



A PUBLICATION OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

Native Plant to Know

Black Walnut

Juglans nigra

by Don Scallen

Whenever I happen upon the large green fruit of black walnuts (*Juglans nigra*), I pick one up and inhale its rich odour. Some describe the smell as citrusy – perhaps, but the scent really has no analogue. A hint of citrus, yes, but other undefinable elements, too. Regardless, it transports me back to my childhood, when I picked up all sorts of fallen nuts. I loved these compact parcels of possibility and, truth be told, I still do. I marvel that they contain the genetic information to grow giants – giants in stature, but also giants of ecological function.

Black walnuts are majestic in maturity. They can attain prodigious dimensions on fertile soils. The largest black walnut, according to Wikipedia, grows in Oregon, far west of its natural range. With a diameter of 2.62 metres (eight feet, seven inches), a height of 34 metres (112 feet) and a spread of 44 metres (144 feet), it is a monumental organism – worth a look on the Wikipedia page.

The branching structure of walnuts is usually visible even when the trees are in full leaf, because the lovely, filigreed foliage often doesn't create a totally closed canopy as it might on a maple or oak. This highlights the sturdy limbs and creates a lovely open effect.

Black walnuts grow naturally over much of the eastern United States and the Midwest. In Canada walnuts grow throughout southwestern Ontario, including my community of Georgetown, north of Lake Ontario. Georgetown is at the northern periphery of the black walnut's native range. Despite this, black walnuts thrive here. They grow fast and compete robustly with other trees. They do very well in my suburban neighbourhood. In fact, if all of us in my neighbourhood decided to let nature take its course, my guess is that our properties would ultimately be dominated by black walnut and the invasive Norway maple (*Acer platanoides*).

In natural settings, black walnut trees flourish in riparian areas – low-lying habitat associated with streams and other wetlands. Kayakers on sections of Ontario's Grand River, which empties into Lake Erie, may encounter solid stands of black walnut, stretching for hundreds of metres. Walnuts thrive in these riparian areas because of rich soils deposited in spring floods but, intriguingly, the

dietary preferences of beavers may benefit walnuts as well. My admittedly unscientific observations suggest that black walnuts are largely shunned by these tree-chomping rodents. I have yet to find a black walnut harvested by beavers, even in areas of high beaver activity.

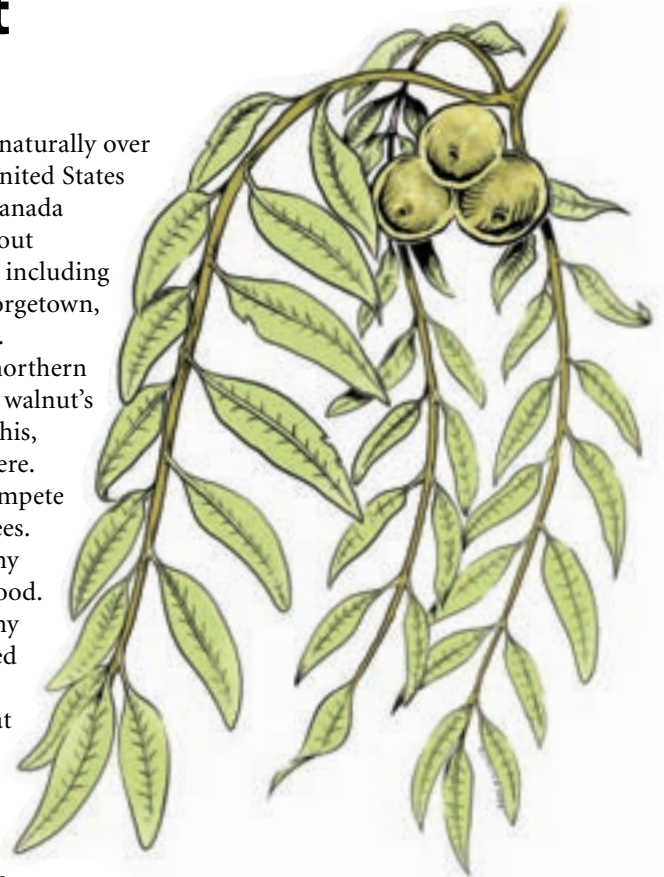


ILLUSTRATION BY NATHAN DONALDSON

Continued on page 15

The Blazing Star is . . .

The Blazing Star is published quarterly (April, August, November, February) by the North American Native Plant Society (NANPS). Contact editor@nanps.org for editorial deadlines and for advertising rates. The views expressed herein are those of the authors and not necessarily those of NANPS.

The North American Native Plant Society is dedicated to the study, conservation, cultivation and restoration of North America's native flora.

Fall 2023

Volume 24, Issue 4

ISSN 2291-8280

Editor: Irene Fedun

Production: Bea Paterson

Copy Editor: Vicki Soon-Ai Low

Printed by: Guild Printing,

Pickering, Ontario

© North American Native Plant Society
Images © the photographers and
illustrators, text © the authors.
All rights reserved.

North American Native Plant Society,
formerly Canadian Wildflower Society,
is a registered charitable society, no.
130720824 RR0001.
Donations to the society are tax-
creditable in Canada.

NANPS Membership:
CAN\$25/YEAR WITHIN CANADA,
US\$25/YEAR OUTSIDE CANADA

Join online or send cheque or money
order to North American Native Plant
Society, Box 69070, St. Clair P.O.,
Toronto, Ontario, Canada M4T 3A1.

E-mail: info@nanps.org

Web: nanps.org

Facebook: facebook.com/nativeplant

Twitter: [@tnanps](https://twitter.com/tnanps)

Instagram:

instagram.com/nativeplant_society/

Board of Directors:

President: TBD

Vice-president: TBD

Treasurer: Blair Marik

Secretary: Lynn Wu

Kim Bell

Adam Centurione

John Foster

Sarah Gladki

Natasha Gonsalves

Clement Kent

Alice Kong

NANPS Events

The Danforth Pollinator Pathway Video

The North American Native Plant Society is excited to present our most recent video project, *Danforth Pollinator Pathway*, completed in partnership with the TD Friends of the Environment Foundation, the David Suzuki Foundation and the City of Toronto's PollinateTO program. The short film tells the story of an east-end Toronto neighbourhood that took steps to create an environment attractive to pollinators by planting a network of native plant gardens at homes and in public spaces. The delightful video offers tips and inspiration to community groups wanting to provide the essentials of life for bees, butterflies and other pollinators. <https://nanps.org/danforth-pollinator-pathway/>

NANPS has also completed another fact sheet that readers may find helpful – *Pollinator Gardening: Nine Quick Tips*. https://nanps.org/wp-content/uploads/Pollinator_Tip_Sheet.pdf

Annual General Meeting

NANPS 2023 AGM took place via Zoom on October 28 with 23 members attending. A recording of the AGM has been posted on YouTube at <https://youtu.be/hzq3lvvL68A>.

Two board members, Janice Keil and Katie McDonald, stepped down this past year. Many thanks to both Janice and Katie for their hard work and dedication to the cause! We wish them great success in their future endeavours, which will undoubtedly benefit native plants and ecosystems. Three members stepped up to join the board: Kim Bell, Sarah Gladki and Clement Kent. Their achievements and credentials are too many to list here; suffice it to say, we are confident that they will all make valuable contributions to our volunteer-based organization.

NANPS is seeking an Event Volunteer Coordinator to coordinate and manage our volunteer network and resources for public activities and events where volunteers are needed. Visit nanps.org for details. Submissions due by December 8.

https://nanps.org/wp-content/uploads/Event-Volunteer-Coordinator_NANPS.pdf

From seven charming entries to the NANPS 2023 Video Contest, AGM participants chose Sara Mojtehdzadeh as the winner in the novice category and Sayeh Beheshti in the experienced category. Look for photos and creative ideas from all the contestants in upcoming issues of *The Blazing Star*. The video contest entries can be viewed on our Facebook at <https://www.facebook.com/nativeplant/> or Instagram at https://www.instagram.com/nativeplant_society/.

*In 2022, Sara Mojtehdzadeh and her husband moved into their first home, removed the front lawn and planted narrow-leaved vervain (*Verbena simplex*), foxglove beardtongue (*Penstemon digitalis*), little bluestem (*Schizachyrium scoparium*), prairie smoke (*Geum triflorum*), heart-leaved aster (*Symphotrichum cordifolium*) and other native plants while she was pregnant. Their son Yari was born on October 15 of this year, while the asters were in full bloom! Sara won the novice category in the 2023 NANPS Video Contest.*



PHOTOGRAPH BY SARA MOJTEHDZADEH

Horseshoe Bay Nature Park, Texas

by Sarah Yant

Peer into any citrine flower of the prickly pear cactus (*Opuntia engelmannii* var. *lindheimeri*) at Horseshoe Bay Nature Park in Central Texas and you'll likely find a cluster of Kern's scarab beetles nestling deep in the pollen. The perpetually gold-encrusted beetles were among the world's first pollinators, abundant even during Mesozoic times, as they sought out ancient, cup-shaped flowers like cacti. This is just one example of the many native plant-animal interactions that have flourished since the development of Horseshoe Bay Nature Park.

The preserve is a testament to one community's vision to safeguard their share of the Texas Hill Country. The city of Horseshoe Bay is located on the rolling upland prairie of the Edwards Plateau, a geologically and biologically unique place under threat from population growth and climate change. Born from a need for public green space and a desire to connect residents with their native ecology, Horseshoe Bay Nature Park was

founded on volunteer efforts and in-kind donations.

The conservation project arose in defiance of the original zoning plans for high-density development. The owners of the property donated the use of the 11 acres (4.5 hectares),

working with the park's nonprofit, HSB Park, Inc., and local nature lovers to turn the tract into a community green space that preserves a precious piece of a vanishing ecosystem. In just two short years, the undeveloped site

Continued on page 4



Kern's scarab beetles feeding on a prickly pear cactus

PHOTOGRAPH BY KATHERINE DANIELS



An aerial photo of Horseshoe Bay Nature Park captures the walking trail winding through mixed tallgrass prairie, wooded areas and granite outcroppings.

PHOTOGRAPH BY BORJA VISUALS

moved from dream to reality, opening its gates to the public in late 2021. My firm, Twistleaf Land Design, was honoured to lead the design development and construction of the park's first phase.

During the conceptual design phase, ecological planners identified degraded soil conditions and evidence of erosion in two key areas of the park that showed large swathes of invasive grasses such as King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*) and johnsongrass (*Sorghum halepense*).

To solve the problem, we constructed a series of berms and swales along the contours of the land to manage erosion and build up soil quality. The depression of a swale captures and filters rainfall into the soil, thereby recharging groundwater, reducing pollution and enriching the soil with nutrients and organic matter. Avoiding the use of pesticides, we manually removed invasive plant species and seeded heavily with dozens of native grasses and forbs where the non-natives threatened to return.

In order to provide a smooth and level trail surface and protect existing natural drainage swales, we installed multiple pipe culverts and riprap. Biodegradable erosion control mats were used to stabilize soil during reestablishment of vegetation at trail edges and seeded areas.

During construction of the nature park, we took great care with the placement of stockpiled materials and the movement of heavy equipment to minimize impact on native vegetation and wildlife habitat. For example, when we built the half-mile walking trail, named the Live Oak Loop, we rerouted it in one area to protect a colony of lace cactus (*Echinocereus reichenbachii*), a threatened species.

Thanks to our efforts, with lots of help from nature, the park offers a stunning tapestry of wildflowers, including iconic Texas bluebonnets (*Lupinus texensis*), which adorn the landscape with their vibrant blue and

purple hues each spring. The bright fuchsia blooms of the Texas thistle (*Cirsium texanum*) sparkle during spring and early summer. As pioneer species, native thistles flourish in disturbed areas, feeding pollinators, songbirds and mammals. The larvae of painted lady caterpillars feed off the nectar, along with many bees and other flying insects. Goldfinches and other birds love the seeds and line their nests with the silky fluff.

Much of the parkland is mixed-grass prairie and features eight notable ecological zones. One example is the Boulder Draw, defined by numerous granite outcroppings with colonies of xeric woolly lipfern (*Cheilanthes tomentosa*). The Dry Creek Woodland funnels rainwater into a nearby pond and hosts lush plant life such as Virginia wild rye (*Elymus virginicus*) and grass-leaved rush (*Juncus marginatus*). The three Texas live oak (*Quercus fusiformis*) mottes (a regional term for small groves) provide shade and sanctuary for wildlife and house their own special understory plant communities, which include woody shrubs such as agarita (*Mahonia trifoliolata*) and evergreen sumac (*Rhus virens*).

A central tenet of sustainable land design is embracing native plants that thrive in their



PHOTOGRAPH BY BRITTANY DAWN SHORT

Wavyleaf twinevine twined around a little bluestem



PHOTOGRAPH BY BRITTANY DAWN SHORT

Texas bluebonnets framed by winecups (*Callirhoe involucrata*)



Pearl milkweed vine

natural habitat, even when faced with extreme temperatures, droughts and floods made more severe by climate change. While beautiful, these plants aren't just for show; they sequester carbon, improve water quality and play a crucial role in supporting wildlife by providing food, habitat and nesting material.

Drought hit the area in 2022, the year after the park's opening. This left many of the seeds we'd spread unable to germinate. The delay caused concern in the region; everyone was eager to see the park lush and green. Thankfully, patience and sufficient rainfall in 2023 brought outstanding wildflower blooms and growth. This resulted in an influx of visitors – and donations!

From milkweeds such as the wavyleaf twinevine (*Funastrum crispum*) to prairie grasses such as little bluestem (*Schizachyrium scoparium*), wildflowers like the

striking white prickly poppy (*Argemone albiflora*) to succulents like the stately Buckley's yucca (*Yucca constricta*), this nature preserve illustrates the diversity and resilience of the native flora of the Edwards Plateau.

For demonstrating its dedication to conserving and restoring indigenous Texas Hill Country habitat, the park was recognized with the prestigious **Texan by Nature Certification**. By rescuing this delicate ecosystem from development, Horseshoe Bay has placed the environment at the heart of its local life and culture. It sets an example for other communities to champion grassroots land stewardship projects.

Sarah Yant is the founder of Twistleaf Land Design, [twistleaf.com](https://www.twistleaf.com). Visit hsbpark.org for more about Horseshoe Bay Nature Park.



Male orchard oriole perched on mesquite



Woolly lipfern



PHOTOGRAPH BY UNITED EARTH PHOTOGRAPHY

Black-bellied Whistling Duck

Brilliantly marked and with a true whistle to their call, black-bellied whistling ducks charm visitors to Horseshoe Bay Nature Park. These delightful, pink-billed waterfowl gather in large numbers at a neighbouring pond, overlooked by the park's Bluestem Bird Blind. They typically nest in hollow trees, on the ground or in thickets of mesquite (*Prosopis glandulosa*), hackberry (*Celtis* spp.), willow (*Salix* spp.), live oak or other trees. Once a rare species found in North America only in the Rio Grande Valley of South Texas, black-bellied whistling-ducks have been rapidly expanding their range since the 1980s and have now been spotted as far north as Maine!

NANPS Seed Exchange

Join the friendly folks who collect native plant seeds – tree, vine, shrub, forb, grass – and contribute to the restoration of native plant communities. Send your seeds separated by species and identified with the source/parentage to NANPS Seed Exchange, Box 69070, St. Clair P.O., Toronto, Ontario, M4T 3A1. To learn how to collect seeds efficiently and ethically, visit nanps.org/seed-collecting.

Seed packets are available for a small fee. Donors are first in line to order seeds. A list of last year's species can be found at nanps.org/nanps-seed-exchange.



Joe Pye weed seedhead (*Eutrochium fistulosum*)

PHOTOGRAPH BY ROLF STRUTHERS

35th Annual Design Symposium Landscape, Ecology & Culture

2 Days of Landscape Exploration

January 10-11, 2024 in PA • January 17-18, 2024 in CT

Virtual options available

Learn more: ndal.org

NDAL



New Directions in the American Landscape

Founded in 1990 by Larry Weaner

photo by Ngoc Minh Ngo

NEW!
for Dec.
register
ndal.org

December 21 & 22, 2023

To Spray or Not to Spray?

Controlling Invasive Species

Trees burn – of course they do. That doesn't make them climate-change villains

by *Peter Kuitenbrouwer*

As my dog and I walked down the street the other day, a man stopped us. "I just found a tree," the man said. "Somebody needs to save it."

He held a lit cigarette in one hand. With the other hand, he pointed. There in the gutter, where the pavement met the sidewalk, a little tree had pushed its way out of the murk and stood proud, pointing its green leaves towards the sun. It had reached the height of a wine bottle. A few steps from the seedling grew a tall silver maple tree, its trunk the circumference of a refrigerator. Clearly a samara, or seed, had fallen from the mother tree in a choice spot where rotted leaves had become earth. In this rainy summer, the seed sprouted. Hundreds of people have passed by the tiny, brave tree; this man noticed it.

"It's not going to survive there," the man said. "It needs to be moved. I don't have a yard." (A guy walking a Labrador retriever must have a yard.) "We need trees," he said.

Do we? Trees have gotten a bad rap lately, in our summer of forest conflagration. Bloomberg News reported in July that the greenhouse gases released from Canada's 2023 wildfires are twice the emissions from every other sector of our economy. Canada's National Observer noted that, in the 21st century, our forests have consistently emitted more carbon than they have absorbed. The New York Times piled on, with the headline "Forests are no longer our climate friends." Also in the Times, a writer who planted trees in northern Ontario in the early 1990s called tree planting part of the problem: "Now when I think of that summer, I don't think that I was planting trees at all. I was planting thousands of blowtorches a day."

Trees burn. This is true. But it is a terrible mistake to vilify trees as a culprit in climate change.

Trees suck carbon and emit oxygen.

Without trees, we would find it difficult to breathe. The forests of Canada store a large chunk of Earth's carbon: even the epic carbon released by this summer's fires is a tiny fraction of that stored in our forests. We want that carbon storage to increase – by adding trees.

Forests are burning. Why? Our rampant consumption of fossil fuels has caused global warming. Forests are hot, dry and more flammable. To slow

climate change, we must drive less and ride buses or trains (or walk or cycle), and switch to renewable energy.

We need to protect more intact forests, as more than 90 scientists and researchers, mostly from North America, pleaded with Prime Minister Justin Trudeau in an open letter last year: "Canada's primary and older forests have a key role to play in preserving a safe and livable world, and the government can make a



*Peter Kuitenbrouwer and his dog, Rook, with the rescued tree standing in front of the parent tree, a massive silver maple (*Acer saccharinum*).*

Strategies to Reduce Wildfire Severity

significant contribution by prioritizing keeping these vital and irreplaceable ecosystems standing.”

To spare these forests, we can plant trees elsewhere for our future use, as we have done for more than a century. In 1968, for example, Ontario’s premier celebrated the planting of the province’s billionth tree, grown in one of a network of provincially owned nurseries. Harvesting has since thinned these forests, providing lumber, paper and hydro poles. New openings in these woods allow other species of trees to grow, creating mixed forests.

A colleague the other day compared a tree to a Swiss army knife. A tree does so much: absorbing rainwater to take pressure off our sewer systems, filtering the water we drink, preventing erosion, cooling our houses and streets, growing nuts and fruits, and even improving test scores for our children and lowering the blood pressure of those who walk in their shade.

Back on the street, I knelt on the sidewalk and tugged softly on the tiny tree’s stem. The little seedling, its roots intertwined with decayed leaves and a bit of dirt, came away easily. I found a little plastic bag in my pocket and wrapped it around the tiny root ball.

My new friend smiled. “Perfect!” he said. He stood under the big silver maple and craned his neck skyward. “Look how big it’s going to get!” he said. He called to a passerby, “We saved a tree!”

I have planted the tree in my front yard (the man was right about that detail.) For the sake of our collective well-being. I have high hopes for the youngster.

Peter Kuitenbrouwer is a journalist and registered professional forester who holds a master of forest conservation from the University of Toronto. This article is reprinted from The Globe and Mail, September 25, 2023 issue, with his permission.

To reduce the incidence and intensity of wildfires, the forest industry needs to “change from prioritizing timber to prioritizing forest resilience,” said John Innes, Forest Renewal BC Chair in Forest Management at the University of British Columbia and former Dean of the Faculty of Forestry, during an interview on CBC’s *The Current* (September 26, 2023).

This year, “fires have been ripping through” stands made up of pines (*Pinus* spp.), spruces (*Picea* spp.) or cedars (*Thuja* spp.), conifers that are valuable as timber. Wildfires would be reduced if the forest industry would incorporate a broader mix of species, such as hardwoods that “have higher moisture content and fewer volatile compounds, which means they don’t burn as readily and severely as conifers. So they are very valuable as fuel reduction breaks in the landscape.” “If you have patches of aspen (*Populus* spp.) or birch (*Betula* spp.), a fire may well be held at those points,” continued John.

Planting trees less densely can also make them less susceptible to major

conflagrations, making it harder for wildfires to jump quickly from one tree to another through the crowns. “This requires getting the numbers right, as trees that are spaced too widely will have crowns that reach the ground, enabling fire to reach the crowns.”

“We should also be retaining more of the older trees of species such as Douglas fir (*Pseudotsuga menziesii*) and Ponderosa pine (*Pinus ponderosa*) because they have thick, fire-resistant barks and crowns that are generally well out of reach of low-intensity ground fires. They have the added advantage of being very beneficial to biodiversity,” according to John.

By moving away from “timber-based forest management objectives to objectives based on managing fire across a landscape,” we would not only reduce damage done by fire, but might also reduce catastrophic insect infestations, which have become a massive problem in many areas, especially British Columbia. “In landscape approaches to fire management, we would be looking to

Continued on page 10



Broad-leaved stands, such as this one near Fort St. John, British Columbia, provide important breaks in conifer-dominated landscapes, which can help reduce the spread of wildfires.

PHOTOGRAPH BY JOHN INNES

create a mosaic of forest stands with different species and different states of development. We would be leaving some areas clear of trees and making use of natural and artificial fire breaks such as rivers and roads that make it more difficult for fire to spread,” added John.

These strategies are already in use in “what’s known as the wildland-urban interface, which is the area immediately around towns.” This approach is expensive, but the cost of suppressing fires has been astronomical, with over 18,500,000 hectares (45,700,000 acres) burned in Canada just this year. “But if we were to start off by planting the right species in the right place, we could actually then work with fire to make our landscapes more resilient.”

John explained that the catastrophic wildfires that have destroyed towns are very hot, move fast and quickly get out of control. Other types of fires can be beneficial to the landscape. In fact, some species of trees, such as jack pine (*Pinus banksiana*), rely on fire to release their live seeds and reduce competition around their trunks.

Low-severity fires can occur naturally as a result of lightning strikes or they can be deliberately set and controlled as prescribed burns, with a specific purpose in mind. “In many places First Nations have long used fire to manage the landscape and we need to learn from their experience and knowledge.” This will involve encouraging the return of fire to many landscapes that are suffering from what is known as fire deficit. Deliberately set fires burn up a lot of the fuel on the ground in the form of dead leaves and brush, as well as many of the shrubs and other low vegetation, making way for new growth and preventing catastrophic fires from occurring. Medium-severity fires, if they occur at the right place and right time, can also remove fuel from the landscape and reduce the severity of any future raging, uncontrollable wildfires.

Some of these can be set deliberately under the right conditions, others may involve allowing lightning-induced fires to burn, but only if the conditions are such that the risk of the fire getting out of control is minimal.

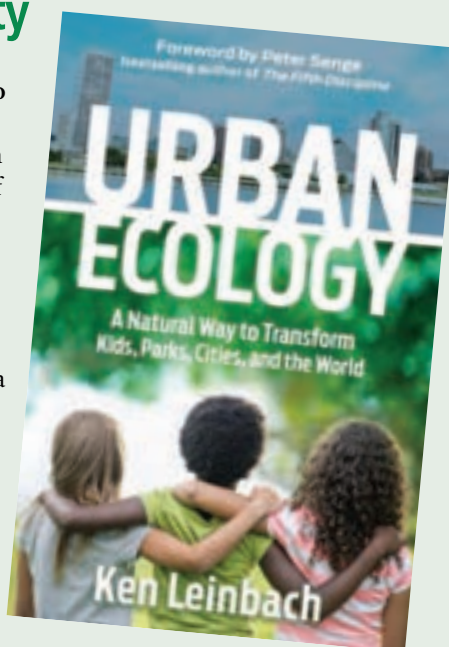
Given the importance of climate change, a reforestation strategy worth considering is the use of drones to seed areas that are inaccessible to tree planters or too dangerous to traverse on foot after a wildfire has whipped through. “We are seeing drones being used to plant seeds embedded in a mix of materials that encourages the germination and subsequent growth of that seedling,” said John.

To our great misfortune, this year’s

wildfires released vast quantities of carbon, exacerbating the climate crisis. The young trees will have an appreciable impact on climate only after many years of growth, but the good news is that they start to absorb carbon as soon as they are in the ground. According to John Innes, it’s important to replant and do so as quickly as possible. Yes, we should have adopted these strategies decades ago. But that does not diminish the fact that we need trees and we need to plant them now, using better strategies to ensure that they are less susceptible to the type of catastrophic fires that we saw in 2023.

Transformation through Nature and Community

Urban Ecology: A Natural Way to Transform Kids, Parks, Cities and the World, written by Ken Leinbach in 2018, tells the story of a group of ordinary folks in Milwaukee, Wisconsin, who came together to make their community a vibrant, safe space to live and work in. Celebrated environmental activist Jane Goodall refers to this book as a “practical blueprint” for “teaching land stewardship and nature conservation to children and their families” – and doing it well. The book is about community, not just restoring ecosystems, the communities of flora and fauna that constitute a healthy environment, but communities of people, young and old, from all walks of life, all ethnicities, all levels of ability, getting together in the time-honoured way to do good work. Dudley Edmondson, author of *Black and Brown Faces in America’s Wild Places*, says, “The changing demographics and urbanization of America make *Urban Ecology* and Environmental Education essential. This book is a



must-have tool for those passionate souls out there working with the youth of today who will become our future conservationists.” Richard Louv, author of *Last Child in the Woods*, calls *Urban Ecology* “a transformative book, an essential tool in the new nature movement.”

To obtain a copy, contact editor@nanps.org or visit MorganJamesBuilds.com.

Putting Heads Together to Master the Asters

by William D. Van Hemessen

Early American botanist Asa Gray famously lamented, “If you hear of my breaking down utterly, and being sent to an asylum, you may lay it to *Aster*, which is a slow and fatal poison.” A less dramatic statement might be a reimagination of Dr. Richard Feynman’s thoughts on quantum mechanics: “If you think you understand asters, you don’t understand asters.” Asters are confounding. Those of us keen on mastering the group may spend years examining field material and herbarium specimens, familiarizing ourselves with the subtle forms and features of a particular species, only to find yet another specimen that seems to break all the rules. We are used to betrayal. These are widespread and familiar wildflowers, but phenotypic plasticity, their tendency to duplicate chromosomes and, occasionally, to hybridize makes their identification difficult even for experienced naturalists.

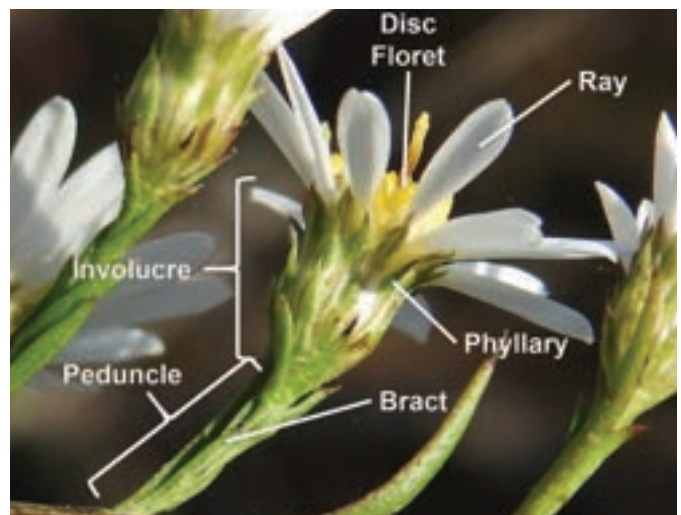
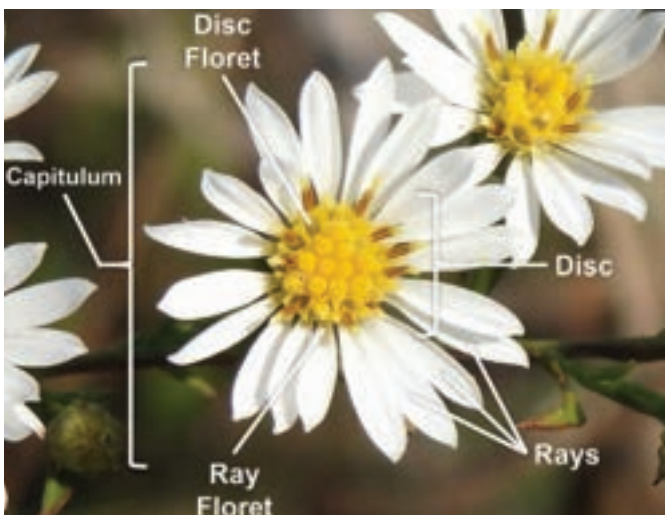
In the colloquial sense, asters are wildflowers in the tribe Astereae in the composite family Asteraceae, which also includes the goldenrods, fleabanes, lawn daisies and related plants. If you’re reading a field guide or other botanical publication from before the 1990s, you most likely know the asters and goldenrods as *Aster* and *Solidago*, respectively, but modern

taxonomy has blurred this binary distinction and reclassified the vast majority of North American aster species into multiple different genera. With the exception of gardens and a narrow range of Rocky Mountain peaks and Arctic tundra, you’re unlikely to find a true aster in North America. Our species now fall into *Symphyotrichum*, *Eurybia*, *Oclemena*, *Dieteria* and a few dozen other genera that I won’t list here. The genus *Oligoneuron* includes species historically called both *Aster* and *Solidago*, which illustrates the tenuous distinction between the traditional asters and goldenrods. Although potentially frustrating for novice botanists, this new taxonomy is firmly justified on genetic and morphological lines; the divisions become apparent the more familiar one becomes with aster identification.

Learning the asters has to start with an understanding of their unique morphology. Importantly, what look superficially like flowers are actually *capitula*, or “heads,” composed of two types of florets: ray florets (the “petals”) and disk florets. A close look at an aster head reveals that each floret has its own reproductive organs and corolla: five-lobed on disk florets and ligulate on ray florets. This morphology of ligulate ray florets surrounding five-lobed disk florets can be found throughout the tribe Astereae and, indeed, in thousands of

other species in the family Asteraceae, hence that family’s historical name, Compositae. Each aggregation of disk and ray florets is ensconced in an involucre, or “cup,” of modified bracts called phyllaries. The size, shape and pigmentation of the phyllaries, rays and disk corollas are some of the most important characteristics for aster identification; novice botanists will quickly learn that failure to examine and photograph those features will most likely end with an identification of *Astereae* sp. Head morphology is usually enough to confidently identify an aster to genus. Beyond that, we need to examine the shape and vestiture of the leaves (both stem leaves and basal leaves), stem vestiture and overall growth form.

I am sometimes asked to provide a single feature that will distinguish a particular aster species from all others. This is quite impossible and, I think, perhaps controversially, especially impossible for asters relative to any other group of flowering plants in temperate North America. A combination of features is almost always required for the positive identification of an aster specimen. One of the factors that make aster identification so challenging is their tendency to produce wildly different morphologies in response to variation in ploidy (the underlying genetic weirdness) and complex environmental variables. Polyploidy



Continued from page 11

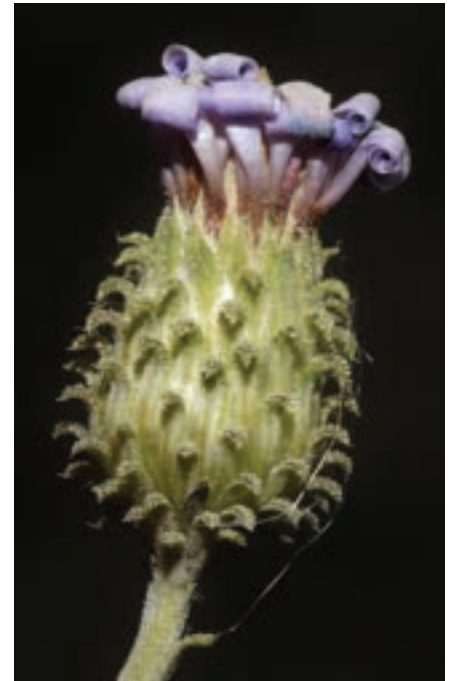
occurs when chromosomes are duplicated during reproduction, resulting in offspring that have two, four, eight or even more sets of chromosomes. In asters, differences in ploidy can produce plants with remarkably different morphologies, which can appear at a glance to be different species altogether. Morphological changes can also manifest from environmental variables like light and moisture, while some phenotypic variation, such as ray pigmentation, may occur with no obvious genetic or environmental underpinning. For example, New England aster (*Symphyotrichum novae-angliae*), a common and widespread species in eastern North America, can have deep purple, pink, blue or even pure white rays, but I know of no genetic or environmental explanation for why some plants produce rays of any particular colour. In 2022, while surveying populations of willowleaf aster (*S. praealtum*) in southwestern Ontario, I was almost fooled by a rare purple-rayed form of panicled aster (*S. lanceolatum*), which looked superficially like the former species. The asters always keep us on our toes.

The diversity of asters in North America is spectacular; they occupy all but the wettest and coldest habitats. Quantifying the diversity of North American asters is difficult because the name aster is paraphyletic, meaning it doesn't represent a cohesive evolutionary clade (recall that the tribe Astereae includes species not traditionally called aster, namely the goldenrods and fleabanes). From the genera that include the colloquial asters, we can find around 150 species across North America, including about 50 in the Great Lakes region. No article can explore such a diversity of species in adequate detail, but I've attempted in the next few paragraphs to highlight a few of the most attractive, unique and regionally representative species.

Adding a splash of purple to the western plains and deserts, tansy-aster

(*Dieteria canescens*), with its gland-bejewelled phyllaries, is a common sight in late summer. Showy aster (*Eurybia conspicua*) lives up to its name in western montane woodlands and, higher up, in the highest alpine meadows of the Rockies, our only Old-World species, the alpine aster (*Aster alpinus*), rears its heads in early summer. On the shortgrass rangelands of the high plains, heath aster (*Symphyotrichum ericoides*) and prairie aster (*S. falcatum*) stand rugged against the elements. This is just scratching the surface of the western North American asters; I am regrettably less familiar with them than with our eastern species.

East of the Great Plains, in the tallgrass prairies of the Midwest and grassy glades of the Ozarks, the spectacular silky aster (*Symphyotrichum sericeum*) should be



Hoary tansy aster (*Dieteria canescens*)



Northern aster (*Symphyotrichum boreale*)

PHOTOGRAPH BY WILLIAM VAN HEMESSEN

PHOTOGRAPH BY WILLIAM VAN HEMESSEN

a bucket-list species for any North American plant enthusiast. Its eastern counterpart, eastern silvery aster (*S. concolor*), is equally stunning and can be found in sandy grasslands and pine savannahs on the Atlantic coastal plain. This region, extending from Texas east to Florida and north to Nova Scotia, is one of the most aster-diverse regions in the world. One of the coastal plain's most unique species is climbing aster (*Ampelaster carolinianus*), which grows somewhat like an herbaceous liana on riverbanks and wet forest edges.

Asters with an Appalachian phytogeography include whorled wood aster (*Oclemena acuminata*), toothed white-top (*Sericocarpus asteroides*) and wavyleaf aster (*Symphyotrichum undulatum*). The southern Appalachians and adjacent Piedmont are their own centre of aster diversity, home to magnificent species such as Georgia aster (*Symphyotrichum georgianum*) and late purple aster (*S. phlogifolium*). Farther to the northeast, New England and the Atlantic provinces are, perhaps surprisingly, another region of aster endemism, with New York aster (*S. novi-belgii*) as its most familiar species.

One of my favourite asters is great northern aster (*Canadanthus modestus*), a specialty of Canada's boreal forests and the only species in its genus. With its deep purple rays and cream-coloured disks, this aster brightens up rainy fall days in mesic northern woodlands. Other species with boreal affinities include Robyns's aster (*Symphyotrichum robynsonianum*) and northern bog aster (*S. boreale*). The high Arctic tundra is mostly devoid of asters, but one species, the pygmy aster (*S. pygmaeum*), is at home on dunes and riverbanks in Nunavut, the Northwest Territories and Alaska.

The Great Lakes region, where I live, is a land of lakeshores and deep glacial soils. Imagine a grassy woodland atop

Continued on page 14



Smooth aster (*Symphyotrichum laeve*)

PHOTOGRAPH BY WILLIAM VAN HEMESSEN



Flat-topped aster (*Doellingeria umbellata*)

PHOTOGRAPH BY WILLIAM VAN HEMESSEN

Continued from page 13

a ridge of gravelly till with widely spaced oaks, pines and hickories. Here, you are likely to find heath aster, smooth aster (*S. laeve*), sky-blue aster (*S. oolentangiense*) and arrow-leaved aster (*S. urophyllum*) colouring the hillside a powdery blue in early fall. In the bottomlands, flat-topped white aster (*Doellingeria umbellata*), shining aster (*Symphyotrichum firmum*) and swamp aster (*S. puniceum*) keep the land abuzz with bees, wasps and other insects well into the fall. Prairie species, like willowleaf aster, and Appalachian species, like white wood aster (*Eurybia divaricata*), poke their heads into the margins of our region.

Many backyards in North America have asters; while they may be confounding at times, they are some of the most accessible plants on which to practise our botanical observation skills. Backyard naturalists would do well to explore the fantastic diversity of their local Astereae. I've emphasized the importance of examining multiple plant characteristics to have any hope of identifying an aster species. Keen naturalists and backyard observers who take the time to carefully and methodically examine their local asters will find that this group always has more to teach us.

William Van Hemessen is a naturalist and consulting ecologist based in North Dumfries Township, Ontario. He is on the board of directors of the Field Botanists

of Ontario and leads plant identification workshops for universities and non-profit organizations. His favourite aster is sky blue aster.



Shining aster (Symphyotrichum firmum)

PHOTOGRAPH BY WILLIAM VAN HEMESSEN

Continued from page 1 – **Black Walnut**

One of the first things we learn about walnuts is their reputed toxicity to other plants growing in their vicinity. Juglone, a metabolite of walnut trees, is tagged as the culprit. Juglone has anti-bacterial and anti-fungal properties that may help protect walnuts from pathogens. But a near-universal belief is that this juglone, leaching into the soil from walnut roots and fallen leaves and fruit, inhibits the growth of tomatoes, apples (*Malus* spp.), lilacs (*Syringa* spp.), *Viburnum* spp., *Rhododendron* spp. and many other plants. Black walnut, in fact, is the poster child for the phenomenon of allelopathy – the production of chemicals by a plant

that suppresses the growth of other plants. However, there appears to be little clear evidence that this is the case. The walnut toxicity story may be a canard – a story repeated so often, over many years, that it achieves the status of unalloyed truth simply by dint of repetition.

In the *Allelopathy Journal*, R.J. Willis of the University of Melbourne in Australia published in 2000 the results of a comprehensive study into the purported allelopathic effects of walnut trees on other plants. His conclusion? “While the genus *Juglans* provides what are probably the most widely accepted examples of allelopathic plants, it must be concluded that there

is still no unambiguous demonstration of its effect.”

Even if walnut trees are not truly allelopathic, that doesn't mean that other plants will thrive nearby. Walnut trees are effective competitors for water and nutrients. Plants languishing in their vicinity may be victims of competition or simply of the shade cast by the foliage.

Still, the perception that walnuts chemically inhibit the growth of other plants is not likely to go away. In 2017, one Toronto, Ontario, homeowner used this “toxicity” in her appeal to cut down a walnut tree in her backyard. A Canadian Broadcasting Corporation reporter wrote that the

homeowner referred to her walnut as a “killer tree” because the toxins were “making it hard to grow anything else.” To bolster her tree removal case, the homeowner also expressed fears that neighbourhood children were in danger of being hurt by falling nuts.

Though I could find no reference to anyone being injured by falling nuts, the almost tennis-ball sized fruits can dent vehicles parked below. And in some years, like the current one, they can be abundant. A homeowner with a very large black walnut growing in his front yard told me that he collected one ton of walnuts during a particularly good mast year. The nuts do pose a clean-up challenge, especially if not gathered quickly, because the thick husks rapidly turn black and stain anything that touches them, including human hands. But, an effective staining agent can also make a great dye. People have used walnut husks for hundreds of years to dye wool and other fabrics.

Walnuts are tough to crack. Squirrels can open them up with their impressive incisors, as can mice and voles, given enough time. Crows in various parts of the world crack walnuts – and other nuts – by dropping them on hard surfaces. In urban areas, roads and parking lots are often used. Remarkably, crows in Japan drop walnuts on pavement and wait for cars to crush them. It even appears they position themselves at intersection crosswalks so they can collect the nutmeat when red lights halt the traffic!

For people, there are dedicated walnut-cracking machines that facilitate nutmeat removal. The reward? A delicious food high in protein, omega 3 fatty acids and a host of essential minerals.

Walnut leaves nourish a plethora of creatures, including over 100 species of lepidoptera (moths and butterflies). I raise luna moth caterpillars on leaves from the walnut tree in my backyard.

Walnut wood is valuable. Hard, fine-grained and durable, it is highly

sought after for furniture, cabinet-making and flooring. This makes walnut trees targets for illegal logging. Lyndsie Bourgon, in her book *Tree Thieves: Crime and Survival in North America's Woods*, writes that criminals poach an estimated \$1 billion worth of trees per year across the continent. Many of those trees are walnuts. In this dark era of tree decline – think beech bark disease, emerald ash borer, butternut canker, hemlock woolly adelgid, oak wilt and other pernicious arboreal assaults – black walnut has, until recently, stood out as a species of robust good health. Outbreaks of walnut caterpillars (*Datana integerrima*) can occasionally defoliate trees, while fall webworms (*Hyphantria cunea*) often drape walnut branches in their silken tents. But in the main, walnuts have had few serious pests – until now. A recent threat has emerged in North America called Thousand Canker Disease; commercial walnut groves in California are currently under attack. This fungal disease (*Geosmithia morbida*), of unknown origin, requires an insect called the walnut twig beetle (*Pityophthorus juglandis*), native to western North America, to create entry holes into the cambium layer of walnut tree bark. Until recently, black

walnuts in eastern North America were isolated from the disease, with neither the fungi nor the beetles present in their range. But in recent years walnut twig beetles have expanded eastward and the fungus has been found in Maryland and Tennessee.

If Thousand Canker Disease spreads widely throughout eastern North America, we could lose a lot of walnut trees and that would be an economic and ecological calamity. And those of us who love trees will mourn the diminishment of yet another majestic species and the continuing decline of our beleaguered eastern forests.

Don Scallen is the author of Nature Where We Live.



PHOTOGRAPH BY DON SCALLEN



PHOTOGRAPH BY DON SCALLEN



FALL 2023

NANPS MEMBERSHIP

New membership ☐ Renewal ☐

Change of Address ☐ Gift ☐

Digital Blazing Star Paper Blazing Star
(includes mailing costs)

_____ 1-year regular membership:	\$25	\$30
_____ 2-year regular membership:	\$40	\$50
_____ 3-year regular membership:	\$60	\$75
_____ 5-year sustaining membership:	\$200	\$225
(includes \$100 tax receipt)		
_____ Full-time student membership:	\$10	Digital Only

Name of institution _____

_____ **Donation** (Canadian tax receipts are issued for donations of \$20 or more. Canadian registered charity #130720824 RR0001)

_____ **Total** _____ **cheque** (payable to NANPS)

For online applications with credit card go to nanps.org

DATE _____

NAME _____

ADDRESS _____

CITY _____

PROVINCE/STATE _____

POSTAL/ZIP CODE _____

PHONE (optional) _____

*EMAIL _____

Required for digital copies of The Blazing Star

☐ I am interested in volunteering with NANPS.
Please contact me.

Send this completed form along with your cheque to:

NORTH AMERICAN NATIVE PLANT SOCIETY
Box 69070, St. Clair P.O., Toronto, Ontario, Canada
M4T 3A1

The North American Native Plant Society treats all information we receive as confidential. We do not rent, sell or provide this information to third parties.



**NORTH AMERICAN
NATIVE PLANT SOCIETY**

Box 69070,
St. Clair P.O., Toronto,
Ontario, Canada
M4T 3A1

