

## Change

By Joann Fricke

In nature, as in our lives, change is a constant. Autumn changes are currently in full swing. The leaves of deciduous trees are turning their brilliant reds, yellows and oranges. Many environmental factors are involved in determining the color, intensity and duration of these transient autumn colors. The most important of these factors are soil moisture, warm sunny days and long, cool nights. Some of the leaf pigments are formed under these conditions, but others are already there, masked only by the green chlorophyll in the leaves.

Fall color is observed in deciduous foliage because a series of events occurs in plants with the changes in light level and temperature. Leaves have an abscission (or separation) layer on the leafstalk that eventually allows the leaf to drop. In the fall, the cells in a leaf abscission layer begin to seal off the flow of water to the leaf, and prevent the outflow of sugars that were manufactured within the leaf. Chlorophylls, which are the primary pigments for converting sunlight into sugars within the leaf, continually break down and must be replaced. However, in the fall, the rate of water moving into the leaf is reduced, but it is still being lost by the leaf through transpiration. This decrease in leaf moisture begins the reduction of these green chlorophyll pigments.



Red oak. Photo courtesy Joann Fricke

Assisting chlorophyll in capturing light and in the production of sugars in leaves during the growing season are the carotenoid and the xanthophyll pigments. Beta-carotene is the most common carotenoid pigment, and contributes to the orangish-yellow and orange colorations of leaves in the fall. Lutein is by far the most predominant xanthophyll pigment and when uncovered, produces the bright yellow fall colors. Although these two pigments are the most common, there are over 80 different carotenoid and xanthophyll pigments found in leaves, and this contributes to some of the wide variation seen in fall color. These pigments break down more slowly than the chlorophylls.

Also present in the leaves of trees are tannins. Tannins are believed to contribute to making foliage unpalatable to herbivores and insect pests, as well as having an antimicrobial effect against disease-causing organisms. Tannins found in leaves contribute to the golden colors found in some fall foliage and the brown color of late fall, as observed in many oak species.



One last category of foliar pigments involved in fall color is the anthocyanins. These pigments are produced from glucose that has built up and is trapped in the leaves, and the resultant pigments give the brilliant red and purplish-red fall color. Some anthocyanins may be found in leaves during the growing season, giving a purplish color to new growth and to mature foliage, such as in some plum trees. Here they act as anti-oxidants within leaves to protect cells from high light damage. These pigments, coupled with the carotenoid, xanthophyll and tannin pigments make for the tremendous variation of colors in the numerous species of deciduous trees and shrubs in Illinois.



Sassafras.



Flowering dogwood. Photos courtesy Joann Fricke

Much as seasons change, so do relationships and organizations. Clifftop, itself, is going through a transitional period, but our mission remains the same: to promote the conservation, preservation, and protection of the Mississippi River bluffs corridor in Monroe, Randolph and St. Clair Counties through informational and educational public outreach programs, hands-on land stewardship work and facilitating stewardship programs for landowners, and permanently protecting bluffslands of critical natural area importance.

The more things change,  
the more they stay the same.

--Jean-Baptiste Alphonse Karr  
*French critic, journalist, and writer*



# A Born Nature Lover

By Lauren Wratchford

Throughout my childhood, I had always been curious about the natural world; I could be found outside making mud-pies, inspecting rocks and animals, or helping plant seeds for our garden. As I got older, my mom, my sister and I traveled to numerous state parks across Illinois and Missouri, and I even had the opportunity to travel to Alaska with my father for his work. Through these early travels, I became intensely intrigued by environmental education and conservation and yearned to experience even more of our natural world.

In 2015, I was given the chance to travel the world with fellow Girl Scouts through the Girl Scout Destinations program. Offering both domestic and global travel opportunities for individual Girl Scouts around the world, the Destinations program requires a rigorous application and referral process. After a lengthy wait, my acceptance email arrived and I was ecstatic! My first destination: the U.S. Virgin Islands.

There, I snorkeled some of the clearest waters in the world, witnessing thousands of colorful aquatic plants and animal sea-life. Mangroves were everywhere, providing erosion resistance to the island edges and serving as a home to corals and creatures alike. Above water, the islands were teeming with a different kind of life. A desert-scrub biome provided small trees, bushes, and cacti as homes for birds, mongooses, and deer.



Left: Lauren, right, hanging out in a park in Alaska. Right: Soaking up the sun in the U. S. Virgin Islands. Courtesy Lauren Wratchford

The following year, I was accepted again into a Destinations adventure, and chose a geology-based program in Iceland. While in southern Iceland, I saw countless mountain ranges, hiked a glacier, descended into a fully-intact dormant volcano, and awed at waterfalls rival only to Niagara Falls. Strikingly different from the desert biome of the U.S.V.I., natural geologic structures dominated in Iceland. I was reminded of Alaska as I trekked through glacial valleys and dormant lava tubes, learning about the geologic processes that shape and reshape the surface of the Earth.

Just this past summer, in July, I traveled to western Mongolia, once again with the Destinations program. All from the back of a traditional Mongolian horse, I discovered an endless rolling steppe dotted with small forests and an occasional mountain. Herds of sheep, goats, and horses freely travel the sandy-soiled steppe, stumbling across clear flowing, rock-bottomed rivers.



Left: Horse trekking through the Mongolian steppe. Right: Gearing up to hike a glacier in Iceland. Courtesy Lauren Wratchford

Traveling to these immensely contrasted landscapes, with their stark differences from the prairies and deciduous forests of my southern Illinois homeland, opened my eyes to the natural world like never before and pushed me to begin working to improve and preserve the environment.

Captivated by the magnificent beauty and fragility of Earth, I was determined to focus my Girl Scout Gold Award, a service project that requires the highest level of determination and dedication of all Girl Scout honors, on environmental stewardship. I formulated my project, consisting of at least 80 hours of service and countless other stringent requirements, teaming with Clifftop to construct interpretive signage for and promote the conservation of the young prairie at the Paul Wightman Subterranean Nature Preserve.

When I embarked on the journey to receive my Girl Scout Gold Award, I knew I was going to learn more than I could imagine. What I didn't know was exactly what I was going to learn, or even how I was going to learn it. Now, in the midst of my project, I am astonished by the amount of knowledge I have obtained. I have gained a wealth of plant nomenclature and wildflower identification knowledge, as well as prairie management and insight into developing public use areas from various Clifftop board members. In addition, I am gaining valuable experience in communication and leadership. The members of the board of Clifftop have been welcoming, eager to share their knowledge and happy to involve me in their valuable work.

Observing and serving the environment through my Gold Award project is helping me to begin a lifetime of volunteerism and environmental stewardship in partnership with Clifftop. All of the wonderful travel opportunities given to me have allowed me to not only see some of the beauty of the world, but also to realize and appreciate the unique landscapes, geologic features, and rare species of our own backyard, creating within me a desire to promote and protect the environment.

*Editor's note: Lauren and her family live very near Paul Wightman Subterranean Nature Preserve and have been Clifftop members since early 2016.*

\*\*\*\*\*



**Attention, Clifftop volunteers! Please watch your email inbox for information regarding upcoming regular workdays at White Rock Nature Preserve. We will be preparing for a controlled burn while also working to restore prairies and glades.**



# What's new at our nature preserves?



Board member Ralph Buettner has been busy in the shed at Wightman, constructing built-in shelving on the south wall (photo on left, above) for miscellaneous storage. He has also built some free-standing shelves to store burn equipment and a rack for burn tools (photo on right, above). Also new at PWSNP is a large water tank (photo, right) to use on our prairie controlled burns. Many thanks to Baebler Education Farm for the donation of the tank.



New at White Rock are stone benches purchased through an Illinois Clean Energy Community Foundation Amenities Grant awarded to Clifftop earlier this year. Additional interpretive signage, purchased with generous donations in honor of Edna Dell Weinel's 90<sup>th</sup> birthday, was also recently installed.



Stone bench and glade interpretive sign at Edna's Dell (above) bench and volunteer sign at intersection of White Mine and Ridgeway Trails, North and South (right).



To view more photos of our events or interpretive sign and stone bench installation, visit our Facebook page at: <https://www.facebook.com/Clifftop-162533970518561/>



# Photo Gallery...



Many families joined us for our Total Solar Eclipse Field Trip at PWSNP on Aug. 21. Over 300 people were in attendance, making this our targets event ever!



Some chose to watch the eclipse from the prairie.



Rev. Sheldon Culver spoke of the spiritual aspects of a solar eclipse.

Dr. Mike Krawczynski, above, left, of Washington University, St. Louis, provided equipment and personnel to help understand the science of a solar eclipse.



Those who attended Members' Day at PWSNP on Oct. 14, enjoyed stimulating conversation and good food, as pictured above.





# Donate to Clifftop

**Dedicated to preserving and protecting the Mississippi River bluff lands in  
Monroe, Randolph and St. Clair Counties**

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

E-mail: \_\_\_\_\_ Phone #: \_\_\_\_\_

Donation of \$\_\_\_\_\_ \* is enclosed

In memory of: \_\_\_\_\_

In honor of: \_\_\_\_\_

\_\_\_\_ Birthday    \_\_\_\_ Anniversary    \_\_\_\_ Graduation    \_\_\_\_ Marriage

\_\_\_\_ Other (specify) \_\_\_\_\_

\_\_\_\_ Use my gift as you see fit    \_\_\_\_ I want my gift used for a specific purpose (specify below)

Please send completed form and a check, payable to Clifftop to:

**Clifftop**

**P. O. Box 131**

**Maeystown, IL 62256**

\*Clifftop is a 501(c)(3) non profit organization incorporated in the State of Illinois. Donations in support of Clifftop's activities are tax deductible to the extent allowed by law.



Steve Taylor photo

# Join Clifftop

Members receive:

- ~~ E-mail newsletters
- ~~ Annual Report
- ~~ Invitations to special events & work days
- ~~ Invitations to join committees and work with the Clifftop Board of Directors
- ~~ **The satisfaction of preserving and protecting our natural areas and natural heritage.**

## Membership dues:

- \$15.00 annually, student
- \$25.00 annually, individuals
- \$35.00 annually, families
- \$50.00 annually, supporting
- \$100.00 annually, sustaining
- \$500.00 life membership

**Questions regarding Clifftop membership, please e-mail: [cliffmbr@htc.net](mailto:cliffmbr@htc.net)**

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

E-mail: \_\_\_\_\_ Phone #: \_\_\_\_\_

Membership dues of \$\_\_\_\_\_ are enclosed; additional donation of \$\_\_\_\_\_

\_\_\_\_\_ Renewal \_\_\_\_\_ I would like to volunteer with Clifftop, please contact me.

Please send your completed form and a check, payable to Clifftop to:

**Clifftop  
P. O. Box 131  
Maestown, IL 62256**