

# The Blazing Star



A PUBLICATION OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

## Native Plant to Know

# Spotted Wintergreen

*Chimaphila maculata*

by Kevin Kavanagh

As I was examining a spectacular patch of native flowering azaleas in the Shenandoah Mountains of Virginia during my university days, I paused to tie a loose bootlace. As I bent down, I discovered my very first patch of spotted wintergreen (*Chimaphila maculata*). I was thrilled. It's easy to miss this diminutive plant even though it ranges widely with scattered populations from New England and Ontario southward to Arizona, Mexico and Panama. Its ability to go undetected quite often is due, in part, to its tendency to grow among fallen needles, logs and other organic matter on the forest floor. Furthermore, its variegated foliar colour scheme helps it to remain camouflaged among the dappled shadows.

Other common names for this evergreen perennial include striped prince's pine, striped wintergreen and spotted pipsissewa. The name pipsissewa is from a Cree term meaning "it breaks into small pieces." A member of the family Ericaceae (Heath Family), spotted wintergreen has narrow, olive to blue-green toothed leaves that have a beautiful variegated pattern. The veins are white and especially pronounced along the midrib of the leaf. The leaves are arranged in a whorl around a stem

that is typically less than 15 centimetres (six inches) tall but which occasionally reach 25 centimetres (10 inches). The plant is highly clonal with stems emerging from a series of horizontally creeping rhizomes. Over time, it can form patches of modest size on the forest floor. Some classify it as a shrub based on its persistent stems and evergreen characteristics, while others consider it to be a sub-shrub or herbaceous perennial.

In mid to late summer, larger (more mature) stems will produce one to (rarely) three short flower stalks rising a few centimetres above the leaves, often branching at the top to produce a small number of five-petalled, rounded flowers held upside down like miniature umbrellas. The petals are generally coloured white to light pink and beautifully complement the grey-green variegated foliage. Like most other ericads, the flowers develop into small capsules filled with tiny seeds which, despite the plant's strategy of hugging the forest floor, are believed to be wind dispersed. Bumblebees are known to pollinate the flowers.

Spotted wintergreen appears to be very particular in its site locations and growing conditions. Preferred forest habitats are generally restricted to those dominated

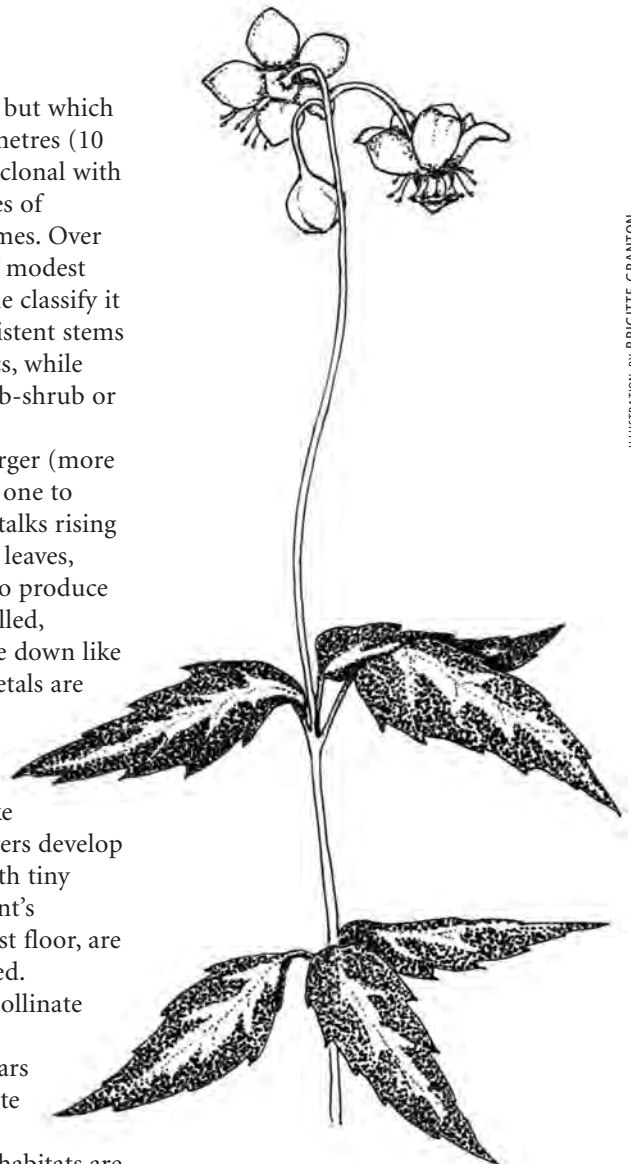


ILLUSTRATION BY BRIGITTE GRANTON

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## The *Blazing Star* is . . .

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Join online or send cheque or money order to North American Native Plant Society, Box 84, Stn D, Toronto, ON M9A 4X1.

Telephone: (416) 631-4438.

E-mail: [info@nanps.org](mailto:info@nanps.org)

Web: [www.nanps.org](http://www.nanps.org).

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## Celebrating Our Volunteers

### Why volunteer?

Volunteering allows you to meet new people, learn new things, expand your horizons and channel your enthusiasm for nature into action! Ask NANPS volunteers why they do it and you'll likely get many more reasons.

My involvement with the North American Native Plant Society began when I went to the native plant sale for the first time. Over the years I "graduated" from customer to volunteer to plant sale committee member to plant sale coordinator. It has enriched my life. In addition to gaining native plant knowledge, I have learned about volunteer coordination, publicizing the sale, managing sales data and charity governance. Along the way I have met amazing people and had many interesting discussions. I am grateful to NANPS for these opportunities.

### What does NANPS do?

You likely know about some NANPS activities. They include publishing a quarterly newsletter, managing two conservation properties, organizing the speaker series, workshops and excursions, writing information sheets, staffing information booths, operating a seed exchange, planning the AGM and awards, and maintaining our website, Facebook, Twitter and Linked-In pages. We also have committees focussed on restoration and, of course, organizing the plant sale, our biggest event of the year.



PHOTOGRAPH BY JANET CARNEGIE

Long-serving volunteers Miriam Henriques and Bill Ford.

### What can I do?

All contributions are valuable. They include setting up refreshments at our events, unloading and organizing stock at plant sales, representing NANPS at community events, cleaning seeds, providing your photos for our website, designing flyers, networking, fundraising, writing articles, taking photographs or drawing cartoons or illustrations for *The Blazing Star* and managing our organization. You don't have to be an expert. With interest and dedication you can learn while participating.

### Where do I start?

We email out volunteer opportunities several times a year. To participate, please contact [volunteer@nanps.org](mailto:volunteer@nanps.org). In the upcoming year you can help at information tables at various events and at our plant sale in May. Our editor is always happy to receive ideas for newsletter articles. We are currently looking for someone to coordinate volunteers and to promote the use of our trailer which was purchased to support plant rescues and restoration efforts.

If you have a specific skill, talent or area of expertise, please tell us. We sometimes receive questions by email and it is helpful having resource people who can respond.

### Come join us!

Each year we honour a Volunteer of the Year at our annual general meetings. Past recipients are listed on our website. Maybe next year it will be your turn! But from my perspective, the biggest reward is the satisfaction of helping nature and being with others who also care about our natural world. Without volunteers, there would be no North American Native Plant Society. A big thank you to all my fellow volunteers!

*Alice Kong*

*NANPS plant sale coordinator*

## NANPS SPEAKERS' SERIES

### NATIVE PLANTS FOR MULTI-SEASON SHADE GARDENS

Wednesday, February 22, 2017

7 - 8:30 p.m.

TBG Studios

Toronto Botanical Garden, 777 Lawrence Avenue East, Toronto

Award-winning horticulturist Frank Kershaw will reveal the multi-season attributes of native shade garden plants and offer simple approaches to identifying, establishing and caring for them. A co-founder of the Canadian Wildflower Society (now the North American Native Plant Society), Frank has over 40 years experience in the parks, environment and gardening fields. He teaches garden design at George Brown College and previously taught at the University of Toronto's Landscape Architecture School.

Space is limited. Please reserve your spot by emailing [nanps@nanps.org](mailto:nanps@nanps.org). Pay at the door: NANPS members \$5, non-members \$10.

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### CONNECTING THE DIVERSITY DOTS: GARDENING WITH NATIVE PLANTS

Wednesday, April 12, 2017

7:30 p.m.

Toronto Botanical Garden

In this illustrated slide presentation, garden author **Lorraine Johnson** explores the beauty and benefits of native plants and the pleasures of low-maintenance gardens that attract birds, bees and butterflies. Lorraine's recently updated *100 Easy to Grow Native Plants* will be available for purchase and signing.

Doors open at 6:30 p.m. NANPS members and TBG members get in free, general public \$15, students (with ID) \$12.



PHOTOGRAPH © GREGOR G. BECK

A Baltimore Checkerspot butterfly feeds on the nectar of common elderberry (*Sambucus canadensis*).

## LETTER TO THE EDITOR

Dear Editor,

I have a couple of comments about the cover story in the fall 2016 issue of *The Blazing Star* about the ostrich fern (*Matteuccia struthiopteris*). I'd be cautious about including the genus *Pteridium* in a statement about edible fiddleheads. I've always heard that you should avoid eating bracken ferns. In the *Field Manual of Michigan Flora* (Voss & Reznick, 2012), the authors say about *Pteridium aquilinum*: "The fiddleheads of this species contain the carcinogenic terpene ptaquiloside and should not be eaten." Also, to my knowledge, cinnamon fern was re-classified into its own genus *Osmundastrum* in 2008. *The Michigan Flora* (<http://michiganflora.net/species.aspx?id=1874>) and FOIBIS, Flora Ontario Integrated Botanical Information System, (<http://www.uoguelph.ca/foibis/index.htm>) both use this classification, although I don't know if it has been accepted North America-wide.

David d'Entremont, Mississauga, Ontario

**Editor's Note:** There are differing opinions on the safety of eating bracken fiddleheads. Here's one article: <http://honest-food.net/bracken-fern-edible/>. For anyone who wishes to avoid the controversy altogether and eat only what is universally considered to be safe, you should feel secure buying fiddleheads at the grocery store since there is too much liability involved for food chains to get sloppy on their identification. If you're picking your own, please make sure of the identification before you pick. Check the internet or a reliable field guide before you go out searching for fiddleheads. Please pick no more than 10% of a given population of any native plant.

Irene Fedun

## NOMINATIONS OPEN FOR NANPS AWARDS

The NANPS Founders Conservation Award recognizes the extraordinary contribution of an individual or group to the conservation, protection or restoration of the natural heritage/flora of North America at the community, regional, provincial, state, national or continental level. Deadline for submissions is July 31, 2017.

NANPS Garden Award recognizes and celebrates the amazing gardens that support diverse habitat and shared accommodations for our native flora and fauna. Deadline for submissions is September 1, 2017.

The Richard Woolger Cultivation Award celebrates growers who demonstrate a passion and commitment to the propagation of native plants. Deadline for submissions is September 1, 2017.

The NANPS Volunteer Award is given to a volunteer who makes an outstanding contribution to the fulfilment of NANPS goals.

Visit [nanps.org](http://nanps.org) for more information.

# Don't Just Smell the Roses ...

by *Patricia Baldwin*

Has anyone ever asked why you love plants? Were you hard-pressed to find an answer? Do you find it difficult to put into words the joy and wonder that botanical nature elicits in you? Do you believe that being out in nature affects your health in a positive way?

Most of us find the answers to these questions elusive but scientists have been studying this fascinating subject for decades. They are trying to clarify exactly what it is that makes us love nature and how nature is beneficial to our health.

Studies such as those done by psychologists Rachel and Stephen Kaplan indicate that being in nature gives our over-worked brains time to restore themselves. In the pre-industrial world, the majority of people were employed in activities, both for work and leisure, that were tied in with the natural environment. Compare foraging in the forest to grocery shopping at a big box store, for example. Each experience is quite different to our brains. Looking for ripe fruit or berries outdoors uses the primitive parts of the brain and requires less conscious thought than reading grocery store labels. It is an activity that many people now do for pleasure and relaxation. When shopping, we use the pre-frontal cortex to read and decipher language, pricing, nutrient information and cooking instructions. Advertisers post colourful packaging to attract our attention and the steady stream of visual stimuli can be stressful. A great deal of conscious thought is involved in interpreting the information. Our heavy use of the pre-frontal cortex without time to rest causes us to become less and less efficient. Mental health can decline due to overuse of this part of our brain. We need to rebalance by using the primitive brain which is associated with rest and relaxation and is more engaged by forest smells and colourful foods. In other words, we need to recharge our

brain's batteries for it to become productive again.

Nature doesn't just contribute to our mental health; there are many physical benefits to be gained from the forest environment. Dr. Qing Li in Japan has discovered that spending time in forests increases a serum protein hormone known as adiponectin produced by adipose

tissue in our bodies. Adiponectin helps regulate our blood sugar levels and body weight. In urban environments, human populations are experiencing an increase in blood pressure problems and metabolic syndrome. People with Type 2 diabetes or high blood pressure can benefit from a walk in a forested area.

In recent studies, Dr. Li and other



PHOTOGRAPH BY PATRICIA BALDWIN

*Redwood old-growth forest in Muir Wood National Monument in the San Francisco Bay area*

scientists have discovered complex relationships between human endocrine and immune systems and the biogenic volatile organic compounds (BVOCs) released by trees. Dr. Li has found that tree BVOCs, also known as phytoncides, can bring about blood pressure reductions in humans that rival the effects of blood pressure medication. Trees are particularly significant producers of BVOCs due to their long life and large size. The resins in older trees build up within the heartwood providing a high concentration of phytoncides, especially in old-growth trees. Grasses and other plants do not rely as heavily on chemical defences such as those employed by trees because they have defence mechanisms like sharp leaves or the ability to regrow quickly. They still produce BVOCs, but in smaller quantities. When we are outside, we breathe these gaseous chemicals straight into our lungs. Theoretically, they can then pass the blood-brain barrier and enter directly into the bloodstream if the molecule size is small enough. Thus, it's possible for phytoncides to affect our bodies in the way drugs do. It is not surprising that some medical practitioners are now prescribing a walk in the woods in place of a drug.

Japan has set aside 24 forests for use as health facilities where residents can practise a preventative health care practice known as Shinrin Yoku. This term translates to “forest bathing.” The forests were selected because of the presence of trees known to produce certain chemicals. Dr. Li notes that phytoncides provide 50% of the human health benefits for Shinrin Yoku, but there are other factors working in combination with BVOC's to enhance human health such as negative ions near bodies of water (a stream or a pond.) Negative ions have been linked to good health and longevity in humans. If you've ever tried aromatherapy, you've used volatile organic compounds (VOCs) to

obtain specific health benefits. Shinrin Yoku has been described as aromatherapy in the forest.

You may have heard about VOCs with respect to pollution. These pollutants are usually man-made volatile organic compounds created during industrial processes. VOCs and BVOCs can both contribute to the formation of smog. Despite that, a study in Houston, Texas, where smog is a serious problem, has postulated



that the large-scale planting of native trees along the city's outskirts would result in an overall reduction in smog. The study authors suggest replacing 400 hectares (1,000 acres) of grasslands with tree species such as American elm (*Ulmus americana*), cedar elm (*Ulmus cassifolia*), green ash (*Fraxinus pennsylvanica*) and sugarberry (*Celtis laevigata*).

Humans rely on the circulation of blood to bring chemicals to various parts of our bodies. Plants are different in that plant cells have chemical sensors (like those in human noses) throughout their leaves, stems and roots. Different chemicals transmit different signals to the plant. These could be scents to encourage pollinators to approach the plant or to warn other parts of the plant – or even neighbouring plants – that insects have begun snacking. The plant might respond with the production of a

nasty-tasting or even poisonous chemical to discourage the insects. A common VOC, methyl jasmonate, is released by a number of plants to signal stress, warning the rest of the plant to take preventative measures for survival. Stressors could take the form of bacteria, fungi or insects (which also produce BVOCs, just to complicate matters.) The presence of any of these could trigger a chemical response from the tree. However, most of the reasons that plants produce chemical signals are still unknown. We are only beginning to grasp their significance.

In Japan, the cypress tree (*Chamaecyparis obtusa*) and a cedar (*Cyptomeria* sp.), both native to the country, have been studied and found to be especially beneficial due to the release of compounds such as alpha-pinene and limonene.

A northern Quebec study measured the levels of alpha-pinene and limonene in balsam fir (*Abies balsamea*), black spruce (*Picea mariana*), white spruce (*Picea glauca*), tamarack (*Larix laricina*), jack pine (*Pinus banksiana*), white cedar (*Thuja occidentalis*) and Labrador tea (*Rhododendron groenlandicum*). The study looked at the antimicrobial properties of the trees' essential oils (which produce the BVOCs.) Many North American First Nations used balsam fir in traditional medicines. Some tribes apparently used them for bedding as well. All the tree species in this study had strong ethnobotanical histories.

Plants, like people, need to maintain homeostasis (the tendency of the body to seek equilibrium within its internal environment) for optimal health. Alternative evolutionary adaptations to body temperature homeostasis are evident when we compare warm-blooded animals, like humans, with cold-blooded animals such as amphibians and reptiles. Humans regulate body temperature with internal body adaptations, including

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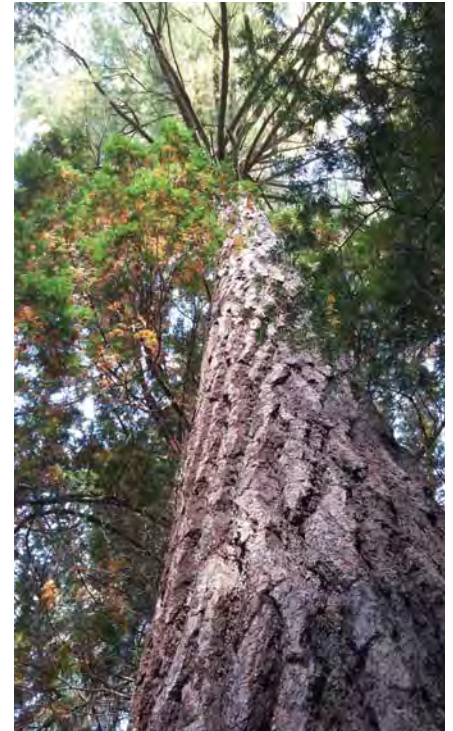
perspiring when hot or shivering when cold. Alternatively, cold-blooded animals use the outside environmental temperature to provide heating and can internally adjust to extremes of temperature in ways humans cannot. Trees adjust to temperature extremes by shutting down photosynthesis and growth in the winter. Deciduous trees will drop their leaves. Evergreens drastically reduce photosynthesis although it still occurs through the needles, which have considerably less surface area than the leaves of a deciduous tree. Phytoncide production also varies with climatic factors such as temperature and light.

Trees emit their phytoncides into the air to affect their surrounding environment. Dr. Qing Li has found that, in the appropriate forest environment, some trees are producing BVOCs in sufficient quantities to provide benefits to humans when they come within close proximity. A dense forest will provide greater health benefits than a city park with large expanses of grass.

Worldwide, scientists are looking at this plant-human relationship. The issue is becoming especially important as more humans move away from rural areas and into flora-impooverished urban environments. The Japanese have developed health care guidelines for boosting immunity.

Dr. Li says that walking a minimum of two hours over 2.5 kilometres (1.5 miles) will boost both physical and mental health. If you have a full day available, then walk five kilometres (three miles) over four hours. If you wish to produce natural killer cells which fight cancerous tumours, he recommends taking a three-day trip into the forest and spending two nights in that forest therapy setting. In other words, like a turtle seeking a warm log in a pond to warm its body and maintain homeostasis, urbanites need exposure to the natural world in order to stay healthy.

The Japanese prescription for preventive health looks a lot like what Canadian conservationist Monte Hummel described in his book *Wintergreen: Reflections from Loon Lake*. Hummel was talking about his small cabin set in the forest around a small lake on the Canadian Shield: “For years now, my habit (and firm resolve) has been to be in my cabin for a few days every month... More than anything else, this place has been an enduring sanctuary for me from a very demanding work schedule, and a spiritual wellspring... My great regret after thirty years of full-time involvement in the Canadian and world conservation movement is that I have not taken more time to experience what we have all worked so



PHOTOGRAPH BY PATRICIA BALDWIN

*White Bear Conservation Reserve old-growth forest in Temagami, Ontario*

hard to protect. Because without dipping back into our source regularly, any of us can lose our way.”

*Pat Baldwin trained as a forester but worked in the health care industry for many years. She is now involved in research at the Faculty of Forestry, University of Toronto, in a field that marries the two disciplines.*

## Native Edibles from Your Garden

by Lorraine Johnson

In the native plant movement, we often try to interest people in adding native plants to gardens for a by-now-familiar list of environmental benefits: enhancing biodiversity, creating habitat for wildlife, reducing water use, eliminating pesticides. We also talk about the attractiveness of native plants, appealing to the aesthetic impulse of gardeners to create landscapes of beauty.

I think that for a long time, however, we've missed a key element—and it's one that has deep resonance for people. Let's start promoting the edibility and deliciousness of many native plants, and the ways in which gardens full of native plants can provide food not only for pollinators and birds, but for humans, too. If we start focusing on edible native plants, I think we will extend the reach of our message and gain a whole new audience of



PHOTOGRAPH BY LINDA READ

*Redbud pods*

gardeners, along with the growing numbers of people who are interested in foraging. (A related bonus is that by promoting the planting of edible natives, we will be gently redirecting foragers away from natural areas that can't sustain plant harvesting.)

The following is a list of some readily available native plants for northeastern gardeners that are easy to grow—and delicious to eat.

## Trees and Shrubs

**Pawpaw (*Asimina triloba*):** An ideal urban tree, pawpaw is about six metres high (20 feet), tolerant of a wide range of conditions, flowers prolifically (with maroon blooms in spring) and produces the largest edible fruit of any tree native to Canada. The fruit looks like a small mango and tastes like a cross of banana and pineapple. Pawpaws should be planted where they are protected from wind; plant three trees to ensure fruit set.

**Wild plum (*Prunus americana*):** This small tree (a bit taller than pawpaw) produces attractive whitish pink flowers in spring and plums in early autumn. A fast grower, wild plum also suckers and spreads. Not only does this tree provide food for humans, but it's a host for the larvae of the cecropia



PHOTOGRAPH BY DAN BISSONNETTE

*Smooth serviceberry (Amelanchier laevis)* is closely related to the *A. arborea* mentioned in the article. The fruits are sweet and juicy and comparable to blueberries.

moth and coral hairstreak butterfly.

**Serviceberry (*Amelanchier arborea*):** This tree is perfect for urban conditions in sun or shade. It grows 4.5 to 7.5 metres (15 to 25 feet) and produces a mass of white flowers in spring, followed by prolific berries in early summer and beautiful fall colour. The fruit tastes like a combination of

blueberries and almonds, and can be enjoyed in many different ways: eaten raw, cooked into pies and jams or dried.

**Redbud (*Cercis canadensis*):** Both the flowers—some of the earliest to appear in spring and covering the branches with bright pink colour—and the dangling pods of

this small tree that's up to nine metres tall (30 feet) are edible. The flowers are great in salads and the pods can be cooked in a stir-fry. Does well in sun or shade, is leguminous and its early flowers are important for pollinators.

**Nannyberry (*Viburnum lentago*):** This tall shrub/small tree (up to nine metres) flowers in late spring and produces bluish black fruit in late summer, which can be eaten raw. (Note that the fruit has a large seed.) Easy to grow and versatile, nannyberry can be grown in sun or shade.

**Shagbark hickory (*Carya ovata*):** A massive, 30 metre (100 foot), slow-growing but long-lived tree, shagbark hickory (yes, with shaggy, peeling bark) has two things going for it in the edibility department: its nuts (with thick outer husks and slightly bitter nut meat inside) and its sap, which can be boiled into a syrup, like the sap of sugar maples. Grow it in sun or part shade and plant it where you won't have to move it, since its taproot makes transplanting difficult.

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PHOTOGRAPH BY DAN BISSONNETTE

*Pawpaw fruit*

**Staghorn sumac** (*Rhus typhina*): This enchantingly architectural shrub spreads well in sunny spots, and the fruit—borne on perky-looking cones—can be boiled in water, then cooled, for a delicious lemonade-type drink.

**Chokeberry** (*Aronia melanocarpa*): This large shrub/small tree is highly versatile, growing in a wide range of conditions and creating thickets by suckering prolifically. Its spring flowers are followed by abundant blueberry-sized fruit in early fall that are too astringent to eat raw but are best when processed into juice or jam. This species has good autumn foliage.

**Spicebush** (*Lindera benzoin*): The sweetly scented, yellow flowers of this small, three-metre-high (10 foot) shrub appear before leaves in spring. The fruit, a reddish berry that develops in summer, can be dried and used as a



PHOTOGRAPH BY JANE ZEDNIK

substitute for allspice. The leaves, twigs, and bark can be made into a tea. Grows in sun or shade. A host plant for spicebush swallowtail larvae.

## Perennials

**Nodding wild onion** (*Allium cernuum*): All parts of this native onion are edible, with a strong

*Allium cernuum*



PHOTOGRAPH BY DAN BISSONNETTE

*Wild bergamot*

and pungent flavour. Growing to roughly one-third of a metre (one foot), nodding wild onion does best in sun but will tolerate open shade, producing white to pink and purplish flowers in summer.

**Ostrich fern** (*Matteuccia struthiopteris*): Few things announce spring more than fresh fiddlehead ferns—the edible (when cooked), closed up fronds of this attractive fern. Grows in sun and shade, in regular to moist soil, and spreads well, creating large colonies.

**Mayapple** (*Podophyllum peltatum*): Spreading to create dense colonies, this shade-tolerant groundcover, which grows to roughly half a metre (1 1/2 feet), flowers in spring and then produces a single small round fruit that can be made into jelly. Mayapple's umbrella-shaped leaves are especially attractive.

**Virginia waterleaf** (*Hydrophyllum virginianum*): This very aggressive, moisture-loving woodlander grows to half a metre (two feet) and has small purplish flowers in spring. The young stems can be cut, cooked and eaten

like asparagus.

**Wild bergamot** (*Monarda fistulosa*): A favourite of bees and butterflies for its nectar, wild bergamot is a sun-loving, meadow plant (growing to hip height) that flowers for weeks in the summer, producing lavender blooms that look a bit like jesters' hats. The leaves of *Monarda fistulosa* have an Earl Grey tea scent and can be made into a lovely hot drink.

**Wild ginger** (*Asarum canadensis*): The rhizomes of this shade-loving, low-growing groundcover do indeed taste like ginger and can be used in many different ways (e.g., candied, finely chopped and added to peas). Spreading well, wild ginger needs humus-rich soil, medium to moist conditions.

Lorraine Johnson, a past president of NANPS, has written a number of books about native plant gardening; a new, revised edition of her classic 100 Easy-to-Grow Native Plants for Canadian Gardens is coming out this spring from Douglas & McIntyre Books.



# Botanical Forays into Eastern Virginia

by Stephen R. Johnson

Virginia, my home state on the mid-Atlantic coast, occurs at a latitude where flora of the southern United States meets and intermingles with flora from the northern states. Perhaps the most interesting and familiar region to me is the eastern part of the state. I had the privilege of exploring just a fraction of the botanical treasures of this broad area in various professional capacities from the mid-1980s to the early 1990s.

One of the first of these forays was to a fascinating isolated sphagnum bog in Caroline County northeast of Richmond. My college botany professor, Dr. Miles Johnson, led the exploration. We saw the staple of the southern U.S. pulp and paper industry, loblolly pine (*Pinus taeda*), growing in standing water, towering over masses of purple pitcher plants (*Sarracenia purpurea*). I had thought of loblolly pine as an upland tree until then. Interspersed among the prolific pitchers and, glowing like jewels, were tiny round-leaved sundews (*Drosera rotundifolia*). I did not see Pine Barrens gentian (*Gentiana autumnalis*), a beautiful and – thankfully – fairly common gentian species; it was too early in the season. However, almost three decades later, I found this species at a native plant nursery. The owner had collected the seeds from plants growing in a Caroline County bog.

In spring 1987, an invitation came from Robert Wright, then head of the Virginia Native Plant Search Consortium. Wright was conducting a botanical survey of New Kent County, several miles east of Richmond, searching for populations of the state and federally endangered small whorled pogonia orchid (*Isotria medeoloides*). We walked through many clearings, occasional bucolic pastoral scenes and forest edges beneath countless tulip trees (*Liriodendron tulipifera*) and other typical Carolinian species such as red

maples (*Acer rubra*), northern red oaks (*Quercus rubra*) and white oaks (*Q. alba*). We also saw the occasional southern red oaks (*Q. falcata*) but found not a single pogonia. Instead we enjoyed seeing large twayblade orchids (*Liparis lilifolia*) and a gorgeous example of crossvine (*Bignonia capreolata*), all in flower. The crossvine straddled two dead trees and bore its yellow and plum-coloured flowers along its entire length. The upper flowers were particularly striking framed against the blue sky. It's good that we made our trip to New Kent County when we did because, sadly, within five years the county was consumed by suburban sprawl.

During the late 1980s and early '90s, I was a field technician for three wetland mapping contractors. This job gave me the opportunity to visit several of what I call ghost natural areas in Spotsylvania County just west of Fredericksburg. I term them "ghosts" because each was marked for imminent annihilation and quick conversion into a wealthy gated development. One of my first trips as a technician was to a moist glade west of Fredericksburg. At the forest edge I remember a beautiful fringe tree (*Chionanthus virginicus*) in full flower. In the morning sun it fluoresced; with the slightest breeze it shimmered. Nearby grew a single wild azalea (*Rhododendron periclymenoides*) with its pink and white flowers and a style

that sticks out like a tongue.

I was sampling for the presence of wetland soils, typically pale gray clay originating from anoxic conditions, at another site west of Fredericksburg when I spotted a small orchid with one, sometimes two, glossy bright green leaves, known as green adder's



DRAWING BY STEPHEN JOHNSON

While searching for small whorled orchids with the Virginia Plant Search Consortium, Stephen found many large twayblade orchids.

mouth (*Malaxis uniflora*). I also found a line of American chestnut (*Castanea americana*) stumps each with a crown of root suckers. Growing in sporadic clumps between the blighted chestnut trees were a dozen or more of the uncommon large whorled pogonia orchids (*Isotria verticillata*), congeners of the small whorled pogonias we were searching for on the previously mentioned excursion.

Spotsylvania County was the site of many American Civil War battles. I noticed while probing and assessing soil colours for wetland characteristics that the landscape had a bed of gravel

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just below the soil surface, except in one place. At a strange erect pile of earth, the stone layer had mysteriously disappeared. I believe this was a civil war breastwork, a breast-high defensive structure possibly constructed in 1863 at the Battle of Chancellorsville or in 1864 at the Battle of the Wilderness. Both battles occurred west of Fredericksburg. This particular site was somewhat hidden and surrounded by broad arching American holly (*Ilex opaca* var. *opaca*).

On my last visit to a Spotsylvania wetland, I was alone in a thicket of red maples. Near the wetland edge, I saw an amber spring peeper sleeping on a leaf at eye level. Among the green and straw-coloured blades of wetland grasses I spied the unmistakable green globular inflorescences of American bur-reed (*Sparganium americanum*) shining in the sun. Its spherical floral structures stood out in sharp contrast to the linear and angular leaves of the attendant grasses and graminoids.

On a graduate school class trip in plant ecology, my plant ecophysiology professor Don Young and I went to the easternmost point of mainland Virginia to First Landing State Park. This natural area is located within the city limits of Virginia Beach just south of historic old Cape Henry Lighthouse. Here loblolly pines grow in both dry sand and black water muck. More interesting were the few large live oaks (*Quercus virginiana*) and the less frequent, co-dominant, dry dune oak pair: blackjack oak (*Q. marilandica*) and blue jack oak (*Q. incana*). Live oak ranges from here to northeastern Mexico, while blue and blackjack oaks share co-dominance in old, nutrient-poor sand hills throughout the southeastern U.S. All three oak species were festooned with

Spanish moss (*Tillandsia usneoides*) while adjacent loblolly pine was not. Some researchers suggest that the pine tree sheds bark at such a fast rate the seeds of Spanish moss can't establish. Oaks don't shed bark that quickly so Spanish moss can establish – not necessarily to the advantage of the oaks. Spanish moss may eventually cause enough drag in windstorms to break tree limbs and dry Spanish moss can spread ground fires into the crown of a tree.

Perhaps the most intriguing plant search was with Chris Ludwig, then botanist for the Virginia Natural Heritage Program. Ludwig was searching for the state-rare species known as long-leaf lobelia (*Lobelia elongata*). We travelled to remote North Landing River in southeast Virginia and took a small boat

into one of the most botanically surreal areas I'd ever seen. The water was acidic and tea-coloured but you only glimpsed it when you disturbed the carpet of duckweed (*Lemna* sp.) obscuring it. Our boat traversed a narrow channel margined by thickets of towering cordgrass columns (*Spartina cynosuroides*). In the near distance was a dark forest and I could make out the round floral heads of buttonbush (*Cephalanthus occidentalis*) and an almost-continuous canopy of bald cypress (*Taxodium distichum*). Erupting from the duckweed carpet were cypress knees three to five feet (one to one and a half metres) tall. A cypress knee is a woody projection that sprouts above the water level, growing vertically from the root of the tree, generally in swamps. As the knees age, the tops may become chipped, craggy and collect dead leaf litter and other organic matter. It was in just such a matter-filled knee top that we found our sought-for lobelia with its spike of velvety violet flowers.



North Landing lobelia

DRAWING BY STEPHEN JOHNSON



Pickerel weed

PHOTOGRAPH BY STEPHEN JOHNSON

Later we met the assistant director of the Natural Heritage Program to search the same system of tidal creeks for waste discarded from pleasure boats. The assistant director and I were startled by a strange guttural cry from Ludwig. We glanced sharply at him and found him pointing towards the bow of the boat, incapable of speech. A beautiful cottonmouth snake, maybe eight feet long (over two metres), was serenely undulating across the stream in front of our boat.

One of my favourite places in eastern Virginia is the paved, automobile-accessible loop trail at Jamestown Island National Park. In the summer you will likely see spiky blue-flowered pickerel weed (*Pontederia cordata*) and arrow arum (*Peltandra virginica*) growing in the swamp in front of the visitor centre. Helen Roundtree, author and expert on eastern Virginia Native Americans, says the vegetation growing there

today is much like what was there when the first English explorers arrived in 1607. On this trail I like to get out of the car and view the James River from a line of loblolly pines that grade steadily down into the river. In the middle of this loop trail is a freshwater swale that is generally shaded at midday but probably sunlit at other times of the day. In the spring of 1990, while approaching the marsh, I saw an orange dot hovering above the wooden roadside railing. As I drove closer, the dot resolved into the tight cluster inflorescence of a fewflower milkweed (*Asclepias lanceolata*). As I turned to get my camera in the passenger seat, my eyes locked onto the eyes of a great blue heron

standing stock still very close by. We were both startled but the lanky bird remained unmoved. Rather than further disturb the heron, which had fishing and frogging rights to the swale whereas I was just an interloper, I slowly pulled away from the milkweed, saving it for another foray.

*Stephen Johnson no longer lives in Virginia but he still considers himself a Virginian and grows many Virginia plants in his Iowa front and back yards as a reminder of those halcyon forays so many years ago.*

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# Strategies for Plant Profiling

by Peter Kaellgren

Finding orchids in the wild can be a challenge. Most books on Canadian orchids are illustrated with photographs of the blossoms only. These beautiful, carefully chosen and photoshopped images feed the "orchid bug." My partner John Alexander and I caught the bug when we visited the Purdon Nature Reserve near Perth, Ontario. Around mid-June, the bog at Purdon is filled with an estimated 15,000 pink and white showy lady's slippers (*Cypripedium reginae*). The profusion of bloom and the beauty of the bog made a deep impression on us.

It's important to realize that the photos of orchids you see in books are not like the mug shots taken of convicted criminals who look more or less like their image 365 days of the year. Some plants, especially orchids,

only bloom one day of the year. Most of the books suggest blooming times but these can be unpredictable and even mature native orchids do not bloom every year. Trying to find a plant using only images of the blossoms usually leads to frustration and disappointment. To locate and identify the plant requires more evidence. Once the amateur naturalist has gathered this evidence, he or she might be able to see and photograph the orchid in prime blooming condition.

John and I have always been interested in nature. Originally, we focused much of our energy on observing and counting birds during spring migration in Southern Ontario where we live. John, who has been doing photography professionally since his teens, would record what we saw. We had always been interested in wildflowers as well. Six years ago,

friends living in Arnprior, Ontario, near the Ottawa River, showed us yellow lady's slippers (*Cypripedium calceolus*) at their cottage, and suggested that we check out the Purdon reserve. The rest is botanical history.

Over 70 varieties of orchids have been documented as growing in Canada. All are terrestrial, that is to say they grow in the ground as opposed to many tropical orchids that are epiphytic, meaning they live in tree branches, or lithophytic, meaning they live

in the cracks of rocks. Most reproduce with difficulty. In many cases, the flowers are not pollinated. A pollinated blossom may produce a capsule with millions of microscopic spores, but the spores still have to combine with a specific fungus and end up in exactly the right growing conditions (soil, moisture, sunshine, space) so that the fungus can gather nourishment for both parties. It can take 7 to 17 years for a plant to appear and it may bloom only when its health and the conditions are right. In our search for orchids, John and I have developed a new appreciation for the necessity of studying and preserving fragile ecosystems and keeping development and invasive species under control. That includes not walking too close to the orchids! The body weight of humans can compact the surrounding soil and make the chemical balance inhospitable for the fungus, resulting in the death of the orchid.

The showy orchis (*Galearis spectabilis*) is among the first to bloom in mature Canadian woods. Its rounded, glossy green leaves, sometimes with indented vertical veins, rise a few inches from the leafy forest floor and surround its stalk. The stalk has small snapdragon-shaped, pale pink and white blossoms. Most of the photographs we've seen show one to three plants, each with a single stalk of flowers.

For years, John and I had been dying to see and photograph a showy orchis. In 2014, a potter from Chatham sent us photographs of a single plant that she had found along one of the trails at Rondeau Provincial Park. She provided us with detailed information on the location. The ecosystem or "plant profile" for the location corresponds to what is described in the books as ideal for showy orchis: a mature hardwood forest with accumulated leaf litter. Companion plants such as maidenhair fern (*Adiantum pedatum*) and white trilliums (*Trillium grandiflorum*) grow



PHOTOGRAPH BY JOHN ALEXANDER

Leaves and blossom stem of the showy orchis as discovered on the Bruce Peninsula in August 2015.

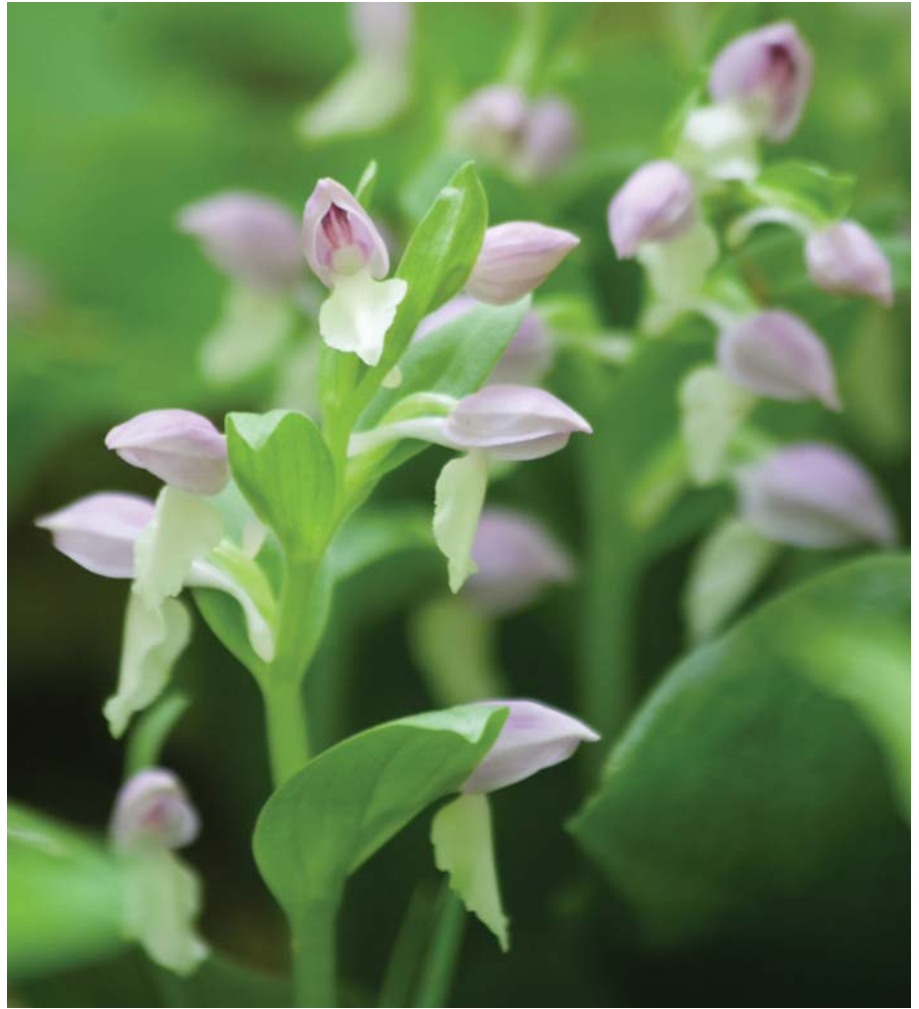
in patches along the trails. We scoured the trail but were unsuccessful in locating the small plant.

Since 2013, we have done most of our orchid hunting in Bruce and Grey Counties, for several reasons. Over 40 of the orchids found in Canada have been documented growing there. The Owen Sound Field Naturalists published an excellent book, *A Guide to the Orchids of Bruce and Grey Counties*. Most important of all, the town of Tobermory at the tip of the Bruce Peninsula and Fathom Five Marine Park host an annual orchid festival early in June. This festival is the ultimate fix for any orchid lover.

In August 2015, we were hiking a conservation area in Grey County when we came upon mature hardwoods with a carpet of decaying leaves on the forest floor. I was excited to see hart's tongue fern (*Asplenium scolopendrium*), a rare plant in Canada. Then we began to notice clumps of maidenhairs and some of the healthiest white trilliums I have ever observed complete with red berry seed pods. On a roadside bank, we spotted a large group of rounded, glossy green leaves with indented vertical veins and stems with the dried-out remains of blossoms. It looked like showy orchis. The plant profile was ideal. Anxious to verify our discovery, John photographed the plant and sent photos to naturalist friends with orchid experience. They confirmed that we had finally found the showy orchis.

Now the waiting began to document the plant in bloom. The following year, we drove up on May 12 and found that the leaves had come up but the stems were only beginning to rise. We waited until the Victoria Day Weekend. There was some colour on the buds, but no blossoms yet.

On both these visits, while John photographed, I tiptoed around the area hoping to discover other showy orchis plants. Where there's one, often there are others lurking. This inspection proved challenging. Not



PHOTOGRAPH BY JOHN ALEXANDER

*The same clump of showy orchis in bloom as photographed on May 27, 2016.*

only was I trying not to step too heavily on the soil, but also I encountered the similar-looking green leaves of large numbers of wild leeks (*Allium tricoccum*) and trout lilies (*Erythronium americanum*).

On May 27, our efforts were finally rewarded – and richly. Most of the blossoms were open and fresh. There were 16 spires of blooms on that single clump, more than we have seen on internet photos, in talks or illustrated in books. The spring weather had been warm, even hot, and by this time, the leaves of the wild leeks and trout lilies were beginning to yellow and wither. This reduced the amount of confusing vegetation and allowed me to discover two smaller clumps of showy orchis growing a few

metres away from the first one. In the end, we counted only three clumps. Like many of Canada's native orchids, the showy orchis is rare and difficult to find.

To profile native orchids, naturalists need to become familiar with the plants' preferred ecosystems, companion plants and trees. Learn to recognize the orchid's leaves, seed pods and immature or younger forms. These last longer and you are more likely to see them than the blossoms. Once you have located and confirmed the identity of the orchid, you stand a far better chance of finding it again in bloom. *Native Orchids of Nova Scotia* and *Orchids of the North Woods* are exceptional in reproducing helpful

Continued on page 14

photos of ecosystems and development stages.

John and I are amateurs when it comes to orchids, but our experiences have taught us a few things. First, if you find one native orchid in an ecosystem, there are likely to be others. (Note: this does not apply to helleborines [*Epipactis helleborine*], a European orchid that will grow anywhere.) This has proven true in our trips searching for orchids in Bruce Peninsula nature reserves. Many of the orchids are small, 50 millimetres (two inches) or less. In 2014, we discovered tiny, yellowish green Loesel's twayblade orchids (*Liparis loeselli*) growing along the boardwalk at Oliphant Fen. We then found one or two at Petrel Point and a single one at Singing Sands in an area currently covered by the rising waters of Lake Huron. According to the naturalists at Fathom Five Park, Loesel's twayblade had never been documented at the last two locations. In 2015, all of a sudden there were two dozen or more Loesel's twayblades growing on the boggy islands of pitcher plants (*Sarracenia purpurea*) and other species in the south section of Petrel Point. This year we saw hardly any. Since native orchids in Canada do not come up or bloom every year, you need to keep checking. You may get lucky.

Secondly, many of the native orchids that grow in Canada are white or occasionally produce albino forms. Although there are many white wildflowers which can add to the visual confusion when looking for native orchids, in our experience white orchids in Canada are almost incandescent. The white stands out because it seems to glow from within. We found this quality helpful in locating the lady's tresses (*Spiranthes* spp.), fringed white orchids (*Habenaria blephariglottis*), prairie fringed orchids (*H. leucophaea*) and bog candles (*Platanthera dilatata*) as well as albino forms of rose pogonia (*Pogonia ophioglossoides*) and grass

pinks (*Sabatia angularis*). The incandescent quality of the white may be the result of cell structure in the orchid blossom and how it reflects the light. Precise scientific research needs to be done to better explain this effect.

May your careful and well-researched searches prove as enjoyable and rewarding as ours.

*Peter Kaellgren is a retired curator of decorative arts who spent his career at the Royal Ontario Museum, Toronto. By assisting John Alexander with his photography, he is reviving his childhood interest in nature and focusing on Canadian wildflowers and orchids.*



PHOTOGRAPH BY JOHN ALEXANDER

Loesel's tway blade discovered in a clump of pitcher plant at Petrel Point Bog in July 2014. The plant is five centimetres (two inches) tall.



CARTOON BY ADAM MOHAMED

## Calendar of Events

MARCH 18, 2017

Be “The Educated Naturalist”

Kimball Township, Michigan

Master Gardeners of St. Clair County present Rick Darke and Douglas Tallamy, authors of *The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden*, Mark Weathington of JC Raulston Arboretum and Larry Cornelis of the Return the Landscape program at the Landmark Academy. To register, phone (810) 367-3399 or e-mail: sanderan51@yahoo.com.

JUNE 7-10, 2017

Native Plants In The Landscape Conference

Millersville, Pennsylvania

For more information: [bhwp.org/education](http://bhwp.org/education).

JULY 19-22, 2017

Cullowhee Native Plant Conference 2017

Cullowhee, North Carolina

Hosted by North Carolina Native Plant Society

Visit [ncwildflower.org](http://ncwildflower.org) for details.

SEPTEMBER 29-OCTOBER 1, 2017

Tri-State Native Plant Conference 2017:

Nature Knows No Boundaries

Shepherdstown, West Virginia

The native plant societies of Virginia, Maryland and West Virginia are hosting this conference. Visit [mdflora.org/event](http://mdflora.org/event) to register.

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Continued from page 1 – **Spotted Wintergreen**

by various combinations of oak (*Quercus* spp.) and pine (*Pinus* spp.) on well-drained, sandy soils. These sites exhibit moderate to high acidity, especially in the humus-rich surface layers where most of the fibrous root system occurs. The species can tolerate considerable shade, sometimes growing under closed pine canopies, but it also thrives in more open oak-pine woodlands. It is rarely found growing where dense shrubbery or other understorey plants could crowd it out, preferring more open understorey conditions.

Spotted wintergreen is listed as endangered in Canada by both federal and provincial authorities, with all extant populations located in southern Ontario. One population previously recorded from southwestern Quebec is now considered to be extirpated. In the United States, spotted wintergreen is designated as endangered in Illinois and Maine and is listed as exploitably vulnerable in New York. The attractive foliage can make it a tempting target for native plant enthusiasts who try to transplant it into their gardens, but due to its dependence on a mycorrhizal relationship and the delicate nature of the roots, most transplants fail.

Habitat disturbance is likely a cause of population declines or loss, as is

often the case for slow-growing forest understorey species with low reproductive potential. An ongoing monitoring program by a local conservation group in southern Ontario suggests that herbivore browse may negatively impact the species. In this instance, a small population that was being monitored experienced a sudden and significant decline over one winter. Much of that winter was characterized by an extended period of intense cold with little snow cover, especially beneath the dense, overhead pine canopy. Observers noted that there were numerous white-tailed deer, eastern cottontail and wild turkey tracks in and around the spotted wintergreen patch. Other nearby evergreen plants, such as ferns (*Dryopteris* spp.) and various conifer seedlings, exhibited very heavy browse, and it is believed that winter browse of spotted evergreen was a factor in the sudden decline of this patch. To investigate the impact of the browsing, the group constructed a small fenced enclosure around the patch before the next winter and installed a trail camera. Happily, the barrier proved effective, excluding rabbits, deer and most wild turkeys. (The enclosure was open at the top and turkeys have entered on rare occasions from above.) Within two years, the vigour of the patch and size

of the stems began to improve significantly. By comparison, surrounding vegetation outside the enclosure has continued to show winter browse. While this was not a formal experimental design, this preliminary action suggests that heavy herbivore pressures in winter when plants are exposed may cause reductions in local patches of spotted wintergreen and other vulnerable species.

Traditional uses of this species are varied and include medicinal purposes such as treating colds and fevers. Leaves have been used for making tea but should not be confused with the better known wintergreen (*Gaultheria procumbens*).

The avid field botanist will be cheered to come upon spotted wintergreen, especially in colder weather when many other forest understorey plants have gone dormant. If we keep an eye out in ideal habitats, perhaps more populations of this secretive little plant will be discovered.

*Kevin Kavanagh is the owner of South Coast Gardens, a small specialty nursery and landscaping business in Norfolk County, Ontario. He is involved in several monitoring initiatives for endangered plant species in the heart of Carolinian Canada.*



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