



the Thalweg

Watershed Stewardship Program

Volume 14 Issue 4

Fall 2017

Photo credit: <http://tinyurl.com/ybd2jwd5>

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Symbiotic Relationships

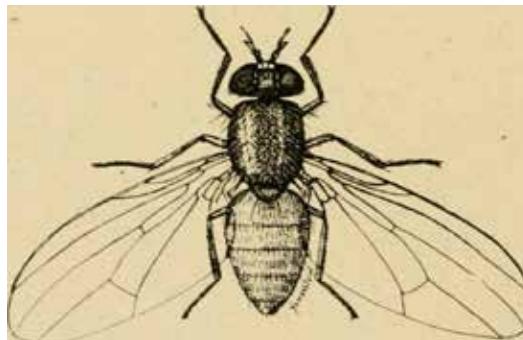


Photo credit: <http://tinyurl.com/ybgaev3a>

Symbiotic relationships are a special type of interaction between species. Sometimes beneficial, sometimes harmful, these relationships are essential to many organisms and ecosystems, and provide a balance that can only be achieved by working together. An example of a symbiotic relationship is the goldenrod gall fly creating galls, an abnormal plant growth caused by various organisms, on the goldenrod plant.

"The goldenrod gall fly lives its entire life on goldenrod plants. This fly is small and grows to be about five millimeters long with females usually being a bit larger.

Adult gall flies spend most of their time walking up and down goldenrods because they do not fly that well.

The male chooses a bud and simply waits until a female arrives. When a female comes close by the male makes specific movements in hopes of attracting her. After they mate, the female locates a suitable spot on the goldenrod stem to lay her eggs.

In about ten days, the larvae will hatch and they immediately start to eat inside the stem. Larvae saliva contains a chemical in which it causes the plant to grow abnormally; this creates the gall.

Larvae will stay in the gall one year before becoming adults. They continue to eat the stem which in turn makes the gall continuously grow until it's the size of a golf ball. As autumn approaches the plant turns brown and the larva digs an escape tunnel but will not leave the gall until spring. The larva produces a chemical in its body, a sort of anti-freeze, to help keep it from dying throughout the winter months. In the spring each larva becomes a pupa before hatching into an adult. Interestingly, the adult goldenrod gall fly does not eat.

Goldenrod gall flies do not seem to have any effects on us. They do not sting or bite and they tend to be focused only on mating and goldenrods; in fact, their activities do not even harm the goldenrod."



Photo credit: Joe Bartok
<http://tinyurl.com/yc8cxnx8>

Sources: Excerpt from *Edible Wild Food*, written by Karen Stephenson, *Goldenrod Gall: Survival Food*. <http://tinyurl.com/ybozfm5g>
<https://www.extension.umn.edu/garden/insects/find/insect-and-mite-galls/>
<http://study.com/academy/lesson/symbiotic-relationship-definition-examples-quiz.html>

Searching for the Sandhills



Sandhill Crane
Grus Canadensis

(c) Sharon's Nature
www.sharonfisher.zenfolio.com

Photo credit: <http://tinyurl.com/yako4zyz>

As the leaves continue to fall and the air begins to cool, it is time to turn our ears to the sky and anticipate the annual arrival of the elegant sandhill cranes. These migrating cranes will announce their arrival by letting out a loud, rattling, bugle sounding call that can be heard over a mile away. They are most notably characterized by their tall grey bodies, black toes and legs, as well as a crimson colored crown- their most prominent feature. While grey is their natural color, some cranes may take on temporary brown hues by preening their feathers with brown or red colored mud. The red mud is found in iron rich environments and is likely acquired as a result of probing for food in muddy wetland soils.

The sandhill crane is one of the most numerous and wide-ranging of all the world's cranes, as well as the tallest flying bird. Although found predominantly in North America, these birds are distributed across a broad breeding range in the Northern United States, Canada, and as far out as Siberia. As the winter approaches, these cranes undertake long journeys to their wintering grounds in Florida, Texas, Utah, Mexico, and California.

Ideally, sandhill cranes thrive in freshwater wetlands located adjacent to healthy uplands. These areas must contain an abundance of short and long vegetation that can be utilized to construct whatever they may need. Making use of their resources, the cranes build low mounds that are used for nesting. The females typically lay two eggs which are then incubated by both parents for 29-32 days. During this time, the male is primarily responsible for defending the nest.

All sandhill cranes are omnivorous. These birds can be found enjoying plants, grains, mice, snakes, insects and worms. When searching for food, these cranes use their long, sturdy beaks to probe into the soil and hopefully acquire nutrients. This technique has led to conflict with farmers as the cranes find and dig up their planted seeds such as corn. Over time, this practice can lead to extreme crop loss or even force farmers to replant entire fields. In attempts to combat this issue, The International Crane Foundation is developing new ways to treat corn seeds with some kind of deterrent before they are planted. This method of prevention does not hurt the cranes but simply provides a solution for farmers.



Photo credit: <http://tinyurl.com/yc8ewj37>

Alternately, human activities are also posing threats to the sandhill cranes. As we continue to develop our societies residentially and commercially, many habitats are being destroyed in the process. The loss of habitats and wetlands is of greatest concern in the breeding and wintering grounds along their migration routes. In addition to habitat loss, overhunting is also a problem being faced by the sandhill crane population. If we continue to mindlessly develop these areas and prey on these graceful creatures, they could potentially face extinction in the future. It is imperative that we do our part to preserve these wetlands and protect some of nature's finest creations.

Why Do Sandhill Cranes Dance?

One of the most unique things about sandhill cranes is their love for dancing. The main explanation for this phenomenon is that it is a mating ritual. This courtship is an opportunity for the male to show the female how powerful he can be. Since cranes mate for life, this dance is crucial in helping them find a partner. These dance routines involve running, leaping, flapping their wings, and otherwise prancing around. In attempts to portray strength and protection, the cranes may poke at sticks or shrubs and even throw them high into the air.

Although dancing is most commonly seen during mating season, it can also be observed year round. Some other commonly accepted theories on why cranes dance involve establishing social relationships, announcing territorial claims, or even warning other cranes of potential danger. Many believe that dancing thwarts aggression, relieves tension, and strengthens pair bonds among the cranes.



Photo credit: <http://tinyurl.com/y7mx7v6m>

Adaptations



Photo credit: <http://tinyurl.com/yalx9puw>

Like many other animals, sandhill cranes have special adaptations that allow them to survive in certain conditions. For example, their long strong beaks make it easier for them to probe for food in tough or frozen soils. In addition, the edges of their beaks are jagged, giving them a better grip on slippery foods. Because the cranes spend extended amounts of time in nearly freezing water, they constrict the blood vessels in their feet to reduce the amount of blood needing to be warmed. Lastly, their loud and wide-ranging call serves as a measure of communication to help keep the herd together during flight. These simple adaptations play a huge role in the survival of the sandhill cranes in various conditions.

Top Viewing Sites in Cobb County

With Thanksgiving right around the corner, we can expect to see the sandhill cranes making their way to their wintering grounds. Migrating south from northern states, these cranes can be seen most easily in the upcoming months of November and December. The annual visitation from the sandhill cranes is a spectacular nature event that can be enjoyed from your very own backyard or a nearby park. Many locations in Georgia have been noted as popular grounds where these cranes can be spotted. Locally, there are a few viewing spots that have been reported as the top places to see the sandhill cranes in Cobb County.

These sites are:

1. Chattahoochee River National Recreation Area--Cochran Shoals Unit
2. Kennesaw Mountain National Battlefield Park
3. Chattahoochee River National Recreation Area--Johnson Ferry Unit
4. Lake Acworth
5. Noonday Creek Trail



Photo credit: <http://tinyurl.com/y9uoer4j>

Sources:

<http://goodnature.nathab.com/video-the-great-migration-of-the-sandhill-crane/>
<https://www.savingcranes.org/215-2/>
https://www.allaboutbirds.org/guide/sandhill_crane/sounds

<http://www.audubon.org/news/see-sandhill-crane-migration-march-2-april-7>
<http://rowe.audubon.org/crane-facts>
<https://www.savingcranes.org/215-2/>
<https://ebirdhotspots.wikispaces.com/US-GA-Lake+Acworth>



Photo credit: <http://tinyurl.com/y9h3tabg>

Out My Backdoor: Harbingers of Spring

Terry W. Johnson
Georgia Department of Natural Resources
Wildlife Resources Division

The first signs of spring have been seen and heard in the Peach State. They were not borne on the wings of robins or bluebirds. They were not emblazoned in the fresh vibrant colors of a crocus. They didn't fill the still night air like the chorus of the chorus frog. Instead, the pending arrival of spring was announced from on high by birds whose ancestors winged their way over the continent some 2.5 million years ago.

The messengers were northward-bound sandhill cranes.

I seem to hear their calls when I least expect them. Such was again the case this year. I heard them on the remarkably warm afternoon of Feb. 13 as I was walking about my yard trying to shake off the effects of an illness that had kept me inside far too long. Off to the north I heard the unmistakable karoo, karoo, karoo calls of a flock of sandhill cranes flying so high in the sky I could not see them. While it is true that these garbled calls, which can be heard a mile or more away, often sound like the barking of a pack dogs, I was sure I was listening to sandhill cranes.

Immediately my spirits lifted

for I knew that these harbingers of spring were telling me spring is just around the corner.

Chances are if you are not familiar with these long-legged birds when you first spot their long meandering V-shaped flocks you will mistake them for Canada geese. Since the birds fly so high it is often difficult to tell much about them other than the fact that they are really big birds.

If you have a pair of binoculars handy, once you focus on the passing flock you can immediately tell they are not geese. In comparison, sandhills possess long legs that trail well behind their tails. The legs of geese never extend beyond their tails. You might even be able to make out the crane's long, dagger-like bills.

The next clue to look for is the shape of their flocks. Both sandhill cranes and Canada geese often fly in V-shaped formations. While



Photo credit: <http://tinyurl.com/yaath88>

geese typically maintain this shape, the V-shape of a crane flock seems to constantly change. The sides of the V will undulate. In addition, birds will often fall out of formation, then seemingly regain their bearings and rejoin the V-shaped flock once more.

It is always a special treat to find a flock of sandhill cranes on the ground. Only then can you appreciate their size and beauty. Standing erect, an adult male sandhill crane stands almost as tall as an average man. From wingtip to wingtip their outstretched wings measure 6½ feet. In comparison, the wingspread of the endangered whooping

crane is 7½ feet. The bodies of sandhill cranes are gray and their heads are adorned with a bright red crown. Their tails are short and ostrich-like.

Sandhill cranes make brief stops in our state as they move northward. Look for them late or early in the day in large fields or open, shallow wetlands. Sometimes these visits are associated with fog or other bad weather. Occasionally, they will even make unscheduled stops on golf courses and other open areas.

Those that wing their way over Georgia are greater sandhill cranes. They are but one of nine distinct populations. They have been dubbed the eastern population. The breeding range for these cranes reaches from the icy shores of the Hudson Bay southward to Michigan and Wisconsin. Their total population numbers only 24,000 to 26,000 individuals. Practically all of these birds migrate through Georgia.

It has been suggested that sandhill cranes follow Interstate 75 to and from Florida in the same manner ducks and geese follow major rivers on migration. This theory is going to be very hard to prove.

Although most winter on the vast prairies of Florida, some wintering birds never venture farther than south Georgia. They can be found in the greatest numbers from the Okefenokee Swamp west to Grand Bay Wildlife Management Area near Valdosta, where they sometimes share roosting and feeding areas with our resident Florida sandhill cranes. However, I regularly find them during the winter as far north as the farmlands around Americus.

Sandhill cranes are very social birds. On migration, their flocks number into the hundreds. These flocks are composed of family groups and unmated birds. While migrating, they constantly communicate with one another. Interestingly, males and females often sing duets as they fly. A major concern shared by wildlife biologists is the rapidly changing landscape along the crane's migration pathway. Without safe, productive areas to feed and rest as they move to and from their breeding grounds, the numbers of sandhill cranes would quickly plummet.

The migration of the sandhill crane remains one of nature's most spectacular annual events. What is truly amazing is that I don't have to travel to some distant wilderness area to enjoy. It is something I can watch while standing in my own backyard.

Terry W. Johnson is a retired Georgia DNR nongame program manager and executive director of The Environmental Resources Network (T.E.R.N.), the DNR Nongame Conservation Section's friends group. Read more in Terry's "Out My Backdoor" column, his "Backyard Wildlife Connection" blog and his new book, A Journey of Discovery: Monroe County Outdoors.

Source:

<http://tern.homestead.com/>

<http://georgiawildlife.com/outmybackdoor>

<https://backyardwildlifecommunity.com/tern-the-environmental-resources-network/>

<https://www.amazon.com/Journey-Discovery-Monroe-County-Outdoors/dp/1535053429>



Photo credit: <http://tinyurl.com/y9qtfpwn>

OBSERVATIONS

Burrowing Bot Flies



Photo credit: <http://tinyurl.com/ydh36tah>

development under the soil. The sores left on the squirrel's skin usually heal within a few weeks.

Linda May
Environmental Outreach Coordinator, Georgia DNR Wildlife Resources Division

ECOPEDIA

Migration

When people hear the word migration, they typically imagine the seasonal movement of a flock of birds from one place to another. However, there are many other forms of animal migration, including journeys between east and west, complex round-trips involving land and ocean, altitudinal journeys up and down mountains, and vertical movements through the water column of oceans and lakes (Hoare 2009). This phenomenon is not exclusive to birds and can be seen among many other species as they make their physical movement from one type of habitat to another. Amazingly enough, the longest insect migration is performed by the Monarch butterfly.



Photo credit: <http://tinyurl.com/y7ugfmlf>

Source: Hoare, B. *Animal Migration. Remarkable Journeys by Air, Land and Sea.* London, UK: Natural History Museum, 2009.

Stewardship Stars Excellence in Data Collection

The following volunteers have submitted data each month during the June, July and August quarter:

Arden & Jeremy - Chemical Monitoring in the Allatoona Watershed
Connie Ghosh - Chemical, Bacterial and Macro Monitoring in the Rubes Watershed
ERM Atlanta - Chemical Monitoring in the Chattahoochee Watershed
Lakewood Colony - Chemical and Bacterial Monitoring in the Rubes Watershed
The Ochala Family - Chemical and Bacterial Monitoring in the Noses Watershed
Richard's Creek - Chemical Monitoring in the Allatoona Watershed
Sierra Club Centennial Group - Chemical, Bacterial and Macro Monitoring in the Rottenwood Watershed
SG5 - Chemical Monitoring in the Nickajack Watershed
Simon Locke - Chemical and Bacterial monitoring in the Butler Watershed
Team Salty - Chemical Monitoring in the Sope Watershed
Varner - Chemical Monitoring in the Noonday Watershed
Village N. Highland Subdivision - Chemical, Bacterial and Macro Monitoring in the Willeo Watershed

**Thank you for your hard work and dedication
in the hot weather!**



2017 Georgia River of Words Winner

Unnoticed Beauty

Mikayla Stoltz

Grade 6

The Walker School, Marietta

Teacher: Mary Ann Stillerman

w e l c o m e

Varner

Chemical Monitoring in the Noonday Watershed

The Ochala Family

Chemical & Bacterial Monitoring in the Noses Watershed

Nancy Payne

Chemical Monitoring in the Ward Watershed

ANNOUNCEMENTS

Join the 2017-2018 Chattahoochee Challenge!



In this exciting challenge, scouts, families, clubs, community groups, and businesses are encouraged to attend and organize waterway events and projects throughout Cobb County. At the end of the contest, the group that has accumulated the most volunteer service hours receives a free rafting trip in May. The rafting trip will take place on the Chattahoochee

River with a National Park Ranger. Plus local waterways will be cleaner and healthier!

We have scheduled several volunteer opportunities, including creek cleanups and storm drain events, to get the Challenge started! Upcoming events can be found on the calendar at cobbstreams.org. Register your group for the Challenge by December 1st.

Register your group at www.cobbstreams.org located under Volunteer/Chattahoochee Volunteer Challenge

Best of luck to all our competitors!

WSP Thanks Our Summer Interns

The Watershed Stewardship Program would like to thank summer interns Lina Yazbak and Miles Parker. Both have interned with the WSP in the past and volunteered their time again working this summer.

Lina is a recent graduate from The University of Georgia with a degree in Environmental Economics, and Miles is a Posse Scholar at The College of Wooster majoring in chemistry.

In addition to helping with summer programs, Lina and Miles worked on specific projects such as completing the upcoming newsletter and working in the lab.





WSP Welcomes Taylor Dove

The Watershed Stewardship Program would like to introduce Taylor Dove as our new part-time Environmental Program Specialist! We are very excited to have Taylor join our team. Taylor graduated from The University of West Georgia with a degree in Geography and GIS. She has spent the last year working in Montana as an AmeriCorp member with The Nature Conservancy. Taylor will head up our middle and high school outreach, oversee stewardship projects such as waterway cleanups, stormdrain marking, privet pull projects, and assist with community outreach. Welcome Taylor!

SEASONAL HAPPENINGS

Announcing the Last 2017 Rain Barrel Make & Take Workshop

Wednesday • October 18, 2017 • 10:00am - 11:00am

A rain barrel is a rainwater harvesting system that is connected to a downspout from a house or building. By collecting rainwater, you can save energy, water, and money. Rain barrels also help reduce erosion and storm water runoff and increase water quality. Participants will have the opportunity to make and take home a free rain barrel. Space is limited. One per household. Cobb County residents only.

Fairy Pumpkin House Workshop

Tuesday • November 7, 2017 • 10:00am - 12:00pm

Designed to foster a foundation of service, an appreciation for being outdoors, and a sense of wonder for the natural world, Cobb County's Fairy Habitat Helpers is a youth service project that helps ensure all creatures have a healthy and secure home place. Our youngest environmental stewards will have a chance to use pumpkins and natural materials collected from along the trail to create shelters for fairies and other small creatures. Fairy pumpkin houses will be taken home to provide habitat to the creatures at your house. Workshop will take place, rain or shine, at the Water Lab, 662 South Cobb Drive, Marietta.



Adopt - A - Stream Visual Monitoring Workshop

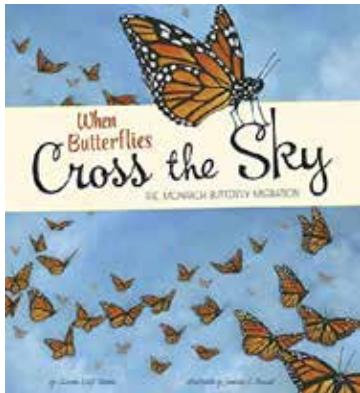
Saturday • December 2, 2017 • 10:00am - 1:00pm

Come join us and learn how to assess your watershed. We will take water quality measurements, evaluate stream habitat, and conduct visual assessments of the stream including creating a cross section and conducting the Wentworth Pebble Count. This workshop is free and requires no prior experience. You will receive both the *Getting to Know Your Watershed* and the *Visual Stream Survey* manuals. Bring water, snacks and a folding chair! Dress comfortably for December weather and the outdoors. Comfortable walking shoes and/or rain boots/waders are also recommended as we will be in the stream. Location to be determined.

RECOMMENDED RESOURCES

When Butterflies Cross the Sky: The Monarch Butterfly Migration

by Sharon Katz Cooper



"Soar alongside one particular monarch butterfly, and discover why its migration is one of the world's most extraordinary. Realistic illustrations illuminate the journey, while the narrative excites and educates."

"Focusing on the migration journey of one specific monarch butterfly, *When Butterflies Cross the Sky* engages readers with a story-like narrative while subtly teaching the role of migration in the butterfly's life cycle. Includes a "fast facts" page, a glossary, and realistic, text-match illustrations that pull readers right into the sky."

Sources: <http://tinyurl.com/ycxw32gu>
<http://tinyurl.com/ydz9akmj>

CONSERVATION TIP

Popcorn

Share your popcorn when you're at the movies instead of buying multiple cartons or bags. You'll save money and packaging. Americans today consume seventeen billion quarts of popcorn each year (fifty-four quarts per person), 30 percent of which are eaten at movie theaters, sporting events, entertainment arenas, amusement parks, and other recreational centers. If half the people shared their popcorn at these events, we could save the paper packaging for more than 2.5 billion quart-sized servings.



Source: *The Green Book*

**Cobb County Water System
Watershed Stewardship Program
662 South Cobb Drive
Marietta, Georgia 30060**



Cobb County...Expect the Best!

This is an official publication of the Cobb County Water System, an agency of the Cobb County Board of Commissioners.

Calendar of Events

October

- 12 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 12 Storm Drain Marking Mob • 4:30pm - 6:30pm • Noonday Creek Watershed
- 14 Rivers Alive Stream Cleanup • 10:00am - 1:00pm • Fair Oaks Park
- 18 Adopt-A-Stream Chemical Monitoring Workshop • 6:30pm - 9:00pm • Cobb County Water Quality Laboratory
- 18 Rain Barrel Make-and-Take Workshop • 10:00am - 11:00am • Cobb County Water Quality Laboratory
- 19 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 20 Outdoor Learning Symposium • Atlanta, GA • <http://www.eealliance.org/outdoor-learning-symposium>

November

- 2 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 2 Adopt-A-Stream Bacteria Monitoring Workshop • 6:30pm - 9:00pm • Cobb County Water Quality Laboratory
- 4 Storm the Watershed 5K • Cubihatcha Outdoor Education Center • <http://stormthewatershed.com/#home>
- 7 Fairy Pumpkin House Workshop • 10:00am-12:00pm • Cobb County Water Quality Laboratory
- 9 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 14 Storm Drain Marking Mob • 4:00pm - 6:00pm • Olley Creek Watershed
- 16 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 30 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory

December

- 2 Adopt-A-Stream Visual and Habitat Survey Workshop • 10:00am - 1:00pm • Cobb County Water Quality Laboratory
- 5 Privet Pull Mob • 4:00pm - 6:00pm • Heritage Park
- 7 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 14 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 21 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory

Events in **GREEN** are Cobb County

Watershed Stewardship events.

More information can be found on our
Calendar at www.cobbstreams.org.