SHORTIA

NEWSLETTER OF THE

WESTERN CAROLINA BOTANICAL CLUB

Shortia galacifolia

Oconee Bells

Spring 2021
Field Trip Cancellations: Occasionally, field trips must be canceled or changed either for weather conditions or other reasons such as road closings. Such changes are sent out by email to all members by 7 AM the day of the field trip. If you do not have email access, please call the leader, co-leader, or recorder (whose phone numbers are listed on the schedule) to be sure that the walk is going to go as planned. Indoor programs are canceled when Henderson County Schools are closed (see http://www.hendersoncountypublicschoolsnc.org) but NOT necessarily canceled because of the delayed opening. For any change of address, email or telephone number, please send an email to wcbotanicalclub@gmail.com. Our webpage is located at http://wcbotanicalclub.org.

NOTE: All club activities are canceled until July 2021 due to Covid-19 concerns. All full year ($15) dues for 2020 will be applied to 2021, so memberships will be automatically renewed for 2021 (assuming there are activities in 2021).

As a reminder, here is the information that all of you should have received concerning the plan for 2021.

The Scheduling Team discussed the virus, the requirement to wear masks, social distancing, and the vaccine. The club’s plans for the first six months of 2021 are as follows:

1. Cancel all official activities/walks for the period January 1 through June 30, 2021, and evaluate in May.

2. Send members the sheet with walks for the past 5 years, and the proposed Spring schedule, as was done in 2020.

3. Post the current checklists and members can print what they need.
President’s Message
Gayle Mercurio

Spring Is Here!

What a glorious time of year. We have survived a year with the COVID pandemic. The winter was cold and the wind was horrendous at times. But now our clocks are reset, it stays light outside longer and the sun is shining brightly.

We’ve been hiking Twin Bridges for a couple of months looking for a speck of green. Each hike made us a little more anxious to find something. At first it was a winter forest appearing to be at rest. There were no flowers, leafless trees and not much to see. We studied the bark on the trees and dead leaves surrounding them. On later hikes we saw just tiny hints of something pushing up the dead leaves. Soon after that we were excited to see some small green stems and a few green leaves appear. Finally, the most beautiful ephemeral flowers unfolded lifting our spirits and making us smile. How welcoming they were to yearning souls.

The last time we went to Twin Bridges we saw great numbers of blooming plants. The floor of the forest was covered with bountiful color. It graciously presented a stunning show. The one surprise we had not expected was the precious columbine, Aquilegia canadensis, in bloom, never noticed in previous years, not far from the boulders at the entrance from the road.

As we finished our hike and gathered at our cars across the road, we stood looking down at the roaring, running creek below. Its furious speed over rocks was so loud you had to raise your voice to be heard over the gushing, splashing, tremendous amount of water racing down the hill. On the other side of the creek directly in front of us there was an enormous cliff with trickling water working its way down from the top to join the rushing water at the bottom. Far up on the cliff, tucked in a tiny ridge, we saw a flower in full bloom. I grabbed my binoculars to confirm our identification. Yes, it was a columbine, alone and gloriously blooming red and yellow.

Such an extraordinary way to end a spectacular day. Spring is here. What a total joy to know and learn and love wildflowers and nature.

A small columbine blooming the following day in my garden at home.
Plants we Love to Hate - *Smilax*  
by Penny Longhurst

As someone who has done an awful lot of bushwhacking in the past year, I have a definite hate-hate relationship with Smilax. In some of the places I’ve gone, its thickets resemble those bead curtains you used to see hanging down in doorways. Other times, the tangling vines are worse to clamber through than Dog Hobble. And, of course, Smilax is covered with nasty PRICKLES! I learned to wear leather work gloves for these expeditions but I need to get some leather chaps to prevent scratched and bleeding legs!

The genus name, *Smilax*, means “bindweed” or “clasping” referring to the habit of the *Smilax* vine species to climb by extending tendrils around supporting plants. A common name for the genus is “Greenbrier”. According to Weakley (2020), 21 different species and varieties of *Smilax* are found in the Southeastern United States. They are divided into 2 groups based on plant form and whether they bear prickles. Seven have been recorded in our database. Biltmore Carrion Flower (*Smilax biltmoreana*) and Carrion Flower (*Smilax herbacea*) are kindly herbaceous perennials that lack prickles. The remaining species are vines with woody stems and, as we well know, have prickles with varying degrees of nastiness. They are Saw Greenbrier (*Smilax bona-nox*), Whiteleaf Greenbrier (*Smilax glauca*), Laurel Greenbriar (*Smilax laurifolia*), Catbrier (*Smilax rotundifolia*), and Bristly Greenbrier (*Smilax tamnoides, formerly Smilax hispida*). The genus *Smilax* and the species *S. herbacea, S. bona-nox, S. laurifolia, and S. rotundifolia* were named by Linnaeus. The flowers of *Smilax* species are dioecious; male and female flowers are borne on separate plants. The species we see most commonly are described below.

The leaves of Biltmore Carrion Flower (*S. biltmoreana*) are often confused with those of Wild Yam (*Dioscorea villosa*), but *S. biltmoreana* has fewer leaves with only 3-5 central veins that join at the leaf apex. It is a short plant, rarely growing more than 1 or 2 feet tall. The specific epithet refers to the Biltmore estate in Asheville, NC.
Carrion Flower (S. herbacea) can grow an astounding 12 feet in a year, magically supporting itself in an upright position until it can attach to supporting shrubs with its curling tendrils. The specific epithet means “herbaceous, not woody”. The common name “Carrion Flower” refers to the putrid scent of the flowers which attracts pollinating flies. Fertilized female plants develop a ball of green berries that turn black/blue as they ripen and are a food source for many animals, including black bears.

Catbrier (S. rotundifolia) Fruit  Bristly Greenbrier (S. tamnoides)

Catbrier (S. rotundifolia) is a good plant to avoid, although sadly it’s very common in the areas where I hike! Its stems are green, rigid, 4-angled with large, stout prickles, and attach to other plants with tendrils. The derivation of the common name is fairly obvious. Those prickles can really hurt and cause nasty bleeding scratches. The specific epithet means “round leaf”, although the leaves are more often ovate. The leaves are green on both upper and lower surfaces. The flowers are inconspicuous and produce berries that turn black later in the year.

The appropriately named Bristly Greenbrier (S. tamnoides) is a less commonly seen vine. The stem is much slimmer than that of S. rotundifolia and covered with small, slender, sharp, brown/black prickles that can still cause damage. The specific epithets tamnoides and hispida mean “bristly”.

The remaining Smilax species are much less frequently found; we have only one picture of each on our website, so we need to do better. S. bona-nox has been seen at Glassy Mountain. The stem is 4-angled and zigzags. The leaves have a distinctive shape, principally triangular. Hopefully we can find it next time we visit. S. glauca has been seen at Ashmore Preserve. The leaves are light colored underneath and should be easy to identify. S. laurifolia has been seen at Eva Chandler Heritage Preserve. With its slim leaves it also should be easy to identify. We just need to watch out for those prickles! By the way, several Smilax species are edible when young and reputed to taste like young asparagus.

Extracts of the roots of some non-native Smilax species are included in a herbal medication called Sarsaparilla and have been used to treat gout, syphilis, leprosy, psoriasis, and more. However clinical studies to evaluate their efficacy have not been done.
References

Dingwell, Sue: Smile – It’s A Smilax! Virginia Native Plant Society. November 5, 2014
https://vnps.org/smile-smilax/

Gaia Herbs. Sarsaparilla
https://www.gaiaherbs.com/blogs/herbs/sarsaparilla

namethatplant.net
http://www.namethatplant.net/4DCGI/Query?scientificname%3Dsmilax


https://ncbg.unc.edu/research/unc-harbarium/floras/
Lycopodiums – an Ancient Species

by Vince Mercurio

It was a beautiful February winter day when Lucy, Rosemarie, Gayle and I took a walk through Dupont Forest to see what spring ephemerals the winter had to offer up. It was a little chilly in the shade yet not so cold in the bright sunshine with patches of snow scattered about from the last snowfall. We saw some early shoots poking up through the leaf litter and a few flower buds but most impressive were the patches of lycopodium. Here, in the dead of winter, contrasted against leafless towering trees and the bare stems of last year’s bushes were vibrant, robust patches of lycopodium. I wondered how a plant without any bark for protection or a ton of leaves for generating enough energy to get it through the winter, could not only survive but thrive in the dead of winter. How a plant that grows mostly in the shade at the bottom of the forest floor and whose biggest opportunity for getting sunlight is during the winter when the light from the sun is at its weakest angle can thrive. Thus was born my next pandemic stay at home research project.

I didn’t have to look far to find my answer. It was in a book that has been sitting idly on our bookshelf since I read it five years ago. The book, The Trees In My Forest by Bernd Heinrich, is a collection of essays he wrote on various topics centered on a wooded 300 acre patch of land he owns in Maine. Heinrich is a biology professor at the University of Vermont and is the author of many books dealing with natural history. His answer has to do with growth strategies that are embedded in each plant’s DNA. In nature, plants can only take in so much energy depending on where and how they grow. How they spend that energy to grow, survive and reproduce is based around their growth strategies. The strategy we’re perhaps most familiar with is that of the big, towering woodland trees. Essentially, their strategy is simple - grow taller than all other trees near them and put out leaves in a wide swath to collect as much sunlight energy as possible. When this strategy is successful, the results are magnificent, but more often than not, this is a losing strategy. Typically, only one out of thousands or perhaps millions manage to achieve their full growth. This simple strategy of growing high and wide requires a massive and costly support structure consisting of a sturdy trunk and a network of limbs branching out in all directions to support the thousands of leaves for collecting the energy required to fuel its growth. Another adverse aspect of reaching high and wide is icing and snow and winds that can topple trees unless they were able to invest the resources in building a substantially massive support structure. As a precaution against these dangers, trees shed their leaves in the fall and once again have a massive energy debt in the spring for growing new leaves.

Lycopodiums are an ancient species dating back more than four hundred million years which is about eighty million years earlier than the Blue Ridge mountains were formed. They have survived all these years by adopting a growth strategy of minimizing energy requirements by not competing in an arms war of bigger is better. By not competing, they don’t have to allocate huge amounts of energy for building wooden scaffolding to reach for the sky or renew their solar collecting leaves each year. It’s estimated that trees spend 99% of their energy for building their wood scaffolding and...
growing a new crop of leaves each year. This leaves only 1% for reproducing and propagating their species. A razor thin margin that, if not met, can easily put a tree in an energy deficit making it more vulnerable to disease, inclement weather and death.

Lycopodiums operate on a very low energy budget and supposedly grow best in mixed evergreen deciduous woods. By growing close to evergreen trees, they do not become buried in leaves that deciduous trees shed. Yet the nearby deciduous trees, with their leaves shed, allow a small yet sufficient amount of sunlight to reach them for satisfying their scant energy needs. So on our next walks, an additional lycopodium challenge will be not so much of identifying the species but instead to observe the habitat to see, if in fact, lycopodiums grow best in mixed evergreen/deciduous habitats.

A patch of Lycopodium digitatum in a mixed pine/deciduous forest
What’s in a Name - *Rugelii*

By Penny Longhurst

Everyone loves trilliums. I’ve written about Catesby’s Trillium\(^1\) and Vasey’s Trillium\(^2\) in past issues of Shortia, but I think that one of my favorites is “Rugel’s Trillium” (Southern Nodding Trillium, *Trillium rugelii*). Susan P. and I spent many hours crawling around Coontree trail documenting all the different variations of *T. rugelii* growing there, and I’ve spent similar amounts of time doing the same thing up on Big Ridge. Many trillium are considered promiscuous, hybridizing across species, but in this area, *T. rugelii* is SUPER-promiscuous, apparently hybridizing with neighboring *T. vaseyi* with ease and producing plants with fascinating blooms of all shapes and colors. *Trillium rugelii* is named after Ferdinand Rugel, a German-born plant collector who is considered one of Tennessee’s botanical pioneers. Rugel’s Plantain (*Rugelia nudicaulis*), which Joe calls the “Worlds Ugliest Rare Flower”, is also named after him.

*Southern Nodding Trillium (Trillium rugelii)*

Typical form

*Rugel’s Plantain (Rugelia nudicaulis)*

Photograph by Joe Standaert

Ferdinand Ignatius Xavier Rugel was born in 1806 in Ravensburg, Germany, about 110 miles west of Munich. Around 1827 he moved to Bern, Switzerland, and worked as an apprentice pharmacist. He became interested in botany, collecting plants in southern Switzerland, France, and the Pyrenees. Rugel was mentored by the British botanist Robert James Shuttleworth, who lived in Bern and after whom *Hexastylis shuttleworthii* is named. In 1840, Rugel travelled to the United States to collect plants and shells in Georgia and the Carolinas with strict instructions to send them to Shuttleworth only. Nothing he collected was to be given or sold to American botanists. Thus, most of the American plants collected by Rugel were written up and attributed to Shuttleworth, causing considerable ill-feeling among the American botanists, who hastened to beat him to publication.

In 1840 and 1841, Rugel worked as a pharmacist and collected plants in Portsmouth, VA. Then, in the summer of 1841 he travelled west, collecting on Black Mountain and in Rutherford County, NC, and in 1842, settled in Dandridge, TN, where he worked as a pharmacist and physician. This became his headquarters for plant collecting. Although some biographies state he married in 1842 and others in 1845, Wayne Roberts, Director of
the Jefferson County Archives, kindly checked for me and found that Rugel married Laura Bell on January 12th, 1843. Corgan reports that she subsequently became the mother of “12 little Rugels”!3

In April 1842, Samuel Botsford Buckley (after whom Hypericum buckleyii is named) was passing through the area and stopped by to visit Rugel. He described him as “a real German student, careless of his appearance, very industrious, and the best prepared and equipped for collecting and preserving specimens of any person I ever met”4 However he commented that Rugel’s knowledge of American plants was “very low”, which was maybe not surprising since he had been collecting in the area for only a few months. On April 24, 1842 they set off together to botanize in the Smoky mountains, travelling to Alum Cave Bluffs and then into the higher mountains. An oft-repeated incident from the trip describes how Rugel’s horse, Fox, ran off with him bouncing around on board!4 Despite this excitement, Buckley reported that they returned safely from their trip loaded with specimens and well pleased with the result of their excursion. In a later report, Buckley described how he and Rugel had found Rugel’s Plantain near Newfound Gap on Mount Mingus, during that trip.5 However, on September 29th, 1842, Moses Ashley Curtis wrote to Asa Gray that “Buckley was just here and tells me he was with Rugel a while, & that he is a mean man; also, that he has fallen out with Torr. & Gray, & that he has sent & is sending his plants to Europe. The European botanists have written him not to let the Americans have his plants. I am determined therefore to work up the few plants that I have into a paper for the Jan. [...] of Silliman’s Journal [the American Journal of Science & Arts] so as to anticipate, as far as I can, any European Botanists. I wish you would help me in this, if you have time. Buckley’s plants had better be worked over also.”6

Rugel continued to collect. In addition to his Tennessee excursions, he travelled through Alabama and Florida in 1843, sending about 1,000 species of plants to Shuttleworth. Subsequent trips took him back to Florida and also to Cuba. In 1849 he severed ties with Shuttleworth, moved to Knoxville, and worked compounding drugs at a manufacturing company. He mostly gave up plant collecting, and after the Civil War moved to a farm in Jefferson County, East Tennessee, where he died in 1879. After Shuttleworth’s death in 1877, his herbarium, containing thousands of specimens collected by Rugel, was purchased by the British Museum. An exchange was subsequently made with the United States National Museum which ended up with over 1,000 of Rugel’s specimens.7 A similar exchange was made with the UNC herbarium which obtained 150 of Rugel’s plants, including a specimen of Rugelia nudicaulis collected by Rugel in the “Smokey Mts., Tennessee” in August 1842.8 Rugel’s personal herbarium and collection of shells was purchased by the Smith, Kline, & French company and donated to the Philadelphia College of Pharmacy and Sciences.7 I was unable to find out if it is still there.

Weakley (2020)9 lists 15 plants associated with Rugel; six of these share the species name rugelii. The genus Rugelia (which contains only Rugelia nudicaulis) is also named after Rugel. Those listed in our database are Broad-leaved Plantain (Plantago rugelii), Southern Nodding Trillium (Trillium rugelii), and Rugel’s Plantain (Rugelia nudicaulis). The specific epithet, nudicaulis, means having leafless or naked stems. The club found R. nudicaulis, a rare species endemic to the high mountains of the Smokies, on our field trip to Heintooga Ridge Road. The mollusks Deep-tooth Shagreen snail (Inflectarius rugeli) and Wrinkled Button (Mesomphix rugeli) are also named after Rugel.
But, to get back to Rugel’s Trillium… Most *Trillium rugelii* have the typical characteristics of white, ovate, recurved petals, and dark purple stamens. Case and Case point out that plants in mixed colonies with *T. vaseyi* often have petals with colors ranging from bicolored pink and white to dark red with white centers.¹⁰ Hybrids may also be formed with *T. erectum*. The flowers that Susan and I found in our explorations were all nodding, suggesting they were *T. rugelii*. However, the flowers came in all shapes and sizes, ranging from the typical *T. rugelii* form shown in the upper left-hand picture to the typical *T. vaseyi* form in the lower right-hand picture. Some hanky-panky had clearly occurred!

So, if you are out on Lower Coontree at the end of April or the top-most section of Big Ridge in mid-May, make sure you peek at any trillium flowers that are nodding and see if you can find some of these interesting hybrids.

Sources:


S.W. Geiser. Biographical Note on Dr. Ferdinand Rugel, American Botanist. Field and Laboratory. 16: 113-119, 1948.


Trillium vaseyi or Trillium rugelii or a Syngameon?

By Lucy Prim

Springtime is here, and the Trilliums are blooming! Do you remember an indoor meeting we had back in November 2019 when Penny invited Kathy Matthews to do a presentation for us about Trilliums? How long ago that meeting seems, ages and ages ago, when the world was just about to turn very strange, but we didn’t know it yet.

I remember being captivated by Kathy’s presentation, and felt particularly intrigued by a word I had never heard before, “syngameon.” What does it mean? Is it a newly discovered Tolkien story? No, not a new story, but a new word (to me) to describe a situation that occurs when different species have not evolved to be so different from each other that they can’t produce fertile offspring. Two such species are Trillium vaseyi and Trillium rugelii. They can act like a single species, a species complex, interbreeding and forming intermediate fertile offspring which Kathy called “syngameons”.

I decided to create another chart! I drew the features of Trillium vaseyi and Trillium rugelii which help us distinguish them from each other. When we are out on a walk and come upon one of these Trilliums that almost but doesn’t quite fit either description, (such as a Trillium rugelii with a dark ovary), instead of feeling confused and frustrated, we can recall Kathy’s presentation and summon to mind the lovely word she taught us— “syngameon”!
Trillium

vaseyi

- Petals usually maroon, rarely white to wihish
- Filaments far exceed the pistil
- Anthers: white to yellow to maroon
- Filaments-maroon
- Ovary: 3-12 mm long
- Ovary: dark purplish black

rugelii

- Petals usually white, rarely maroon
- Filaments shorter than ovary
- Anthers: dark purple to lavender
- Filaments-white to purplish
- Ovary: 10-17 mm long
- Ovary: white to pink to purple
I've previously shared my findings for an Android app to use to identify plants using photos on your phone. Since most of my photos end up on my desktop computer running Windows 10, I thought it expedient to have an ID program there. The Microsoft Store had such an app called, not surprisingly, “Plant Identification”. It costs $4.99.

It has you select a photo of the plant you are interested in and the screen appears as …….

When it finds a possible guess in its database, it displays the following screen. You’ll notice that it provides

- The name of the plant
- Several photos from its collection
- An estimated accuracy score
- The complete Taxonomy
- A link to a Wikipedia article
One small quirk is if it cannot find a guess in the database, which may be because you provided a poor picture, the program shuts down. When I first encountered this, I thought “this is crap”, the program crashes. Wrong. Just restart the program and select a better photo. Overall, I like this app especially because I can use it on my desktop computer where I do most of my photo manipulation and file naming.
The mission of the Club is to identify and study native plants and their habitats and to advocate the protection of biodiversity in our natural world. Membership is open to all. Individual/family memberships are $15. Send dues to Western Carolina Botanical Club, 351 Cheestoonaya Way, Brevard, NC 28712