



# The Canadian Botanical Association Bulletin

## Bulletin de l'Association Botanique du Canada

Volume 58 Number 2 - September/septembre 2025

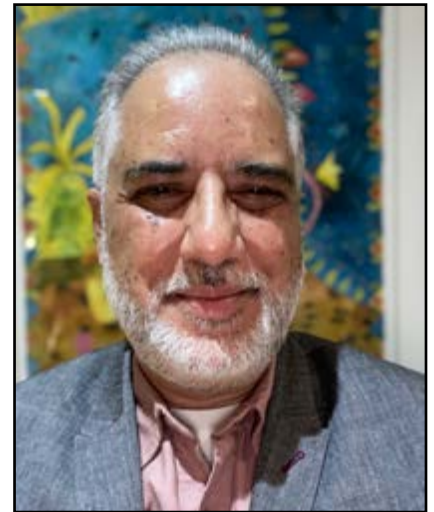
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### President's Message

Dear members of CBA/ABC,

It is a great privilege, honour, and responsibility to serve as the President of the Canadian Botanical Association / L'Association Botanique du Canada (CBA/ABC). I eagerly anticipate this wonderful opportunity to collaborate with all CBA/ABC members in promoting the Association's role in botanical research and education across various scientific forums in Canada.



First and foremost, I would like to express my profound gratitude to John Markham, Nicole Fenton, and Christian Lacroix for stepping in as Special Advisers to lead the Association last year when I was unable to serve as President. A special thank you goes to Mihai Costea (President, 2022-24) and John Markham (Interim President, 2024-25) for their strong leadership and mentorship role. I also extend a warm welcome to our new Board members: Cory Wallace (Director East), Quentin Cronk (Director West), Claire Schon (Student Director East), and Amy Wiedenfeld (Student Director West). I appreciate the dedication of the current Executive members and those who have completed their terms.

#### *61st Annual Meeting in St. John's*

This year, we held our 61st Annual Meeting at the stunning Memorial University campus in St. John's, Newfoundland and Labrador on June 10 - 14. The theme of the 2025 conference was "*Botany on the Rock for Conservation and Sustainability / Botanique sur le rocher pour la conservation et la durabilité.*" The event was exceptionally organized, well-attended, and a resounding success.

## **The Canadian Botanical Association Bulletin**

The CBA Bulletin is issued three times a year (March, September and December) and is freely available on the CBA website.

### Information for Contributors

All members are welcome to submit texts in the form of papers, reviews, comments, essays, requests, or anything related to botany or botanists. For detailed directives on text submission please contact the Editor (see below). For general information about the CBA, go to the website: [www.cba-abc.ca](http://www.cba-abc.ca)

### Executive Editor

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### Next issue

Texts for the next issue, 58(3), must be received by December 1, 2025

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## **Bulletin de l'Association Botanique du Canada**

Le Bulletin de l'ABC paraît trois fois par année, normalement en mars, septembre et décembre. Il est envoyé à tous les membres de l'ABC.

### Soumission de textes

Tous les membres de l'Association sont invités à envoyer des textes de toute nature concernant la botanique et les botanistes (articles, revues de publication, commentaires, requêtes, essais, etc.). Tous les supports de texte sont acceptés. Pour des renseignements détaillés sur la soumission de textes, veuillez consulter le rédacteur (voir ci-dessous). Infos générales sur l'ABC à l'url suivant: [www.cba-abc.ca](http://www.cba-abc.ca)

### Rédactrice en chef

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### Prochain numéro

La date de tombée des textes du prochain numéro, le no 58(3), est le 1 décembre 2025

## *Conference Highlights*

The scientific program featured several highlights, including the “Botany on the Rock” general symposium, the Weresub lecture titled “Nothing Rotten! Finding Inspiration in Fungi” by Yolanda Wiersma, and the public lecture “Vegetation and Flora of Newfoundland” by Susan Meades. We also had a thought-provoking plenary lecture, “Indigenous Leadership in Science: Going Beyond Inclusion,” delivered by Warren Cardinal-McTeague. In addition, the CBA/ABC Sections organized their own section-specific symposia, enriching the program further.

Our social program was equally engaging, beginning with a relaxing “Welcome Mixer with Live Art Demo” on Tuesday, followed by an entertaining “Live Auction” expertly orchestrated by John Markham on Wednesday. The festivities culminated in a lively “Banquet and Awards Evening” at Spirit of Newfoundland on Thursday.

The success of this conference can be largely attributed to Julissa Roncal (Vice-President and Chair of the Local Organizing Committee) and her dedicated team: André Arsenault, Madonna Bishop, Carissa Brown, Kathryn Hargan, Timothy Strange, Yolanda Wiersma, Dmitry Sveshnikov, and Cory Wallace. On behalf of CBA/ABC, I extend my heartfelt thanks to Julissa and her team for their outstanding efforts in organizing the conference.

## *Awards Ceremony*

A highlight of our CBA/ABC Annual Meeting was the celebration of our fellow botanists' achievements through various awards. John Markham presented two Mary E. Elliott Awards for meritorious service to the Association: one to Moira Galway for this year and another to Deb Metsger for last year during the banquet. Karen Tanino from the University of Saskatchewan was honored with the Magister Teaching Award.

We also recognized several students for their exceptional contributions. The student award winners included: Nicolas Penafiel Loiza (Porsild – Consaul Award); Ziqi Ye (Stan Rowe Award); Adele Bunbury-Blanchette (Luella Weresub Award); Romina Silva Espejo (Iain and Sylvia Taylor Award); Claire O'Brien (Lionel Cinq-Mars Award) with Katie King as Honorable Mention; and Tedi Pollack (Laurie Consaul Northern Research Scholarship).

This year's recipients of the Macoun Travel Bursary were Emma Neigel, Katerina Coveny, AJ Deneka, Sandamini Bandara, Claire Schon, and Mia Courville-Todorov. The Undergraduate Travel Bursary recipient was Spenser Morouney. Additionally, Jada Ripley and Rowan Kernaghan won the Undergraduate Awards at the Science Atlantic meeting at Acadia University, while Spenser Morouney and Sofiyah Oladipupo received Undergraduate Awards at Ontario Biology Day.

Congratulations to all our award winners! A heartfelt thank you as well to all our judges and award organizers for their invaluable contributions.

### *Looking Ahead*

Looking forward, our next Annual Meeting will be held at Carleton University in Ottawa, June 2-6 2026. The Local Organizing Committee, led by Tyler Smith (CBA/ABC Vice President), has already begun planning for this exciting event. More information regarding the conference program will be shared soon.

### *Get Involved!*

The true strength of CBA/ABC lies in its members. We encourage all members to actively participate in the Association's activities and welcome volunteers for various CBA/ABC committees, including the Executive. Additionally, we invite you to help promote the Association and attract new members. One effective way to do this is by sharing the information about the benefits of joining CBA/ABC with colleagues in your department. Please feel free to send us your suggestions, comments, and perspectives on how we can increase CBA/ABC membership.

I look forward to seeing you at our next annual meeting in Ottawa!

Sincerely,

Santokh Singh



Interim President John Markham presenting the official CBA seal to incoming President Santokh Singh during the AGM at this year's conference in St. John's.

## New Member Publications

Neigel, E. R., Schwinghammer, T. D., & McCune, J. L. (2025). Dispersal limitation and seed predation drive rarity of a plant species at its range edge. *Journal of Ecology*, 113, 2148–2159. <https://doi.org/10.1111/1365-2745.70083> (and see the accompanying blog post [here](#)).

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## Systematics, Evolution, and Biodiversity Section Update

Adriana Lopez Villalobos is our new section co-chair. Adriana is the interim research and biodiversity informatics manager at the University of British Columbia's Botanical Garden.

During our section meeting we brainstormed ideas on how to better promote the Porsild Consaul award and to attract young people to plant systematics, evolution and biodiversity more generally. We agreed to send emails to biology, ecology and evolution departments across Canadian Universities for which Adriana is starting to compile such list. In the email we will send a description of the award with a link to the CBA's website.

We also agreed to prepare profiles of people with a career in plant systematics, evolution and biodiversity and post them in our website so young students can have some ideas on what they can do with a career in botany.

~Julissa Roncal



Photos of Julissa Roncal at the Agnes Marion Ayre Herbarium open house on Saturday, June 14th. On the left, Julissa is showing specimen mapping before GIS. On the right, Julissa is showing one of Agnes Marion Ayre's illustrations, intended for her planned series of books, *Wild Flowers of Newfoundland*.

# Ecology & Conservation Section Update

By Jenny McCune

Thank you to all section members who joined us for our section meeting at the CBA/ABC conference this June in St. John's. There, I presented a draft of a two-page policy brief entitled *Canada needs a National Plan to Conserve Plants*. The goal of the document is to highlight the gaps in plant conservation here in Canada, along with the opportunities to fill those gaps, and to urge the federal government to:

- Support a **National Plan for Plant Conservation** in collaboration with environmental NGOs, Indigenous knowledge holders and land guardians, researchers with plant expertise, and the vascular plant and bryophyte and lichen sub-committees of COSEWIC.
- Provide funding for a small dedicated staff to co-ordinate activities.
- Promote and fund both protection *and* active stewardship and recovery of plants

If you would like to review the draft document and provide feedback, please email me at [jl.mccune@uleth.ca](mailto:jl.mccune@uleth.ca). I'd also appreciate any suggestions on distributing it (once finalized) from those of you with experience communicating with the people in power.

Our section organized a half-day symposium at the CBA/ABC meeting entitled *Plant ecology at the edges: ecotones and range limits*. Thank you to the participants for their excellent talks. They demonstrated that Canadian plant ecologists are at the forefront of understanding the causes and consequences of shifting ecotones and range limits.

Claire O'Brien - *Thermokarst can stimulate tall shrub productivity and facilitate plant-soil feedbacks at the taiga-tundra ecotone*

Kristin Olson - *Population performance of a wide spread wildflower varies with geographic range position and environmental conditions*

Olivia Rahn - *Incorporating clines in habitat quantity into our understanding of species range limits*

Katie Goodwin - *Climate and herbivory interact to drive population and range dynamics of a montane plant*

Christopher Eckert - *Range limits may arise from an imbalance between extinction and colonization*

If you have ideas for a symposium or a field trip at future CBA/ABC meetings, let me know.

Congratulations to Ziqi Ye (Laurentian University), winner of this year's J. Stan Rowe award for the best student paper in plant ecology. Ziqi's paper, entitled *Root and shoot phenology, architecture, and organ properties: an integrated trait network among 44 herbaceous wetland species*, earned high praise from the judges. I would like to thank the judges for volunteering their time to help me adjudicate the award: Dr. Marlow Pellatt, Dr. J.C. Cahill, Dr. Nancy Shackelford, Dr. Laurent Lamarque, and Dr. Chris Eckert. You can read the paper here: <https://nph.onlinelibrary.wiley.com/doi/full/10.1111/nph.19747>

Finally, if you are a university research lab, non-governmental organization, consulting firm or other organization that **does plant ecology in Canada**, please send me the address of your website so I can include a link to it in the Ecology and Conservation Section CBA/ABC webpage.

# The 2025 Canadian Botanical Association Awards

Prepared by John Markham

## Magister Award for Teaching Excellence

*The Magister award recognizes plant biologists who have demonstrated a consistently high level of teaching excellence and teaching-related activities at a Canadian post-secondary institution.*

This year's recipient of the award is Karen Tanino, from the University of Saskatchewan.

Karen has been an exemplary teacher for more than 35 years. She is a dynamic lecturer with a passion for teaching and is dedicated to student growth. She initiated a number of international student exchanges and has also taken many students on international horticulture tours to California, Cuba, The Netherlands, and Japan. She is co-principal investigator on a major Global Skills Opportunities grant under Universities Canada to promote student mobility outside of Canada for indigenous, low income, and disabled students. Karen is also a builder of communities. She created the College of Agriculture and Biosciences (AgBio) Horticultural Club, one of the largest and most active clubs on campus. Excess vegetables grown by students are sold to other students at very reasonable prices, improving food access on campus. As the President of the Canadian Society for Horticulture Science, she created a number of initiatives to encourage student participation, and as a result, increased student membership by 500%. Furthermore, Karen is also involved in hands-on horticultural activities with the Bedford Collegiate (an Indigenous public high school), manages Gardenline, an information source that provides timely information to gardeners in the community through online workshops, a website, social media and a telephone line from May to September every year.



Karen was unable to attend the Annual Meeting to receive her award. However, she wished to convey the following message:

*Thank you so much to the Canadian Botanical Association evaluation committee, to my nominator, and to those who wrote letters of support. I truly appreciate all of your time and effort. I apologize for not being able to receive this award in person. Maya Angelou once said, "People will forget what you said, People will forget what you did, But people will never forget... How you made them feel." Through engaged learning, I strive to instill a sense of wonder in my students by taking them on a journey—the story of the plant. If I can spark even a little excitement and curiosity about plants, creating their own journey into the discovery of plants, then I believe I've done my job. I am deeply humbled by this award. Thank you again for this incredible honor.*

## **Elliot Award**

*The Mary Elliott Service Award is given to an individual for meritorious service to CBA/ABC.*

This year's recipient of the award is Moira Galway, from St. Francis Xavier University.

Moira has been a stalwart supporter of the CBA/ABC. She helped organize the Plant Canada meeting in Antigonish in 2003. She has chaired the Development section for over a decade. She has served two terms on the Board of Directors. She has been our representative of Plant Canada for six years. Just as importantly, in all her time with the Association, she has been someone who can be relied on to help whenever needed, judging countless presentations at the annual meeting and evaluating articles for the Taylor Steeves award. She truly embodies a commitment to the society and promoting botany in Canada.



**Above:** Moira Galway receives the Elliot Award from John Markham.

**Right:** Moira Galway, John Markham, and last year's Elliot Award winner, Deb Metsger.



## Consaul Northern Research Scholarship

This award is given to an undergraduate or graduate students doing field research in Botany in the northern regions of Canada, and honours the memory of Laurie Consaul. We gratefully acknowledge the donation of this award by Laurie's partner, Mark Armstrong.

This year's recipient is **Tedi Pollack** from Acadia University, working in Zoe Panchen's lab. Her project is entitled: *Investigating arctic lousewort for mycorrhizae: cultivation methods for culturally important plants*. Tedi will be working in Cape Bounty, Melville Island, and Iqaluit, Baffin Island .



## Paper awards

Porsild-Consaul Award for the best paper published by a student in systematics, evolution and biodiversity.

Winner: **Nicolas Penafiel Loiza** from Memorial University for his paper:

Nicolás Peñafiel Loiza, Abigail H. Chafe, Mónica Moraes R, Nora H. Oleas, Julissa Roncal. 2024. Genotyping-by-sequencing informs conservation of Andean palms sources of non-timber forest products. *Evolutionary Applications*. 17: e13765. <https://doi.org/10.1111/eva.13765>



The Weresub Award for the best paper published by a student in mycology

Winner: **Adele Bunbury-Blanchette**, St. Mary's University for her paper:

Bunbury-Blanchette, A.L., Fan, L., and Kernaghan, G. 2024. Yeast communities of a North American hybrid wine grape differ between organic and conventional vineyards. *Journal of Applied Microbiology* 135: lxae092. <https://doi.org/10.1093/jambio/lxae092>



Rowe Award For the best paper published by a student in the field of Ecology or Conservation

Winner: **Ziqu Ye**, Laurentian University (pictured here with Peter Ryser), for his paper:

Ye, Z., Mu, Y., Van Duzen, S. and Ryser, P., 2024. Root and shoot phenology, architecture, and organ properties: an integrated trait network among 44 herbaceous wetland species. *New Phytologist*, 244(2), pp.436-450. <https://doi.org/10.1111/nph.19747>



## CBA Annual Meeting Presentation Awards

### Cinq-Mars Award for the best oral presentation by a student at the Canadian Botanical Association annual meeting

Honorable mention: Katie King. Identifying the symbiotic fungi of the endangered Ram's-Head Lady Slipper orchid in Nova Scotia, Canada

Winner: **Claire O'Brien**. Thermokarst can stimulate tall shrub productivity and facilitate plant-soil feed-backs at the taiga-tundra ecotone



### Iain and Sylvia Taylor Award for the best poster presented by a student at the CBA/ABC annual meeting

Winner: **Romina Silva Espejo**. Richness and composition of foliicolous lichens from the northeastern part of Puebla, Mexico



## CBA conference Travel Awards

### Macoun Travel Bursary for graduate students presenting a paper or a poster at the annual meeting of the CBA/ABC

Recipients (left to right): Mia Courville-Todorov (Moncton), AJ Deneka (Canadian Museum of Nature), Sandamini Bandara (Manitoba), Katerina Coveny (Waterloo), Claire Schon (Waterloo), Emma Neigel (Lethbridge)



Undergraduate Travel Bursary for undergraduate students presenting a paper or a poster at the annual meeting of the CBA/ABC

Winner: **Spenser Morouney** (Acadia)



**Regional Science conference CBA Award winners 2025**

Science Atlantic (Acadia) Meeting at Acadia University

The best botany poster award was awarded to:

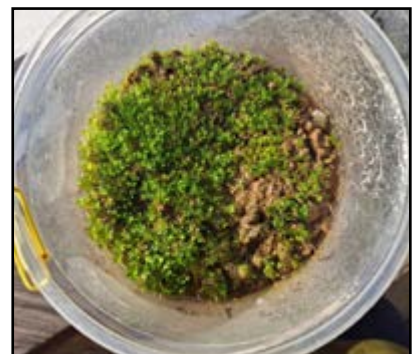
Name: **Rowan Kernaghan**

School: Saint Mary's University

Title: Distribution patterns of bryophytes on Nova Scotian farmland

Description of the study:

The main takeaway of our study was that bryophytes on farm fields were more abundant towards the field margin. We also wanted to know if this distribution of bryophytes was because their propagules could not effectively reach far into the field or if habitat conditions were preventing colonization away from the field margin. To find the answer, we took soil samples at different distances from the field edge and brought them to our lab to give them ideal growth conditions for bryophytes. This involved germinating bryophytes from the propagules found in the soil under controlled environmental conditions. We concluded that although habitat conditions were the main drivers of bryophyte dispersal patterns in farm fields, propagule dispersal also had a slight influence. We found no connection between the presence of bryophytes and soil quality.



Moss propagules germinated in the lab using soil taken from an agricultural field.

The best botany presentation was awarded to:

Name: **Jada Ripley**

School: Mount Allison University

Title: Pollinator importance of a specialist bee, *Macropis nuda*, versus other generalist visitors to a New Brunswick population of *Lysimachia terrestris*

Ontario Biology Day

Best botany Poster:

Name: **Sofiyyah Oladipupo**

School: McMaster University

Title: The effect of interstrain competition on the nodule occupancy of green pea plants

Best botany presentation:

Name: **Spenser Morouney**

School: Wilfrid Laurier University

Title: Seeds of change: impacts of permafrost disturbance on tundra shrub production



*Calliandra houstoniana* seen in Mexico

Photo by Mihai Costea

## How Can CBA/ABC Contribute to Reconciliation?

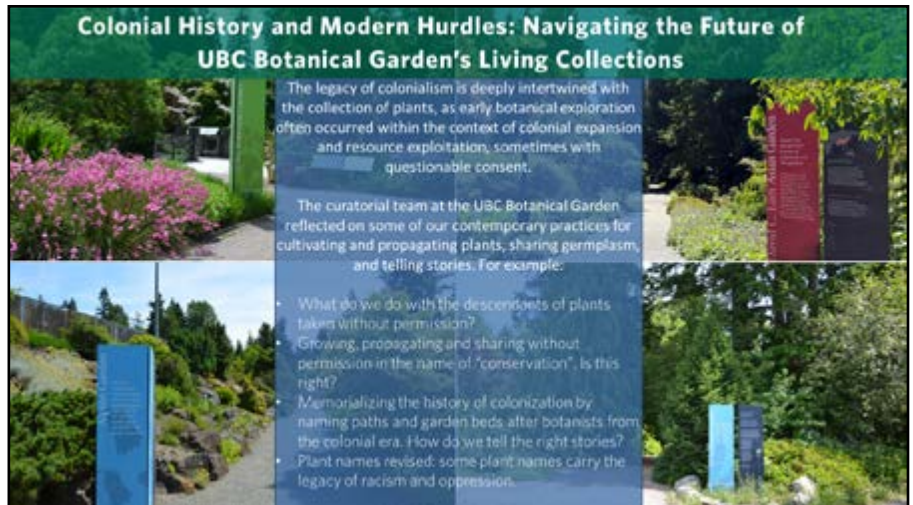
The CBA/ABC IDEA (Inclusion, Diversity, Equity, and Accessibility) Committee has been active in ensuring that its members can have access to material to help them understand the importance of the Truth and Reconciliation Calls for Action and how everyone can play a role in this. In the past year, a living library has been developed with reading that can help people along this path.

In June, during the 2025 CBA/ABC meeting, the IDEA committee also organized a symposium entitled, “Moving towards post-colonial botany.” The aim was to bring discussion on the topic of Indigeneity from various perspectives. We structured the event around three sections: 1. The colonial history of herbaria in Canada; 2. Indigenous ways of knowing about plants, and how to integrate that in future Indigenous projects, Indigenous perspective; 3. Researcher perspectives on how to work respectfully with communities and Indigenous knowledge of plants.

We were fortunate to have a slate of excellent presenters. In the first section, we were privileged to hear the diverse perspectives of representatives of herbaria and botanical gardens from the Pacific to the Atlantic Coasts: Adriana Lopez (Botanical Garden, UBC), Diana Bizecki Robson (Manitoba Museum), Nadia Cavallin (Royal Botanical Gardens, Ontario), and Sean Haughian (Nova Scotia Museum). Their different approaches to this question illustrated both its breadth and the variety of ways it can be addressed.

In the second section, we were honoured to have two representatives of Indigenous communities from different parts of Canada. Chief Byron Alexander of the Indian Head First Nation (Newfoundland) shared his perspectives and experiences with plants. He highlighted the importance of staying grounded in the earth to better see and understand the links between all living things, including between plants and humans. Iris Lochon, project manager for the Abitibiwinni Anicinabe Nation (Québec), spoke of the relationship between community members and plants, and how they are working on bringing indigenous plant knowledge into the school and braiding it with scientific techniques, such as collecting plant specimens with elders and documenting indigenous names and uses.

In the third section, André Arsenault (Canadian Forest Service, Corner Brook, NL) shared his motivations and experiences in working with different Indigenous communities across Canada. André presented some examples of ways we can engage with Indigenous communities. Examples include research projects, communication programmes, and training workshops. Indigenous led research is probably one of the most important aspects while working with Indigenous people. Relationships and reciprocity are



Reflections by Adriana Lopez on the colonial history of the UBC Garden



An image from a new exhibit highlighting the roles played by indigenous peoples on the prairies. Image copyright Ian McCausland.

essential and can take time to build.

Dr Warren Cardinal-McTeague (UBC; Métis, Cree) offered some closing remarks summarizing the afternoon and opening the door towards continuing efforts. As noted by Dr. Cardinal-McTeague, this kind of symposium is new for the CBA, a landmark that seemed unimaginable just a decade ago. The Association can be proud of the important step forward, particularly if the momentum builds from here.

We are especially indebted to generous 2025 symposium presenters, who were all invited so close to the event date, and to patient participants, who – for lack of time – forewent dedicated time for reflection and productive discussion that the occasion most certainly inspired. In these ways and others, the 2025 symposium highlighted opportunities for organizers of future symposia.

One main lesson that the IDEA committee takes forward to 2026, and encourages CBA to factor into future symposia, is time. Beginning to plan a year or more in advance could increase flexibility and intention to everyone’s benefit. For example, creating an initial plan that includes speakers and local participants, whether or not they would otherwise have attended the meeting, prepares symposium organizers to make early time, space and budget requests of the Local Organizing Committee (LOC), and/or to seek external sponsorship and support (or to re-imagine the scale and scope of the event to fit the available resources).

While the symposium was considered a success with a full room and many comments and questions, it is clear that time would also increase options for gathering diverse panels with appropriate representation. Future CBA/ABC symposia should allow enough time for communicating well and preparing content more fully. A discussion period with panel questions and strategies for fuller participation should become a must. These measures are especially helpful with themes that are newer or less familiar to the organization, until, with practice and learning, we become more confident and efficient.

At the 2025 symposium, Dr. Cardinal-McTeague concluded with thought-provoking questions. For example, What is “post-colonialism”? Is “decolonization” a goal the CBA should or even *could* target? What should we envision instead?

Important questions can be such valuable invitations. What can CBA do next toward seeing Indigenous Knowledge and perspectives flourish in the Association and all its activities?

Other questions regarding diversity have yet to be examined and discussed at CBA/ABC, considering our demography and the multiculturalism of the country. But should it only be the responsibility of the IDEA committee? How can other symposia presented during the conference include more diversity in their panelists?



During the plant collection activity held in Pikogan in 2023-2024 students learned about plants from both herbarium and indigenous perspectives.



André with Miawpukek Land Guardians, Newfoundland and Labrador

This is where time is of the essence to ensure reflections and finding ways to embrace different perspectives in botany.

Whether or not you were present for the IDEA symposium in 2025, please send your suggestions and observations to the authors or to any member of the IDEA Committee (listed below).

Or, better yet, join the Committee and make a difference! Many hands make light(er) work, as the saying goes. IDEA Committee meetings are on topic and on time, with specific action items and timelines. Whatever time, energy, ideas or skills you may have to share will be warmly appreciated!

*~Jennifer Doubt, Liette Vasseur, & Nicole Fenton*

*[The IDEA committee is composed of the above authors, as well as: Nina Obiar, Colin Bonner, Sam Livingston, Laura Super, Santokh Singh, Jana Vamosi, and Julian Starr ]*

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*Salvia laevis* seen in Mexico

Photo by Mihai Costea

# How might climate change impact northern populations of white trillium?

Kristin Olson, PhD Student

Department of Biological Sciences, University of Lethbridge; Department of Biology, McGill University

White trillium is an iconic sign of spring. The plant's large white flowers blanket forest floors across southern Ontario every May. Farther north, however, you might not see the sea of white that you would in the Peterborough area. Instead, you might see individual trillium plants with leaves larger than your hand (Figure 1). This finding, that populations near the center of trillium's range have lots of relatively small individuals and northerly populations have fewer individuals but that those individuals tend to grow to larger sizes, is a key result of my work with white trillium.

Over the last three summers (2023-2025), I visited 58 unique white trillium populations across trillium's northern range- from as far south as Port Franks, Ontario to as far north as Temiskaming Shores, Quebec. This region is a beautiful place to work and provided the opportunity for many exciting outdoor adventures including; extensive botanizing, black bear and moose sightings, sunrise paddles and more (Figure 2)! But I didn't just collect memories, I also collected lots of data on the performance of white trillium populations across the region. Theory suggests that habitat quality declines from the center of species' ranges toward their edges and therefore population performance will also decline. So, to understand how populations of trillium may change across a range-center to northern-range edge gradient, I collected data on population size, plant density, and individual plant size. I found that plant density did decline toward trillium's northern range edge, as expected. However, I found that individual plant size increased along the same gradient. This second result was unexpected based on theory (but not all that surprising) and shows that not all metrics used to define population performance will decline toward a range edge.

Overall, these northern range edge populations appear to be healthy and productive even if they have fewer individuals than central populations. It's possible that, as temperatures continue to warm due to climate change, habitat quality near trillium's northern range edge will increase (or that it already has!). An increase in habitat quality would mean that northern edge populations may increase their growth and become more abundant over the next 10-20 years. It also means that habitat beyond trillium's northern range edge may become warm enough for trillium to establish and persist in.

The idea that habitat quality beyond trillium's



**Figure 1.** An individual white trillium with leaves the size of an adult hand growing in a northern range-edge population near Renfrew, ON (left). A population of white trillium near Peterborough, ON where individuals blanket the forest floor every spring (right).



**Figure 2.** Enjoying a peaceful evening after a long day of field work at ZEC Maganasipi. Keeping an eye out for ducks, moose, and beavers!

current northern range edge may increase to a suitable level for trillium to establish into was the motivation for the second part of my study. I took individuals from natural populations of white trillium in southern Ontario and planted them at sites within trillium's range and beyond its northern range edge (Figure 3). To test whether increasing temperatures will allow trillium to persist farther north than it currently does, I added warming treatments to some of my plots (Figure 4). So far, more transplants have survived at sites that are within trillium's current range than at sites beyond trillium's northern range edge. Plants at sites within trillium's range also tended to be more likely to flower and, among the plants that did flower, they also produce more seeds than individuals at sites beyond trillium's northern range edge. Results on whether plants within warmed plots out-perform plants in un-warmed plots are yet to come!



**Figure 3.** (A) The rhizome of a white trillium that we dug up and planted beyond trillium's northern range edge- by counting the rings on this rhizome we can estimate the individual is 20+ years old! (B) Nora Bartram-Forbes holding a bouquet of trillium that we made after extracting their rhizomes for transplanting (don't worry, we had permits for this). (C) Planting rhizomes into their new homes in our research plots and wishing them good luck.



**Figure 4.** Measuring how big the transplanted trillium are inside open topped warming chambers (OTCs) (left) compared to control plots (right).

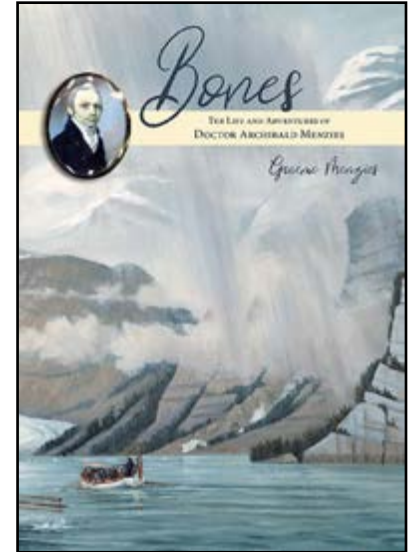
## Book Review

### Bones: The Life and Adventures of Doctor Archibald Menzies

By Graeme Menzies; Whittles Publishing, Dunbeath, Scotland; 2024, 142pp. \$31 softback, ISBN 978-184995-591-1.

Reviewed by David H.S. Richardson

With no clue from the title, I was sent this book and found that in some small ways, my experiences matched those of Archibald Menzies, but 200 years later. We were both born in Britain, I being brought up on a farm in Devon with a walled kitchen garden in which I grew roses, then I went to university and studied botany. Archibald was born in Scotland in 1754, the son of the Head Gardiner of Castle Menzies near Killin in central Scotland. He grew up and worked in the gardens that included a physic garden as well as decorative gardens. At the age of seventeen, with the approval and sponsorship of the Chief of the Clan, he went to Edinburgh University and studied botany with Professor John Hope. Then he did medicine and joined the Royal Navy. His travels took him to the West Indies, Nova Scotia and later to Western Canada. The ships he sailed in used a sextant for determining the ship's position and barometers for monitoring weather changes. Archibald also used the latter for estimating the height of mountains. I sailed a 32 ft sailboat, *Sarva*, from Britain to the west Indies and thence via the eastern coast of the USA to New York and up the Hudson River to Manatoulin Island in Lake Ontario in 1977. I also used a sextant, barometer, and paper charts, but now GPS and modern technology is the norm for long distance sailors (Richardson, 1976, 1978a,b). Later in my career, I too spent a year on Vancouver Island and 30 years in Nova Scotia. Thus, in many ways, I was able to compare Archibald's experiences with the current situation. In a letter to his botany professor, John Hope, during his visit to Nova Scotia Archibald commented on "the vast number of Cryptogamic plants of which you know I am passionately fond" (p,27) a sentiment that I can endorse from my own career. Of course, there have been huge changes with respect to the flora, fauna, and human population as well as interactions with indigenous inhabitants and improvements in medicine. The description of Archibald's life in the 1780s and 1790s makes this an absolutely fascinating book for those living today. Not only does the text describe each period in the life of Archibald Menzies, but also where he went, whom he met, who influenced his success, along with the politics of the day, as well as his botanical achievements and his medical experiences.



The book is divided into ten chapters. Initially we find out about Archibald's early life and career in Edinburgh, where when walking from the Royal Botanic Gardens to the university, he experienced the culture and architecture of the city, which is described in detail. Archibald was incredibly lucky to study with Professor John Hope, who involved him in botanical surveys to the top of Ben Nevis, the highest mountain in Scotland, and to the Hebrides. In Edinburgh, he met a diverse community of people and visitors like the famous botanist and explorer Joseph Banks. From him, Archibald learned that James Cook, after completing a circumnavigation of the world, returned with some 30,000 plant specimens. This stimulated Archibald to maintain and expand his interests in botany, which became a focus of his later career.

After ten years at Edinburgh University and having received training both as a botanist and a doctor under leading experts of the day, Archibald was accepted as a surgeon in the Royal Navy. Initially, he worked in Naval hospitals in Britain, but in 1781 was appointed to *HMS Nonsuch*, which was c. 50m long. The warship was sent to the Caribbean to join a fleet of more than thirty ships under the command of the famous Admiral Rodney to protect British interests in the area, and prevent hostile takeover of islands such as Jamaica, Barbados, and Antigua. This book provides a fascinating account of life and role of a ship's surgeon at the time. The fleet met and engaged the

French fleet in the “battle of the Saintes” in which the Royal Navy defeated the French. There are details of the battle and of the skill of Archibald as a surgeon that are very interesting. After the battle, Archibald was transferred to a smaller ship, *HMS Assistance*, that was sent to join the Navy Base in Halifax, Nova Scotia. Arriving in early September 1782, Archibald commented that the area was “a delightful prospect for botanical researches” and lists some of the species he found (p.27). Over the next three years, in addition to his medical employment, he was active in observing and collecting plants, keeping in touch with friends in Europe including his professors in Edinburgh. He then returned to London in 1786 and with the help of Joseph Banks, got a position on a commercial mission bound for western North America. The ships set off, but it took almost a year before Archibald’s ship, “*The Prince of Wales*” arrived in Nootka Sound, on the west coast of what is now called Vancouver Island, some 150 miles north of Victoria. The object of the mission was to Trade various metal objects and beads with the local indigenous inhabitants in return for animal skins. This gave Archibald opportunities for botanical searches for seeds and undescribed plants. After two summers, he returned to London, arriving in the summer of 1789 after an absence of some three years. This account includes fascinating details as to whom Archibald met, talked with or corresponded with; both with respect to his activities as a doctor and as a botanist.

Archibald was next invited to join an exploration that focused on surveying the west coast of North America, as well as recording features that included the geology and botany etc. of the region. The expedition was eventually led by Captain George Vancouver and was mounted against a backdrop of political intrigue that involved Spain and Britain with respect to who was to control the Northwest of North America, including commercial locations like Nootka Sound. Three ships comprised this mission and Archibald was assigned the position of Botanist on the *HMS Discovery*. He was given detailed instructions which stipulated that seeds and collected plants were to become the property of King George III on return to Britain and also sent to botanical gardens. Many of the officers in charge of this expedition were in their thirties, so it was an interesting group to lead this daunting circumnavigation.

The ships left in 1791, went around the tip of South Africa, and from there to Hawaii, where Captain Vancouver enforced strict regulations about interactions between the sailors and indigenous inhabitants. However, Archibald was able to undertake botanical research and field trips that included climbing the highest mountain Mauna Loa while carrying a barometer with which they determined that the peak was 156m above sea level, where it was freezing cold and very exposed. The ships then left for the 2,600 mile trip to Nootka Sound. There, the mission spent from the spring of 1792 to the end of the summer of 1794 exploring the western coast of North America from California to Alaska. They located and charted the Columbia River and entered the straight of Juan de Fuca and heading north between what is now Vancouver Island and mainland British Columbia, with Archibald making botanical collections and finding new plant species (including those listed on p.83 and 84). He also observed numerous cryptogamic plants and medicinal species interacting with local inhabitants. The surveys confirmed that what is now called Vancouver Island was indeed an island and which included Nootka Sound on its west coast.

After all sorts of adventures, the *HMS Discovery* with Archibald on board headed home via Cape Horn. Almost a year later in October 1795, they arrived in London. This was the longest survey expedition in history, taking nearly five years to complete. Archibald’s botanical achievements were remarkable. William J Hooker attributed to Archibald the first collections of almost 200 species (p. 121) in his *Flora Boreali Americana*. A few of these plants are listed in the text of this book (p.95). On his return to London, Archibald interacted with the Linnean Society and a wide range of friends, including a lady called Janet Brown. He then took on a project aimed at controlling levels of typhus and other diseases on naval ships and was appointed the ships surgeon on *HMS Sans Pareil*, the flagship of the Caribbean fleet. He returned to the UK some two years later and married Janet Brown, but they had no children. Archibald became a well known and highly respected doctor in London for the next 20 years, continuing his interactions with botanists and other scientists who were living nearby or who visited. Janet died in 1836 and Archibald in 1842.

Archibald Menzies lived a remarkably long life for someone so adventurous, dying at the ripe old age of 88. This book covers every aspect of day to day activities while Archibald was sailing, collecting plants, or simply

interacting with scientists and friends at home. For those interested in botany, it would have been interesting to include more on the species of plants he first found, or to have an appendix table of those plants that Hooker attributed to Archibald Menzies. The book has such an array of detail on so many aspects of life in 1750 to 1850, that it can be recommended not only to botanists and sailors, but also those with interests in the history of Indigenous-European interactions or the development of modern medicine.

The book ends with a list a list of sources, a series of end notes cross-listed by numbers with the text, and an index to people, places and ships. The endnotes frequently make really interesting reading, providing sources or extra information to that which is in the text. Finally, there are about a dozen pages of colour plates that illustrate aspects covered in the ten chapters, and an epilogue. In answer to an obvious question about the author of this outstanding book, Graeme Menzies is directly related to Archibald Menzies – they share the same surname and both descend from the Scottish Menzies clan, but they are not direct relatives.

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*Ludwigia octovalvis* seen in Mexico

Photo by Mihai Costea

# ‘Thérèse Bugnet,’ Developed by Alberta Pioneer, Georges Bugnet

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Most enthusiasts are aware that the passion for rose shrubs in private and public gardens is enhanced after learning about their history and the people who bred them. There are dozens of international books on garden roses which discuss the heritage of the most popular kinds; however, there is seldom room for information about those bred in Canada. Such information is even more sparse about early settlers who developed new varieties by breeding the ones they introduced with wild shrub roses growing near their homes.

One of the best examples of an early settler who developed hardy rose shrubs is Georges-Charles-Jules Bugnet (pronounced Boo-nyea). Bugnet was a French journalist who came to Canada in 1904 at the age of 25 with his wife and small child. In 1905, they homesteaded a quarter section of forested land about 80 km northwest of Edmonton, near what later became the hamlet of Rich Valley.

As with most homesteaders in this area, Bugnet (1879-1981) struggled with farming because of a short growing season, killing frosts and relative isolation of his farm. Several years before World War I, Bugnet hoped to develop hardy herbs, shrubs and trees according to the local growing conditions. He wrote to botanic gardens in the northern regions of the world requesting seeds of hardy species which he then planted on his property. As well, Bugnet began crossing wild shrub roses he found near his farm with those grown from seeds he received from Europe and Asia. He developed 11 kinds of hardy roses, several of which are still found in botanic gardens near Edmonton. The one he named Thérèse Bugnet is widely available today and is considered one of the hardiest roses in the world.

Bugnet would have been aware that the two species of native wild roses found on his farm, *Rosa acicularis* (commonly known as ‘prickly rose’; Fig. 1) and *Rosa woodsii* (commonly known as ‘Woods rose’), are rugged, their blossoms have a fragrant aroma and are well adapted to various habitats. They are cold hardy, resistant to disease, thrive in areas burned by forest fires, grow on poor soils, resist desiccation, and reproduce both sexually and asexually. He knew that the blossoms are simple, flat structures, with only 5 petals, and abscised after a day or two (Fig. 2). They flower once a year over a period of 4-6 weeks with each fertilized blossom developing into a hip with nut-like seeds (botanically, they are achenes). Viable offspring that resemble the parents result from these seeds. Both are clonal species and produce plantlets by underground rhizomes that spread from the mother plant. Bugnet wanted to develop cold tolerant shrubs with large, long-lasting blossoms that repeatedly appeared from spring to fall, had multiple



**Fig. 1.** Wild rose shrub, *Rosa acicularis*, growing in a roadside ditch near the Bugnet homestead.



**Fig. 2.** Blossom of the wild shrub rose, *Rosa acicularis* (the floral emblem of Alberta) found near the Bugnet homestead.

petals, and stems with fewer prickles than the parents. He succeeded with Thérèse Bugnet.

My connection with Georges Bugnet and Thérèse Bugnet began in the summer of 2023 when visiting a friend's rose garden in Sudbury, Ontario. While showing me a Thérèse Bugnet (Fig. 3), he described how it was a hybrid between an Alberta wild rose and a rose from northeastern Asia and that it was developed by a French settler near Edmonton. This piqued my interest since my wife and I spent part of our lives in this part of Alberta and neither of us recalled hearing about Bugnet.

Upon further investigation, we learned that the Province of Alberta purchased a portion of the former Bugnet homestead in 1965 to establish the 'Bugnet Plantation Historic Site', which is now considered a 'Provincial Historic Resource'.

An inquiry in the early spring of 2024 sent to the website of La Société des Amis de la Plantation Bugnet (Friends of the Bugnet Plantation Society), resulted in a response from Juliette Champagne, President of the Society. She told us that the site consists of 5 hectares surrounded by private farmland and permission must be obtained from the Alberta Historic Resource Management Branch in order to access the site.

Champagne warned us that there were no roads to the site and a truck is required to traverse the rough trails. Further, she explained that few signs of Bugnet and his homestead remain, and the site is overgrown with caragana and lilacs (Fig. 4) with only a few paths through the dense brush. However, wild shrub roses are found in nearby roadside ditches.

We persisted and flew to Alberta to meet Champagne on May 21 on a roadside about 1.5 km northwest of Rich Valley. Unbeknown to us, she had posted word of our visit on the Plantation website, and we were joined by 7 others, two of whom had trucks. After walking the trails for about two hours and trying to imagine what the site once looked like, we had lunch in a small clearing near mature conifers grown by Bugnet (Fig. 5) and were entertained with stories about this amazing man. Turns out, he was far more than a farmer and plant breeder. Besides being a journalist, he was a novelist, poet, and playwright and received many awards for his accomplishments.

One of the visitors that day was Leonard Nobert, a retired dentist from St. Albert, Alberta who told us about visiting the Bugnet farm when he was a boy and seeing a large orchard with fruit trees, berry-producing shrubs such as haskap, and dozens of rose shrubs. Nobert took us to the nearby Lac la Nonne Cemetery where Georges and his wife are buried. We then visited the nearby town of Legal, where a large mural commemorating Bugnet is painted on the side of a building (Fig. 6). There was a flowering Thérèse Bugnet growing among Manitoba maples that were partially blocking the mural.



**Fig. 3.** Thérèse Bugnet in a garden in Sudbury, Ontario.



**Fig. 4.** Dense growth of caragana and lilacs that make the Bugnet Historic Site almost impregnable.



**Fig. 5.** Conifers along one edge of the Historic Site that were planted by Bugnet from seeds he obtained from Asia. Most have superior attributes compared to endemic species. The metal enclosures at the base of the trees are to prevent damage by porcupines.

We learned that Georges Bugnet spent 25 years developing Thérèse Bugnet and regarded it as his greatest horticultural achievement. The parentage is thought to be (*Rosa acicularis* x *Rosa rugosa kamchatica*) x (*Rosa amblyotis* x *Rosa rugosa flore plena*). There is evidence he made four complex crosses with at one point *Rosa rugosa kamchatia* used as the female parent crossed with *Rosa acicularis*, or possibly *Rosa woodsii*. The smooth canes of Thérèse Bugnet suggest that one parent was Betty Bland, which was developed by another western pioneer, Frank Leith Skinner (1882-1967) and introduced in 1926. Other roses produced by Bugnet include Martha Bugnet, Louise Bugnet, Madeleine Bugnet, Rita Bugnet, Lac Majeau, Lac la Nonne' (*Rosa rugosa rubra plena* x *Rosa acicularis*), and Betty Bugnet, but Thérèse Bugnet is the most widely available in gardening centres.

One of the intriguing attributes of wild shrub roses throughout the world (about 150 species are recognized) that make them rugged, and able to quickly adapt to new habitats, is the ease by which they cross or interbreed with other species. Each of the species of wild shrub roses in Canada will readily interbreed with other nearby species. Knowing this, Bugnet set out to produce plants that were superior to his local wild roses.

The terminology for naming and cataloguing rose shrubs growing in the wild and in our gardens is complex and confusing. Most writers on roses use the term 'rose' when referring to both the blossoms and the shrub. As a biologist, I prefer to use the term 'rose' when referring to the shrub and 'rose flowers' or 'blossoms' when referring to the petalled reproductive organs, and the terms 'wild shrub roses' and 'garden shrub roses' when referring to the entire bush.

Rosarians classify shrub roses in several different ways without much reference to botanical principles. In terms of ancestry, they are often divided into three main groups: 'Species Roses,' 'Old Garden Roses,' and 'Modern Garden Roses.' Rosarians include wild roses under the category 'Species Roses' whereas biologists consider species only as those with populations that breed true and have a Latin genus and specific name.

Most garden shrub roses are hybrids, meaning that they do not produce viable offspring that look like their parents. Garden roses produced by interbreeding are not true species in the botanical sense, but this is of little concern to rosarians since cultivars can be propagated by taking cuttings of the new plant with desired features. These hybrids or cultivars are biological anomalies and this is the reason they are referred to by common rather than scientific names. Most new hybrids of roses exhibit heterosis, or hybrid vigour, which is a trait whereby progeny resulting from the breeding of two distinct species exhibit phenotypic superiority over the parents with characteristics such as cold hardiness, size and shape of flowers, prickliness of stems, rate of growth, and shape of the shrub. It does not matter if new cultivars produce viable seeds, or if seedlings show wide variability with no resemblance to the parents.

The formation of hybrids in nature allows offspring better chances of surviving changing environmental conditions than their parents. Thérèse Bugnet is an excellent example of a hybrid Modern Garden Rose as it grows faster,



**Fig. 6.** Mural on the side of a building in Legal, Alberta commemorating Georges and Julia Bugnet.



**Fig. 7.** Blossom of Thérèse Bugnet in a garden in Sudbury, Ontario.

taller, is prickly free except near the base, and is more disease resistant and cold hardy than either parent. Naming and categorizing garden shrub roses or cultivars, nearly all of which are a mixture of species, is challenging for biologists, especially those studying host-specific insects.

Bugnet was fortunate to obtain seeds of the garden rose *Rosa rugosa* from the St. Petersburg Botanic Garden and use them in his experiments. The Rugosa shrubs he worked with are famous for their vigour and cold hardiness. Their canes are densely clothed with prickles, they have thick, dark green, wrinkly leaves (thus the name Rugosa), are long-lived and disease and pest resistant. Their blossoms (Fig. 7) vary in colour from red to white, are highly fragrant, and bloom repeatedly from spring to fall. Most importantly, Rugosa roses freely interbreed with other species.

The shrubs Bugnet developed are genetically complicated because the introduced Rugosa parents he mated with his wild shrub rose were likely already hybrids. Most Rugosa hybrids produce seeds, but plants raised from these seeds are a mixture of parents. Of interest, Thérèse Bugnet produces few hips. Because of its *Rosa rugosa* heritage, rosarians classify Thérèse Bugnet as a Rugosa rose. This rose is easy to propagate from softwood cuttings.

Thérèse Bugnet is more floriferous than its parents with large, double, pink, fragrant blossoms, with an average of 36 wavy petals 8-10 cm in diameter. Its clusters of blossoms appear repeatedly from mid-spring to the first frost of fall. The multiple canes grow two metres in height under ideal garden conditions and turn red in the fall. The stems are nearly prickly-free even though the stems of parents, *Rosa acicularis* and a Rugosa hybrid, are heavily clothed with prickles.

Hybrids such as Thérèse Bugnet are usually free of insect pests; however, it has been increasingly common for specialized insects such as gall-inducing cynipid wasps to shift hosts from endemic wild shrub roses to the hybrids, especially those with *Rosa rugosa* parentage. For example, large stem galls the size of golf balls, induced by *Diplolepis spinosa*, and normally found only on *Rosa blanda* in eastern Canada, and *Rosa woodsii* in western Canada, are commonly found on garden roses with *Rosa rugosa* parentage. Of interest, the tiny cynipid wasp *Diplolepis rosaefolii* locates garden Thérèse Bugnet with ease and induces lens-shaped galls on the leaflets (Figs 8 and 9). Galls induced by cynipid wasps appear to cause no damage to roses, but to many gardeners, they are unsightly and should be removed.

Much remains to be learned about the potential use of the hundreds of compounds known to occur in the various organ systems of both wild shrub roses and cultivars of garden shrub roses. It stands that if these potential uses are to be explored, the gene pools in the form of living hybrid shrubs, such as those developed by Georges Bugnet, must be sustained. Thankfully, rosarian Margit Schowalter, has assembled at her garden in Tofield, Alberta, southeast of Edmonton, a large collection of these old roses developed on the prairies by breeders of the past, including those of Georges Bugnet. She has ensured that many of these old cultivars are preserved at the St. Albert and University of Alberta Botanic Gardens and cuttings are sent to other botanic gardens such as the Montreal Botanical Garden. The Cornhill Nursery in New Brunswick carries Bugnet's roses.



**Fig. 8.** Lens-shaped galls of the cynipid wasp *Diplolepis rosaefolii* on the leaflets of 'Thérèse Bugnet'.



**Fig. 9.** Mature gall of *Diplolepis rosaefolii* in the spring with adult wasp that had just exited its gall and would soon begin searching for leaflets in which to lay eggs.

It is uplifting to realize that rose shrubs in our gardens are living relics of history. They provide an emotional connection to the past serving as a breathing immediacy that fossilized bones, scraps of literature, or paintings or frescos on ancient walls cannot match. We can touch and smell the same shrubs that descended through centuries and millennia and are still contributing pollen to the intricate web of rose genealogy. To hold a blossom of ‘Thérèse Bugnet’ in one hand (Fig. 10) is like simultaneously shaking the hand of Georges Bugnet with the other.



**Fig. 10.** Leonard Nobert, retired dentist and founding member of the Friends of the Bugnet Plantation Society and Marilyn Shorthouse admiring a blossom of Thérèse Bugnet.

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*Joe Shorthouse is a retired entomology professor at Laurentian University in Sudbury, Ontario where he studied the wild roses of Canada, and in particular the cynipid wasps that induce galls exclusively on roses. He undertook his MSc at the University of Alberta and his PhD at the University of Saskatchewan on leaf galls of wild roses in Alberta, Saskatchewan, the Yukon Territory and Alaska, USA. He and his wife spend the winters in Sudbury and the summers on Manitoulin Island in northern Lake Huron. In his retirement, he writes articles for newspapers and magazine and enjoys giving presentations on insects, shrub roses, the natural history of Manitoulin Island and the greening of Sudbury. The photo below was taken in 2010 at the former University of Alberta George Lake field research station about 30 kms northeast of Rich Valley.*



Joe Shorthouse with the galls of *Diplolepis polita* on *Rosa acicularis* at the George Lake Field Station of the University of Alberta, east of the Georges Bugnet site. Photo by Marilyn Shorthouse.

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