Sempervirens

Summer 2020 | The Quarterly of the Virginia Native Plant Society

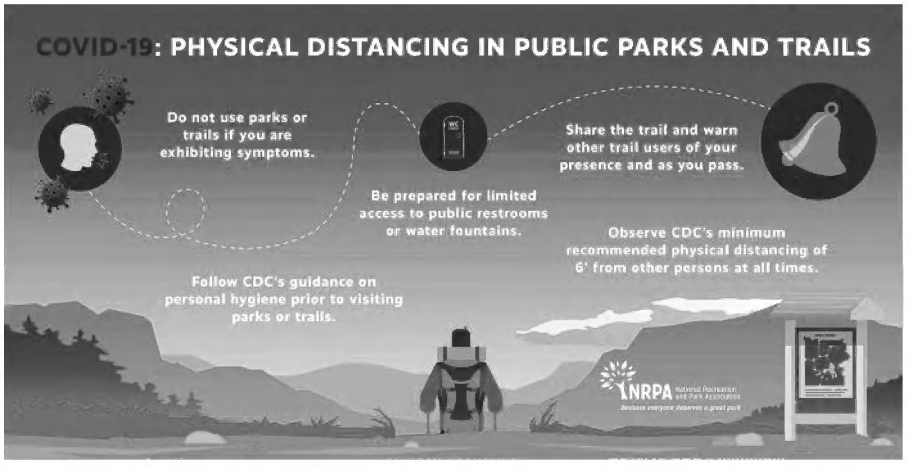
Pandemic means adaptability, creativity

From Your Natural Heritage Program

By Jason Bulluck

The word "Unprecedented" has to be a contender for some dictionary's "Word of 2020." We are hearing this word everywhere—press briefings, news, webinars, conference calls, and conversations—to describe how COVID-19 is impacting our once-normal activities and behaviors in personal and work life. Likewise, routines in how we think and plan, how and where we work, and how we interact at Natural Heritage, continue to be challenged. Our charge is to stay focused on protecting Virginia's biodiversity, in accordance with Governor Northam's Executive Order 55, and to learn the lessons these unusual times are offering. Our hope is for there to be net positive on the other side of COVID for Virginia's natural heritage resources.

We have learned much already. First, the talents and passion of staff at Virginia Natural Heritage are proven every day. We are teleworking and adjusting all fieldwork and travel logistics to assure social distancing. Indeed, field season is upon us, green is reappearing, animals have emerged, wings are in the air, and we are steadfast to stay on pace. Field observation refines data and our data are the engine that moves us toward **doing** the conservation that is our mission.



Natural Heritage staff have shown such impressive creativity, agility, and expertise, to ensure that we stay productive, safely. This group of scientists, data specialists, land protection specialists, Natural Areas stewards and supporting administrative staff are the best, and exactly what we need right now.

Secondly, we are learning moreover about the carrying capacity, and in some cases the vulnerability, of Virginia's Natural Area Preserves. We take any opportunities we can through press and other outreach, to reiterate the purpose of the Natural Area Preserves: to conserve Virginia's biodiversity through protection and stewardship of the best examples of rare plants and animals, and unique natural communities. Providing public access via parking areas, trails and water access is secondary to our mission, though we work hard for it, realizing the benefits to our citizens and program. We select very carefully which preserves have facilities for public access. We steer that access to less vulnerable areas. We keep parking lots to small sizes that match a preserve's carrying capacity. We work to keep public access to levels that our staff can manage in terms of facility upkeep and natural resource management.

With two to four stewardship staff per region, and in some regions the help of Volunteer Stewardship Committees, our plates were more than full with resource and public access management prior to COVID. But, since mid-March, public access alone has dominated staff time. We have seen the impacts of heavier foot traffic on trails; damages to over full parking areas; portable toilets that can't be accessed for service; and, in the worst cases, intentional vandalism of vegetation and rock features, signage, and even theft of equipment. Without enough staff to control the levels of visitation, many preserves have surpassed their capacity, and this is exacerbated as other public lands in their vicinity are closed due to safety and social

(See Pandemic Learning, page 9)

From the President, Nancy Vehrs

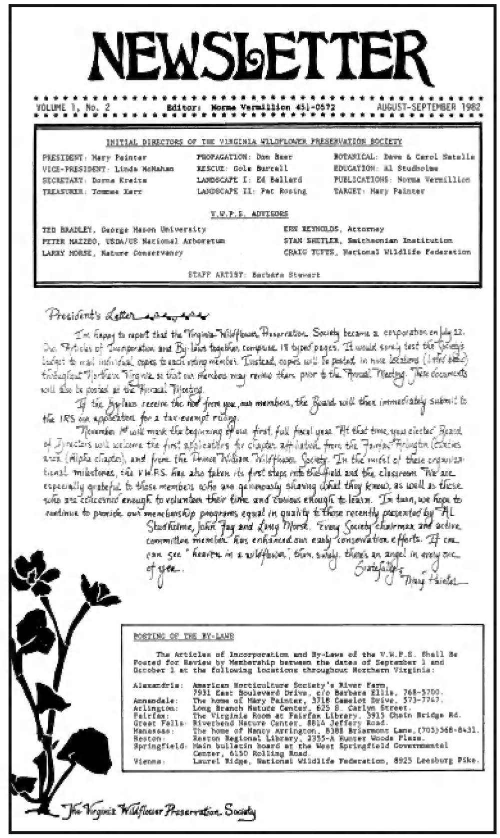
Ponderings on pandemics and more

As you can tell, this is our COVID-19 Pandemic issue. To comply with our commonwealth's guidelines, we canceled all our spring activities including our annual workshop. With much of our membership in the older, at-risk population, we want everyone to stay safe. Many of us are using the time at home to appreciate the nature in our own backyards, but it is sad that Shenandoah National Park and popular natural area preserves had to close during the height of the spring wildflower season.

As we have publicized previously, our annual meeting is scheduled for the last weekend in September in Abingdon. Because we do not know what the situation with the pandemic will be at that time, we have paused our planning. We hope to decide at our June board meeting whether we will proceed with the regular annual meeting format in September or consider alternatives.

Our social media presence continues to grow and we hope that you follow us. We now have a following on Instagram of more than one thousand after just a few months. Our Facebook page has more than 18,000 followers and we strive to create a post a day. Our Facebook group, created by Potowmack Chapter member Marty Nielsen many years ago, now includes more than 6,700 members and is growing rapidly. Members post photos, provide native plant identifications, and offer native plant gardening and invasive plant removal advice. With so much action on the page, we set up rules and appointed moderators to keep everyone on the native plant track. I owe a debt of gratitude to our moderator team that includes Susan Gitlin, Judy Dority, Garrie Rouse, and Steve Young. Thank you all!

Another person I need to thank is our web administrator Mark Murphy. He initiated and recently completed posting an archive on our website of all the Society's newsletters from 1982 to the present. Wow! Thank you, Mark. ❖



NEWSLETTER

VOLUME 1, No. 2 Editor: Norma Vermillion 451-0572 AUGUST-SEPTEMBER 1982

INITIAL DIRECTORS OF THE VIRGINIA WILDFLOWER PRESERVATION SOCIETY

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STAFF ARTIST: Barbara Stewart

President's Letter

I'm happy to report that the Virginia Wildflower Preservation Society became a corporation on July 12. Our Articles of Incorporation and By-laws together comprise 19 typed pages. It would sorely test the Society's budget to mail individual copies to each voting member. Instead, copies will be posted in nine locations (listed below) throughout Northern Virginia so that our members may review them prior to the Annual Meeting. These documents will also be posted at the Annual Meeting.

If the By-laws receive the nod from you, our members, the Board will then immediately submit to the IRS an application for a tax-exempt ruling.

November 1st will mark the beginning of our first full fiscal year. At that time, your elected Board of Directors will welcome the first applications for chapter affiliation from the Fairfax-Arlington Counties area (Alpha chapter), and from the Prince William Wildflower Society. In the midst of these organizational milestones, the V.W.P.S. has also taken its first steps into the field and the classroom. We are especially grateful to those members who are generously sharing what they know, as well as those who are concerned enough to volunteer their time and curious enough to learn. In turn, we hope to continue to provide our membership programs equal in quality to those recently presented by Al Stud[h]olme, John Fay and Larry Morse. Every Society chairman and active committee member has enhanced our early conservation efforts. If one can see "heaven in a wildflower," then, surely, there's an angel in every one of you.

Gratefully, [illegible]

POSTING OF THE BY-LAWS

The Articles of Incorporation and By-Laws of the V.W.P.S. Shall Be Posted for Review by Membership between the dates of September 1 and October 1 at the following locations throughout Northern Virginia:

Alexandria: American Horticulture Society's River Farm, 7931 East Boulevard Drive, c/o Barbara Ellis, 768-5700.
Annandale: The home of Mary Painter, 3718 Camelot Drive, 573-7767.
Arlington: Long Branch Nature Center, 625 S. Carlyn Street.
Fairfax: The Virginia Room at Fairfax Library, 3915 Chain Bridge Rd.
Great Falls: Riverbend Nature Center, 8814 Jeffery Road.
Manassas: The home of Nancy Arrington, 8388 Briarmont Lane, (703)368-8431.
Reston: Reston Regional Library, 2355-A Hunter Woods Plaza.
Springfield: Main bulletin board at the West Springfield Governmental Center, 6130 Rolling Road.
Vienna: Laurel Ridge, National Wildlife Federation, 8925 Leesburg Pike.

The Virginia Wildflower Preservation Society

Society newsletter, Vol. 1, issue 2, 1982

Nature offers solace during pandemic

As the news media keeps reminding us, it is a strange time in which we live today with the COVID-19 coronavirus pandemic. "Social Distancing" is the new normal and wearing a mask to the grocery store is now *de rigueur*. Many of us in the Society take solace in nature. I invited members of our board of directors to share how they are coping with the "stay at home" recommendation.

Catie Cyrus is working from home and considers herself extremely lucky to have a naturally wooded backyard with an outbuilding (old workshop) to use as an office. "I keep the door open when the temperatures are okay so I can hear the birds calling. My coworkers comment on the bird sounds during conference calls. I have been in this house for three years and am noticing more native species in the yard this year than any year before. I'm not sure if it's just because I'm home more, or as I like to imagine, the woods are naturally regenerating now that they have an owner who doesn't pull the 'weeds'."

Ruth Douglas says: "I've been almost exclusively practicing self-isolation EXCEPT when I'm outside on the beautiful wildflower trail along the Rivanna River near my subdivision (Key West, NOT in Florida). A good friend is shopping for me, which is wonderful.

Outside, I am incredibly fortunate to have a wonderful wildflower-lined trail along the Rivanna River in my subdivision. I have given a field trip there in early April for the Rivanna Master Naturalists training class since our chapter began in 2006, but this year, the class is via Zoom, and we had to cancel the field trips. But, some of my subdivision neighbors have come to enjoy the labels too, so I set it up for them. We use red surveyor flags to mark the location of each plant, put a number on each, and create a key to

(See Solace, next page)

Solace

(Continued from page 2))

the numbers with the common names of the plants, which are in a realtor's info box at the start of the trail. The only fly in the ointment is the invasives that are getting more numerous all the time, mainly Oriental Bittersweet and Japanese Honeysuckle. I do what I can but can't invite the Master Naturalists to help because it's private property. I am "patrolling" the trail almost daily, working on slowing the invasives down.

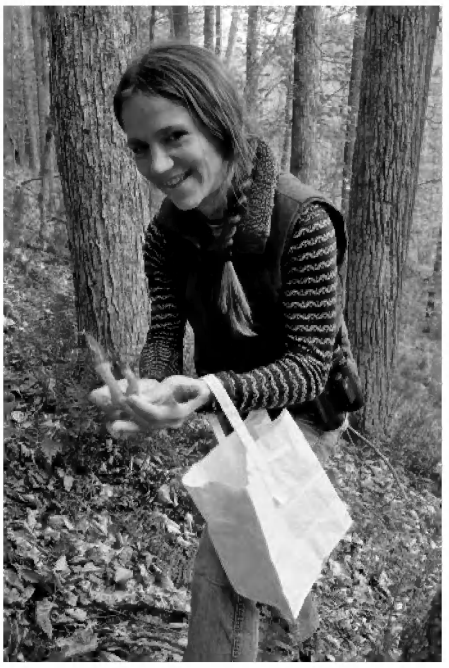
So, in summary, I keep busy with nature-related activities mainly and they keep me sane (or as close to being sane as I can get these days). I feel I'm living in a bubble, though, because (so far) I don't have close friends or family with coronavirus and the disruption to my life has not been anywhere near so severe as is true for many others. But it's certainly a very stressful time, and I have become so easily distracted, lots more than usual. I hope it's temporary."

Mary Lee Epps has a farm and is taking frequent woodland walks. "This has been a great year for morels. Wake and I would starve to death if finding them were up to us, but [daughter] Mary Jane has managed several brief visits and she has found two or three pounds' worth. (My personal maximum was five and that was after I gave up looking and was climbing a steep slope on the way home, which both slowed me down and forced me to watch the ground closely.)" Mary Lee thought the season was over then reported "In two hours, I found none. She found a pile!" They also found Showy Orchis in bloom.

Jan Smith said, "Like a broken record this thought keeps going around and around in my mind: 'I am so lucky to be retired with a pension and living in Rockbridge County during this time of COVID!' I guess it is true that it is better to be lucky than good." She went on to report that because all Master Gardener activities were cancelled, this is the spring that she is working on her own property. "Sixty-seven acres provides me with lots of opportunities—from managing invasives to planting new shrubs. And our Upper James River Chapter has received many thanks from community members for our self-guided plant walks. In lieu of our guided Saturday morning plant walks, we thought social distancing would be better maintained by a flagged walk. Our first attempt was the busy Chessie Trail [in Lexington]. We flagged about 20 plants, listed their names, whether native or not, and any fun facts we could find about the plant. This list was emailed out to our chapter members and other interested people. It was a fun thing for families to do—the kids liked finding the flags and the adults learned a bit about plants. After COVID, we will keep the self-guided walks as well as doing the Saturday guided walks. I am not delusional; I know the walks were popular because there was little else. But perhaps with the flexibility of the self-guided walks, more people will be able to grab a few minutes to enjoy the beauty of our wildflowers."

Nancy Sorrells is following the rules and getting outside during the pandemic. "I am using this 'gift of time' to be out gardening. We have a whole new solar installation that needs to be landscaped and I am enjoying getting plants in the ground."

Nancy also explained that she and a friend committed to exploring a Virginia natural area every week (per Gov. Ralph Northam's orders to get outside, breathe fresh air, and exercise). So far they have explored McCormick's Farm, the Virginia Blue Ridge Railway Trail, Natural Bridge State Park, the Chessie Trail, Natural Chimneys and the G. Richard Thompson Wildlife Management Area. "We have enjoyed nature's spring like perhaps never before. And, we have followed proper social distancing rules."



Mary Jane Epps shows off her morel bounty.

Personally, I miss my weekly bird (and botanical) walks at Huntley Meadows Park; the park's trails are open, but its parking lots are closed. To continue the camaraderie of the birding group, I host a weekly Zoom meeting that substitutes for the après-walk at the local Denny's. We have had as many as 30 on the call. My 62nd birthday occurred in March, and I was disappointed that I was unable to celebrate with my planned purchase of the "geezer pass," the senior pass that allows lifetime entry to all federal parks and national recreation lands. It has been challenging, but I still managed to visit some of my favorite places for spring wildflowers. Following a nonexistent winter, we have been gifted with a long spring. Our native plants are oblivious to our health issues and perhaps some natural areas have relished the reduced human presence. ❖

—*Nancy Vehrs, Society President*

Checking in with Conservation Chair Alex Fisher

In 2020, Society President Nancy Vehrs launched a new initiative for *Sempervirens*. In an ongoing series of interview features, she goes behind the scenes to introduce us to those volunteers whose hard work and enthusiasm make VNPS such a success. In this chat, Nancy checks in with **Conservation Chair Alex Fisher** to find out what makes him tick.

Nancy: The VNPS is so fortunate to have you as our Conservation Chair, Alex. Can you tell us a little about your childhood and how you became interested in plants and nature?

Alex: *I grew up in Midlothian, a suburban town outside of Richmond. There I had the luxury of growing up in a neighborhood where many of the riparian areas had large intact forested buffers connecting to undeveloped land in several directions. As a child this allowed me to wander through the forest traversing waterways enabling endless exploration of nature's wonders. It was hard not to be interested in joining nature's grace when there was always something to learn or find anew. These experiences and my mother's willingness to have me spend most of my days outside must have seeded my interest in nature early in my childhood. My specific interest in plants grew during my college years spent in Wilmington, N.C., where I gained the foundational understanding of much of life's reliance on the Plantae Kingdom and spent ample time exploring the threatened and biodiverse long leaf pine ecosystem.*

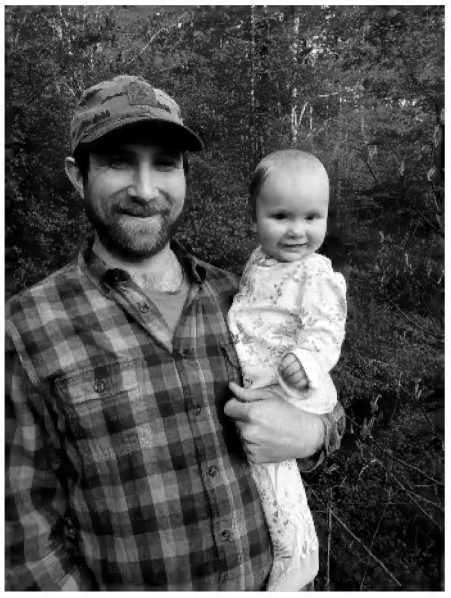
Nancy: You received your degree from the University of North Carolina at Wilmington. Tell me more about that experience.

Alex: *After I decided I wanted to study environmental science in college, I did a college tour and ended it shortly after visiting UNC Wilmington. It was immediately appealing to me because it has a pedestrian friendly campus, the university exists in a coastal town with access to two different waterfronts (Cape Fear River to the west, Atlantic Ocean to the east), and is a very different environment than what I was used to in Virginia. Favorite classes: Natural Resource Policy–opened my eyes up to the U.S. history of natural resource policy and how our environment has and is regulated; tropic ecology–studied an entirely different habitat and complex relationships associated and participated in a field study in Belize collecting avian population data in the highly biodiverse region of the Maya Mountains. Additionally, I studied abroad at James Cook University in Townsville, Australia, in the dry tropics region of Queensland. There I gained new perspectives on natural resource management, social-ecological systems, and evolutionary history. It was inspiring to see regional natural resource agencies integrating traditional knowledge into their conservation and restoration planning. All the independent travel throughout Queensland that I embarked on was bestowed with inspirational natural landscapes wildly foreign yet refreshing. Most importantly, after my extended time living abroad in Australia, I returned home with a renewed appreciation for the Piedmont of Virginia and all the organisms that make this region unique.*

Nancy: What was your career path once you graduated with a degree in environmental studies?

Alex: *Shortly after graduating from college I decided to ride my bicycle across the country with a close friend. We rode from North Carolina south to Florida and then west to San Diego, California, finishing our ride in Burbank, California. Although it placed a hold on my career search, I gained a lot of life experience from it. After this I began work at American Conservation Experience, as an AmeriCorps member and later as a crew leader. I was based out of Flagstaff, Arizona, and spent my workdays throughout the Southwest, including the Lower Rio Grande Valley of Texas building and repairing trails, clearing vegetation, performing habitat restoration, building rock structures, and numerous other conservation and forest management related tasks. Doing that work meant spending three-quarters of a year camping in the outdoors in many different habitats. Spending so many days in the outdoors up close to nature, I became entrenched in learning to identify plants and animals more vigorously. I next began work with Virginia Forestry and Wildlife Group in Charlottesville and was tasked with providing various ecological restoration, wildlife, and forest management services throughout central and western Virginia. This mostly included invasive species removal and subsequent native plantings. I am thankful for those tireless days removing acres of invasive plants, as it taught me the real damage invasive species have on our native ecosystems and the power of collective action in successfully reducing the negative impacts caused by them. In following my non-linear career path, I moved on to working for a development engineering firm in Richmond providing professional wetland and soil consulting services. Following this I began working for The Nature Conservancy Virginia, based out of our downtown Richmond office. Here I work as a wetland restoration ecologist, monitoring stream and wetland restoration projects throughout the state.*

Nancy: We know your wife Ashton


Alex Fisher with daughter Paige.

is Program Director at the Blue Ridge Partnership for Regional Invasive Species Management (PRISM). Did you meet over invasive plants?

Alex: *Ashton and I did not meet over invasive plants. We met at a concert venue in Richmond just after I finished cycling across the country. She embarked with me on the journey to Arizona working as AmeriCorps members at American Conservation Experience. She excelled quickly as a crew leader, specialized in chainsaw work removing invasive species and felling hazard trees. We shared many of the same fun and challenging experiences associated with working very long days followed with primitive living quarters. Following our experience out west Ashton began work with the Blue Ridge Partnership for Regional Invasive Species Management on her own accord while I was working with Virginia Forestry and Wildlife Group. Invasive species are a known threat in our household, but we encourage others to get involved in the fight with us!*

Nancy: You and Ashton welcomed your baby daughter Paige into the world this past summer. How has she changed your life?

Alex: *Yes, Paige was born in August at our home in Bon Air, Va. Daily life has certainly changed for us. Having her has created challenges for Ashton and me in managing our time and balancing all of our responsibilities. These challenges are a part of the journey with a growing child as Paige has become the most important part of our lives. Her growth and experience in this world are wonderful to witness. She has opened my eyes to so much of life that, as adults, we tend to take for granted or forget the brilliance of.*

Nancy: Tell us a little about your work for the VNPS, especially during this session of the General Assembly.

Alex: *In this position I am constantly doing my best to stay up to date on the latest and preexisting conservation issues throughout the state. I also strive to stay informed about existing or proposed natural resource and environmental policies at the local, state, and federal level that influence the conservation of our Virginia native plants, plant communities, and ecosystems. The goal is to share this information with partner organizations, members of this society, and the general public to spread awareness of these issues and policies that may then catalyze action for engagement in the public policy process or on ground conservation activities. Additionally, in collaboration with other board members, I draft position letters on such policies offering a voice to our cause. During this past Regular Session of the Virginia General Assembly, which formally adjourned March 7, 2020, I crafted a budget amendment to the governor's proposed budget for additional funds to be appropriated to the Department of Conservation and Recreation's Division of Natural Heritage. I spent much of January walking the General Assembly building, gathering support from various legislators for this amendment. Unfortunately, our budget amendment did not make it through important money committees. The Division of Natural Heritage is an important partner to VNPS. It shares a similar mission by focusing on conserving Virginia's biodiversity through inventory, protection, and stewardship. An increase in funding for its work is critical to maintaining quality services while managing increased public access to enjoy some of the state's best examples of our rich natural history.*

Nancy: As a member of the millennial generation, are you hopeful for the future of our environment?

Alex: *There are many days where I am not hopeful for the future of humankind on this Earth. There are many good reasons to doubt our species' ability to have a more harmonious relationship with nature. However, I am hopeful too, that the sliver of ourselves so innately bound to nature will help humanity move forward and progress away from our destructive relationship with nature. Like never before, there are people experiencing the negative impacts of climate change and habitat destruction around them. These realities can no longer be ignored, and communities around the world are taking action to protect the environment as it provides people with everything they need to survive. Humans have everything to lose if we do not stand up for it, so I am hopeful that we will.*

Nancy: Thank you, Alex. We are indeed fortunate to have you on our team and wish you much success as you pursue your graduate certificate in ecological restoration at the University of Florida while working full time, engaging in a full family life, and serving the VNPS.❖

Autecology of Wild Geranium

Article and photo by W. John Hayden, Botany Chair

This article explores the autecology of Wild Geranium, *Geranium maculatum*, the 2020 VNPS Wildflower of the Year. Autecology encompasses all aspects of how an **individual species** is adapted to and interacts with both its physical environment and other species found in that same environment. Autecology stands in contrast with synecology, which focuses on interactions among **groups** of organisms at larger scales of organization examining, e.g., how communities or whole ecosystems function. The information that follows is derived largely from a publication based on the PhD dissertation of Sister M. Celine Martin (1965), supplemented with information from Willson et al (1979).

Let's examine a year in the autecology of Wild Geranium, starting in the spring. After winter dormancy, the first sign of life is emergence of long-petioled leaves from the rhizome. Most of these first-to-develop leaves arise from the apical meristem (terminal bud) of the rhizome, but some may also grow from the rhizome's lateral buds. At this time, there is no above-ground stem; consequently, these first-formed leaves constitute a brief rosette stage of growth. Timing of basal rosette emergence varies, of course, with latitude and altitude. About two weeks after the rosette is fully formed, flowering stems begin to emerge, initially visible as mere buds at ground level. Soon, these buds grow upwards, forming the aerial stem and supporting one pair of cauline (stem) leaves before terminating in a sparsely branched, cyme-derived, flower cluster. Compared to rosette leaves, cauline leaves have much shorter petioles and smaller leaf blades.

Flowering (Figure 1) lasts for 10-14 days. "Anthesis" is the technical term for a flower that is open with stamens and/or stigmas developmentally ready for pollination. Typical bisexual flowers of Wild Geranium possess 10 stamens, arranged in two whorls; stamens of the inner whorl are taller than those of the outer whorl. The inner stamens begin to shed pollen within an hour or so of petal opening; the outer whorl of stamens shed their pollen a day or two later.

The style terminates in five stigma branches. Initially, stigmas are not ready to receive pollen; in this early phase, stigmas are fully erect and clustered tightly together, thus rendering their pollen-receptive surfaces inaccessible to pollen. Once the styles separate by recurving outwards, pollination becomes possible. According to observations made by Martin (1965), timing of stigma receptivity varies among the different Wild Geranium plants she sampled: "Of 48 plants, 16.6% had stigmas open at the first pollen shedding, 18.7% at the second pollen shedding, 35.4% one day later, 8.5% two days later, and 20.8% more than two days later." These data reveal a complicated, and perhaps, therefore, flexible model for a balance between self- and cross-pollination in Wild Geranium flowers. Clearly, there is a large component of protandry: Martin's data show that much pollen can be shed before stigmas are receptive and many stigmas do not become receptive until most pollen in the same flower is likely to have been removed by pollinators. However, the data also show sufficient overlap in the timing of pollen release and stigma receptivity that self-pollination is certainly possible.

Martin (1965) conducted more than one hundred controlled pollinations to test the efficacy of

Figure 1. *Geranium maculatum*, Wild Geranium, flower at anthesis; in this flower, note that inner stamens are shedding pollen while outer stamens remain closed and the stigmas are closely appressed and not yet receptive to pollen.

self versus cross pollination in Wild Geranium. First, as a necessary control, she removed all anthers from one group of flowers before those anthers had opened and she then covered these emasculated flowers with bags to prevent insect visitation; these plants produced no fruits and no seeds, thus eliminating the possibility of asexual parthenogenesis which, if present, would have complicated interpretation of this experiment. To test for self-pollination, Martin removed already open flowers from test plants and she then covered these plants so that remaining flower buds could open in the absence of insect visitors; of the flowers thus treated, 12.5% produced fruits, showing that self-pollination is possible, but not particularly common. Cross-pollination was measured by removing unopened anthers from newly opened flowers, followed by hand application of pollen from different plants to receptive stage stigmas of these emasculated flowers; 24% of flowers thus treated produced fruit. In other words, cross pollination appears to be roughly twice as successful as self-pollination in Wild Geranium. From similar observations, Willson et al. (1979) conclude that while *Geranium maculatum* flowers are self-compatible, insect visitors make a significant contribution to successful pollination and ultimate formation of fruits and seeds. An interesting but unexplained

(See Autecology, next page)

• Autecology

(Continued from previous page)
result from both studies is that a fairly large proportion of flowers fail to produce any seed at all. Petals drop shortly after pollination and no insect visitors were recorded by Willson et al. (1979) for apetalous flowers.

Wild geranium flowers conform to what is described as the "open bowl or dish" pollination syndrome. All floral structures essential for the pollination process, i.e., nectaries at the base of petals, anthers bearing pollen, and pollen-receptive stigmas, are fully exposed at one time or another during anthesis and are, therefore, readily accessible to floral visitors. It should not be surprising, therefore, that many different insects have been documented to visit flowers of *Geranium maculatum*. Martin (1965) recorded 28 categories of insect visitors collected from flowers of Wild Geranium. Some of the insects she recorded were identified to species, but others were identified just to the taxonomic level of family, so the actual number of species visiting Wild Geranium is certainly much greater than 28. Like last year's WOY (*Ceanothus americanus*), Wild Geranium appears to have a relatively unspecialized pollination syndrome. Willson et al. (1979) note that small flies and small bees are able to reach Wild Geranium nectaries at the base of petals without contacting anthers or stigmas; while these small insects might, on occasion, transfer pollen to stigmas, they are most likely not very effective pollinators. Perhaps the small insects that remove nectar but accomplish little to no pollen transfer are a factor in the low seed set noted (above) for Wild Geranium flowers. Bumblebees, on the other hand, seem to be the right size to get the job done. When bumblebees visit Wild Geranium, they initially clamber about for a while accumulating pollen on their ventral surfaces, then they straddle the stigmas while reaching for nectar at the base of the ovary and, from this position, any pollen on their ventral surfaces is easily transferred to stigmas. Of course, that pollen could be from the same flower, or from flowers of any other previously visited Wild Geranium.

There exists a specialized bee, the Geranium Miner (*Andrena geranii*), that once seemed to provide an interesting counterpoint to the broadly unspecialized pollination biology of Wild Geranium. Species of *Andrena* are solitary ground-nesting bees, the characteristic from which the common name, Miner Bee, is derived. Adult bees emerge coincident with the flowering time of their host plants, from which they collect both nectar and pollen. Pollen is stored as larval food in burrows dug into soil. Some *Andrena* species are referred to as polylectic, meaning they visit flowers of multiple different plant species. For many years the Geranium Miner Bee was thought to be monolectic, i.e., completely dependent on flowers of Wild Geranium. However, natural history observations reveal that *Andrena geranii* bees also visit flowers of *Anemone*, *Campanula*, *Hydrophyllum*, *Rosa*, *Rubus*, *Viola*, and *Zizia* (Discover Life 2020). Clearly, Geranium Miners are at least oligolectic (few hosts), if not outright polylactic (many hosts).

Successful pollination leads to fruit and seed development. Fruits mature about three weeks after pollination, and seed ejection (via active outward flinging of individual carpel segments) takes place over the course of one to three days. Seeds can travel up to 900 cm (30 feet) from their maternal parent plants.

Once fruits have matured and seeds have been dispersed, the business of Wild Geranium is preparation for next year's flowering season. New buds for the next season's aerial stems and flowers form during late summer and fall, but only if the plants experience favorable conditions of moisture, light, and temperature to support enough photosynthesis by rosette leaves to generate the resources needed for next year's reproductive output.

Martin (1965) dissected several samples of fresh seed and found about 90% to contain healthy (firm, green, intact) embryos. Fresh seeds, however, are dormant, in part because of the physical barrier to water absorption provided by the hard seed coat, but also because of the embryo's initial, inherent, physiological quiescence. By simple experimental observations of seeds treated in petri dishes, Martin showed that cold stratification was necessary for breaking of seed dormancy. Under natural conditions, prolonged exposure to soil moisture and low temperatures during winter serve to rehydrate the seed and break embryo dormancy. Seedlings naturally germinate in the spring.

And that completes a year in the autecology of *Geranium maculatum*. This brief summary represents a distillation of more than 50 pages of published information from, as noted above, Martin (1965) and Willson et al. (1979). One point I wish to make in closing is that it takes a tremendous amount of careful work and keen observation to wrest this sort of insight about how just one species functions in its natural environment. I certainly do not wish to take anything away from the important work documented by the two sources consulted for this article. But as we shall see in the next *Sempervirens*, there is, alas, one gaping hole in the story of Wild Geranium autecology as related above. Stay tuned . . . ❖

WORKS CITED

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School habitat thrives despite empty classrooms

Jamestown Lilies (*Zephyranthes atamasa*).

Entrance to the Stonehouse Habitat Garden with Serviceberry (Shadbush) (*Amelanchier arborea*) in the foreground.

Spring has come to Williamsburg and especially to the native plants in the Schoolyard Habitat at Stonehouse Elementary School. Unfortunately, no one can enjoy the native plants this spring because James City County schools are closed for the remainder of the school year due to the COVID-19 virus.

In spite of the stay-at-home orders, native plants (and weeds) in the beds are thriving. These photos were captured on a short walk in mid-April by garden caretaker Susan Voigt.

Jan Newton, parent and former VNPS member, helped create the garden 15 years ago in a bare courtyard close to the kindergarten and first grade classrooms. It was certified as a National Wildlife Federation Schoolyard Habitat.

After Jan moved from Virginia, members of the John Clayton Chapter have continued to maintain and improve the garden and have added several pathways, all in cooperation with school staff, a few parents, and two boys working on Eagle Scout projects.

The chapter occasionally provides plant walks for the public at the garden and, following one of those walks, the Williamsburg Council of Garden Clubs recognized Susan Voigt, the school garden caretaker, with their Arbor Day Individual Award.

—*Susan Voigt, John Clayton Chapter*

Pinxterbloom Azalea (*Rhododedron periclymenoides*), top, and Winterberries (*Ilex verticillata*)

VIRGINIA NATIVE PLANT SOCIETY

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 Readers are invited to send letters, news items, and queries for consideration. E-mail items to Nancy Sorrells at lotswife@comcast.net.

Next submission deadline: July 15, 2020

Preserved newsletters tell Society's story

Did you know the VNPS was originally named the Virginia Wildflower Preservation Society (VWPS) and was founded in 1982? Recent efforts to obtain and publish newsletters from the early years of the Society have revealed a fascinating story of the dedication and perseverance of our founding leaders and volunteers.

The VWPS was incorporated in Virginia in July of 1982 and published its first 10-page *Newsletter* in 1982. Founding board members included President Mary Painter, Vice-President Linda McMahan, Secretary Dorna Kreitz, and Treasurer Tommee Kerr. Marsh Marigold (*Caltha palustris*) was chosen as the floral symbol. The Charter Membership Roster included 106 Associate, Patron, and Family members.

Early *Newsletter* editions included announcements and articles about planned plant rescues, volunteer guidelines, "eradicating moles," membership profiles, committee activities, and the Society's first Annual Meeting at the National Wildlife Federation in Vienna in October 1982. Several active committees reported meetings with county supervisors, starting a native plant propagation program, planning conservation projects for children, and walks and presentations.

In 1983, the *Newsletter* became the *Bulletin*. Thanks to VNPS members Nancy Sorrells and Nicky Staunton, who provided paper copies of many issues, we now have a complete archive of all issues from 1982 until the *Bulletin* became *Sempervirens* in 2015. Potowmack chapter members Roberta Day and Pat Salamone also provided archive issues of the *Potowmack News*.In 1988, the VWPS membership voted to change its name from the Virginia Wildflower Preservation Society to the Virginia Native Plant Society to encompass the conservation of native plants other than just those commonly considered as "wildflowers."

To browse the *Bulletin* and *Sempervirens* archives visit vnps.org.

Be sure to also check our blog post on **The First 10 Year of VNPS: How We Began.**

—Mark Murphy, Website Manager

Pandemic learning

(Continued from page 1)

distancing concerns with COVID-19 and overcrowding.

Buffalo Mountain, The Channels, as well as VOF-owned Bull Run Mountains Natural Area Preserves have been closed. We are watching the visitor numbers and impacts closely at other preserves such as The Pinnacle, Crow's Nest, Poor Mountain, Hughlett Point, and Savage Neck Dunes. We have learned that not only does beyond-capacity visitation require more staff presence, but that closed preserves require the same if not greater levels of presence as well, to prevent trespass and unsavory activities. With challenges of social distancing, our staff are unprecedentedly working as parking lot attendants for open preserves and serving as oversight and patrols for closed preserves. This has required us to request assistance from volunteers, local law enforcement, and partner agency staff, all of whom are also stretched thin. We are greatly appreciative for the assistance we have been receiving.

COVID-19 has brought bigger crowds from farther away and thus newcomers to the preserves, pointing to another lesson that COVID is underscoring already: the critical need for strong messaging to the public, stronger partnership, volunteer support, and continued need for funding to support the program and the preserves system. When we have passed the COVID curve, we may well see a new normal of visitor numbers. It will be ever important to effectively interpret and communicate to the public the primary purpose of preserves, how they are unique from other public lands and why they should be treated with special, leave-no-trace respect.

The opportunity to educate a larger audience may be a silver lining not only for preserves but all public lands. We can hope that the clear need for more public lands will drive a movement to invest in the strategic expansion of public lands for natural resources conservation and management, and to benefit those communities most in need of outdoor recreation. This will require funding, both for those lands and for the jobs of stewards and resource managers needed on them. More conserved lands, more public access, and more jobs—there is a win-win-win.

Lastly, we are reminded of how important our family of supporters and partners are, and the VNPS is a long-standing leader. Without the outreach, funding support, and shared efforts to communicate the values and needs of Virginia's natural heritage to the public and elected officials, I am certain we would not be as resilient as we, and your natural area preserves, have been up to now. I believe that this support will help to insure that when this challenging time is behind us, this support will be moreover important and valuable as we move forward, maybe even to achieve conservation, in an unprecedented way. ❖

Strange times: Botanizing during the 'plague'

Article and photos by Gary Coté, New River Chapter

Flower of Apricot Mallow (*Sphaeralcea ambigua*), common flowering shrub of the California Desert.

"State of Emergency declared in San Diego because of the Coronavirus." My husband David got that snatch of news from his radio. More followed. Schools closed, bars closed, restaurants limited to half capacity. We were in San Diego County, California, when we got that news, although nowhere near a bar or restaurant. We were huddled in a tent, waiting out the rain, in a deserted campground on the Los Coyotes Indian Reservation, on the slopes of the highest peak in the county, Hot Springs Mountain (6,533 ft.). We hadn't seen anyone since the tribal policeman who had signed us in the day before.

We were on a trip back to San Diego to revisit old friends and former haunts, the first trip back together since moving east in 1986. Although David, who had grown up there, had been back many times, I had not. So when my retirement from Radford University was approaching, we started making plans and arrangements. An Amtrak trans-continental train would take us through the desert southwest where we would stop to visit a retired Radford colleague in northern Arizona. Onward from there we would camp in the familiar mountains and deserts of San Diego County, then visit family and friends in the city. Then north to visit a friend in the Bay Area, stopping to botanize in San Luis Obispo County, and finally we would head home on a trans-continental train over the Rockies. Dates were carefully chosen to fit everyone's schedules, coincide with the spring blooming of coast and desert, and take advantage of Amtrak deals.

But our timing turned out to be somewhat unfortunate. We left Virginia amid reports of a new virus sickening people in China, and then in Washington State, and we wondered if perhaps this was not the best time to travel.

Despite our worries, the westward train ride was restful and scenic. With our Arizona friend we visited Native American petroglyphs, Montezuma Well and the Montezuma Castle National Monuments, and, of course, the Grand Canyon. The interest was primarily archaeological at most of those places, while the Canyon, that vast chasm where, little by little, the Colorado River and the rains have carved and tumbled eons of rocks, and the river has borne it all away to the Gulf of California, upstaged everything else. However, we stuck our faces into the bark of Ponderosa Pine (*Pinus ponderosa*) to inhale the rich vanilla aroma, and marveled at the gnarled forms of Pinyon Pines (*Pinus edulis*) and the Utah Junipers (*Juniperus osteosperma*) with their orange clumps of parasitic Mistletoe (*Phoradendron juniperinum*). We also enjoyed seeing cacti once again, admiring great branching clumps of Prickly Pear (*Opuntia phaeacantha*). Although it was early March, brilliant yellow blooms covered Golden Currant bushes (*Ribes aureum*), and the purple pea-like flowers of the early-blooming Torrey Milkvetch (*Astragalus torreyana*) decorated the sand. We finished our Arizona stay with dinner in a bustling restaurant in Flagstaff before boarding a train to California.

In California we rented a car and headed to Los Coyotes Indian Reservation, one of our favorite places in San Diego County. We pitched our tent in a grove of Canyon Live Oak (*Quercus chrysolepis*) and cooked dinner. West of us, although we didn't know it, clouds were lifting gallons upon gallons of the Pacific Ocean up into the mountains, preparing to dump it on us in a torrential downpour, and to carry the remnants eastward to flood the desert.

Because of the rain, we spent much of our stay at Los Coyotes in the tent, reading, talking and munching trail mix. We had no cell phone signal there, but the radio promised more rain and delivered occasional grim bulletins about Coronavirus spreading on the West Coast and social restrictions being mandated.

As more rain was coming, we packed up the next day and moved to Blair Valley Primitive Campground in the Anza-Borrego Desert State Park, which amounted to a couple of bathrooms at the edge of a broad, high valley containing a dry lake bed, now carpeted with the pink flowers of naturalized Red-stemmed Filaree (*Erodium cicutarium*), naturalized in Virginia as well, although uncommon. Navigating around the huge puddles left by the previous day's storm, we headed well away from the enormous RV's and found a pleasant site to pitch our tent at the base of a cliff, among tumbled boulders and bushy mounds of Desert Sunflowers

(*Bahiopsis parishii*). Gander Cholla (*Cylindropuntia ganderi*) lifted spiny arms around our campsite, and Desert Barrel Cacti (*Ferocactus cylindraceus*) were just opening their first blooms here and there between boulders. The area by our tent was made cheerful by the yellow blooms of Bristly Fiddleneck (*Amsinckia tessellata*), tiny white Popcorn Flowers (*Cryptantha sp.*), and even tinier Yellow Whispering Bells (*Emmenanthe penduliflora*). A pair of Common Ravens was nesting on the clifftop above us, winging in with unidentifiable morsels for their chicks.

While in the Blair Valley area, we hiked a few miles to Yaquitepec, the high-desert homestead of Marshal and Tanya South. In the early 20th century they had performed an "experiment in primitive living" on waterless Ghost Mountain (3,200 ft.). Around the ruins of their homestead we saw the same plants they would have seen in a similar season, Gander Cholla, Agave (*Agave deserti*), a riot of blooming desert sunflowers, and, hiding between the rocks, Fishhook Cacti (*Mammillaria dioica*), with their candy-striped flowers. On our hikes there and back we encountered Ocotillo (*Fouquieria splendens*) just beginning to open flame-red flowers at the tips of their long stalks. A few agave plants had already decided this was their year to bloom and die and were sending up flower stalks; many more had bloomed last year and their dead stalks still stood sentinel. Bees were swarming the Desert Apricot Bushes (*Prunus fremontii*) with their white cherry-flower blossoms. Lavender flowers of Thistle Sage (*Salvia carducea*), golden flowers of Blazing Stars (*Mentzelia sp.*), and blue-violet flowers of Wild Heliotrope (*Phacelia distans*) dotted the ground beneath the shrubs.

Sea Dahlia (*Leptosyne maritima*), formerly in the more familiar genus Coreopsis. The leaves, visible in the background, are intricately dissected into linear segments. It frequently blooms alongside coast sunflower, which has simpler leaves and a brown disk.

We also drove down to the lower desert to see what might be in bloom there. Chuparosa (*Justicia californica)* with flaming red flowers, Creosote Bush (*Larrea tridentata*) with yellow blooms, Desert Wishbone Bush (*Mirabilis laevis*) with delicate white flowers, and Desert Lavender (*Condea emoryi*) covered with pale purple blooms were common shrubs. We were delighted to find an Apricot Mallow (*Sphaeralcea ambigua*) with its showy orange, tulip-shaped blooms.

My favorite desert annual, Desert Monkeyflower (*Mimulus bigelovii*), a common plant of desert washes. It grows, blooms, and sets seed very quickly when spring rains trigger germination.

We got down on hands and knees in a desert wash, where, just days earlier a flash flood had likely rampaged. I found my favorite desert flower, Desert Monkeyflower (*Mimulus bigelovii*), outsized pink blooms on plants slightly taller than the flowers were long. We also found Gold Poppies (*Eschscholtzia parishii*), and the gorgeous bells of Brown-eyed Evening Primrose (*Chylismia claviformis*) with their pure white petals, dark red centers, and brilliant yellow stamens.

At the end of our stay we said good-bye to the ravens, returned the car, and took commuter rail to our hotel in the Old Town neighborhood of San Diego. With our return to civilization we gained a cell phone signal and access to newspapers; the warnings we had gleaned from the radio became starker. The hostel in San Luis Obispo, where we had reservations, had called to say they were closed, and a newspaper announced that the Bay Area, where our friend lived, was under stay-at-home orders. Amtrak proved flexible and we revised our itinerary to backtrack through Arizona and New Mexico at the end of our planned week in San Diego, We then went looking for a restaurant that had not already reached the mandated half capacity, but found only restaurants that were actually closed or open but nearly empty. The next day, all restaurants were ordered closed except for take-out or delivery. Our hotel was near Old Town Historic Park, normally teeming with tourists, but now a ghost town, historic buildings, theaters, and shops closed.

In San Diego, we visited coastal bluffs and the beach. The bluffs were dominated by the yellow sunflower-like blooms of two shrubs, Sea Dahlia

(See Pandemic botanizing, page 12)

Pandemic botanizing

(Continued from page 11)

(*Leptosyne maritima*) and Coast Sunflower (*Encelia californica*). On the beach, the naturalized Hottentot Fig (*Carpobrotus edulis*), sported thick succulent leaves and large yellow and purple blooms, as it usually does in every season. It originated in South Africa, but now invades beaches all over the world.

The trip back had an eerie feeling. San Diego's historic Santa Fe depot, built for the 1915 Pan-Pacific Exposition, was nearly deserted. The trains, sleeper and coach cars alike, had few people. Chicago was empty at rush hour on a Tuesday, traffic sparse and only a handful of people out, many taking pictures of the emptiness. On the train out of Washington, we saw the cherry blossoms at the Tidal Basin in their glory, but no one was on the sidewalks, and traffic was sparse. In Lynchburg, the station platform is normally brightly lit by headlights, and a wave of people spreads out from the train, but this time the platform was dark and three people got off.

A major tourist site, San Diego's Old Town Historical Park. Note the unusual lack of tourists during the pandemic.

Within a few weeks of our return, almost every place we had visited had closed, the Grand Canyon, national monuments, Los Coyotes Reservation, Anza-Borrego Desert State Park, museums, restaurants, campgrounds, beaches, even scenic overlooks. Had we left a few weeks earlier, we might have been back before the pandemic. Had we planned for a few weeks later, we would not have gone. Despite our unfortunate timing, we still saw incredible scenery, fascinating archaeology, and beautiful southwestern plants, a reminder that even in difficult times, the natural world abides. ❖

Gary Coté is a long-time member of VNPS, and a founding member of the New River Chapter. He majored in biology at MIT, received his PhD at the University of California in San Diego, and taught for 20 years at Radford University, where he is now professor emeritus. He lives in Radford with his husband, David Darnell, a former president of the New River Chapter, and their cat, Kismet, who shows no interest in native plants except to eat grass.

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