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Earl Core Student Report:
Life Without a Sporophyte: the Case of the Appalachian Gametophyte, *Vittaria appalachiana*

by Jessie Pelosi

All plants undergo an alternation of generations between the large leafy sporophyte that we are accustomed to seeing and the gametophyte life stages. In flowering plants, the gametophyte phase is reduced to just a few cells. In ferns and lycophytes, however, the sporophyte and gametophyte stages are nutritionally independent of one another, and in some cases the sporophyte is completely lost; meaning that gametophytes can live on their own indefinitely. This has been termed the "separation of generations". The existence of gametophyte-only ferns in North America was first reported by Don Farrar in his 1967 paper in *Science*[1].

Although not officially named until 1991[2], the "Appalachian gametophyte", *Vittaria appalachiana* (Figure 1), was one of the four ferns that Farrar had found, although herbarium specimens may date back as far as 1824. Colonies of *V. appalachiana* grow in "rockhouses", recesses formed between rocks or carved out of single rocks (Figure 2). The environment in these habitats is relatively stable and buffered from extremes, though they do have exceptionally low light levels. The current distribution of *V. appalachiana* with the northern-most populations just below the southern extent of the Pleistocene glaciation suggests that the sporophyte was lost sometime during the Last Glacial Maximum (LGM) between 10,000 and 20,000 years ago, although the timing remains uncertain.

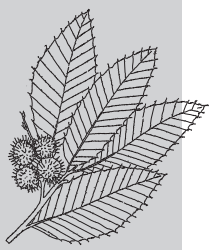
Figure 1. Colony of Vittaria appalachiana at 10X magnification from Panama Rocks, NY.

Figure 2. Example of the "rockhouse" habitat in Daniel Boone National Forest, KY occupied by Vittaria appalachiana.

Vittaria appalachiana reproduces entirely vegetatively through the asexual production of somatic buds called "gemmae", which are significantly larger and heavier than fern spores, greatly limiting dispersal distance. Interestingly, early population genetic studies[3] using allozymes found that the genetic variation within the species is not appreciatively lower than in sexually reproducing species. However, genetic variation within populations is very low, with most populations consisting of a single genotype, suggesting that individual colonies are of clonal origin. Severe bottlenecking following the loss of the sporophyte and restricted gene flow is the most likely cause for this phenomenon. Interestingly, the only recorded populations in Farrar's study that contained multiple genotypes are in Alabama and Ohio. We are interested in addressing the genomic consequences of strictly asexual reproduction in this fern and to address long-standing questions about the species' population genetics including:

1) Are colonies derived from single-spore events (e.g., are all individuals clones)? What are the origins and historical demography of the current populations?
2) How are genetic diversity and effective population size impacted by the absence of gene flow and sexual reproduction?
3) What are the population genetic implications of the separation of generations?

Life Without a Sporophyte continued on Page 13



From the Editor's Desk

by Joe Pollard, newsletter editor

I don't receive many comments about Chinquapin. (It would be great to get more, whether positive or negative - it would be a relief just to know it's being read!) However, among the comments that do arrive, a common theme is delight when reading about the research conducted by students supported by the Earl Core Research Award. I share that sentiment. For several years I've had the privilege of serving on the committee that reviews proposals and selects awardees. Even for a small, regional society with a supposedly arcane specialty, we receive an amazingly rich and competitive pool of applications, and many worthy proposals cannot be funded. Another fascinating research report kicks off this issue.

As I've detailed below, just a few years since its inauguration, the John Fairey Botanical Field Station Scholarship is starting to have great success in supporting student training in botany. For the first time, in this issue we're publishing the students' reflections on their field course. I think the reports are really impressive, and that the grants and awards our society makes to students are among our most important accomplishments.

Elsewhere in this issue, there's a list of 49 new members who have joined SABS this year. Welcome to all new members; if I've failed to include anyone in the list, I sincerely apologize; things have been a bit chaotic recently. For those who are students, we're especially glad to have you as members. And let's be honest. The SABS Council is well aware that many students join the society specifically to be eligible for our student support, such as the Core Awards, Fairey Scholarships, conference travel funds, and presentation awards. Some never renew their membership after that. We'd like to persuade you to stay. We don't have infinite money to give away, but we want the chance to show you that membership is valuable in its own right, both for the tangible benefits (e.g., access to Castanea and Chinquapin) and the more intangible ones, like the ability to make professional contacts and belong to a society that is at the cutting edge in scientific and scholarly activity, yet friendly and welcoming. Please let us know how we're doing with that, and learn more about ways to be involved in the society. You can contact any member of the Council, listed at left.

John Fairey Biological Field Station Scholarships Support Botanical Education

A Brief History (by Joe Pollard):

As editor of the Chinquapin newsletter, I also serve on the Council of the Southern Appalachian Botanical Society. I remember the mix of emotions when the Council learned in 2016 that Dr. John E. Fairey III had left a substantial endowment to the society to support education in the plant sciences. John was a former president and stalwart member of the society, and we were still saddened by his passing, but full of optimism about the opportunities that his bequest might provide. There was a lively discussion of how we could use the funds, resulting in the idea of offering scholarships to help students attend a field course or workshop at a biological station.

The program was advertised in 2017, and by the summer of 2018 we had our first student recipient, Emily Ulman from NC State. The next year we gave three awards, to Brandy Benz (NC State), Robert Helsel (Rutgers), and Aryan Kadkhodaei (Virginia). And the following year … well, that was 2020 of course, and everyone was in lockdown. But the Council agreed that any applicants for 2020 could be considered again the following year if they wanted.

It's now 2021 and the Covid-19 pandemic is still hanging on, but summer field courses are nevertheless being taught again. With many college courses moving to online instruction, the need for hands-on time in the field has perhaps never been greater. In that context, I'm delighted to say that this year, **seven** students received John Fairey Scholarships to attend a field course. For the first time, we invited the students to provide brief reports on their experiences, in the spirit of the Earl Core research summaries. Their testimonials appear below. We hope you will

continued on next page

be impressed and encouraged by the knowledge and enthusiasm of these promising future botanists.

Grasses of the Southern Appalachians* - Alana Hicks (University of Tennessee Chattanooga), Brittany Martin (Haywood Community College), and Morgan Gaglianese-Woody (Appalachian State University)

Our group of eight women, led by the expertise of Dr. Paul McKenzie, spent a week together learning about the grasses of the Southern Appalachians. We lodged at the Highlands Biological Station of Western Carolina University, which during the growing season, is an approximation of what one might imagine the garden of Eden to be. We made a few field trips to various parks, fields, and trails in the surrounding area, where our troop of plant enthusiasts from all walks of life got first-hand exposure to all things grass; we collected many specimens along the way that would later be dissected and keyed out at the HBS laboratory. During our outings, we also gained some exposure to birding, as our wonderful instructor, Paul (as he would prefer it), is an avid birder and called in numerous models of some really beautiful species. Our time in the lab began with well-structured lectures that were so rich and efficiently delivered that many of us were in disbelief at how much we felt we had learned in just a week. During our last few days together, we spent most of our time keying out the many species of grasses we had collected as well as some species Dr. Paul presented, some pulled from the HBS herbarium, in addition to some sedges and rushes to compare and contrast. We had a wonderful time delving into the local natural area and applying hands-on learning at the same time.

Biology and Identification of Ferns* - Luke Sheaffer (Western Carolina University) and Neely Millard (University of Tennessee Chattanoga)

Highlands Biological Station was a gorgeous place to live in for a week while we learned a great deal about the local pteridophytes. The station's tools and technology were very convenient while in the learning process, because we were able to study the ferns without hindrance due to the microscopic nature of some of their characteristics.

Through this class, we learned an almost unimaginable amount about ferns, both on the microscopic level and the macroscopic level. We started out the class with a lecture of fern and fern ally biology and morphology. Some things we learned are specific to ferns and their allies, while other characteristics are applicable to other plant genera, well preparing us for interaction and learning of other Appalachian foliage.

Everyday this week, we started out with a morning hike where we identified specimens in the field and collected some to take back to the lab for further identification and preservation for our herbarium collection. On the hikes, we were able to interact with fern expert Emily Sessa in addition to Dr. Joey Shaw and learn about ecology and many aspects of ferns along the way.

Each hike the class acquired a total of 38 specimens for a collection. In addition to these, we observed many more and chose not to collect them, due to their rarity, such as *Isoetes tennesseensis* Dr. Shaw was helpful during the learning process, not giving us direct answers, but making us think for ourselves and make educated hypotheses of fern species based on their morphological characteristics.

In the end, we identified and labeled all of the ferns we collected and pressed so that they may be added to the University of Tennessee at Chattanooga Herbarium. In total, we both created a collection of more than 35 species of ferns and allies.

Sedges of the Blue Ridge* - Brandon Wheeler (Western Carolina University)

As a graduate student at Western Carolina University, the trek from Cullowhee to Highlands, NC was far from arduous. I arrived on the campus of the biological station brimming with excitement and ecstatic to learn more about one of the most challenging groups of plants in the southeast: sedges. The instructor, Dr. Dwayne Estes, arrived that morning with two massive coolers, both filled to the brim with examples of almost 100 species within the *Carex* genus, all in Ziplock bags labeled with their location. We spent the first day of the course in the field, hitting the road to find several rare and common sedges of the Blue Ridge escarpment in their natural habitat. The learning atmosphere was electric, as I was surrounded by some of the brightest botanical minds in the Southern Appalachians. With each sedge introduced, Dwayne offered a myriad of identifying characteristics of each species as well as the section that the species was grouped into within the genus. I followed closely, quickly making notes and trying to keep up with the wealth of information. After chasing sedges throughout the area, we returned to the station for a dinner break, which was followed up by an evening in the lab learning some of the basics of the *Carex* key. Dwayne's reputation as a night owl preceded him, and I was fully caffeinated to compensate for my opposite disposition. Thankfully, he took it rather easy on us and we were out of the lab before the stroke of midnight on most days. Each day followed a similar pattern- usually with some field trips if weather allowed, but with a vast amount of time spent with microscopes, keys, and sedges unknown. In teams, students would work through the key and then offer a possible identification to Dwayne, or assistant instructor Dr. Paul McKenzie, who would then either confirm or ask leading questions to discern where we'd made a wrong turn within the key. Having the variety of source material available to us made sedges vastly easier to approach and transformed my fear of a difficult group into curiosity.

The experience of the course was like nothing I've ever experienced. Over the course of five days, I became engrossed in the world of sedges and aware of a plethora of plant diversity that had previously hidden behind the label of *Carex sp.* The five days I spent at the biological station were incredible and I truly did not want to leave at the end of the course. I'd made fantastic new friends and networked until I dropped. For much of the summer the pace of my field work and hiking has drastically slowed as I stop to inspect every sedge along the way, much to the chagrin of some dear companions that I then subject to a short lecture on the identification of this difficult group. I am deeply thankful for this opportunity and for the funding provided by the Southern Appalachian Botanical Society in the form of a John E. Fairey Biological Field Station Scholarship- without their generous support I would have missed out on the experience of a lifetime.

Field to Database: Collecting Biodiversity Data in the Age of Global Databases* - Laura Hamon (North Carolina State University)

From July 12th – 16th, I took a course entitled "Field to Database: Collecting Biodiversity Data in the Age of Global Databases" at Highlands Biological Station in Highlands, North Carolina. The class was taught by Dr. Joey Shaw from the University of Tennessee at Chattanooga with the assistance of Dakila Ledesma, a PhD student

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Edible Wild Plants:
Cool as a Pseudo-Cucumber, with Passion and More

By Lytton John Musselman, Old Dominion University

When wild edibles are being considered, few foragers think of vines. While vines may not provide the tastiest repast, they are readily available and often abundant vegetables. Here I consider four vines: melonette, yellow passionflower, the greenbriers, and hops.

Melonette

Melonette (*Melothria pendula*) is a common annual vine. In my neighborhood in Norfolk this native plant climbs delicately on hedges, fences, and poles. Melonette, also known as climbing cucumber, is most frequent in the coastal plain and piedmont. The fruits give *M. pendula* its vernacular name, meaning tiny melon. Melonette is easily confused with the perennial vine yellow passionflower (described later in this article).

Figure 1. Melonette showing the small yellow flower and developing fruit.

Figure 2. Green fruits of Melothria pendula. These can be eaten raw or pickled.

Melonette has small, yellow flowers (Fig. 1) and produces a fruit that when green looks like a tiny watermelon (Fig. 2). It takes many of the vines to make a meal.

This is one of the few native edibles in the cucumber family, a group usually grown for their fruits including melons, cucumbers, and squash. But cucurbit vines are eaten in other countries; for example, in Nepal the growing tips of pumpkin vines are regularly harvested as a vegetable. Melonette stems have an unremarkable vegetal taste. It is easy to boil the stems into submission yielding a mass of parenchyma cells. Steam lightly.

A relative, Mexican sour gherkin (*Melothria scabra*), is grown as a curiosity vegetable for pickles.

The ripe fruits are dark-purple and bitter but the immature fruits can be eaten raw with a flavor remotely reminiscent of cucumber. The green fruits are ready mid-summer. They make a crunchy pickle when preserved in a standard brine.

Yellow passionflower

A native perennial producing herbaceous vines annually, yellow passionflower (*Passiflora lutea*) is a frequent weed in suburban gardens and waste places. It is most common in the piedmont and coastal plain and can form high climbing masses at the edges of maritime forests. The small yellow flowers (Fig. 3) are produced throughout the summer and are much less showy than those of its ostentatious relative, the purple passionflower (*Passiflora incarnata*). Unlike its cousin, yellow passionflower fruits, though non-toxic, have a disagreeable taste.

The young vines of yellow passionflower (Fig. 4) are more substantive than the young stems of melonette. They may an interesting addition to a salad but are also good steamed.

Figure 3. Flower of yellow passionflower. The structure is the same as that of its photogenic congener, just smaller. The flower is about the size of a dime.

Figure 4. A mass of yellow passionflower climbing a pole. The white splotches on the leaves are diagnostic and readily distinguishes this from the often co-occurring melonette.

Greenbriers

Any field biologist working in the Southeast knows these plants on a personal basis. They entrap botanists and other outdoors people with their refractory stems producing stout prickles capable of penetrating thick clothing. They are woody vines with alternate simple leaves and grow in a diversity of open habitats in the Carolinas. The approximately ten woody species in the Southeast (a few species are not woody) all produce long, succulent edible shoots in the spring. The largest shoots are those of *Smilax laurifolia*, laurel leaf greenbrier (Fig. 6; also known as blaspheme vine because of its effective armament, or - as a memorable moniker from a botanist called it -"wait a minute"), a common species in the Coastal Plain in low wet areas. *Smilax bona-nox* (catbrier) is found in a variety of habitats in the Coastal Plain and Piedmont. In my experience, the shoots of catbrier though less fulsome are also less bitter. With a good imagination, greenbriers bear a resemblance to asparagus in texture and taste.

Figure 5. Harvesting young stems of laurel leaf greenbrier. The stem tips resemble asparagus.

I have long had a fascination with the report of the rhizome of laurel leaf greenbrier recorded in

Fernald and Kinsey's (yes, the Kinsey of fabled sex research) magisterial Edible Wild Plants of Eastern North America, where these rhizomes are described as the source of a gelatin by boiling. Accordingly, I thought it appropriate to excavate some at a site where Fernald collected in the 1930's and now is the Blackwater Ecologic Preserve of Old Dominion University. My Field Ethnobotany students made the collection and preparation of the rhizomes a project. So, armed with shovels and picks we chopped, hacked, and dug rhizomes (Fig. 6).

Figure 6. Students displaying their harvest after wading in a pocosin in winter and wielding axes and mattocks to extricate the rhizome. No undergraduates were harmed in this research.

The rhizomes are not woody, they *are* wood. Several of us boiled chunks of the rhizome and allowed the liquid opportunity to gel. No gel, only wooden chunks. The proverbial further research is needed to find Fernald's product of this plant. One useful product we discovered is that the liquid after boiling can be used as a dye.

Figure 7. Portion of a rhizome of laurel leaf greenbrier. Cutting the rhizome requires a saw or an axe.

In contrast, the rhizomes of the abundant common greenbrier (*Smilax rotundifolia*) are pencil thick and reported to be a source of starch. They are easier to extricate from the soil than laurel-leaf greenbrier but seem less rewarding without the sheer bulk of the rhizome.

Edible Wild Plants continued on Back Cover

"I was aware of Darwin's views fourteen years before I adopted them and I have done so solely and entirely from an independent study of the plants themselves. [Letter to W.H. Harvey]"

— Joseph Dalton Hooker,
Life and Letters of Sir Joseph Dalton Hooker O.M., G.C.S.I.

Life Without a Sporophyte continued from Page 9

Using publicly available data from the One Thousand Plant Transcriptomes Project (1KP)[4], we first explored some of the consequences of prolonged asexual reproduction by comparing the transcriptomes of *Vittaria appalachiana* and its sexually reproducing relative *V. lineata*. We found that genes involved in sexual reproduction in *V. appalachiana* were under less effective purifying selection than the rest of the transcriptome, likely since they have mostly fallen out of use. Other genomic consequences of asexual reproduction that have been detected in ancient asexual animals (such as rotifers), including increased GC bias and decreased transposable element loads were not found in our comparisons. This could potentially be because it may take hundreds of thousands of years (or longer) for the consequences of asexuality to appear on a genomic scale. In fact, many asexual animals diverged from their sexual counterparts millions of years ago, while *V. appalachiana* lost its sporophyte (and therefore sexual reproduction) only 10,000-20,000 years ago. This work was recently presented at the 2021 Botany conference held by the Botanical Society of America.

With funding provided by the Earl Core Student Research Scholarship, I was able to travel to 9 states and make collections at 13 populations from 63 colonies for a total of 124 samples. Here, we define a colony as a contiguous or semi-contiguous assemblage of individuals where individuals are separated by no more than 5cm and a population is an assemblage of colonies that are no more than 8 km (5 miles) apart. I have meticulously combed through each sample removing various bryophytes that live in close association with *V. appalachiana*. We have just finished extracting DNA from these 124 samples and will begin testing microsatellite primers this summer. Due to the large genome size (about 11 times bigger than the human genome!), we have decided to design and use specific primers in place of the originally planned restriction site associated DNA sequencing (RADSeq).

Using a combination of publicly available high-throughput sequencing data from the 1KP project and newly generated data from microsatellites, we hope to shed light on the mysterious origin and odd biology of the Appalachian gametophyte. Based on these preliminary results, we have found some genomic consequences of prolonged asexual reproduction, though other signatures may require longer periods of time to develop. I am very much looking forward to seeing how the population genetic side of this research plays out.

Jessie Pelosi is a PhD student at the University of Florida. His advisors are Emily Sessa and Brad Barbazuk.

References:

[1]Farrar, D. 1967. Gametophytes of four tropical fern genera reproducing independently of their sporophytes in the southern Appalachians. *Science* 155(3767):1266-1267.

[2]Farrar, D. and J.T. Mickel. 1991. *Vittaria appalachiana:* A name for the "Appalachian Gametophyte". *American Fern Journal* 81(3):69-75.

[3]Farrar, D. 1990. Species and evolution in asexually reproducing independent fern gametophytes. *Systematic Botany* 15(1):98-111.

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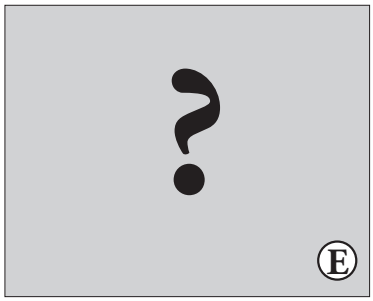
Botanical Brainteasers

By Joe Pollard and Janie Marlow



Our Brainteaser in the last issue [Chinquapin 28(1)] had a slightly unusual format. We showed four plants and asked readers to identify them all and guess at a fifth. The correct identifications were: (A) *Malaxis unifolia*, Green adder's-mouth orchid; (B) *Cardamine diphylla,* Broadleaf toothwort; (C) *Gillenia trifoliata*, Bowman's root; and (D) *Lysimachia quadrifolia*, Whorled loosestrife. That's a very diverse group! But there's a pattern in the scientific names, or more particularly in the specific epithets. They all refer to the number of leaves (in Latin or Greek): 1, 2, 3, 4. So any plant with a species name based on 5 leaves would be a good suggestion for the mysterious box E, and our readers submitted many brilliant suggestions, including *Parthenocissus quinquefolia, Anemone quinquefolia, Panax quinquefolius,* and *Potentilla nivea* var. *pentaphylla*.

We received a total of five entries on this one. Most were correct, so we have to break the ties based on speed of submission. The very first reply we received was perfect, from first-time player John Conover, so we declare him to be the winner of this round. Congratulations, John! But everybody else gets "partial credit" too. This was the first Brainteaser of Volume 28, and we calculate the annual champion based on total points, so playing repeatedly makes a big difference. Message to everyone: don't be shy; there's no penalty for guessing.

So here's the next Brainteaser. Again this time there are four pictures. Of course we want you to identify them, as always. There's a unifying theme among these plants – we might call them "The Impostors Club". For maximum credit, you need to explain why that nickname is appropriate, and name one more "Impostor" who also belongs to the club. There are several potentially correct answers for "E". (To give you a few more options, we won't worry about whether they are specifically Southern Appalachian plants.)

Send your answers to joe_pollard@att.net (that's an underscore character between first and last names). Color photos will be posted online at http://sabs.us/publications/chinquapin-issues. All photos © J.K. Marlow.

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at the University of North Carolina at Chapel Hill. The purpose of the class was to train students on collecting and mounting herbarium specimens, as well as how to upload data to online portals.

As a fifth-year PhD candidate studying plant-insect interactions at North Carolina State University, I have repeatedly encountered herbarium specimens as tools for both education and research. However, I have never had the chance to make herbarium specimens myself. Since I am interested in botanical survey work, I felt this was an essential skill for my personal toolbelt. Thanks to the generous assistance of the Southern Appalachian Botanical Society and the John E. Fairey Scholarship, it was possible for me to take this class even after it was postponed from 2020 to 2021.

Though I was initially unsure how much I could learn within one week, Dr. Shaw made sure that students spent as much class time as possible getting hands-on experience. This allowed us to troubleshoot problems that one can encounter while conducting herbarium work. I quickly became enamored with the inherent component of craft that is involved with making effective herbarium specimens. Highlands Biological Station and the surrounding area also made for a beautiful classroom, complete with its own herbarium. Each day after class, I took the opportunity to explore the campus and nearby trails.

I made sure to note that the first herbarium specimen that I collected, mounted, labelled, and databased was Greater tickseed (*Coreopsis major*). I know the specimen will have a vibrant life serving research as a databased specimen. I am grateful to SABS for allowing me the opportunity to take this course and look forward to applying this skill in the future.

**By chance, all the students this year attended Highlands Biological Station, but that's not always the case. In the first two years of the program students took courses at several other institutions (e.g., Mountain Lake Biological Station in Virginia and the Eagle Hill Institute in Maine.)*

Botanical Excursions

By George Ellison (www.georgeellison.com)
Artwork by Elizabeth Ellison (www.elizabethellisongallery.com)

That Most Perfect Blue

Show me a piece of land that God forgot—
a strip between an unused sidewalk, say,
and a bulldozed lot, rich in broken glass—
and there, July on, will be chicory …

-- John Updike, *Americana and Other Poems*

The status of a given plant as either a noxious weed or a lovely wildflower is pretty much a matter determined in the mind's eye of the beholder. I am here on behalf of chicory, a common wayside plant many categorize as noxious or worse.

In the *Golden Guide to Weeds* A.C. Martin doesn't beat around the bush: "Chicory ... is a Eurasian perennial that is clearly a weed and sometimes a serious pest." As far back as the century before Christ's birth, the poet Virgil paused to single out chicory's pestiferous nature: "And spreading succ'ry chokes the rising fields."

Be that as it may, there are many wondrous shades of blue displayed by our native wildflowers (ranging from the electric blue of some hepaticas in early spring to the velvety tall bellflower in mid-summer to the soft glowing hues of the gentians in fall) but none display the ethereal blue of chicory, which Emerson (who knew his Virgil) described as "Succory to match the sky."

Taking his cue from Emerson, the 20th century naturalist Edwin Way Teal penned this tribute: "On this day, I drive to Concord, Massachusetts, for the annual Thoreau Society meetings tomorrow. Along the way, I see that most beautiful of blues, the tint of the wild chicory in bloom. It seems to me the most perfect blue on earth, the most perfect blue under the sky."

Chicory flowers are heliotropic; that is, they follow the sun. Linnaeus, the ever attentive Swedish taxonomist, noticed that they open in the morning and turn their heads toward the sun until about mid-day, when they close. If the sun doesn't come out, chicory may not bloom at all or it may compensate by blooming all day. Linnaeus determined that the morning blooming period in Sweden is about 5 AM to 10 AM. In the United States flower watchers have determined the range as about 6:30 AM to noon.

Succory, blue sailors, and coffee-weed are but a few of the common names applied to chicory, which was naturalized in North America shortly after the first European settlers arrived and is now firmly established throughout the United States and southern Canada. Succory (from the Latin "to run under") probably refers to the long taproots.

According to Harold Moldenke in *American Wild Flowers*, the designation "blue sailors "alludes to a popular Old World legend of a beautiful girl who fell in love with a sailor. Her lover left her for the sea and so she sat day after day along the side of the highway looking for his return. Eventually the gods took pity on her and turned her into a chicory plant which wears sailor blue in its blossoms and still haunts roadsides in the hope of meeting the returning lover."

Referred to as "The Blue Lookout at the Wayside," its beauty is said to have inspired the German romantic movement of the "Blue Flower," which represented the yearning for the beauty of things and artistic fulfillment. In modern day Germany the blue flower symbol has acquired cultural significance by representing the dream of a better future.

The name coffee-weed refers to the use of the roasted and ground taproot as an additive to coffee so as to enhance color and flavor. During the Civil War and both World Wars it provided a readily available substitute for coffee.

By any name, the long taproots and coarse stems of chicory make this plant the bane of commercial farmers in whose fields it has become established. To them it's clearly a "weed." No argument on that score.

But for me and others chicory is a stunning "wildflower" – one that we can only marvel at when its floral disks appear from June into October along roadsides and display that most perfect blue … Carolina blue.

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Return Service Requested

SABS Welcomes Our New Members

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Tomas Curtis
W. Michael Dennis*
Hannah Dinkins
Blake Fauskee
Skyler Fox
Morgan Gaglianese-Woody
Caleb Goldsmith
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John Wentworth
Brandon Wheeler
Joseph White
James Wood
Jaeseok Yang
George Yatskievych

**new lifetime member*

Edible Wild Plants continued from Page 13

Hops

Not the kind of hops in an IPA beer, but a relative called Japanese hops, *Humulus japonicus* (Fig. 8). This invasive vine has spread to several parts of the Southeast where it can exhibit kudzu-like behavior by climbing up trees at the disturbed margins of forests and along large rivers.

Figure 8. Japanese hops. The shoots on the left are the ideal stage for eating. (Thanks to Nick Flanders for locating a collectible population.)

The hops used in brewing, *Humulus lupulus*, was once used as a vegetable so it is not surprising that its weedy relative can also be eaten. Brewing hops can be eaten raw in a salad, I have not tried that for Japanese hops. Collect only the tender stem tips and developing leaves in the early spring because older plants are tough and covered with aggravating hairs that are not removed by boiling. Taste? Steam some and serve it with an IPA.

WARNING! As with all wild plants use caution and moderation when using them.

Adapted from: Edible Wild Plants of the Carolinas: A Forager's Companion by Lytton John Musselman and Peter W. Schafran. 2021. University of North Carolina Press.