

# OBSERVATIONS FROM NATURE

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PHOTOGRAPHS BY  
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## November 1

The leaves on our Pawpaw (*Asimina triloba*) shrubs are turning yellow. In some cases they grow to small understory trees. They are common in our area, but only grow to shrub size. Pawpaws are in the Custard Apple family (*Annonaceae*), and thus are related to tropical fruits such as cherimoya or sweetsop. They produce stubby, vaguely banana-shaped fruits that are edible (one common name is “poor-man’s banana”). Although the fruits are small (2-6 inches long by 1-3 inches wide), they are the largest edible fruit native to the U.S. The flavor is somewhat like a mix of mango and banana. The fruits are fragile, do not last long, have large seeds, and do not ship well. Thus the commercial possibilities have been limited. However, they were favored by Native Americans. Lewis and Clark report eating them on their expedition, and George Washington is reported to have liked them.

Efforts to commercialize Pawpaws are still in progress. Kentucky State University has over 2000 different Pawpaw plants from 17 states. Researchers there are attempting to improve propagation and storage techniques, and to better understand fruit ripening and other aspects of the genetics. Their web site is: <http://www.pawpaw.kysu.edu/>

## November 3

There are seven species of vultures in the New World, and many more in the Old World. New World species include the California Condor and the Andean Condor, both of which are endangered. In our area, we have two common species, the Black Vulture (*Coragyps atratus*) and the Turkey Vulture (*Cathartes aura*). These two types seem to have accommodated human encroachment better than the condors. They are commonly seen soaring around or sitting in conspicuous perches, often in dead trees.

Black and Turkey Vultures get a considerable part of their food from highway road kills, and it is often possible to get a good look at them at these sites, particularly if there is not much traffic. Often they will merely hop off the road and wait for the traffic to go by.



**Three Black Vultures at a road kill.**

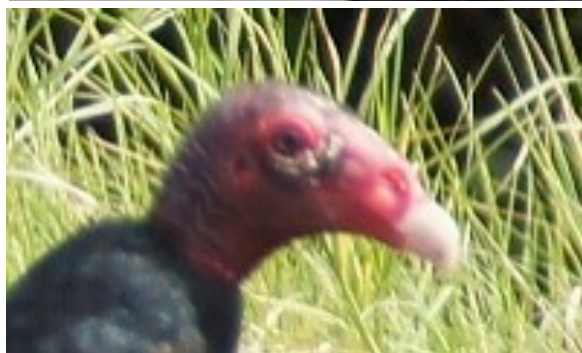
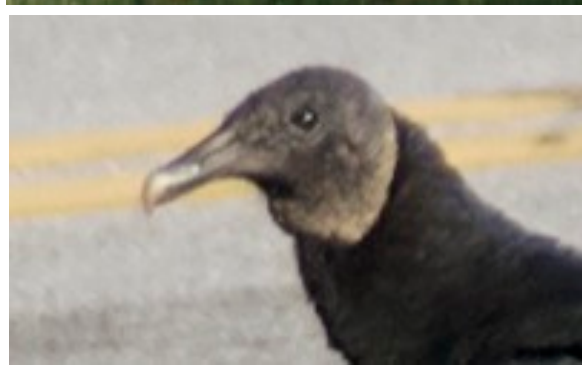


**A Turkey Vulture strikes a pose near a road kill**

This spread-wing stance is common to many species of vulture. This stance is said to be for warming up or drying the wings.



Here are a Black Vulture (left) and a Turkey Vulture (below) for comparison. Note the gray, bare, wrinkled skin on the Black Vulture's head. The Turkey Vulture's head is bare also, but the skin is red. The Turkey Vulture's beak is also much more massive. The tail of the Black Vulture is shorter than that of the Turkey Vulture. This feature is obvious in flight, and serves as one way to distinguish the two species.



Black Vultures are not as adept at soaring as are Turkey Vultures. They frequently alternate flapping and soaring. Turkey Vultures hold their wing tips above the horizontal, forming a dihedral ( "V" shape), when soaring, whereas Black Vultures hold their wings more flat. Turkey Vultures commonly wobble from side to side when soaring, and Black Vultures do not. Black Vultures have white bases on the underside of their primary flight feathers, and a white or gray patch may be clearly seen out toward the underside of the wing tips in flight. Turkey Vultures have gray undersides on their flight feathers which gives their underwings a two-toned appearance, but this contrasting color only shows in the right light and is never as light-colored as are the patches on the Black Vulture's underwings. Black Vultures are much more social when foraging, and small groups are often seen feeding together. The Turkey Vulture tends to be solitary when foraging. With a little practice, these characters make it easy to distinguish the two species even at a distance.

Black Vultures are found from the Southeastern U.S., south to Chile and Uruguay in South America. The genus name, *Coragyps* is from the Greek for cora=raven and gyps=vulture. The species name, *atratus* means “clothed in black” in Latin. So the Black Vulture’s scientific name means “clothed in black raven-vulture”. The word vulture is from the Latin word for “tearer”, which must refer to the way vultures tear the flesh off their dead victims.

The Turkey Vulture has a wider range than the Black Vulture. It can be found from Southern Canada all the way down to the tip of South America and the Falkland Islands. It received the “Turkey” part of its name from the resemblance of its bare, red-skinned head to that of a wild turkey. *Cathartes* comes from the Greek for “purifier”.

There has been a lot of debate about how vultures find the carrion on which they feed, and many experiments have been done. It seems clear now that Turkey Vultures can find carrion by smell. As they cruise around low to the ground, they can smell rotting carcasses. Thus they can find food under the canopy of a forest. Black Vultures do not primarily forage by smell; they hunt visually. Sometimes Black Vultures will follow Turkey Vultures to a food source “sniffed out” by the Turkey Vulture.

When I was young in Indiana, most people called vultures “buzzards”. This name probably dates back to the earliest colonists from England. In England there are no vultures, but there are large soaring birds, like *Buteo buteo*, which the English called the Common Buzzard. The early settlers apparently applied the term “buzzard” to the Turkey Vulture, although vultures are not closely related to the English Buzzards. We do have a close relative of the English Common Buzzard in the U.S. This is the bird we call the Red-tailed Hawk, which is *Buteo jamaicensis* (so, if we want to call any bird a buzzard, it should be this one).

There is a Turkey Vulture Society on-line at: <http://vulturesociety.homestead.com/index.html>. There you can learn lots more about this fascinating bird.



### November 8

This moth came to my lighted sheet last night. It was photographed sitting on the chair that I had used to prop up my UV light, thus the fabric in the background. The moth is about 1.75 inches long. Dr. James K. Adams of Dalton State University helped me identify it as an Armyworm moth (*Mythimna unipuncta*). The tiny white spot on the forewing is diagnostic.

The caterpillars of this species (and other armyworms) will sometimes finish eating at one place and march by the hundreds or thousands in an “army” looking for a new food source.



## November 10

These are two HDR pictures of Clark's Millpond just NW of Louisville, GA. South Georgia has many examples of these wonderful millponds ringed by Bald Cypress (*Taxodium distichum*) trees. Cypresses are conifers but, unlike most conifers, they are deciduous, and their leaves change to a nice orange color in the Fall. Also notable are the cypress "knees", examples of which stick up like pillars around the

large tree in the bottom photograph. These structures convey oxygen to the roots and enable cypress trees to grow with their roots underwater. Lumber from cypress trees is very valuable, and nearly all the trees we now see are juveniles.



The top photograph shows a row of cypress knees along the edge of the millpond. The photograph to the left shows two knees. The larger one is about two feet tall. In front of the knees are a blue Soapwort Gentian (*Gentiana saponaria*) and a big green Arrowhead leaf (*Sagittaria* sp.).



By now, most of the cotton has been baled into big round or cubic bales.



## November 10

This Praying Mantis (*Mantis religiosa?*) was in the mulch near the sidewalk leading to the door of the motel where we were staying in Statesboro, GA. Its grasping, spiked forelegs can be seen. Mantises are primarily ambush predators of other insects. They are excellently camouflaged, and can sit quite still for long periods of time. When another insect approaches, they quickly pounce and snatch the prey between the first two segments of their legs.

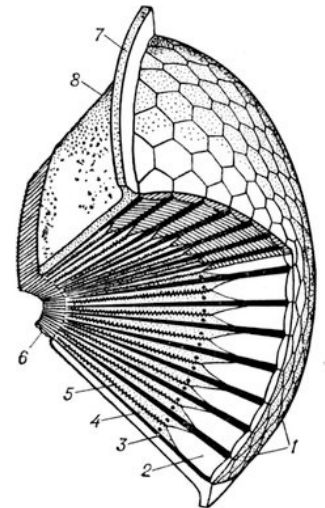
Praying mantises can be kept in a terrarium and fed smaller insects, such as grasshoppers or crickets. I remember keeping one when I was young. It seemed to be thriving in captivity, and I enjoyed taking care of it. However, when Fall came it suddenly died. Later I read that they do not overwinter, and a new crop hatches out each Spring.

Mantis eggs are laid in a froth that dries to look like semitransparent styrafoam.

These egg cases can be found on tree branches or weed stems in old fields. The picture to the left shows an egg case I found in the field along our driveway. Praying mantis egg cases are sold commercially (3 cases for \$12 on line) and marketed as a form of insect control. One places the egg cases outside, and when they hatch the mantises will help control harmful insects.



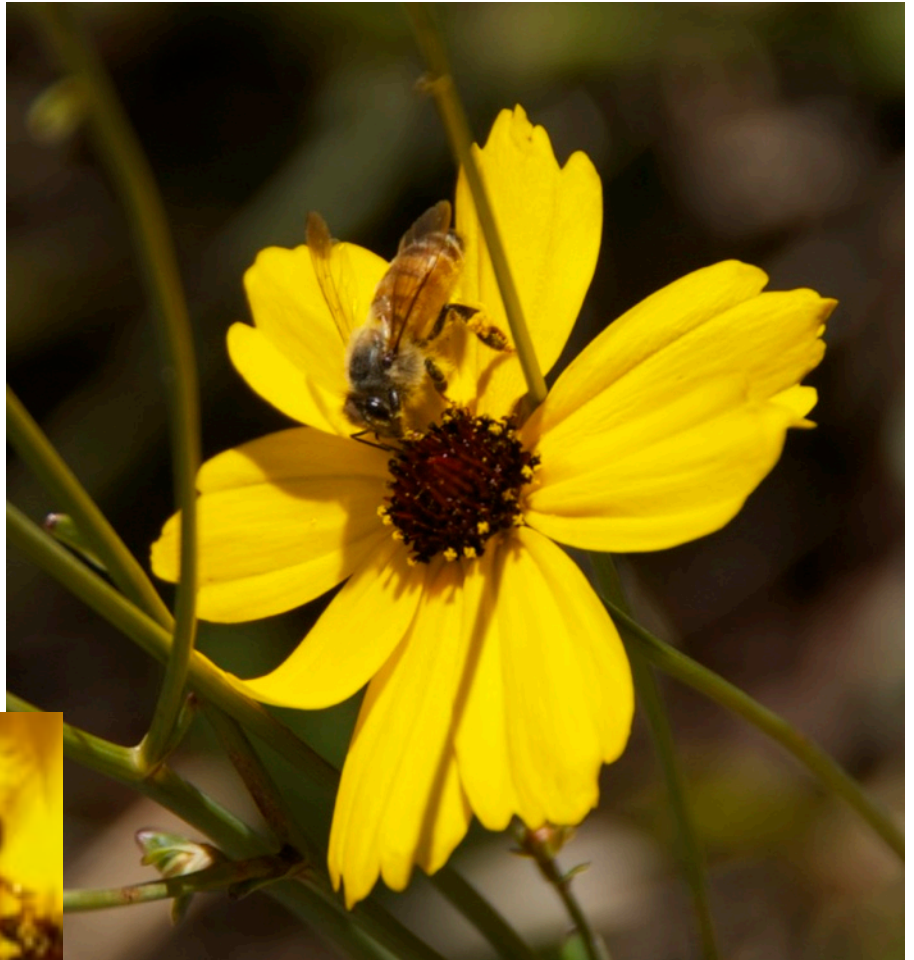
Mantis have large prominent eyes and excellent eyesight. In common with other insects, they have compound eyes (right). Each eye is made up of as many as 10,000 individual lens elements (ommatidia). Compound eyes are excellent for achieving a wide field of view, since the elements are arranged on a convex surface (see the mantis above). They are also quite good at detecting motion. However, for structural reasons, it is difficult to achieve high resolution. For example, to achieve the resolution that our eyes have, humans would need compound eyes each as big as our head.



## November 12

Plants are classified into families based on the characteristics of their flowers and fruits. Long ago plant scientists found that these characters based on a plant's sexual reproduction were more reliable indicators of evolutionary relationships than were vegetative characters, such as leaf shape or habit (whether the plant is a vine, a shrub, or a tree, for example). Here are a couple of examples of easily recognized plant families.

The first example is a nice yellow flower with a honeybee on it. If one looks closely at such a flower, it is clear that this is not one, but a whole group of flowers clumped together in a "head". The small flowers that make up the center of the flower are called disk flowers. Some of these have opened and can be seen as tiny yellow structures around the edges of the central disk. The flowers in the central part of the disk have not opened yet. Eventually this disk will be transformed into a "head" of seeds as each disk flower is pollinated and matures.



The large, yellow petal-like structures are each a modified flower. They are just for show (attracting pollinators) and are sterile.

This plant family used to be called the *Compositae*, because of the composite nature of the flowers. Now it is usually called the *Asteraceae* after one prominent genus in the family. The family has many species, including sunflowers, zinnias, goldenrods, asters, cosmos, and coreopsis.

There are many yellow composites similar to the one pictured which bloom in the Fall. Since there are so many, they are sometimes identified as DYC's (dammed yellow composites).





Alongside the highway in South Georgia, we spotted a lot of these distinctive plants. Some were in bloom, and some had already set fruit. One look at the fruits (top and bottom pictures) will convince one that this plant is related to peas and beans. Fruits of this type are called “pods” or “legumes” and this plant family is commonly

called “legumes”. The former name of the family was *Leguminosae*, but recently the family is more commonly called *Fabaceae*, after the genus *Faba*, one kind of bean.

The bright yellow flowers of this plant are shown to the left. Legume flowers have an asymmetric shape with petals of different sizes and shapes. This plant is *Crotalaria spectabilis*; common name is Rattlebox or Rattlepods. The common name was given because the seeds will rattle in the pod if a mature branch is shaken. The genus name, *Crotalaria*, is from the Greek for “castanet”. Rattlenakes are genus *Crotalus* from the same Greek root.



## November 16

This is a developing rose “hip” photographed in a yard in Brunswick, GA. The swollen yellow structure with the spines contains the ovary of the flower with the developing seeds inside. The five light gray structures arranged in a star pattern at the top are the sepals of the flower. The petals that we are used to seeing in a rose were attached above these sepals, but they have dropped off after the flower was fertilized. There are many species of cultivated and wild roses so there is a big variety in rose hips in terms of size and color. Some are bright red.

Rose hips have had many uses. They are a good source of vitamin C, and were used during WWII in both Britain and the U.S. as a source of this essential vitamin. They can be used to make a kind of tea, jellies, soup, wine and a whole variety of other concoctions. One of the more interesting uses is for itching powder to use as a (somewhat malicious) practical joke. The seeds inside the hip are covered with hairs that are highly irritating to the skin (and must be removed before eating the hip). If these hairs are dried and ground to a powder, Itching powder is the result.

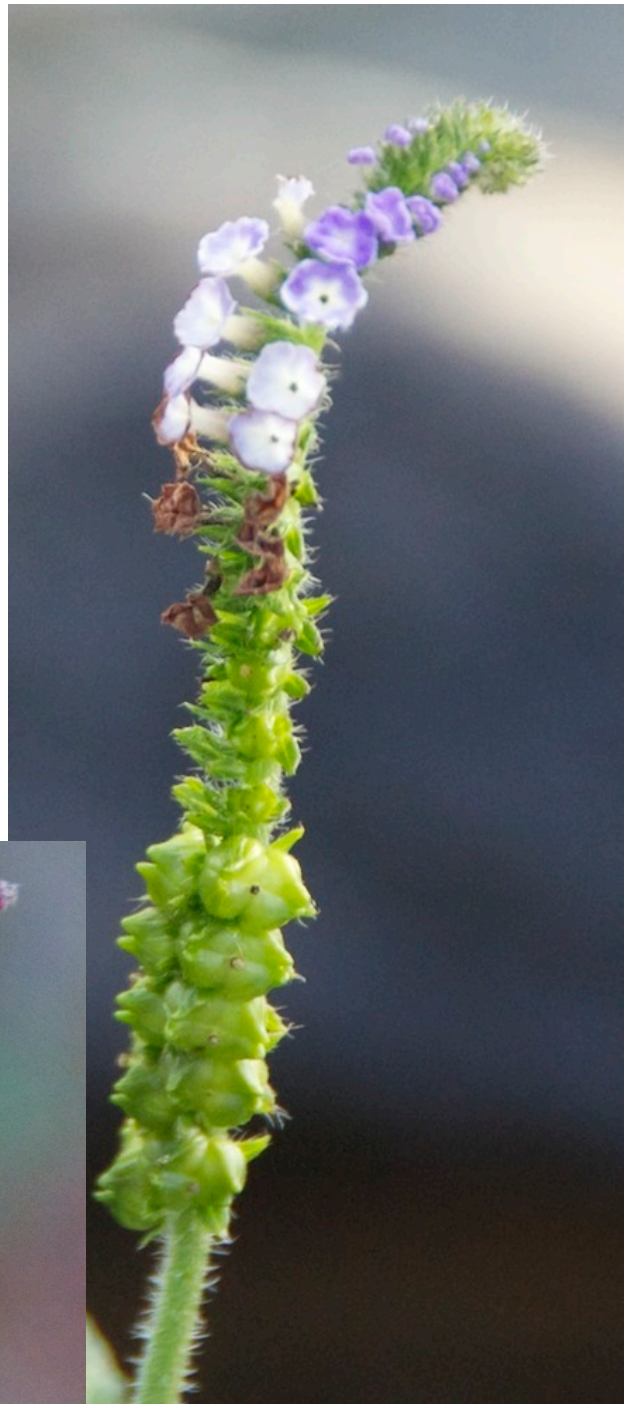
The Rose family (*Rosaceae*) has many other interesting and useful plant species such as apples, cherries, peaches, pears, raspberries, plums, strawberries, and almonds. If you imagine that you could expand the yellow spiny “hip” in the photo above into a large round fruit, you would have an apple. If you look at the end of an apple opposite the stem, you will see the remains of the five sepals that show so prominently in the rose hip above.



## November 18

We stopped on the Altamaha River at Big Hammock Wildlife Management Area. The photograph to the right shows a European Heliotrope (*Heliotropium europaeum*). You can see a nice progression of flowering in this spike. The flowers at the tip are the most recently formed, and they are just beginning to open. When they first open, they are colored, but as the flowers age, they become white. After fertilization takes place, the flower petals turn brown and wither. As you look down the flower spike below the brown withered petals, one can see the fruits getting progressively larger in the oldest flowers.

The name heliotrope is derived from helios=sun and trope=follower, thus follower of the sun.

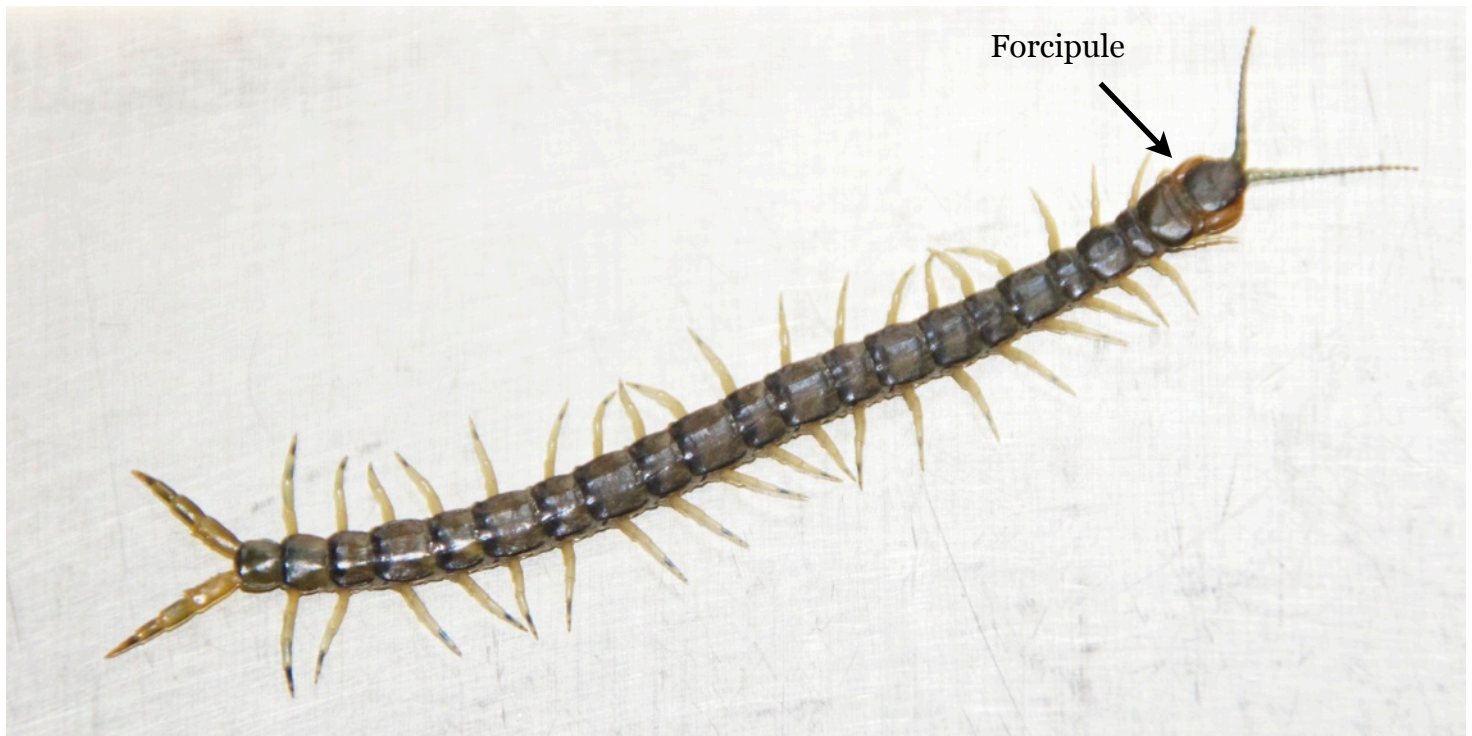


The leaves of the Winged Sumac (*Rhus copallinum*) in our field have turned a deep red. In this photograph, the “wings” on the leaf rachis that give this sumac its common name can be seen. The tiny Pearl Crescent Butterfly (*Phyciodes tharos*) was good enough to perch on the sumac for a picture.

## November 18

I found this centipede in our kitchen sink. The sides of the sink were too slippery for it to escape. After photographing it and taking some movies of its interesting locomotion, I released it outside. This creature was about 4 inches long. Its head is to the right in this picture. Its body is constructed from a series of more or less identical segments, like beads on a string. It has about 21 body segments, each with a pair of appendages. The first segment bears a pair of antennae, and the last segment has a forked structure called a telson. Each pair of legs is progressively longer than the pair just to the front of it. This seems to be an adaptation to keep the feet from stepping on one another as the animal moves along. Most of the appendages are legs, but on the front and the back it has some specialized organs. The name “centipede” comes from Latin, and means “hundred feet”, but as you can see, this one only has about 38 feet. Each body segment has a single pair of legs; if this were a millipede (=thousand legs), there would be two pairs of legs on each body segment.

One has to be a bit careful handling centipedes, because the first pair of legs are modified into strong structures (called forcipules) with sharp fangs at the tip. Centipedes use these to inject venom into their prey (insects or other small arthropods). In this centipede, one can see these as the lighter brown



curved structures alongside the head (see arrow). Small centipedes cannot puncture human skin with their fangs, but the larger ones could. Around 3000 different species of centipedes have been described, and scientists estimate there are several thousand kinds yet to be discovered. They range in size from less than 1 inch to 12 inches in some South American species. The large ones can kill and eat lizards, frogs, and even bats.



### **November 22**

The pods of the milkweed (*Asclepias viridifolia*) that I described last month have now split open and are releasing their beautiful seeds. I hope some of them manage to germinate and grow into adults. I collected a few to plant in a pot indoors.



Here is a crustose lichen (with some intruding moss fronds) growing on the trunk of a fallen tree in our woods. These creatures represent a partnership between a fungus and an alga. The alga is able to perform photosynthesis and provide enough food for both the partners. The fungal contribution is less certain, but could provide absorbed water or some protection from predators.



This photo shows a portion of a frond of Christmas Fern (*Polystichum acrostichoides*). Its name comes from the resemblance of each leaflet to Santa in his sleigh. You can see Santa standing up in the rear of the sleigh (arrow).



### **November 25**

Fox Squirrels (*Sciurus niger*) range over the entire Eastern U.S. (except for New England) and into southern Canada. They have been introduced into several western states. Their common name comes from the resemblance of their color pattern to a gray fox. They are the largest tree squirrels native to North America.

Where I grew up in Southern Indiana, the Fox Squirrels had a nice rusty orange on their underparts with gray hairs mixed in on their back. This form is depicted here in an individual I photographed in Keokuk, Iowa in June of this year. It appears to have a wild grape in its mouth.

Fox Squirrels, show a lot of variation in size and color across

their range. Ten subspecies of *S. niger* have been described. The one pictured on this page is the northern form (*Sciurus niger rufiventer*). The genus name for these squirrels is *Sciurus*. This is from the Greek *skia*=shade and *ouros*=tail. Thus *Sciurus* means “shade tail”. The species name *niger* means “black”. The subspecies name “*rufiventer*” means “rust-colored underside”.



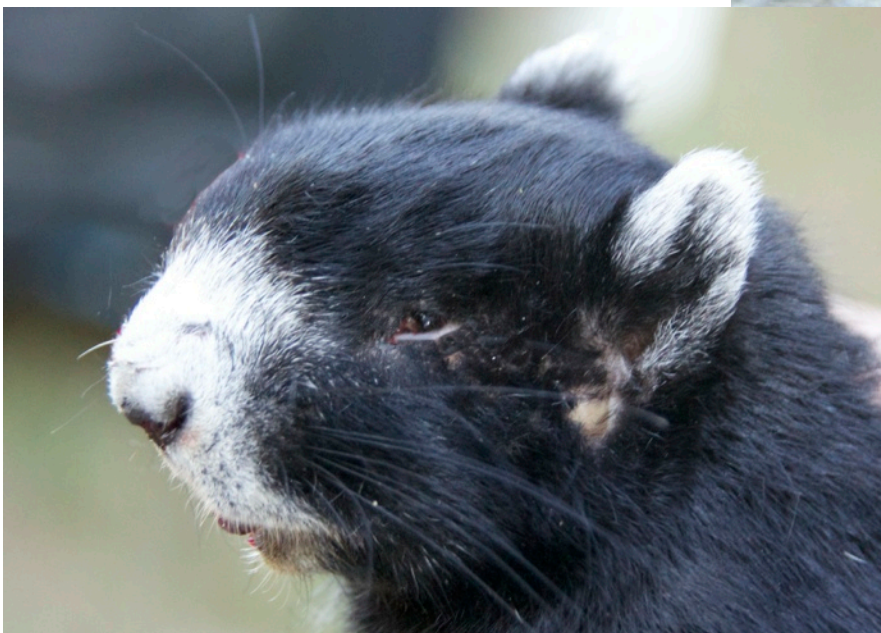
This is the one of the Fox Squirrel subspecies found in the Southeast (*Sciurus niger niger*). It is gray with a darker face. I have seen a lot of these, but never succeeded in getting a good picture of a living one.

However, we always stop to examine road-killed creatures. This one had been recently run over on Highway 80, SE of Warrenton, GA. If you wonder why the species name for Fox Squirrels is *niger* (=black), it is because some individuals are almost completely black, as depicted on the next page.





We came across another road-killed animal on a side road SE of Midville, Georgia. This one is the black form of *Sciurus niger niger*. In these pictures, you can see the large size of these animals. They are much larger than the Gray Squirrel (*Sciurus carolinensis*).



Black forms of Fox Squirrels are found mainly in the southern part of their range. Gray Squirrels are also occasionally found, but mainly in the northern part of their range.