Claytonia

Newsletter of the John Clayton Chapter, Virginia Native Plant Society

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Thursday, November 19's Zoom meeting at 7 pm: Manuel Lerdau on "*Invasive Plants and their Impact on Native Plants*"

Manuel Lerdau, Professor of Environmental Sciences and of Biology at the University of Virginia, grew up in Maryland outside of Washington, DC. He was one of those naturenerd kids who spent more time with frogs and snakes than with schoolwork, and in junior high he developed a fascination with birds. In 1982 he went off to Harvard College, where he majored in Biology. A Plant Taxonomy class in 1984 changed his life and opened his eyes to the diversity of the living world. In college he had jobs in a fruit fly genetics lab, in Gunung Palung National Park in Indonesian Borneo, and in the Gray Herbarium.

Professor Lerdau and an invasive *Pueraria*

After college he worked for a few years as a technician for the USDA and the USFWS on fungal infections of wild wheat and on the population biology of elephant seals, western gulls, and other seabirds, and eventually landed in a PhD program at Stanford University, where he studied Ecosystem Ecology. In 1994 he joined the faculty of SUNY Stony Brook in the Ecology and Evolution Department, and in 2007 moved to Charlottesville to take up a job in the Environmental Sciences and Biology Departments.

His work combines experimental and observational research with process-based ecosystem models, and his current projects involve the regulation of ozone exchange between forests and the atmosphere, the effects of land use practices on boreal forest ecosystems, and the development and deployment of new technology for measuring plant health. This research is supported by the US National Science Foundation and NASA. He reports that he still watches birds and is slowly, too slowly, learning local plants.

From the President

Suddenly fall arrived, with cooler temperatures but not less humidity like last year. In fact, it has rained so much that my yard is like a jungle zone. The changes in plants are evident; the cup plants and their butterfly visitors zooming from one flower to another has changed to Narrow-leaf Sunflowers. Yes, there are still butterflies but they have moved to the sunflowers. In fact, there are still occasional visits from Monarch butterflies. I hope they are all on their way south. I have seen the beautiful Pipevine Swallowtail butterfly with its shinning blue lower wings in my garden. Of course, that is because the vine is all over one side of my garden. It may be a bit of an over enthusiastic grower but that butterfly and the cute pipe bloom make it all worthwhile. One important color this season is blue. Suddenly from the yellow colors in summer, the dominant tone is now blue. First the Great Big Blue Lobelia (*Lobelia syphillitica*). Then the varying shades of blue asters, like the New York (*Symphyotrichum novi-belgi*), New England (*Symphyotrichum novi-anglae*), Purple-stemmed Aster (*Symphyotrichum pilosum*), Eastern Silvery Aster (*Symphyotrichum concolor*), which I wish I could buy, as its color is so beautiful, and Late Purple Aster. My favorite, however, is the Large-flowered Aster (*Symphyotrichum grandilforum*). Its beauty is breathtaking. The sad thing is that this year and last year, I have been plagued by a rabbit that grew up and lives trapped in my fenced garden. It loves to eat the asters. Let us not forget the Blue Mistflower (*Onoclinium coelestinum*). Some bright yellow flowers are still around, of course, such as the Sneezeweed (*Helenium autumnale*) and the Maryland Golden-aster (*Chrysopsis mariana*). The Grass-leaved Aster (*Pityopsis graminifolia*) I used to have disappeared and now is very hard to find. These yellow asters and Sneezweed make the blue even stronger. There are some notable white flowers. One is Frost Aster (*Syphyotrichum pilosum*) with its myriad of tiny white flowers. It appears in late Fall. This aster is the last bloom to feed migrating butterflies and native pollinators. One fruit in my yard hanging over the lake in back is that of American Persimmon (*Diospyros virginiana*). You need a male and a female plant to get fruits. In the autumn at dusk I like to watch the raccoons climb like monkeys to reach and eat the hanging fruits. I would not dare to follow them.

Blue Mistflower

This autumn I went on a walk in the woods at Greenhaven, our registry site in Norge. I saw many interesting mushrooms and fungi. One such looks like a mushroom, but is not at all a mushroom. That is Indian Pipes or Ghost plant (*Montropa uniflora*). It is actually a plant with a stem and a flower, even though it has no color. It belongs to the blueberry family and grows in the deep shade of

Indian Pipes

woods near beech trees. It does subsist like a mushroom, as its roots soak nutrients from the rich moist soil and decaying leaves. Some say it is edible, tasting like asparagus, but it is mildly toxic so it is best not to eat it. It is apparently a very important plant in the ecosystem. Please, if you see it, do not pick it. When someone picks Indian Pipe, it turns black, a third reason not to pick it. The flower is the bell-shaped top of the plant that is bent like a real pipe bowl, and the leaves are like scales on the stem. Small bumblebees pollinate the flower. Once the bumblebees pollinate the flower, the "bell" creates a seed capsule that eventually releases tiny seeds into the wind.

Artist's Conk

In the fall, many mushrooms of different colors and shapes appear in the woods. Yes, in my backyard I see many of them with the typical mushroom shape. I discovered when I looked at Mushrooms in Virginia Wildflowers that the mushrooms have very amusing names like Chicken of the Woods, Elegant Stinkhorn, Destroying Angel, Devil's Urn, Moose Antlers, Old Man of the Woods, Stinky Squids. Often the mushrooms and their names match. See for yourself; go to https://virginiawildflowers.org/mushrooms/. On a recent visit to Norge in the Greenhaven property, I saw many examples of mushrooms. There were many unusual ones for me to admire. One I saw is a tiny red mushroom I failed to photograph, alas. It was so prolific inside a dead tree limb on moss and it continued to have other tiny red mushrooms on the ground. I saw many young Artist's Conk (*Ganoderma applanatum*) mushrooms on a tree tunk. They are brown on top with a white underneath. I read on the internet that these mushrooms have medicinal qualities, and a tea can be made but it is not tasty! You can understand the name Artist's Conk if you look at the photo I took; it has beautiful brown striations when young and small. Then there was a yellow shelf mushroom, but I am not sure that it was a Chicken of the Woods. Many mushrooms look alike, so it is difficult to be sure you have the correct one. I would suggest you should consider them all poisonous unless accompanied by an expert. The point I am making is that a walk in the woods presents many beautiful fungi, especially in the Fall. Then I saw strange bright yellow mushrooms that I could not identify, but at least I can show you the photo. Stranger to imagine were the white worm like shapes coming up from the ground. It is a White Worm Coral fungus (*Clavaria fragilis*). I also saw amazing bright yellow spindles coming from the ground. These are Golden Spindle Mushrooms (*Clavulinopsis fusiformis*); they are so bright and yellow that they really stand out. I learned that there are other spindle mushrooms, like a magenta coral, orange coral, and even brown ones. What a show nature gives us in the autumn, not just in gardens but in the woods also.

Lucile's mystery mushroom

White Worm Coral Fungus

Golden Spindle Mushroom

A usual part of the fall activities started with our having two potting parties for the 2021 Native Plant Sale. I participated in the first one at Stonehouse Habitat Garden on Wednesday, October 7. It was a well-attended potting party, with all of us in masks. There was a second party on Sunday, October 18. Before the second potting party almost 100 plants were potted. Meanwhile, at home I have potted more than 50 more native plants and vines from my garden for the sale. Our 2021 Plant Sale is on the way!

A former member of our chapter, Jan Newton, sent me something I would like to share with you. A wonderful nature photographer, Jim Fowler, is very enthusiastic about wild orchids. He has a web blog full of beautiful flower photography and interesting commentary about his experiences: (http://www.jfowlerphotography.com/?page_id=64&doing_wp_cron=1602630111.2828919887542724609375). I have never seen such incredibly detailed and beautiful photographs. He is now located in Greenville, South Carolina. His photographs are from North and South Carolina; some of them exist in Virginia also. It is a beautiful way to study our wild orchids. Since it is soon Halloween as I am writing this, take a moment to see his blog and photographs about the Shadow Witch Orchid at http://www.jfowlerphotography.com/?p=10775. In fact, this Halloween-season orchid is found in Gloucester at the home of member Joyce Hayes. Jan thinks that she saw it in James City County also.

I send you all my warmest wishes for Happy Holidays and hope you will all keep well and safe. Happy New Year to all of you.

Nature's Best Hope—a Book Review

Nature's Best Hope is the third book written by **Doug Tallamy**. I bought it because I wanted to read it and find out how it differs from his first book, *Bringing Nature Home*.

In his first book, Doug Tallamy wrote in general terms about the importance of Native Plants and their impact on our environment. The second part of the book lists plants that he considers "keystone plants", plants that are most important for each area of the country. It was a wonderful list of trees, shrubs, vines, and shrubs which I tried to follow in my own garden. Then he describes what bird food looks like and how a gardener's choice of plants affects the insects which other animals, like birds, need to survive. Those choices have a profound importance in the diversity of life in our yards, towns, suburbs and our planet.

A butterfly feeds on native milkweed.

The essential message has not changed in his book, *Nature's Best Hope*, but what has changed is the fact that many of the ideas put forth by Doug Tallamy have now been backed by scientific study. He suggests a conservation approach—every small yard or large one can succeed in affecting wild life and the total ecology in our planet. As he says, a new approach that starts in everyone's yard and can connect to another person's yard and so form areas that could be greater than any conservation area. He no longer suggests plants for areas of the country, but rather directs us to search for specific sites that are more accurate to each county! If you are looking for landscaping ideas with native plants, you should check out Doug Tallamy's second book written in collaboration with Rick Drake: *The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden*. Doug Tallamy still considers how a gardener's choice affects the insects. He details the tremendous importance of native plant choices for pollinators and other insects that he calls "keystone plants".

His quote from the biologist E.O. Wilson is the cornerstone of this book. "If all mankind were to disappear, the world would generate back to the rich state of equilibrium that existed ten thousand years ago. If insects were to vanish, the environment would collapse into chaos." We have fallen into a bad habit of thinking of insects as the enemy, but they are the "little things that run the world." He explains what scientific research has found about why most cultivars will harm the pollinators. If the size, the color of flowers or leaves are changed, pollinators will not recognize the plants, therefore avoiding them. Often in cultivars, the following changes are made: the shape of the leaf or flower, the color or something else so that they offer inferior pollen or nectar. If the cultivars are just an improvement on the ability to thrive, but are not changed, they are still fulfilling their mission.

Some of the main ideas he lists which we can do are:
1. Shrink the lawn; 2. Rebuild the carrying capacity of the yard with keystone native plants; 3. Understand why alien plants are bad; 4. Planting for specialist pollinators; 5. Planting generously; 6. Do not spray or fertilize; 7. Educating neighborhood Civic Associations; 8. Use night lighting on timers rather than leaving it on during the whole night. He explains each of these points as well as why he recommends that we do them. Does he think making these changes will work? The answer is yes. Each book he has written expands on the ideas of his first book. I have often looked at the important message he wrote when he autographed my book *Bringing Nature Home*: "Garden as if life depended on it because it does."

Lucile Kossodo

New Members

We welcome new members **Heidi Johnson** of Williamsburg and **Carol Stender** of Deltaville to the John Clayton Chapter.

From Helen…

Wildflower of the Month for October: Great Blue Lobelia (*Lobelia siphilitica*)

Great Blue Lobelia

A lovely plant late in the growing season, when plants with yellow flowers are usually prominent—tall spikes of brilliant true-blue flowers grow on a stiff, unbranched, leafy stalk 1–3 feet high. Flowers of this genus all have 2 narrow lobes or "ears" above, with 3 wider lobes forming a lip below. The 1-inch long violet-blue flowers of Great Blue Lobelia are striped with white on the 3 lower lobes, which appear more prominent than the lobes above. Leaves are alternate on the stem, finely toothed and pointed.

Great Blue Lobelia is a wetland native species, requiring wet to moist, fertile, loamy soil. The plant requires little maintenance, growing in part shade, but in full sun the soil must be consistently moist, as in rain gardens. The natural habitat is meadows, moist thickets, and swamps from Maine to Manitoba and Colorado south to North Carolina and Texas. While found in most counties of Virginia, it is infrequent in the Coastal Plain.

This clump-forming perennial has a long blooming period from July through October. Also known as Blue Cardinal Flower, this plant tolerates conditions that are drier than those of the red species. This plant is a member of the Bellflower Family, the name suggesting a rounded corolla with a long neck. Bumblebees can access the nectar at the bottom of the tube-shaped flower while collecting pollen.

Indian Tobacco

While the seeds are too small to be of use to wildlife, Great Blue Lobelia self-seeds and is easy to grow from seeds collected in the fall. Or by division—the roots make offshoots that can be separated from the main plant in fall or spring. Making cuttings from stems with two nodes is another method of growing more of these plants.

Other Lobelia species native to the Coastal Plain have much smaller flowers. Indian Tobacco (*L. inflata*) has been reported in every county of Virginia, growing in woodlands, roadsides, fields, and wetlands. Nuttall's Lobelia (*L. nuttallii*) is frequent in wet areas and roadsides. Downy Lobelia (*L. puberula*) is in every county other than those in the far northwestern area. Other species and cultivars are available in the nursery trade.

Early medical writers thought American Indians used the root primarily to treat syphilis, hence the species name *siphilitica*. While potentially poisonous, root tea was used by the American Indians for syphilis, and leaf tea for a number of illnesses, such as colds, worms, nosebleeds, coughs, and headaches.

Wildflower of the Month for November: Dog- fennel (*Eupatorium capillifolium*)

Dog-fennel

In late summer drifts of Dog-fennel line roadsides and woodland edges with their lacy fernlike leaves, narrow and very finely divided. In early fall from September through November, the tiny daisy-like white flowers are replaced by small red berries. As the fruits age, the seeds develop hairs, like those of dandelions, allowing dispersal by the wind.

An attractive plant, Dog-fennel grows over 6 feet tall, and can provide a dramatic backdrop in the garden or containers, but it's a very aggressive weed, even invasive in some areas. It's a robust native perennial and forms colonies that crowd out other more delicate plants. There is sterile cultivar called 'Elegant Feather' that has a more benign growth habit and doesn't produce seed.

Dog-fennel grows on the Coastal Plain from New Jersey to Florida, Texas and Arkansas, and in eastern Virginia counties. It is common in habitats where the soil has been severely disturbed, burned areas, clear-cuts, and various moist to wet locales. The plant spreads both by seeds and rootstocks which come from the main taproot and grow laterally in all directions.

In The *Flora of Virginia* the description of this plant ends with: "nearly ubiquitous in disturbed habitats of the Coastal Plain."

When crushed, the leaves and flowers release an unpleasant odor. The common name refers to the fennel-like odor, which dogs appear to enjoy. Essential oils of Dog-fennel have shown activity as an insecticide and antifungal agent; leaves have been used to repel mosquitoes and juice from the plant extracted to treat bites of reptiles and insects. Livestock and wildlife usually avoid consuming Dog Fennel since the plant contains liver-damaging alkaloids.

The species name *capillifolium* is derived from the Latin *capill* meaning "hair" and *folium* meaning "leaf," referring to the thin segments of the leaves.

Does size matter? …or how plants spread their genes

When summer moves into fall most living creatures are preparing for the winter—storing food, digging holes for winter homes, flying south, pupating, making seeds—all to ensure the survival of the next generation. In animals, transmission of genetic material is usually done internally, while plants package their genes to exist without water. In flowering plants, egg cells are protected at the base of the floral tube, anticipating the arrival of sperm cells from pollen grains that have landed on the stigma above.

When fertilization is successful, angiosperms and gymnosperms make seeds for dispersal. Flowering plants cover their seeds in fruits—dry like pea pods and wet like apples. The seeds of pine are "naked"—without fruits, lying on open pine scales.

Seeds carried by wind are small and often are packaged in devices that move them far from the host plant; those traveling in water can be heavier. Seed, pollen, and spore size is related to dispersal methods. Wind-pollinated plants like maples and goldenrod make tiny grains of pollen; orchids and some milkweeds package their sperm in pollinia that are carried by large bees.

The largest seed in the world is the "double coconut" —the coco-de-mer, *Lodoicea maldivica*—it is half a meter (18 inches) long and weighs 25 kg (55 pounds). The smallest seed world-wide is an orchid, *Aerides odorata*, whose seed is 0.5 mm in length (10 mm = ~1/4 inch).


The huge seeds of a coco de mer

Plants use various methods to eject their seeds—how they get these tiny bodies into suitable habitat for growth is a fascinating study. Many plants depend upon external forces to move their seeds—wind, water, animals—while others use their own mechanisms. As the seed becomes hydrated or dried, cells surrounding the seeds expand or contract, releasing seeds. Some of these releases are explosive—entertaining videos of plants like jewelweed, geranium, garden peas, and vetches ejecting their seeds can be found on the web by searching "explosive seed dispersal."

The common early garden weed in our area, Hairy Bittercress (*Cardamine hirsuta*), launches its seeds ballistically to a distance of 2 meters (over 6 feet)—no wonder my garden produced many colonies of this little plant!

Fern sporangia are on separate stalks (Cinnamon Fern, *Osmunda cinnamomea*) or on the underside of fronds (Lady Fern, *Athyrium filix-femina*). Developing inside are tiny spores; when mature the sporangium slowly opens, then suddenly closes, throwing the spores out like a catapult. Mosses also produce minute spores, contained within sporophytes that consist of a stalk topped with a rounded or cylindrical capsule.

Cinnamon Fern, with its sporangia on separate stalks

Lady Fern's sporangia are on the undersides of its fronds.

The spores of *Sphagnum* are violently discharged, but most mosses release their spores passively as the capsule dries or is shaken by wind or touch.

They are really small

Seed sizes are measured in millimeters (mm); pollen and spores in micrometers, commonly known as microns (µm). The smallest seed (0.5 mm) is 500 times bigger than the average size of pollen and spores, 50 µm.

Reference: 1 cm = 10 mm = less than ½ inch

1 mm = 1000 microns

The tiny size of these bodies that carry information to start new plants is one of the reasons why ferns and mosses are the first plants to colonize burned-over or disturbed areas. I got curious about the sizes of spores, since they are mostly invisible to us. A recent study measured the effect of the speed of wind and turbulence on the release of spores of a large moss, *Atrichum undulatum*. The investigators sent these spores into a wind tunnel and found that more spores are released when turbulence was high, suggesting mosses depend upon some kind of movement to open the capsule, allowing spores to escape.

Atrichum undulatum

From their work, the investigators created a massive chart documenting some of the characteristics of wind, turbulence, and spore size for a large number of bryophytes. From that chart I learned that the larger thalloid liverworts like *Pallavicinia* and *Riccia* carry large spores, up to 130 microns. Predictably, the smaller liverworts and mosses that would be carried by wind are smaller. One of the smallest is Silver Moss, *Bryum argenteum*, commonly seen in sidewalk cracks almost worldwide.

Byrum argenteum

There are not many of these studies about dissemination of moss spores—this one was done in Sweden. It's easier to see how seed plants release their products than to study similar processes in the bryophytes (mosses, liverworts, hornworts). At the moment only a few scientists are interested in this kind of challenge, and of course funding would be sparse.

Helen Hamilton

From Sue Voigt…

In Late September and early October the Stonehouse Schoolyard Habitat was a riot of colors: yellow, purple, red, white, and green. Although few students are in attendance in the building, the teachers still enjoy lunch breaks in the native plant garden at one of the 3 picnic tables.

The tables were useful in early October when chapter members dug and potted over 50 plants for our annual native plant sale next spring.

Here are some photos Sue took recently in the Stonehouse Schoolyard Habitat…

At left, Claudia Kirk's photo of Sue in the Habitat

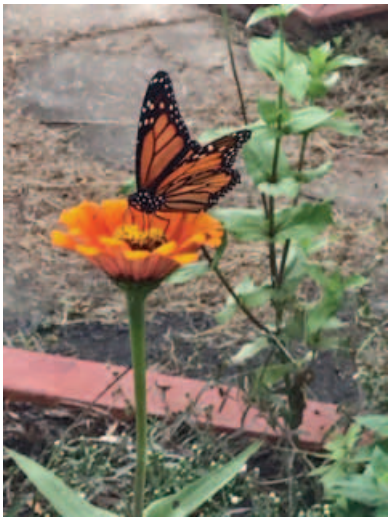
Above, Allan and Mary Turnbull, Adrienne Frank, and Edie Bradbury, chapter members who helped dig and pot plants for the plant sale, standing in front of the courtyard Winterberry.

Close-up of female berries on *Ilex verticillata* (Winterberry) shrub at Stonehouse

Three Monarch butterfly caterpillars feasting on *Asclepias syriaca* (Common Milkweed) near the Butterfly Garden at Stonehouse

Coreopsis and Mistflower

A skipper visits a Mistflower.



Monarch Butterfly on Zinnia in the Stonehouse butterfly garden

Close-up of flower of *Hibiscus laevis* (Rose-mallow, Halberd-leaf)

…and here are some from Adrienne.

A Coreopsis

Common Buckeye on Frost Aster

Marc Moyer potting plants


Freshly potted Lyre-leaved Sage

Labels for newly-potted plants


Keith Navia at work

John Clayton Chapter Calendar

Thursday, November 19 — **7:00 pm: Our November Zoom Meeting: Manuel Lerdau on "Invasive Plants and their Impact on Native Plants"** (See Page 1.)

There are no Chapter walks planned for November and December.

Keep a lookout for announcements about any additional walks or other events in the local newspapers and on our website at **www.vnps.org/johnclayton**.

Renew online at **www.vnps.org** or use the membership renewal form below.
Please contact Membership Chair **Cathy Flanagan** at 757-879-1997 or at **flanagan.catherine@gmail.com** with questions about your membership.

Membership Form for John Clayton Chapter, Virginia Native Plant Society

(Place checks in the boxes below next to your selections.)

I am a ☐ **new member** of the John Clayton Chapter ☐ **renewing member** of the John Clayton Chapter

Name		
Address		
City	State	Zip
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☐ I would like to receive my newsletters electronically at the email address above.

Membership dues

☐ Individual ($30) ☐ Family ($40) ☐ Patron ($50) ☐ Sustaining ($100) ☐ Life ($500)

☐ Student ($15) ☐ Associate ($40) —for groups who designate one person as delegate

I wish to make an additional contribution in the amount of $ ☐ to John Clayton Chapter ☐ to VNPS

☐ This is a gift membership; please include a card with my name as donor.

I have ☐ time ☐ a little time ☐ no time to help with activities.

☐ I do not wish to be listed in a chapter directory.

**Please Note:* John Clayton Chapter does not distribute any of our membership information to other organizations. It is used only by the officers and chairpersons of our chapter.

Make your check payable to **VNPS** and mail to: VNPS Membership Chair
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