



the Bluestem Banner



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Tallgrass Ontario

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Tallgrass Ontario will identify and facilitate the conservation of tallgrass communities by coordinating programs and services to aid individuals, groups and agencies.

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Dense Blazing-star (*Liatris spicata*)

Go to www.tallgrassontario.org to download the Bluestem Banner in color.

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Dense Blazing-star (*Liatris spicata*)
By Season Snyder

Dense Blazing-star is a perennial wildflower found only in North America. In Canada, it occurs naturally only in southwest Ontario, mainly in the area between Lake St. Clair, Lake Huron, and Lake Erie. It is listed as provincially Threatened and both plants and their habitat are protected under the *Endangered Species Act, 2007*. Dense Blazing-star grows in open tallgrass prairies, meadows, grassland savannahs, wet areas between sand dunes, and abandoned fields.



Dense Blazing-star after a prescribed burn.
(Photo: Ministry of Transportation)

The species name describes the elongated inflorescence with its crowded, stalkless flower heads. Flowers are rose-purple with protruding styles, giving the flower an overall feathery appearance. The flowering stem is robust, with linear, grass-like leaves clumped at the base of the plant and becoming smaller up the stem. Plants can grow up to 2 m tall and bloom from the top down in July through August. Bees, butterflies, and beetles are the main pollinators of Dense Blazing-star.



Dense Blazing-star full bloom.
(Photo: William McIlveen)



Flowering occurs from the top of the stem down.
(Photo: William McIlveen)

The main threat to Dense Blazing-star is habitat loss due to urban development and habitat alteration. Another threat is natural succession, a process where trees and shrubs take over an area and eventually shade-out the sun-loving plants. Historically, wildfires played an important role in maintaining the open tallgrass habitat in which Dense Blazing-star grows. Today, tallgrass prairies and savannahs must be periodically managed by prescribed burns to



Monarch butterfly nectaring on Dense Blazing-star.
(Photo: Season Snyder)

stimulate the growth and reproduction of native prairie grasses and wildflowers, while naturally killing invading trees and shrubs. Dense Blazing-star is known to be an indicator of tallgrass habitat and its presence often serves as a measure of the remnant quality that exists in a natural area.



American Chestnut’s Enduring Genetic Diversity ¹

By Sophia Stoltz

The history between the American chestnut and humans is one of bountiful harvest, followed by tragedy and more recently, a glimmer of hope for recovery.

American chestnut was once a charismatic species. It was an emblem of the eastern deciduous forest and known for its lumber and nut production, with a range stretching from Mississippi and Georgia all the way north into Maine and Ontario. As we move through the winter months, the famous “chestnuts roasting on an open fire” lyric may come to mind, or perhaps you are reminded of them while passing the produce shelves adorned with imported Asian and European chestnuts at the grocery store. Today, in Ontario, American chestnuts are considered endangered under the provincial *Endangered Species Act, 2007*.



American Chestnut leaves (Photo: John F. Foster)

Since the 1904 introduction of the fungal pathogen, *Cryphonectria parasitica*, that causes chestnut blight, populations of American chestnut (*Castanea dentata*) have been reduced to 1–10% of their original size. The trees are now dubbed as “frozen in time”, where rootstock shoots re-sprout but often succumb to blight before they can flower and produce nuts.



**American Chestnut infected by
Cryphonectria parasitica
(Photo: John F. Foster)**

Without the ability to reproduce, chestnut trees are unable to produce new genetic variation that may lead them to adapt to the blight. So far, recovery is minimal. However, surveys of chestnuts in southern Ontario report that some of our existing trees seem to be more blight-tolerant and can survive long enough to flower and produce nuts.

It was unknown whether chestnut populations were suffering from consequences of low genetic diversity and inbreeding or whether the chestnuts in Ontario had become isolated from other populations in the United-States. We were also interested in explaining if the seemingly blight-tolerant chestnut trees were hybrid trees from American chestnut reproducing with more blight-tolerant species, such as Chinese chestnut, which are sometimes planted as ornamental trees in

Ontario. As a PhD candidate in Dr. Brian Husband's research lab at the University of Guelph, I was determined to find out if genetic diversity was limiting the recovery of American chestnut. I was also interested in how genetic diversity was organized within and among chestnut populations and how often hybridization occurs with other chestnut species. To address these unknowns, we collected chestnut leaf samples from seven populations in southern Ontario and six populations in the United-States (U.S.) extending southward from the Niagara-Buffalo border to Virginia. Then, DNA was extracted from the leaf samples to obtain genetic information on each tree. Using this data and a variety of computer programs, we can determine how closely related and diverse these trees are within and among populations.



Collecting leaf samples (Photo: Sophia Stoltz)

Unexpectedly, we found that chestnut populations have high genetic diversity! In fact, their levels of genetic diversity were as high as species that had not endured such a population decline, such as European and Chinese chestnut. This is good news, as genetic diversity is essential for species to adapt to environmental change. We also found that American chestnuts in Ontario were quite genetically distinct from the populations in the United-States. In fact, a previous Master's student from our lab, John Gerrath, noted differences in leaf



American Chestnut burrs
(Photo: Sophia Stoltz)

flowering across the border, this may have caused Ontario's American chestnuts to become more like one another and more differentiated from those in the U.S. Only four (1.24%) of the 324 trees we tested were detected as hybrid trees between American chestnut and another chestnut species. These trees are few and scattered around southern Ontario, therefore, it is unlikely that they pose a significant threat to the American chestnut.

So, what does this mean for the future of American chestnut in Ontario?

While the trees in Ontario have retained genetic diversity following the drastic population decline caused by chestnut blight, they remain limited by their lack of reproduction and their vulnerability to the blight. Therefore, it is vital

that we continue to conserve habitat and the trees that remain and learn more from the trees in Ontario that seem to be healthier than others. Research programs in Canada and the U.S., along with restoration initiatives underway through the Canadian Chestnut Council, are ongoing strategies supporting the recovery of the endangered American chestnut in Ontario.

More on this research and ongoing restoration initiatives can be found in our recently published article with the journal, [Conservation Genetics](#), and through the [Canadian Chestnut Council](#), respectively.

1 - Stoltz, Sophia. 2023. *American Chestnut's Enduring Genetic Diversity* used with Permission of Sophia Stoltz. https://www.researchgate.net/publication/365298674_High_genetic_diversity_in_American_chestnut_Castanea_dentata_despite_a_century_of_decline (Accessed Thurs., Dec.7, 2023).

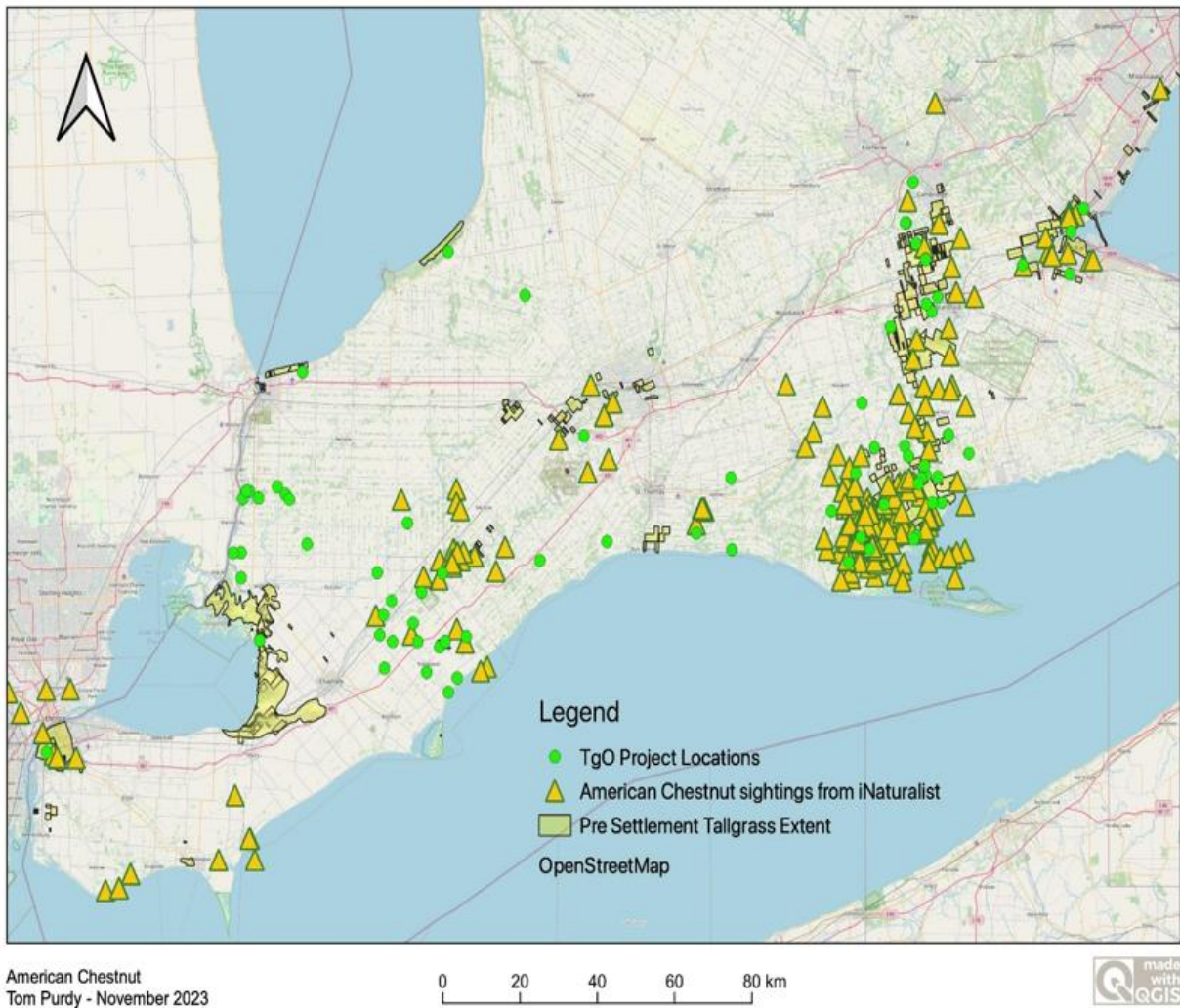
when comparing Ontario American chestnut trees with those from the U.S.

Although these findings were striking, it is important to note that the differences are not necessarily related to aspects of tree health, but more so related to their evolutionary history. These patterns are likely due to the colonization routes of American chestnuts into Ontario from the U.S., along the narrow stretches of land surrounding Lake Erie. With pollen unable to travel over Lake Erie and reach trees



American Chestnut
(Photo: Sophia Stoltz)

Current American Chestnut Range in Southwestern Ontario
By Tom Purdy



(Map: Courtesy of Tom Purdy - Tallgrass Ontario)

American Chestnut - Five facts about American chestnut in Canada
By Sophia Stoltz

AMERICAN CHESTNUT

Five facts about American chestnut in Canada



1

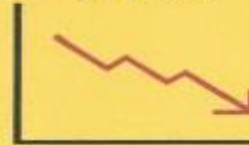
The Canadian population comprises **2531 geo-referenced trees.**



11% are reproductive (i.e. produce flowers) and **only a handful produce nuts.**

2

A **50% decline** in population size is projected within the next 50 years, with **extirpation by 150 years.**



Trees are **dying at a rate of 41% every 13 years.** Establishment of new saplings is **close to zero.**

3

The Canadian population remains **genetically diverse.**

Normally, diversity is lost in a severe population crash. However, diversity at random locations in the DNA is **just as high as other chestnut species** that were not affected by blight. Whether diversity exists for blight resistance genes is not yet known.



4

Hybrids between American chestnut and other chestnut species are **RARE.**



5

3 Genetic groupings in the Canadian population



The Canadian population is **dominated by a genetic group** that is **uncommon** in the main part of the geographic distribution in the U.S.

These genetic differences reflect **differences in colonization history.** We don't know if they reflect meaningful biological differences.

Some Other Photos of American Chestnut
All Photos by John F. Foster



American Chestnut leaves



Recently infected American Chestnut



Unopened American Chestnut burr



Two American Chestnut nuts



Autumn grove of American Chestnuts



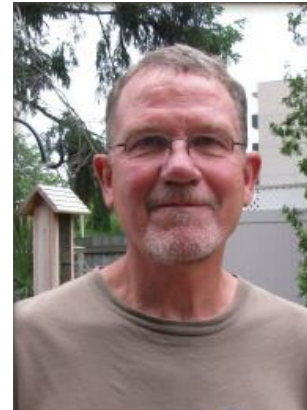
Uninfected American Chestnut bark

Steve Rankin Tribute**Tribute with Contributions by Rob Stover¹ and Season Snyder³**

The Tallgrass Ontario community was saddened by the passing of Steve Rankin last September. While he was with TGO, he was a valuable member of the group's community and its Board.

Steve was born in 1952, in Chatham, Ontario, to parents Robert and Elva Rankin. He is survived by Rob Stover, his spouse of 41 years, his many relatives, and his friends.

Steve was a student of Chatham Kent Secondary School. He pursued a medical degree for 2 years at the University of Western Ontario. He left university when his father passed to look after the family farm and his mom. In his early 20's, he took an interest in flying and got his pilot's licence. After flying and



Steve Rankin² - 1952 - 2023
(Photo: Rob Stover)

other experiences, he worked in the CIBC bank. He had hoped to become a Bank Manager. He was known as a great employee. He did not like the idea of having to move around if he became a manager so he pursued other employment. That work ended, and he eventually became a Manager for Provincial and Federal Governments where he was for 27 years. At his government work place, he earned the great respect of his employer and employees.

Steve liked to be a private person, but he was caring, and respected by those who knew him. He had a keen memory for information, especially for nature, astronomy, and the events of his life.

Steve and his partner Rob purchased a 12-acre parcel of land in 2009. They restored the land to its original state. The property is known as the Elva Gray Kenesserie Tallgrass Prairie. Steve and Rob donated the land to the Lower Thames Valley Conservation Authority in 2019.

Steve enjoyed going to Florida with Rob, and their dog Ginger. He enjoyed camping on Lake Erie at Clearville Park for 20 years. At the park, he maintained a group of Purple Martin houses which was home to large colony of Martins. He liked watching the Purple Martins raise their families, fly and soar, and the fledging of the young.

Steve began his volunteer work with TGO in 2010. For this work, Steve was committed to and dedicated to the TGO community and the TGO Board.

He served most of his years on the executive committee, five years as Secretary and two years as President, as well as the chairperson of numerous committees. He became an expert in TGO governance, overseeing the important business of updating the organization's by-laws and Recovery Plan for Tallgrass Communities of Southern Ontario. The 1998 Recovery Plan

formed the basis for creation of TGO, and after 20 years of progress in tallgrass conservation, the recovery goals and objectives were re-evaluated with a fresh look towards the future.

In addition to this work, Steve became an expert in TGO history, editing our Bluestem Banner publication and contributing numerous articles on TGO's past and present conservation and restoration initiatives with landowners, foundations, and governments.

He understood the value of education and outreach and spearheaded the design and creation of TGO's current website, which offers visitors a variety of technical and scientific information on the significance of tallgrass prairie and the importance of habitat management. He created some of TGO's most visited web pages including the role of prairie grasslands in carbon sequestration.

Even after 10 years of service to TGO, Steve remained involved in our organization as a trusted advisor. He was always generous with his time and expertise to the benefit of TGO and to all the Directors that had the pleasure of volunteering with him. His contributions to TGO are invaluable and will leave their mark for many years to come.

Steve's Family has suggested that if you wish to honour his memory, donations would be appreciated to the local Pet and Wildlife Rescue in Chatham, Ontario.

Thus, Steve has left a lasting legacy with his spouse, Rob, and with those who met and knew him. Hence, this world of ours is a better place because of Steve Rankin having been here.

1 - Stover, Rob. 2023. *Obituary of Steve Rankin*. Obituary online at Mckinlay Funeral Home, 459 St. Clair Street, Chatham, Ontario. Accessed Sat., Nov.30, 2023.

2 - Stover, Rob. 2023. *Photo of Steve Rankin*. Photo online at Mckinlay Funeral Home, 459 St. Clair Street, Chatham, Ontario. Accessed Sat., Nov.30, 2023.

3 - Snyder, Season. 2023. *Steve Rankin Tribute*. Email post dated Sun., Dec.10, 2023.



Sunflower Riddles

By John F. Foster

- 1) I can be up to 3 m tall. I prefer to grow in full sun. The rays and disk florets of my flowerhead are yellow. Who am I? _____
- 2) I am often seen growing by roads and trails. My stem and leaves are hairy. The rays of my flowerhead are yellow but my disk is black. Who am I? _____
- 3) I can grow in shade. My leaves are smooth above and hairy below. Both my rays and disk are yellow. Who am I? _____
- 4) I grow up to 2.5 m tall. My yellow flowerhead can be 8 cm across. The paired stemless leaves on my stem form a reservoir for water. Who am I? _____
- 5) I like to grow in large groups. My yellow rays droop and my gray disk forms a cylinder. I prefer to grow in full sun. Who am I? _____
- 6) I grow both in the wild and in cultivation. My disk can be 8 to 30 cm across. The ripened seeds in my disk are a favourite food of birds. Who am I? _____

(Answers at the bottom of Page 12)

Prairie Wildflower Gallery¹

All Photos by John F. Foster



Ohio Spiderwort (*Tradescantia ohioensis*)
Blooms Apr. to July. Wood edges, roadsides.²



Philadelphia Fleabane (*Erigeron philadelphicus*)
Blooms April to July. Thickets, fields, open woods.²



Grey-headed Prairie Coneflower (*Ratibida pinnata*)
Blooms June to Sept. Fields, prairies.²



Canada Tick-Trefoil (*Desmodium canadense*)
Blooms July to Aug. Open woods, edges.²



Butterfly Milkweed (*Asclepias tuberosa*)
Blooms June to Sept. Fields, dry soil.²



Wild Bergamot (*Monarda fustulosa*)
Blooms July to Aug. Dry edges, thickets, clearings.²

1 - VASCAN. 2024. *Database of Vascular Plant Names of Canada*. Canadensys, University of Montreal Biodiversity Centre. <https://data.canadensys.net/vascan/search>. Accessed Friday, January 12, 2024.

2 - Peterson, R.T. and McKenny, M. 1968. *A Field Guide to Wildflowers*. Houghton Mifflin Company, Boston.



The Bluestem Banner is published twice per year by Tallgrass Ontario. The next edition will appear in June 2024. All previous editions of the Bluestem Banner can be found here:

[Bluestem Banner – Tallgrass Ontario](#)



(Answers to Sunflower Riddles: 1 - Tall Sunflower; 2 - Black-eyed Susan; 3 - Woodland Sunflower; 4 - Cup Plant; 5 - Grey-headed Coneflower; 6 - Common Sunflower)