THE GARDEN BENCH

The Manatee County Master Gardener Newsletter

May 2020 – Volume 19 – Issue 5

Photo: Dr. Lisa Taylor, UF

May is Bug Month!

We've asked our talented "Bench" writers to contribute things that might interest you about bugs. Running the gamut from good bugs to bad, you will discover things you may have never known about them.

The term "bugs" itself presents interesting facts. Bugs belong to a class of animals called invertebrates, i.e., those lacking a backbone. About two-thirds of all animal life is invertebrate.

Within invertebrates, the largest phylum is Arthropoda (jointed limbs). Within the arthropods are several classes including Arachnida (spiders, scorpions and ticks) and Insecta (most insects, like bees, beetles, butterflies, mosquitoes, ants, and termites.)

For interesting sources of information on bugs, visit:

http://blogs.ifas.ufl.edu/pestalert, http://entnemdept.ufl.edu/creatures, and for kids and a free coloring book: http://entnemdept.ufl.edu/MISC/coloring.boook.htm.

Joy Derksen and Amy Stripe, Eds.

Photo: www.projectnoah.org

Beetles as Pollinators

By Joy Derksen, Master Gardener Volunteer

We often think of bees and butterflies as the only pollinators of flowers. But millions of years before bees existed, beetles were pollinating early cycad plants (sago palm, coontie, and cardboard palm are all members of the cycad order). Beetles lived with dinosaurs and pollinated these early types of plants which formed cones around their seeds. They pollinated the cycads and the magnolias and the water lilies that lived in those early geologic eras. So it is not surprising that they continue to pollinate those same plant groups today.

In Florida, cycads frequently house the beetles in their cones. You can also find beetles pollinating various members of the Magnolia order that includes magnolias, pawpaws, pipevine, red bay, and camphor trees. If you look into a blooming water lily you might find a beetle wandering around the center of the flower. Beetles are also found in goldenrod and other tiny compound flowers such as spirea. Florida spicebush (*Lindera benzoin*) and sweet shrub (*Clycanthus fluoridus*) also host beetles.

When we see beetles in our flowering plants, we do not necessarily welcome them. Beetles are looking for nectar and pollen. To get at the pollen they eat through the petals of the flowers, defecating as they travel. The beetles even meet and mate in the flowers. They leave the flower looking messy, and we fail to appreciate their pollination efforts. We also fail to appreciate that the beetles and their larvae are also eating aphids, caterpillars, and other insect eggs. The larvae, hatching from eggs in leaf litter, actually like to eat grasshopper eggs.

In Florida, we have many varieties of pollinating beetles. Goldenrod soldier beetles (named at a time in history when soldiers wore bright outfits, not camouflage!) are a local favorite among wildflower lovers. These yellow and black bugs turn into adults at about the same time that goldenrod are blooming in the fall. They move pollen from one flower to another, from one plant to another. While going from plant to plant causing fertilization to take place, they also eat plant destroying insects such as aphids and caterpillar eggs. It's a win-win situation from the plant's point of view. So the next time you think you need to get rid of these messy beetles, think again about all the benefits they provide!

More information online:

https://www.fs.fed.us/wildflowers/pollinators/animals/beetles.shtml, https://flawildflowers.org/know-your-native-pollinators-goldenrod-soldier-beetle/https://bugguide.net/node/view/1715633, https://bugguide.net/node/view/1715633.

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Contents reviewed & edited by Alyssa Vinson, Extension Agent
Send a photo or gardening problem via e-mail to the Master Gardeners at ManateeMG@gmail.com

Q. Dear M.G.V.:

Can you tell me what this is on our confederate jasmine? Also, what can we do to prevent it?

Thank you,
M.M., Manatee County

A. Dear M.M.:

The spots on the leaves of your Confederate jasmine (*Trachelospermum jasminoides*) indicate an infestation of lace bugs.

Lace bugs have piercing, sucking mouthparts that allow the bug to draw the sugary juices out of leaves, leaving brown spots on the leaf top and eventually causing leaf drop.

Treatment will involve spraying the top and underside of leaves to runoff. Since these are soft bodied insects, your first choice would be a horticultural soap, available in garden centers. A systemic insecticide can work but would take longer than a direct spray from soap.

I have included a couple of links for information about lace bugs and a publication that has a table of insecticides you can use to combat the insects. Treat only until the insects are gone. Pesticides do not prevent insects, only kills them when present.

http://bugoftheweek.com/blog/2013/1/23/lace-bugs-on-the-attack or

https://ufdcimages.uflib.ufl.edu/IR/00/00/42/59/00001/MG32600.pdf.

Master Gardener Volunteers Karen Holleran and Amy Stripe answer your email questions.
Send questions and/or photos for identification of problems to ManateeMG@gmail.com.
Or call us during office hours 9:00 A.M. to 4:00 P.M. at 941-722-4524 and ask for a Master Gardener Volunteer.

Master Gardener Volunteer Sally Herb captures a beautiful sight: milkweed aphids (*Aphis neri)* feeding on tropical milkweed (*Asclepias curavassica*) while a predator lurks about, the lady beetle (*Coccinelidae* family).

These aphids only feed on a few plant species in your yard but attract generalist predators to go after pest insects on all of your ornamental plants.

Florida's Walking Stick Insects

By John Dawson, Master Gardener Volunteer

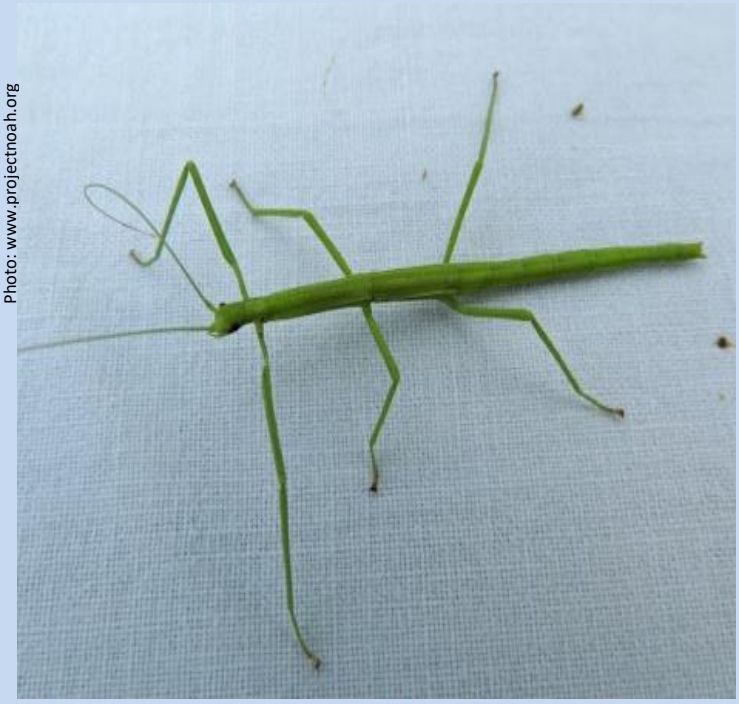


Photo: www.projectnoah.org

Common Female Walking Stick

Diapheromera femorata

Walking stick insects are masters of camouflage, looking more like sticks and twigs than insects. North America has six species; only two are found in Florida, the common or Northern walking stick (*Diapheromera femorata*) and the two-striped walking stick (*Anisomorpha buprestoides*). Both are difficult to find as they are nocturnal, only moving about at night (normally between 9PM and 3AM). They spend most of the day immobile and visually blending to whatever plant they are on.

Walking sticks feed on leaves of trees (oak, ligustrum, crepe myrtle) and tall shrubs (rosemary and roses), eating between the leaf veins (skeletonizing) but causing only minor damage. Although their camouflage is good, it is not perfect, and they are usually preyed upon by birds, rodents, and praying mantises.

The common walking stick is slender with three sets of legs and no wings. The female is mostly green and about 4 inches long with the male being an inch shorter and mostly brown. The two-striped walking stick, the most abundant species in Florida, is smaller and a bit stockier than the common walking stick. Females are about 2.6 inches long with males about 1.6 inches and usually found riding on the backs of the female. They have three longitudinal black stripes with two longitudinal yellow stripes. A black-and-white form of the species has been found only in the Ocala National Forest.

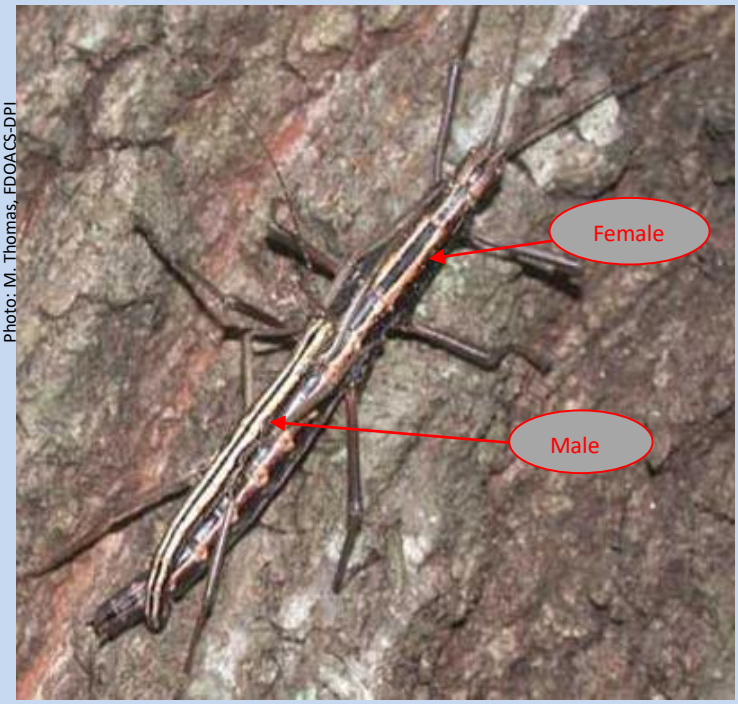


Photo: M. Thomas, FDOACS-DPI

Two-Stripe Walking Sticks

Anisomorpha buprestoides

The two-stripe has an unusual defense mechanism that is lacking in the common. It has the ability to accurately spray (up to 2 feet) a smelly acidic compound on any would-be attacker. The spray comes from a gland just behind the head on the thorax. The compound is very painful if it contacts the eye and may require medical attention, but no permanent damage has been reported. Obviously, observe from a distance and do not handle.

Fall is the mating season for walking sticks and a time when you frequently encounter them. A mature male walking stick will attach himself to a female to ensure finding a mate; they will stay attached until one of them dies.

After mating, the common female drops her eggs onto the leaf litter on the ground below her. The two-stripe female comes down to the ground to deposit her eggs in several different locations. The eggs overwinter while the adults die when temperatures reach freezing. When the weather warms, the eggs hatch and the nymphs climb into the trees and shrubs where they complete their immature stages and become sexually mature adults. Even if the female does not find a male partner, she still produces fertile eggs that she deposits to the ground. Each of these eggs produced without male fertilization will become only female adults. Normally, no pest control is required.

Springtime Eruption: Eastern Lubber Grasshoppers

By Rob Hinz Master Gardener Volunteer

Photo by Jan Hinz

Florida gardeners are familiar with the "monster" eastern lubber grasshopper (*Romalea* spp.*)*. The adult is hard to miss because of its size and distinct coloration. Many might mislabel this grasshopper as a locust due to size. Both are in the order Orthoptera and the family *Acrididae*. Grasshoppers fly for shorter distances, are solitary, have differences in behavior, and have wings that are smaller than locusts. Both grasshoppers and locusts can develop gregarious (social) behavior when conditions are suitable. Grasshoppers swarm in different parts of the world.

The eastern lubber grasshopper (*Romalea microptera*) is a most appropriate designation for this insect. The adult is slow moving, traveling by walking and crawling and climbing up plants. "Lubber" is derived from the old English word "lobre" meaning "lazy or clumsy." This grasshopper is not considered invasive and is commonly found from Texas to Florida.

The large, colorful lubber grasshopper is one the most distinctive species native to the southeastern United States. Size helps this grasshopper stand out. Adult males measure about two inches and females measure about three inches in length. The adult grasshopper's color patterns vary from place to place, but most are tawny (yellow) with some red and black markings on their hind legs and forewings. Nymphs are black with a narrow median strip of either yellow or red.

Lubbers produce one generation of young hoppers per year. These grasshoppers are long-lived both as nymphs and adults. After hatching and during the nymph period, they are highly gregarious and at their most destructive. As adults, they dissipate into a more solitary situation.

This grasshopper has a broad host range; it feeds on at least a 100 species of plants. Its menu includes vegetables, fruit trees, and ornamentals. Nymphs cause more damage to plants due to their larger numbers at hatching. Adults cause damage, but many times take only a bite or two and then go to the next leaf. They do not defoliate a plant as do the nymphs.

Management of this grasshopper includes hand picking, netting, and as a last resort, spraying with insecticides in your garden and yard. Since insecticides have little effect on adults, spraying should be done right after hatching or in the early nymph stages. If spraying, be sure to follow directions, especially around edible plants.

Photos L to R: 1) Adult Eastern Lubber Grasshopper *Romalea microptera* (Beauvois) tawny color, by Jan Hinz
2) Young lubber *Romalea microptera* instar five, by John Capinera UF
3) Black color form of adult eastern lubber grasshopper, *Romalea microptera* (Beauvois), by Lyle Buss UF
4) Adult Eastern Lubber Grasshopper *Romalea microptera* (Beauvois) tawny color, by Jan Hinz

Move Over, Avengers
Honeybees are the Real Superheroes!

By Maureen Hirthler, Master Gardener Volunteer

Did you know that bees pollinate 35% of our food crops, and 80% of the world's plants overall? They have quite an array of superpowers to help them get the job done. Let's take a look.

1. **Bees have incredible vision.** They have five eyes! The three smaller eyes help them maintain stability and navigation. But the two larger eyes are amazing. They have thousands of lenses, instead of just one like us. Bees' brains get a huge amount of information that way.

   Here are a few things that these eyes do much better than ours. Bees see more colors, because they can see ultraviolet light, which is invisible to us. Interestingly, they can't see red. They see three-dimensionally, meaning they can see depth as well as height and width. And they judge distance, too. They can distinguish among different landscapes, types of flowers, shapes, and patterns.

2. **Bees are magnetic.** They can sense the earth's magnetic field, use it to navigate, and even predict thunderstorms. Bees carry a negative magnetic charge and use it to attract the positively charged pollen via static cling. In fact, they are so good at collecting particulates that they're being studied for a wide range of applications, from spreading insecticides to searching for bombs.

3. **Bees are strong.** They can carry up to 122 times their weight in pollen. Bees can travel nearly 40 miles on one bellyful of honey.

4. **Bees control their own temperature.** By different ways of using their wings and wing muscles, they create heat or cool. Bees and hives stay warm in winter and cool in summer. By swarming and covering a predator, they can raise the temperature high enough to kill.

5. **Bees have an advanced language.** It is based on dance. They use moves like the "butt waggle" and the "head butt" to communicate. Through their "waggling" and shaking, scouts can report the distance and direction of food sources over three miles away. The directions are accurate to within about 15 feet. They also explain how good the getting is and whether the area is dangerous.

6. **Bees are the only insects that make food.** Honey has many super uses besides tasting wonderful. It never goes bad, and has anti-bacterial properties that were known at the time of earliest recorded history. Research shows honey is beneficial in chronic wounds and burns, diarrhea, acid reflux, and colds and coughs. Scientists are studying honey as a treatment for infections and even cancer.

7. **Bees are geniuses.** Their honeycombs are built with mathematical precision, using 120-degree angles to form perfect hexagons. They can remember colors and landmarks. They can distinguish among different landscapes, types of flowers, shapes, and patterns.

   Bees can remember route details up to six miles over several days. They can conceptualize a map, determine the shortest distance between two points, and take a different route for their outbound and inbound journeys. They can navigate even in the dark.

8. **Bees are deep thinkers.** Compared to other insects, they have a much greater ability to learn and remember. They are capable of abstract thought, decision-making, and planning. They also show an ability to count and an understanding of time. They can remember four things for several days and be taught to recognize faces.

   Experiments have shown that when one bee was taught to pull a string to get a sugary reward, another bee learned the trick just by watching the first bee. Even more surprising, they could teach this trick to other bees.

9. **Bees can alter their brains.** They can actually change their brains to perform different jobs, and can even make their brains younger.

10. **Bees have an inner life.** They have personalities and feelings. They can become pessimistic, and scientists predict a host of other emotions.

    Honeybees are only one type of bee in Florida. There are 300 species of native bees, such as bumblebees, and they are the main pollinators of our landscape plants. These bees are mostly solitary, nest near or in the ground, and make no honey. They may only pollinate certain plants. Bee gardens attract these bees, and you can even make bee hotels These native bees are the mainstays of a healthy environment - our real super bees.

It is obvious why we worry about the decreasing number of bees in our environment, which is often related to the use of powerful pesticides. Visit http://edis.ifas.ufl.edu/in1027 and discover how to keep bees safe.

Other ideas include planting bee-friendly plants and trees: https://edis.ifas.ufl.edu/in1255, https://gardeningsolutions.ifas.ufl.edu/design/gardening-with-wildlife/bee-plants.html: providing water, and even building a bee house: https://gardeningsolutions.ifas.ufl.edu/design/gardening-with-wildlife/pollinator-hotels.html.

How Insects See the World

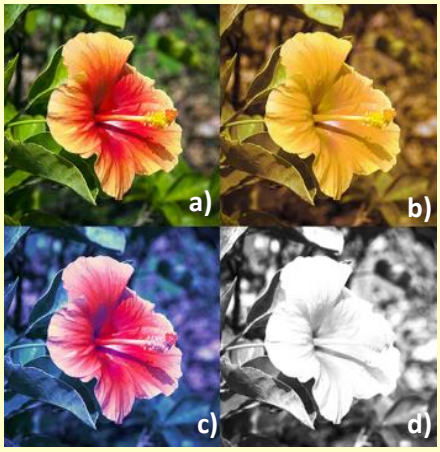
By John Dawson, Master Gardener Volunteer

Vision is basically the same for all living things, but we don't all see things the same way. Eyes detect reflected light from all around using receptors that respond to wavelength (color) and intensity, then send signals to the brain for processing and action. The more receptors an eye has, the greater the image resolution. Think of your TV set: the more pixels, the greater the resolution.

Visual receptors contain proteins called opsins with different opsins for different wavelengths of light. Humans have three types of opsins: red, blue, and green. Purple is detected by the red and blue opsins, yellow by the blue and green opsins, etc.

People who are color blind (a genetic flaw of developing opsins) lack the opsins required to detect certain colors. Many animals are red-green color blind such as dogs and bulls and insects: they cannot detect the color red, and they see mostly yellow, blue, and gray.

Insects see in blue, yellow, and also ultraviolet (mammals can't see UV). Arachnids (spiders) see only in ultraviolet and green. Different insects may have a different number of receptors and opsins in different life stages or instars. Insects that start out as nymphs in water (light reflects differently under water) will have what they need for that environment, but when they emerge, their eyesight will adapt to their new environment.



a) Human Regular Vision

b) Red-Green Color Blindness

c) Yellow-Blue Color Blindness

d) Total Color Blindness

a) Insect Vision

Human Vision

continued on page 7

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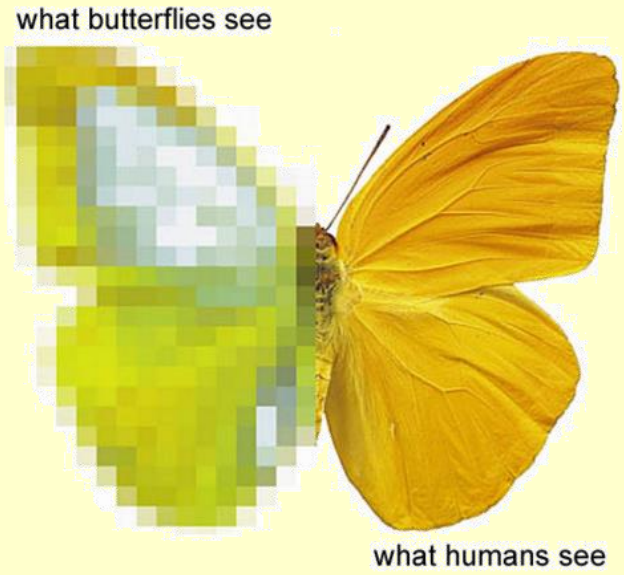
Insects need eyesight for basically two needs: find food and detect prey. Butterflies need to find flowers and spot predators (detect motion), so they only have a small number of receptors. Flies have many more receptors than butterflies to detect motion, which is why they are so difficult to swat and butterflies are easier to catch.

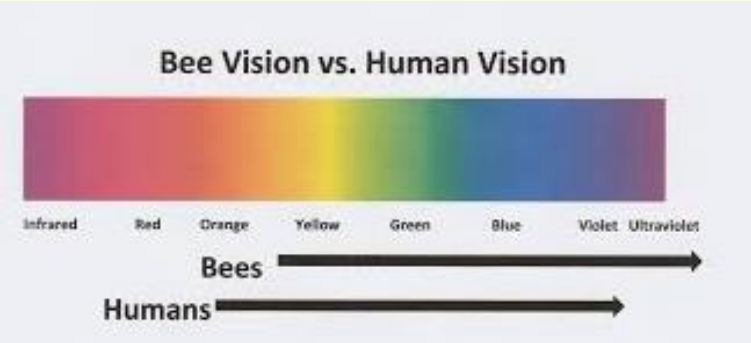
Dragonflies are predators that attack in flight and need higher resolution to spot moving prey. The dragonfly eyes have over 3,000 receptors (many more than humans) with up to 30 different opsins (10 more than us) and are located to provide 360 degrees of vision.

Where we see in standard definition, dragonflies see in high definition with colors we can't imagine. Where we can only see what's in front of us, they can see all around. It is believed that they also recognize polarized light coming off reflective surfaces like water, to avoid confusion with their surroundings.

Bees see mostly in ultraviolet. So if they can't see red, how do they find red flowers? In UV light, there is no red; it will only look blue. Certain chemicals will glow under UV light (remember those old black light posters). Plants have adopted this technique to help pollinators find their way to the stamens containing pollen. Some even have outlined pathways like airstrip landing lights, showing bees where to land and taxi to the pollen. We can't see them, but bees can.

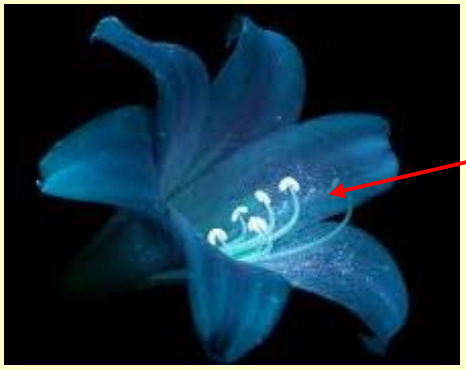
So the next time you watch an insect doing its thing, remember, even though you are both looking at the same scenery, neither of you are seeing it in the same way.





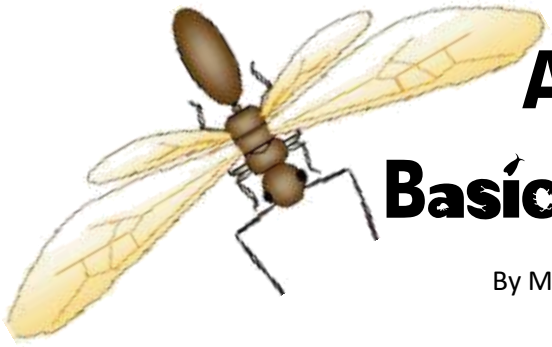
What we see.

What a bee sees.



Stamens glowing with pollen. This is what a bee sees.

Photo credits: Dragonfly eyes commons.wikimedia.org–, UV Glowing Stamens – National Geographic, What a Butterfly sees, and Insect vs. Human Vision – Askabiologist.com, Bee Vision vs. Humans – Bee Culture.com, Color Blind Chart- Vision Source, SD vs. UHD- Even tree sources



Ants vs. Termites
Basic Identification Guide

By Mack Lessig, Community Gardens Program Assistant
and Master Gardener Volunteer

As the warm, rainy weather will soon be upon us, you may notice a large increase in the amount of small winged creatures flying about, getting in your pool, etc. This horde of invertebrates is inevitably lured to the intoxicating glow of your outdoor home and street lights. With all this commotion and fluttering of wings you may arrive at the abrupt conclusion often made about these critters: THEY MUST BE TERMITES! They may very well be termites… or ants. These two insects commonly appear around homes, but have radically different physical appearances, social lives, and appetites.

Firstly, the body of termites and ants may appear superficially alike. But there are some fundamental differences that can help you identify the insect in question. The body of an ant has well defined sections, a "pinched" waist, and two sets of wings that differ in length. Ants also have antennae segmented at right angles like elbows.

Termites have a rounded body with two sets of wings that are identical in length. Their bodies have no discernable segments, and they have straight, "beaded" antennae.

Termites and ants may be separated by their social lives as well. Though both species are colonial and have well defined social castes, the similarities end there. Ants live in colonies composed of one or more queens, or reproductive females. The queen functions to replenish and grow the colony. When the ant colony reaches maturity, it produces winged reproductives, called alates, which are both male and female. After mating, the male ants die, and the queen ants begin new colonies.

Termite colonies are also composed primarily of workers, but this worker caste is comprised of both male and female individuals. Additionally, termites have a caste dedicated to colony defense. These are referred to as soldier termites, and they have large mandibles, nozzles that spray acid, or plug- shaped heads to defend their homes. When mature, termite colonies also produce winged alates. But in the case of termites, males and females pair for life and are referred to as the king and queen.

Additionally, termites and ants differ significantly in their diets. As you may know, termites are renowned for their domicile destruction. They are connoisseurs of wooden items such as timbers, doors, and furniture. But that is not all. Due to their ability to consume cellulose (the major component of wood), cardboard, paper products, and even books have fallen victim to their appetites. Ants, though just as voracious in their feeding, consume proteins and carbohydrates. These are found in prey items like insects, worms, dead animals, nectar, and seedling plants. Ants are less likely to eat your house, but they will take up residence if there is an easily accessible food source.

So the next time you investigate the luxuriously luminous insect traps surrounding your house, consider these steps before assuming that you have termites:

1. collect the insects in question;
2. rule out beetles, moths, and other insects;
3. observe the body for a "pinched" waist;
4. check if the wings are identical or different in length.

Using these simple observational skills, one can, with some degree of confidence, determine whether the specimens are ants or termites.

But when in doubt, please consult your county Extension Office. Agents are available to positively identify your mystery flyer.

Visit: https://edis.ifas.ufl.edu/ig080 or

https://www.fdacs.gov/content/download/3145/file/p01742_consumerinfo_drywood_0910.pdf.