

## Eastwood Preserve Wetland Creation Project

By Jeff Marcus, Eastwood Steward

Many frogs, toads, and salamanders depend on isolated, ephemeral wetlands to breed. These upland pools dry out seasonally so they do not support fish, which would prey on amphibian eggs and young. The seasonal drying allows the wetland to grow grasses, sedges, and forbs which provide critical structure to attach egg masses and among which tadpoles hide once the pond fills again. These ponds typically dry in the summer, when historically lightning-ignited fires would burn through the basin, controlling woody growth and removing litter and duff.

In North Carolina we have lost many of these small wetlands to ditching and land conversion, and many that remain are degraded by lack of appropriate fire and loss of adjacent forest. On the Eastwood Preserve in Moore County, PCP has the opportunity to create a wetland to benefit amphibians. The property includes an old "borrow pit" where clay was extracted to build a road. The clay soil helps to hold standing water, but prior to this project it was not suitable for amphibian breeding. The pit was relatively shallow, surrounded by dense loblolly pines, and filled with dense pine needle duff (Figure 1). It did not hold water long enough for tadpoles to develop and there were few emergent grasses, so there was little food for tadpoles or places to attach eggs.

Eastwood preserve steward Jeff Marcus, PCP Botanist Katherine Culatta, and volunteers Terry Sharpe and Jesse Wimberley improved this site on a work day in March 2020. First, they deepened the pit to ~1.5 feet and widened it to ~20 feet x 10 feet to allow it to hold more water for a longer period of time, yet still shallow enough to dry periodically (Figure 2). They also tapered the edges so the sides were



**Figure 1.** Eastwood borrow pit before restoration. A recent winter burn did not carry through the basin which remained filled with pine needles and debris.

less steep and different plants could grow at a variety of water depths. Next they brought organic soil from the edge of nearby small creek that had been disturbed when fire-management equipment had to cross the

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...more on *Eastwood Preserve*



**Figure 2.** Terry & Katherine deepening the wetland



**Figure 3.** Katherine spreading organic soil.



**Figure 4.** Jesse girdling loblolly pines.



**Figure 5.** The team admires their handiwork.

creek. The organic soil will allow plants to grow better than the clay bottom, and will bring a local seed source to the wetland (Figure 3). The team then girdled the loblolly pines (Figure 4) to allow more sunlight for the grasses, to reduce the amount of pine litter (thick decaying pine needles suppress herbaceous plants and lowers the pH of the water), and to avoid these trees sucking water out of the wetland through transpiration. The standing snags will also provide habitat for woodpeckers and many other species.

At least 16 species of amphibians have been detected at the Eastwood preserve, and the species that may benefit from this wetland project include striped newt, eastern spadefoot, narrow-mouth toad, upland chorus frog, southern cricket frog, spring peeper, and 5 species of tree frog, among others. The preserve Steward will continue to monitor this site for amphibian use in the coming years.



**Figure 6.** Eastern narrow-mouth toad



**Figure 7.** Eastwood borrow pit after enhancement



# *A Note from the President...*



*I*t is my honor to introduce myself as the 2020 President of Friends of Plant Conservation.

I will start by telling you a bit about my background. In July 2018 I retired as Professor of Biology at UNC Chapel Hill, though I retain an office and continue my research. However, I have always been interested in botany and ecology. As a small child in Wisconsin I collected plants, insects, rocks and many other gifts of nature. As a teenager I taught nature study at various summer camps. On my 16th birthday I received a copy of Gray's Manual of Botany, which I still possess and use. This period was followed by obtaining degrees in Botany from the University of Wisconsin where I worked on patterns of forest vegetation, and then in Ecology from Cornell where I studied forest vegetation of the Rocky Mountains. I accepted a faculty position at UNC in 1975, where I remained for the duration of my career. All these choices were easy as I greatly enjoy learning about nature and especially sharing what I have learned, be it in the classroom, the lab or the field.

One consistent theme in my research has been the search for and documentation of patterns in plant species and vegetation on the landscape. Toward this end I joined with several colleagues (particularly, Tom Wentworth, Mike Schafale and Alan Weakley) to establish in 1988 the Carolina Vegetation Survey. As a group, we have over the subsequent 30+ years collected detailed data on the vegetation of roughly 5000 plots with the aid of over 1100 volunteers. Among other applications, these data provide a framework for characterizing and evaluating the quality of natural areas. Indeed, this work helped lead to the creation of a national program for vegetation classification.

As I look forward to my participation in FoPC over the year, I am excited by the possibilities. Recall that the primary function of FoPC is to help the NC Plant Conservation Program to identify, acquire and manage natural areas that contain significantly rare plant species. I hope we can find many ways to engage you as members in these critical activities, and I will do my best to help provide exciting opportunities and to broaden and strengthen our membership. Please remember, I am always open to suggestions as to how we might together accomplish our goals more effectively.

~ Robert Peet



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# Champion Chalk Maple on Redlair Preserve

The Plant Conservation Program of the North Carolina Dept of Agriculture manages a series of Preserves across the state specifically to protect state-listed rare plant species. The Redlair Preserve was established primarily because it is home to the largest population east of Alabama of the charismatic and state-listed bigleaf magnolia (*Magnolia macrophylla*). However, large preserves with a diverse range of high-quality natural habitat like Redlair often contain biological surprises.

Redlair recently provided such a surprise when it was found to be home to two individuals of chalk maple (*Acer leucoderme*) that significantly surpass the previous champion tree in Chatham County, NC. Chalk maple is a relatively modest-size tree species that looks similar to its larger cousin, southern sugar maple (*Acer floridanum*), but is largely confined to scattered upland sites on the southern Piedmont with uncommon, calcium-rich soils. Consequently, it is not well known and is often overlooked.

Dr. Robert Peet, while conducting an ecological survey on the Redlair Preserve, had noticed a chalk maple significantly larger than any he had seen before. After



Peet and NC Forest Service crew working on the site. Photo by Lesley Starke



Robert K. Peet and NC Forest Service takes measurements. Photo by Lesley Starke, NCPCP

comparing its dimensions with those of the reigning state champion, he decided to nominate Redlair's tree for the title.

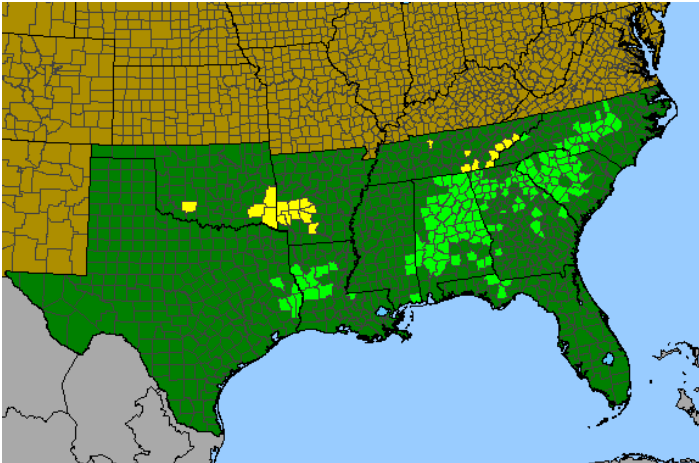
Late in October 2019 members of the Redlair Stewardship Committee met with staff from the NC Forest Service to measure and verify the potential new state champion tree. As they arrived with measuring tapes and other tools in hand, Katherine Rankin pointed out that there was a second large chalk maple only a few feet away that also should be measured. As it turned out, this second tree was even larger than the one nominated!

The system for comparing big trees includes measurements of circumference, height, and average crown spread, documented with a series of photos.

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## Champion Tree continued



*Acer leucoderme* distribution across US. Map from BONAP.



Sabine Rankin

Photo by R. K. Peet

These measurements are then used to calculate a total points score which equals circumference plus height plus one-fourth the average crown spread. Measurements were taken for both trees with the larger clocking in at 37.5 inches in circumference at 4.5 feet above ground, 65.1 feet in height, and an average crown spread of 41 feet. This yields a total points score of 112, substantially higher than that of the previous champion's mere 81 points!

What's even more exciting is that not only is this tree now the new state champion chalk maple, it is also under review for assignment as the new national champion, the reigning champ being the same Chatham County tree that the Redlair tree beat out for the state championship. Come join us for a future workday or hike at the Redlair Preserve and we'll see that you get to meet this marvel!

~Robert K. Peet, University of North Carolina at Chapel Hill

~Lesley A. Starke NC Plant Conservation Program



We appreciate the assistance of Jennifer D. Rall, Urban Forestry Specialist with the North Carolina Forest Service, NC Dept of Agriculture & Consumer Services , with filing the application for certification.



# Note from Lesley Starke, NCPCP Director



I received a letter from the US Fish and Wildlife Service recognizing the important enforcement work by NC Wildlife Resources Commission Officers related to Venus Flytraps in North Carolina.

This, along with the newly executed Memorandum of Agreement for additional help from the Wildlife Resources Commission in enforcing plant protection laws and regulations, is really nice to see.

~Lesley Starke



*Dionaea muscipula*. Photo by Jennifer Koches,



Vol. 20, Curtis' Botanical Magazine (1746-1799)



Volunteers re-planting poached Venus flytraps recovered by NC Wildlife Resources officers. 2015



# A Screeching Adventure...

Dateline: Redlair Preserve, October 13, 2019

By: Haywood Rankin, Redlair Steward

*Haywood Rankin devotes the majority of his time working on Redlair, the land he grew up on and that he, his brother Charles and sister Katherine transferred to NCPCP several years ago. He maintains a life tenancy on the land, and serves as Steward Extraordinaire. Following is a short excerpt from his Hebdomadal for the week of October 13.*

*A*s we were wending our way into the old loblollies east of the Miller Rhyne Place, Cait's dog Grizzly suddenly was in a tizzy, backing off from danger. We examined the cause. At first it seemed to be just a big fluff, maybe a turkey. On closer examination it was perhaps a huge owl, all fluffed up. We assumed it was injured, else surely it would have flown away. We could see no prey, nor evidence that it had been dining. The creature had the wild yellow eyes and size of a great horned owl but not the horns. With her smartphone Cait took superb photos of the creature's fierce, disturbing, menacing eyes, as out of a Frankenstein novel. [See attached for a photo.] She sent one to the Raptor Center's emergency number. The lady on the phone said it was a great horned owl, despite the lack of horns. She said no volunteers would be able to help on a Sunday but "all" we needed to do was throw a blanket over the presumably injured beast, put it in a large carrier, and bring it to the Raptor Center (not too far from Cait's home in Davidson).

We hurried home, gathered blankets, stout gloves, and a large carrier. I had the notion that this big bird might be too large and heavy to carry a third of a mile, so I got the tractor out, admitting that the noise and fumes of a diesel tractor might not be ideal for it. Off Cait and I went to the Miller Rhyne Place, parked the tractor, carried the blankets and carrier to the site, and found the owl – gone. We searched throughout the forest behind the Miller Rhyne Place. No Frankenstein Bird. We chalked it up as an Amazing Experience.

~ Haywood Rankin



# Jack-in-the-Green Welcomes Spring



From *Sketches by Boz*, Chapter XX, by Charles Dickens, 1836.

## Notice:

Due to the presence of Covid-19 throughout the United Kingdom, and across the globe, Jack-In-the-Green activities have been cancelled.

A few private "Jacks" will appear, keeping proper distance, to assure the welcome of Spring.

It is the season for the appearance of Jack-in-the-Green around England, a centuries old ritual in praise of Spring and in anticipation of a fruitful growing season. Traditionally celebrated on May 1st, it is marked by the appearance of the Jack-in-the-Green, a tall figure (often a wood or wire conical cage covered in greenery and flowers) paraded around town along with attendants (who guide the Jack, whose vision was often impeded by the greenery), musicians and Morris Dancers.

The Dancers were often in costume of sorts, the more ridiculous the better, set off with a bright red or green sash. Bells and other clanging bits of metal were attached to dancers attire. Most performers carry white handkerchiefs or sticks, and striking the sticks together to punctuate their dance moves.

Records exist of Jack-in-the-Green celebrations in the 1600s, at which time the celebrations centered around elaborate garlands of spring flowers with some greenery. The garlands were carried by milk-maids in a May Day parade.

The celebrations are certainly much older, but the story of the Jack continues to the 18th C. at which time the performers were mostly upper class. By the 19th C., chimney sweeps took over the festivals, finding it a handy and playful means of obtaining money from the crowds gathered to watch.

The first of May! There is a merry freshness in the sound, calling to our minds a thousand thoughts of all that is pleasant in nature and beautiful in her most delightful form. What man is there, over whose mind a bright spring morning does not exercise a magic influence—carrying him back to the days of his childish sports, and conjuring up before him the old green field with its gently-waving trees, where the birds sang as he has never heard them since—where the butterfly fluttered far more gaily than he ever sees him now, in all his ramblings—where the sky seemed bluer, and the sun shone more brightly—where the air blew more freshly over greener grass, and sweeter-smelling flowers—where everything wore a richer and more brilliant hue than it is ever dressed in now! Such are the deep feelings of childhood, and such are the impressions which every lovely object stamps upon its heart! The hardy traveller wanders through the maze of thick and pathless woods, where the sun's rays never shone, and heaven's pure air never played; he stands on the brink of the roaring waterfall, and, giddy and bewildered, watches the foaming mass as it leaps from stone to stone, and from crag to crag; he lingers in the fertile plains of a land of perpetual sunshine, and revels in the luxury of their balmy breath. But what are the deep forests, or the thundering waters, or the richest landscapes that bounteous nature ever spread, to charm the eyes, and captivate the senses of man, compared with the recollection of the old scenes of his early youth? Magic scenes indeed; for the fancies of childhood dressed them in colours brighter than the rainbow, and almost as fleeting!

From Chapter XX, *Sketches by Boz*, Charles Dickens, 1836.



## More on Spring...

During the late 19th C., the festivals began to fade out, only to return in the 20th C. and continue to the present. There have long been some manner of celebration of Spring in the U.S., many derived from Roman era 5-day celebrations known as Floralia, devoted to the worship of the goddess of flowers, Flora. Taken with them to Britain in the 1st C., it evolved into Spring rituals known as Beltane.

Beltane is celebrated midway between spring and summer, when the sun is at its peak. Celebrations always include bonfires in recognition of Bel, a Celtic deity of light. Traditions include leaping over the Beltane fire to bring good fortune, fertility, and happiness through the coming year.

In my childhood, May Day was celebrated by hanging small baskets of flowers on the doorknobs of neighbors homes. In my elementary school, May Day celebrations were held with a May Pole decorated with trailing ribbons that were woven around the tall pole by the King and Queen of the May and their attendants.

Communities around the US, especially those with a population of Swedish ancestry, still hold May Pole dances, though most often around Summer Solstice or Midsummer (June 20th this year). This too is a celebration of light (and Swedes have bonfires, too) and fertility (no comment on how this might be celebrated).

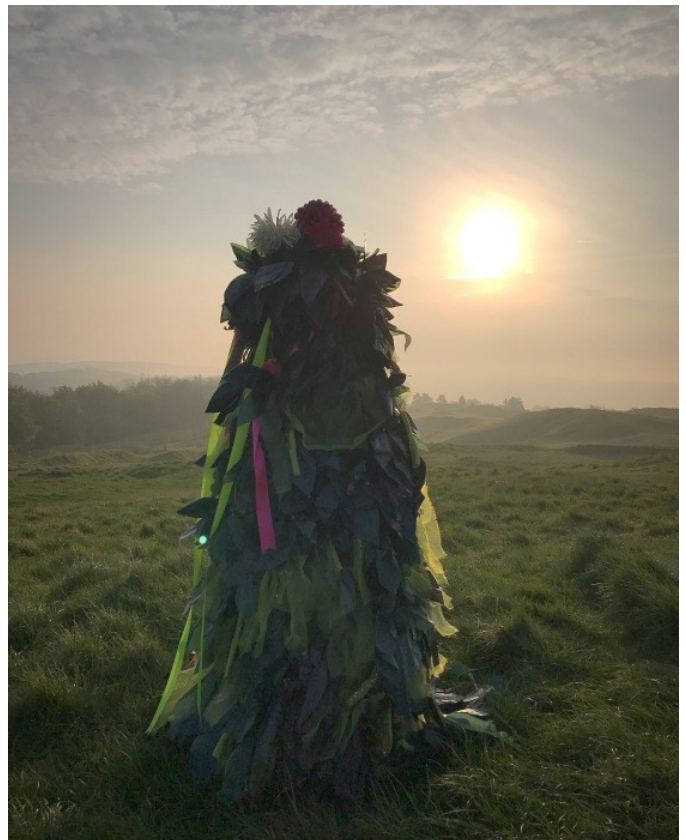
Regardless of your lineage, celebrating the arrival of Spring and light by leaving a little basket of flowers for neighbors is a lovely thing to do—and adding some of our beautiful native flowers (from your garden) is a special touch.



~ KS



A contemporary Jack-in-the-Green



A "Jackie"-in-the-Green that appeared in Painswick, Gloucestershire, at dawn on May 1st, 2017 hosted by Morris Men with Boss Morris (all female dancers). *Used with permission of the Boss Morris and Chris Walton.*



# Imperiled Species:

Wall Rue Spleenwort, *Asplenium ruta-muraria* Special Concern-Vulnerable



*A. ruta-muraria*

Les Mehrhoff

*When the Fern is as high as a spoon,  
You may sleep an hour at noon:  
When a Fern is as high as a table,  
You may sleep as long as you are able. –Old Proverb*

One of North Carolina's protected plant species, *Asplenium ruta-muraria*, Wall Rue Spleenwort (Special Concern-Vulnerable), is one of approximately 700 species in the only Genus within the Aspleniaceae Family.

Hikers seldom erupt in excitement on spotting a Spleenwort in North Carolina, as most of what we see is Ebony spleenwort, *A. platyneuron*, which seldom grows more than 18" tall with a small clump of upright fronds asymmetrically arranged, each frond with a dark reddish brown stipe with filiform scales at the bottom. Its' habitat is described as mostly moist well-drained soil, though it will tolerate some drought and a variety of pH levels. It is found in disturbed forests, on mossy stream banks, and is often associated with rocks. It also shows up in gardens and lawns.

In North Carolina *Asplenium platyneuron* hybridizes with and *A. ruta-muraria* to produce *A. x morganii*. It also hybridizes with *A. rhizophyllum* (to produce *x ebenoides*), and *A. trichomanes* (to produce *A. x virginicum*). Elsewhere, it also crosses with *A. pinatifidum* (to produce *A. x kentuckiense*), *A. x ebenoides* (to produce

*A. x boydstoniae*) and *A. montanum* (producing *A. bradleyi*, a sterile species).



Ebony Spleenwort.  
Stretchwell, inaturalist.

The following description is from the website Vascular Plants of North Carolina, developed and maintained by Harry LeGrand, Bruce Sorrie, and Tom Howard:

This is an evergreen fern with rather limited pinnae, and thus it looks a bit "depauperate". Several fronds grow in a clump, with a green-



## *Asplenium ruta-muraria* continued...

colored stipe to about 3" long, and a rather coriaceous blade somewhat ovate in general outline, bipinnate or bipinnate-pinnatifid in dissection of the blade. The blade is rather short but wide, about 4" long and often 3" wide or more. There are very few pinnae, at most 6 on each side of the rachis, strongly alternate along the rachis and with a "long" stalk of at least 1/2". Even the pinnules are stalked, most ovate in shape but quite small, barely 2/5" long. The bases of the pinnules are cuneate, as well. In most other *Asplenium* species, the pinnae are closely spaced, short-stalked, and the pinnules are normally not stalked, yielding a more compact or dense-looking blade, as compared with the widely spread pinnae and pinnules in this species. The sori under each pinnule are combined into a single entity, covering much of the pinnule.



*A. ruta-muraria*.

Dr. Hagen Graebner

Unlike its cousin, *Asplenium ruta-muraria* has specific habitat needs and is rarely found in North Carolina. Though listed officially as appearing in only 4 counties (Burke, McDowell, Ashe, and Madison), there is some evidence that it may have appeared elsewhere. Earl H. Hall (a professor of botany at what was then called North Carolina Woman's College—UNCG) wrote, in 1930, that on an excursion in Alleghany County several species of *Asplenium* were collected. They included :

- *Asplenium angustifolium* (now known as *Diplazium pycnocarpon*, Glade fern);
- *Asplenium thelypteroides* (an unresolved name as not established as either an accepted name or a synonym). Originally recorded by Andreas Michaux in *Flora boreali-americana*, (1803, p. 265);
- *A. viride* (now *Asplenium trichomanes-ramosum*,

brightgreen spleenwort. This is curious, as the furthest south, on the East Coast, that it is known from is New York, and

- *A. ruta-muraria*. A 1931 article by H.L. Blomquist reports that Hall also collected this fern "near Greensboro." It is unknown if the location was in Guilford County, more likely in or around Danbury (Stokes) or Rockingham County.

Other mentions of the occurrence of *A. ruta-muraria* in North Carolina include L. N. Johnson's 1888 report from Whiteside Mountain in Jackson County. And in 1928 M.L. Fernald reported that Dr. P.O. Schallert reported it from Pilot Mountain in Surry County in 1915. These were all learned gentlemen and the appearance of Wall Rue spleenwort would make for a relatively easy identification. Mistakes are made, however, and habitat

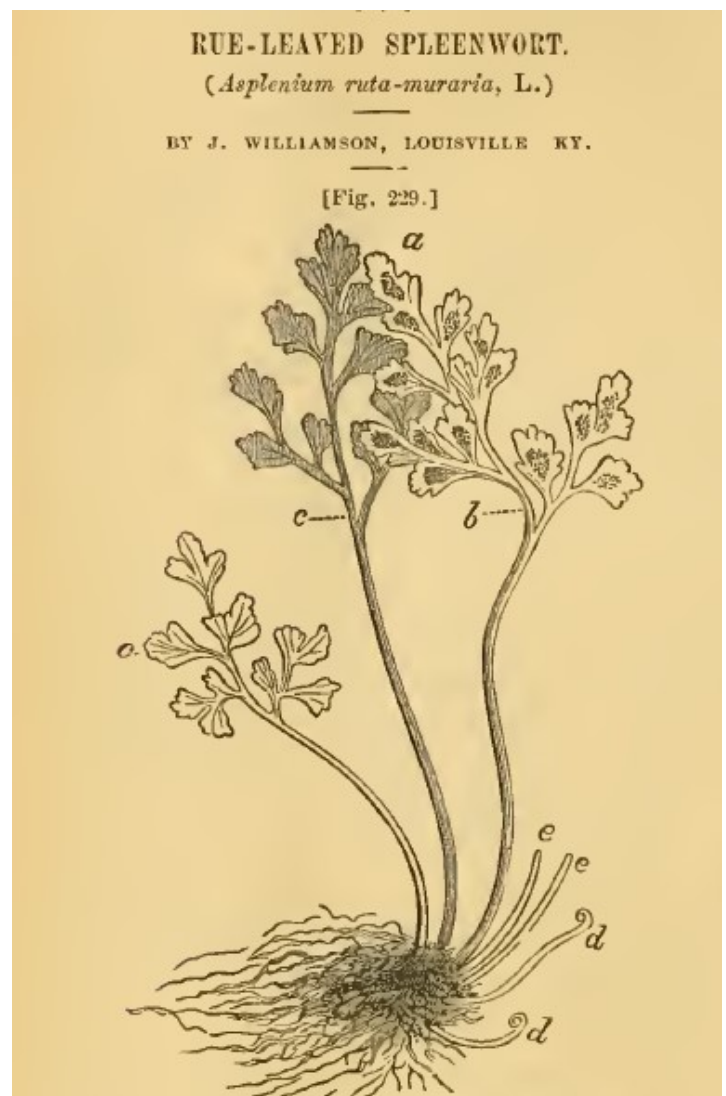
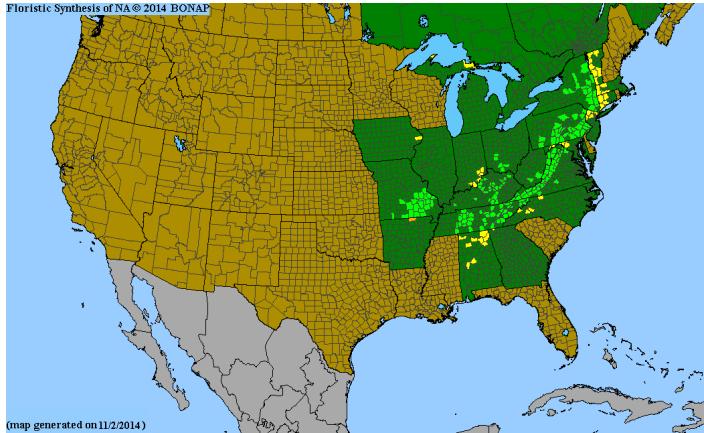


Illustration from *The American Entomologist*, 1868, pg. 380.



## *A. ruta-muraria* continued...



*A. ruta-muraria* distribution map from BONAP includes Burke, McDowell, Madison, and Ashe counties in North Carolina.

changes occur and could have destroyed once thriving populations.

The common name Wall Rue spleenwort is from the UK, where the small species is commonly found growing in stone and brick walls, displaying its preference for limestone habitat, or as described by Thomas Moore of English habitat (1860), "on rocks and on ruins, and in abundance on old walls." Considered almost a weedy plant in Britain, it is more elusive in the U.S., though it's preference for calcareous soil is the same, growing here on limestone rocks or alkaline soil. "Furthermore," says Fernald, "it is quite contrary to our ordinary experience, that a local and non-aggressive Alleghenian species should in Europe be a common plant, there taking possession of the artificial walls built by man: roadside- and garden-walls, the mortar of brick or stone buildings, bridges, and even church-steeple." It does not frequent masonry walls here, but perhaps that is because there are fewer of them.

J. Williamson of Louisville, Kentucky described Wall Rue fern for an issue of *The American Entomologist* (1868):

"In England and Scotland this fern is named the Rue-leaved Spleenwort, or Wall-rue Fern.

It is what is termed a mural species, from its general habitat, growing usually on old walls.

It is found very frequently on old castles, old towers, and old bridges. ... I have seen an old Roman bridge in Scotland almost covered with it. Two other peculiar situations in Scotland interested me very much: one was on the top of an old round tower, about eighty feet high; the other in a well about four feet from the surface. There were only a few plants growing in each place, and no others within a radius

of fifteen miles. It is strange that the spores would have settled in two situations so extremely different. The specimens growing in the well were large, soft, and delicate; those on the tower small and crisp.

Fernald felt the American and European plants should be split, citing a number of morphological differences and proposing the name *Asplenium cryptolepis* for those growing in the U.S. The name, attributed to Fernald, is listed as a synonym of *A. ruta-muraria*. Among the differences he identified were: American plants are usually smaller and with fewer fronds per plant, the teeth segments along the leaf edges are coarser, mature sori are rarely completely confluent, the tips of the rhizome and chaffy stipe-bases can be seen only by dissecting away the rootlets and old stipe-bases, and the spores have much finer sculpturing than the European counterparts. This was not enough to convince botanists and the name remains the same regardless of location.



Notice the teeth on leaf edges.

With the distinctive difference in appearance between *A. ruta-muraria* and other *Asplenium* species in NC, it might be fun to poke around in some of our likely, high limestone, natural areas with an eye for Wall Rue spleenwort. As most of us have more time on our hands than usual and the weather is good, being out



# *A. ruta-muraria* continued . . .

will help keep off those “coronavirus 15,” and may prove useful. Should you happen to spot Wall Rue spleenwort while out, leave it in place, take a photo and please notify the NC Plant Conservation Program, the NC Natural Heritage Program, and your friends at FoPC.

Lovely digital images of Herbarium specimens can be seen at the website for Steer Herbarium at the NY Botanical Garden:

<http://sweetgum.nybg.org/science/vh/specimen-list/?SummaryData=Asplenium%20ruta-muraria>

Keep in mind William A. Weber’s caution regarding rarity: “Species will be rare when first encountered and become less rare with time. The history of many so-called rarities is that they become less rare as we learn more about their nature and the location of their habitats. If the site is not unique then we can expect to find the species more often as we gain experience in recognizing it in the field.”

~Katherine Schlosser

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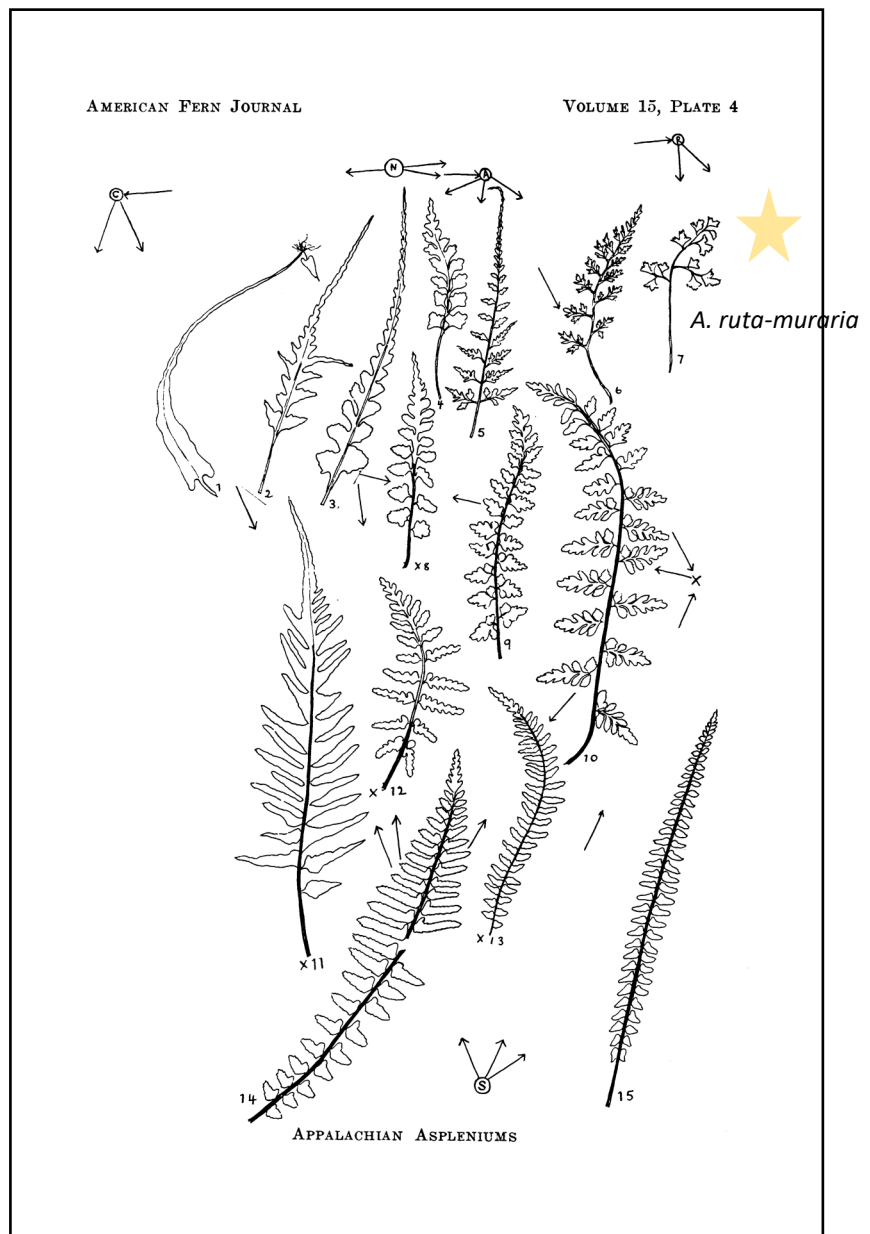


Illustration from Wherry, The Appalachian Aspleniums.



# What Were You Doing In April 1970?



## Earth Day History

- On the first Earth Day, Beat poet Allen Ginsberg spoke at the Philadelphia celebration.
- April 22nd was chosen because it didn't overlap with college exams or other holidays, but April 22, 1970 being the 100th anniversary of Vladimir Lenin's birthday convinced some people of a Communist conspiracy.
- The 20th anniversary of Earth Day included the Earth Day 20 International Peace Climb, with a phone call from Mt. Everest, and over two tons of trash carried off the mountain.
- Chuck Berry was the headlining musician at the George, Washington Earth Day 20 event.
- Also in 1990, Warner Brothers released an Earth Day single "Tomorrow's World" which hit #74 on the Hot Country Songs chart.
- In 1995, the US Postal Service issued their first Earth Day stamps.
- In 2000, Leonardo DiCaprio hosted the Earth Day event on the National Mall in Washington, DC.
- 2000 was also the first year Earth Day used the internet to organize and advertise.
- Earth Day 2017 included the March for Science rally.

From *Earth Day San Francisco*  
<https://earthdaysf.org/>



The small group of organizers at Environmental Teach-In who organized nationwide efforts for the first Earth Day included (left to right) Denis Hayes, Andrew Garling, Arturo Sandoval, Stephen Cotton, Barbara Reid, and Bryce Hamilton. Here's a color version of this LIFE magazine photo, which was taken in early 1970 near the group's office in Washington, D.C.



A Pace College student in a gas mask "smells" a magnolia blossom in City Hall Park in New York City on April 22, 1970 (Associated Press)  
NY Historical Society, <http://behindthescenes.nyhistory.org/first-earth-day-photos-new-york-1970/>