden-themed fiction books.

July
Bees in America: How the Honey Bee Shaped a Nation
by Tammy Horn

October/November
This is Your Mind on Plants
by Michael Pollan

December
The Forgotten Garden by Kate Morton

The Green Thumb Book Club meets the fourth Wednesday of the month in the conference room at the Extension office. If you have any questions regarding the books, club, time, etc., please contact Lisa Belcher at: hydrangeababe@gmail.com

MG Graduation, Awards Dinner

June 13, 2023 at the home of GCMG Mikey and Allen Isbell

Right: Class of 2022 Graduates

Karyl Mehlman
Deborah Brady
John Mitchiner
Carey Little
Mikey Isbell (for Carla Shannon)
Pam Abbott-West
Stacy Mills
Nemo Jackson
Tina Woods
Michelle Turner
Norma Torok
Shinny Anand
Helene Lieb
Angela Farris
Heidi Roth
Larry Brizendine
Patty McElhany
Wendy Baldwin
Linda Crowston
Michael Reed
Mindy Basye
John Ely
Inge Duran
Sharon Hemeon
Not pictured:
Stephen Holiday
Christina Reynolds

Below: Class of 2023 Interns & MGs with 25+ years

Left to right bottom
GCMG President Kathy Maines and
Horticulture Extension Agent Stephen Brueggerhoff presented awards.
Mikey Isbell was the hostess for the event.

All photos by MGs Karolyn Gephart & Tom Fountain

Right: Emeritus members

Below: Jill Jesson & Kathy Maines work hard.

Middle: Kathy Maines holds the third place plaque for Outstanding MG Group in Texas.

Bottom: The 2022 grads line up

TEXAS MASTER GARDENER
TEXAS A&M AGRILIFE EXTENSION
https://txmg.org/

Horticulture

July Events

Amazing Succulent Plants

7/8/23 9:00am – 11:00am
Gulf Coast Gardening Seminar
Explore various succulent plant species. Learn about soil and water needs, container planting and propagation, and home care.

To register, visit: https://galveston.agrilife.org/horticulture/

Open Public Garden Days

Every Thursday, 9:00am – 11:00am
Gardening with Master Gardeners
The Discovery Garden will be open to the public for visitors and gardening questions.

Location: in Carbide Park, 4102 Main St, La Marque, TX 77568

Beautiful Blooming Ginger

7/29/23 9:00am – 11:00am
Gulf Coast Gardening Seminar
Learn to cultivate tropical beauty at home with tips on growing and propagating ornamental ginger.

To register, visit: https://galveston.agrilife.org/horticulture/

TEXAS A&M AGRILIFE EXTENSION

Galveston County Texas A&M AgriLife Extension
4102-B Main Street (FM 519) La Marque, TX 77568
https://galveston.agrilife.org/horticulture/ 281-309-5065

2023 Master Gardener Recertification Hours

Date	Name of Program	Speaker	MG CEUs
1/5/2023	Lunch & Learn - Tree Update to Garden North End	Ira Gervais	0.25
1/7/2023	Wedge Grafting	Herman Auer, Hazel Lampton, Debbie Espinosa	2.50
1/7/2023	Growing Pecans at Home	Stephen Brueggerhoff	2.00
1/10/2023	MGA Jan. Meeting - Looking Ahead in 2023	Kathy Maines, Stephen B.	1.00
1/11/2023	League City Garden Club Speaker	Rosarian Baxter Williams	1.00
1/12/2023	Lunch & Learn - Plant Freeze Damage	Ira Gervais	0.25
1/21/2023	Growing Great Tomatoes, Pt. 2	Ira Gervais	3.00
1/21/2023	Propagating Fig Trees	Barbara Canetti	1.50
1/26/2023	Lunch & Learn - Cantaloupe Trials	David Eskins	0.25
2/7/2023	Seed Potato Cutting Workshop	Kevin Lancon	1.00
2/11/2023	Growing Peaches in Galveston County	Heman Auer	2.50
2/14/2023	MGA Feb. Meeting - Aliens vs Invasives (TEAMS)	Laurie Lomas Gonzales, USFWS	1.50
2/18/2023	Growing Avocados	Hazel Lampton	1.00
2/23/2023	Pruning Pear Trees	Robert Marshall, Herman Auer	1.75
3/11/2023	Tomato Stress Mgmt., Pt. 3	Ira Gervais	2.50
3/14/2023	MGA Mar. Meeting - Tool Time	Tim Jahnke, GCMG 2011	1.00
3/18/2023	Earth-Kind Landscaping for Garden Success	Stephen Brueggerhoff	2.00
3/18/2023	Cucumbers, Squash and Melons	Kevin Lancon	2.00
3/30/2023	Texas Superstars (Rosenberg Library)	Stephen Brueggerhoff	1.00
4/1/2023	Louisiana Iris for the Gulf Coast Garden	Monica Martens	2.00
4/6/2023	Lunch & Learn - March Madness Sale wrap-up presentation	Kathy Maines	0.25
4/11/2023	MGA Apr. Meeting - Seeding Galveston	Cheryl Watson, GCMG 2018	1.00
4/15/2023	Peppers	Gene Speller	2.00
4/15/2023	Grafting Pecans	Stephen B, Herman Auer	2.00
4/22/2023	Open Garden Day at Discovery Garden	Stephen Brueggerhoff, Monica Martens	2.00
4/29/2023	Heritage Gardener's Spring Market - Tips for Growing Better Tomatoes	Ira Gervais	1.50
4/29/2023	Heritage Gardener's Spring Market - Successful Citrus in Your Own Backyard	Herman Auer	1.00
5/11/2023	Lunch & Learn - Intern Tomato Trial update & upcoming tasting information	Donna Merritt	0.25
5/18/2023	Fruit Tree Pruning @ Discovery Garden Orchard	Herman Auer	1.00
5/20/2023	Home Fruit Growers Tour @ Discovery Garden	Stephen Brueggerhoff	2.50
5/20/2023	Home Fruit Growers Tour @ Fruit 'N Such	Herman Auer	3.00
5/20/2023	Beautiful Blooms: Plumeria	Loretta Osteen	2.00
5/25/2023	Tomato Tasting event in the Garden	2023 Interns	2.00
6/10/2023	Bramble On: Blackberries	Stephen Brueggerhoff	2.00
2023 Recertification Hours for MGs		**Total CEUs (Hours)**	**52.50**

Last Updated: June 13, 2023

Reminder: In order to maintain your status as a certified Texas Master Gardener, each year you must complete a minimum of 6 hours continuing education, as well as 12 service hours. Additionally, those hours must be reported through the online Volunteer Management System or other means.

Getting to the Root of Pest Management

Stephen Brueggerhoff
Extension Agent - Horticulture
Texas A&M Agrilife Extension
Service - Galveston County

With this article I will explore a hypothetical scenario using Integrated Pest Management (IPM) to deduce the reason for plant decline and related to pest insect management. IPM uses an organized scientific methodology, developed in the early 1970s in response to pesticide overuse in commercial agricultural production, and over decades adopted and promoted for use in home gardening. IPM principles are practical, easy-to-use investigative and action steps: observe and learn the pest/host life cycle, monitor or sample for pest population, determine an action threshold (economic, health, aesthetic), choose appropriate management tactics, and evaluate the results of your actions.

Scenario: during your growing season, you notice a few tomato plants are stunted, yellowing and sometimes wilted. You have watered and fertilized the plant on schedule, no issues with soil tilth, see no evidence of caterpillars (chewed leaves) or vegetative fungal expression. Using the process of elimination and deduction, you suspect there is a pathogen occurring in the root zone. You decide to dig out one of the tomato plants, examine the roots and note formed nodules, or galls. After consulting with Galveston County Master Gardeners through our *Ask a Master Gardener* service (https://txmg.org/galveston/gcmga_hotline/), you surmise that you have an infestation of Root knot nematodes (RNK). You may also submit samples to the Texas Plant Disease Diagnostic Lab for accurate nematode identification: https://plantclinic.tamu.edu/.

Nematodes are a phylum of roundworms (Nematoda) that are global in scope, with microscopic species that are host specific to vertebrates, invertebrates and plants. The nematodes we are concerned with are soil-borne plant parasites that thrive in loamy sand to silt loam soils. The RNK life cycle is interesting: second-stage larvae penetrate the growing root tip, once inside they release an enzyme that disrupts root cellular growth, enlarging tissue to form a gall that the worm uses as a source of nutrients. Their activity affects vascular tissue, preventing the flow of nutrients from the roots via water translocation. The parasite's life cycle is completed at the formed gall site in estimated 25 days, individual gravid females laying up to 30 eggs a day and dramatically increasing the population during the growing season. While RNK activity increases in warm soil temps and decreases in cooler temps (below 60-F), they can overwinter as dormant eggs until warmer temps initiate the life cycle.

You know a little more about the biology of the insect, and based on the infestation and damage (action threshold) have made the decision to disrupt their life cycle and reduce their population to a manageable level. Recommendations are to remove the infested plant and soil directly around the root zone. An additional step: tilling two to three times

Damage on bean roots GCMG database

Cereal rye. GCMG database

Close up view MG Herman Auer

"Reduce population to a manageable level...."

Non-infested okra roots

RNK infested okra roots MG Herman Auer

Root knot nematodes on red cherry tomatoes MG Herman Auer

after plant removal in the area of infestation, allowing atmospheric exposure to desiccate and potentially reduce the population.

Below are additional methods to consider in reducing future populations:

Solarize the planting beds, covering with 2 to 4-mil thick plastic sheets after the growing season and for a few weeks to reach RNK active at 6 to 8-inches soil depth. Since soil temps reaching above 118-F will kill the majority of the population, this task is best practiced during hottest months from June through September, typically at a time when harvest is completed and prep begins for the Fall season. Of note is a study directed by GCMG member Gene Speller comparing the effectiveness of black versus clear plastic in reducing nematode populations: https://txmg.org/galveston/resources/#GCMGA_Research

Plan on three-year veggie rotation with least susceptible crops. While all vegetables can be affected, rotate with cool season veggies such as broccoli, cole crops, collards, garlic, etc. at a time when nematode activity is suppressed. Also consider varietals that are labeled RNK resistant; tomato varietal examples 'Better Boy', 'Celebrity', and 'Roma', or any those designated with letters VFN (Verticillium wilt, fusarium and nematode resistant); southern peas are known to be nematode resistant as well.

Cultivate a cover crop of Cereal (Elbon) rye as a trap crop at fall season end. This type of grass is not pervasive like Annual ryegrass, attracts remnant RNK populations and disrupts their life cycle. Bonus: the cover crop will add nutritive value to the planting area when tilled under.

While there are no nematicides rated for homeowner use, there are biological pesticides containing saponins (soap-like substance) and horticultural oils, used as a soil drench and claiming to reduce RNK.

The last step using the IPM model is monitoring your plants this next growing season to evaluate methods used in reducing RNK populations.

If you want to know more about IPM, Texas A&M AgriLife Extension's IPM website (https://landscapeipm.tamu.edu) is an information treasure trove that guides sustainable home gardening practices. Galveston County Master Gardeners host publications about beneficial and pest insects from our website: https://txmg.org/galveston/; choose the *Resources* header to explore *Beneficials in the Garden Landscape*, reviewing predatory insects that we want to attract to our gardens; *Gardening Problems and Solutions Handbook*, describing plant diseases, disorders and pest insect biology, and recommendations for garden management. Thanks for getting to the root of RNK management, and I'll see you in the garden.

2023 Master Gardener Association Leadership

President
Kathy Maines

Sr. Vice President
Kevin Lancon

Treasurer
Debra Brizendine

Assistant Treasurer
Vacant

Secretary
Briana Etie

Assistant Secretary
Pam Hunter

State Association Delegates
Tom and Jan Fountain

State Association Alternate Delegates
Ira and Sandra Gervais

VP for Programs
Vacant, Education Programs
Judy Anderson, Monthly Meetings

Speakers Bureau Coordinators
Angela Farris

Plant Sale Chairmen
Kathy Maines and Kevin Lancon

Discovery Garden Coordinator
Kevin Lancon

Discovery Garden Area Leaders
Judy Anderson, Sue Bain, Linda Barnett, David Cooper, Briana Etie, Pam Hunter, John Jons, Wendy Baldwin, John Ely, Monica Martens, Rachel Montemayor, Tish Reustle, and Jim Waligora

VP for Volunteer Development
Nancy Greenfield

MG Intern Course Team Leader
Pam Hunter

VP for Media Relations
Nita Caskey

Newsletter Editors
Karolyn Gephart and Robin Stone Collins

Fellowship
Penny Bessire

MG Volunteer Hour Recorders
Dr. Margaret Canavan, and Linda Steber

Jr. Master Gardener Programs Leaders
Kaye Corey and Gayle McAdoo

Photography Team Leaders
Herman Auer, Tom Fountain and Chris Anastas

Webmaster
Stephen Brueggerhoff

Board of Directors
Judy Anderson, Ira Gervais, Frank Resch, Tish Reustle, and Linda Steber

CEA-HORT and Master Gardener Program Coordinator
Stephen Brueggerhoff, M.S.

Judy's Corner: Galveston County Monthly Meetings

Judy Anderson
GCMG 2012

August

With the arrival of August, we are taking the meeting indoors in the cool air conditioning of the Extension Office, where we will welcome Barry Ward, Executive Director of Trees for Houston. Ward joined the organization in 2008 and embraced the mission to plant, protect and promote trees. Although the focus is on the Houston area, they have expanded into 19 surrounding counties. He will share the history of TFH and discuss recent tree issues in the area. He will spend time answering questions about individual tree concerns.

Besides providing necessary shade, trees improve our air and water quality. TFH partners with schools, local industry, and non-profits to sponsor tree plantings and giveaways. During the past year they gave away over 67,000 native trees.

Barry Ward

The Master Gardeners are extending an invitation to the Galveston Bay Master Naturalists for this special meeting with Barry Ward. The MN have participated in several of the planting projects that partnered with TFH.

There will be door prizes!

September

In September Jan and Tom Fountain will host the Monthly Meeting at their home in Santa Fe. Tom and Jan lived in the Houston area until several years ago when they moved to Tom's Santa Fe home. Tom is a retired weatherman who authors the Discovery Garden in this publication and also serves as a photographer for the GCMG. Jan is often in the Discovery House working with Linda Barnett.

Since moving to the country, Jan and Tom have been transforming their garden with plants from the MG sales. It will be fun to see what they have done with their gardens after this summer. September is the beginning of the Fall Season, but when we visit Jan and Tom, we should expect a summer day. (Tom will predict the weather and temperatures for us as we get closer to the meeting).

Tom and Jan Fountain

At the fish fry at the July 11 meeting, MG Jim Waligora presented information on composting. Christina Reynolds received her GCMG plaque as a graduating member of the Class of 2022.

Special thanks to MG Briana Etie (and her husband Adrian) and MG John Mitchiner for frying the fish and to Briana for her 'secret sauce.'

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