



The Canadian Botanical Association Bulletin

Bulletin de l'Association Botanique du Canada

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Highlights

President's Message	Pg. 1
Member News & Notices	Pg. 3
Consaul Award Research Report	Pg. 10
FREED: Planting Seeds for the Future	Pg. 14
In Memoriam: Dr. Paul Cavers	Pg. 17
Book Review: A Field Guide to Trees of Ontario	Pg. 22
The Kew Herbarium Saga	Pg. 24
The Lawson Medal – By the Numbers	Pg. 32

President's Message

Dear CBA/ABC members,

I will keep my message short this time.

1. Please consider nominating a colleague for our major awards: the Lawson Medal, Mary E. Elliott Award, and Magister Award. Especially the latter has not been awarded since 2016! The deadline for these awards is at the end of January. Among the student awards, Laurie Consaul Northern Research Scholarship has the deadline earlier than the (student) paper awards: February 28 2024. Please see more information about all the CBA/ABC awards on our website: <https://www.cba-abc.ca/awards/>

2. Preparations are underway for the Plant Canada meeting, which will take place in Winnipeg on July 6-10, 2024. John Markham and Sylvie Renault are our representatives in the LOC. Please contact your Section Chairs as soon as possible if you plan organizing a symposium/workshop. [If still wondering why we are going to Winnipeg again next year, please see the President's message from the September 2023 Bulletin].

3. Please don't forget to renew your membership! This is our main source of revenue, from which we support numerous student awards, and without which we cannot survive financially.

4. CBA needs a new President Elect in 2024. Please consider nominating yourself! (see inside Bulletin).

5. The CBA/ABC Board of Directors voted unanimously in favor of a resolution in which we urged the Board of Trustees of the Royal Botanical Gardens, Kew to reconsider the decision to separate the



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. Hardcopy subscriptions are available for a fee.

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

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Next issue

Texts for the next issue, 57(1), must be received by February 1, 2024

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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

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Prochain numéro

La date de tombée des textes du prochain numéro, le no 57(1), est le 1 février 2024

Herbarium from the living collections, and to relocate the herbarium to the Thames Valley Science Park near Reading (Please see inside the Bulletin).

6. Dr. Ernie Small has concluded the extraordinary series of plant portrait articles that he has published in our Bulletin over nearly three decades. Both Dr. Small and Dr. Paul Catling have kindly agreed to allow us to extract, reorganize, and make these articles accessible on a separate page on our website. Please stay tuned!

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As we are approaching the end of 2023, I wish you happiness and good health, and may 2024 bring you fresh inspiration, energy, and new achievements.

§

Chers membres de la CBA/ABC,

Mon message sera bref cette fois-ci.

1. Pensez à proposer la candidature d'un(e) collègue pour nos principaux prix : la Médaille Lawson, le Prix Mary E. Elliott et le Prix Magister. Ce dernier, en particulier, n'a pas été décerné depuis 2016 ! La date limite pour ces prix est fin janvier. Parmi les prix pour étudiant(e)s, la bourse de recherche nordique Laurie Consaul a une date limite antérieure à celle des prix pour articles étudiants : le 28 février 2024. Pour plus d'informations sur les prix de la CBA/ABC, veuillez consulter notre site web : <https://www.cba-abc.ca/awards/>

2. Les préparatifs sont en cours pour la réunion de Plant Canada, qui aura lieu à Winnipeg du 6 au 10 juillet 2024. John Markham et Sylvie Renault sont nos représentants au sein du COL. Si vous prévoyez d'organiser un symposium ou un atelier, veuillez contacter les présidents de votre section dès que possible. [Si vous vous demandez toujours pourquoi nous nous rendrons de nouveau à Winnipeg l'année prochaine, veuillez consulter le message du président dans le Bulletin de septembre 2023.]

3. N'oubliez pas de renouveler votre adhésion ! Il s'agit de notre principale source de revenus, qui nous permet de financer de nombreuses bourses pour les étudiant(e)s, et sans laquelle nous ne pourrions pas survivre financièrement.

4. L'ABC a besoin d'un nouveau président élu en 2024. Pensez à proposer votre candidature ! (voir à l'intérieur du Bulletin).

5. Le Conseil d'administration de l'ABC a voté à l'unanimité en faveur d'une résolution dans laquelle nous demandons au Conseil d'administration des jardins botaniques royaux de Kew de reconsidérer leur décision de séparer l'herbier des collections vivantes et de relocaliser celui-ci au Thames Valley Science Park près de Reading (voir à l'intérieur du Bulletin).

6. Ernie Small a mis un terme à son extraordinaire série d'articles sur les portraits de plantes publiés dans notre Bulletin pendant près de trois décennies. Small et Paul Catling ont aimablement accepté de nous permettre d'extraire, de réorganiser et de rendre ces articles accessibles sur une page distincte de notre site web. Restez à l'écoute !

À l'approche de la fin de l'année 2023, je vous souhaite bonheur et bonne santé, et que l'année 2024 vous apporte une inspiration et une énergie nouvelles, et qu'elle rende possible de nouvelles réalisations.

Translated in French by Frédérique Guinel



Dog-strangling vine (*Vincetoxicum rossicum*)
Photo: T. Smith

Graduate Student Opportunity In Climate Change And Invasive Species Research

Ottawa, Ontario, Canada

The research groups of **Heather Kharouba** (University of Ottawa) and **Tyler Smith** (Agriculture and Agri-Food Canada) invite applicants for a graduate student (MSc or PhD) to begin September 2024. The successful applicant will develop their own project that fits into common themes between the two groups.

Ongoing collaborative research focuses on understanding and predicting the range expansion of invasive plants in North America. Future directions could involve plant-insect interactions and invasive species management.

The successful applicant will join an engaged lab and department at the University of Ottawa, and have access to resources (e.g., herbarium, Experimental Farm) and partnerships at AAFC.

We welcome candidates who are enthusiastic about plant and/or insect ecology and who would like to have a broader impact with their research.

To inquire, please send an email to: heather.kharouba@uottawa.ca describing why you are interested in the position and what makes you a good candidate. Suitable candidates will be asked to provide a full application.

Applications will be reviewed until the position is filled.



New Member Publications

Allan, J.M., M. Guêné-Nanchen, L. Rochefort, D.J.T. Douglas & J.C. Axmacher. (Early View, 6 octobre 2023) Meta-analysis reveals that enhanced practices accelerate vegetation recovery during peatland restoration. *Restoration Ecology*: e14015; doi: 10.1111/rec.14015.

(Une copie pdf de cet article peut être demandée à gret@fsaa.ulaval.ca)

Dickinson, T. A. and S. Han. 2023. What is Suksdorf's hawthorn? Revision of the Western North American 20-stamen black-fruited hawthorns (*Crataegus* series *Douglasianae*, Rosaceae subtribe Malinae). *Journal of the Botanical Research Institute of Texas*, 17: 151-189. <http://dx.doi.org/10.17348/jbrit.v17.i1.1292>

Douglas, H.B., Smith, T.W., and Bouchard, P. 2023. Palaearctic leaf beetle *Chrysolina fastuosa* (Coleoptera, Chrysomelidae, Chrysomelinae) new to North America. *Biodiversity Data Journal* 11: e103261. Pensoft Publishers. [doi:10.3897/BDJ.11.e103261](https://doi.org/10.3897/BDJ.11.e103261).

Jhansi, K., Rahamtulla, M. & Khasim, S.M. (2023). Phytochemicals and pharmacological potential of *Acampe ochracea* and *A. praemorsa* (Orchidaceae): An overview. In: T. Pullaiah (Ed.) *Phytochemical Composition and Pharmacy of Medicinal Plants*, Vol. 1, Apple Academic Press, Inc. Co-published with CRC Press (Taylor & Francis). Pp. 189-199.

Jhansi, K., Rahamtulla, M., Kishore, I.V. & Khasim, S.M. (2023). Phytochemical and Therapeutic Potential of *Aerides odorata* Lour. (Orchidaceae): An Overview. In: T. Pullaiah (Ed.) *Phytochemical Composition and Pharmacy of Medicinal Plants*, Vol. 1, Apple Academic Press, Inc. Co-published with CRC Press (Taylor & Francis). Pp. 201-205.

Koutecký, P., Smith, T., Loureiro, J., and Kron, P. 2023. Best practices for instrument settings and raw data analysis in plant flow cytometry. *Cytometry Part A* n/a. [doi:10.1002/cyto.a.24798](https://doi.org/10.1002/cyto.a.24798).

Kulbaba, M. W., Yoki, Z., and Hamilton, J. A. 2023. Chasing the fitness optimum: temporal variation in the genetic and environmental expression of life-history traits for a perennial plant. *Annals of Botany* XX: 1-14.

Mata, J.K., Martin, S.L., and Smith, T.W. 2023. Global biodiversity data suggest allopolyploid plants do not occupy larger ranges or harsher conditions compared with their progenitors. *Ecology and Evolution* 13(8): e10231. [doi:10.1002/ece3.10231](https://doi.org/10.1002/ece3.10231).

McTavish, M.J., Smith, T., Mechanda, S., Smith, S.M., and Bouchier, R.S. 2023. Morphological traits for rapid and simple separation of native and introduced *Phragmites australis*. *Invasive Plant Science and Management*: 1–28. Cambridge University Press. [doi:10.1017/inp.2023.15](https://doi.org/10.1017/inp.2023.15).

Rahamtulla, M., Mallikarjuna, K. & Khasim, S.M. (2023). GC-MS analysis and therapeutic importance of leaf extracts of *Dendrobium aphyllum* (Roxb.) C.E.C. Fischer: An In vitro study. *South African Journal of Botany*, 153: 62-76.

Rahamtulla, M. & Khasim, S.M. (2023). Phytochemical and pharmacological profile of *Dendrobium aphyllum* (Roxb.) Fischer. In: T. Pullaiah (Ed.) *Phytochemical Composition and Pharmacy of Medicinal Plants*, Vol. 2, Apple Academic Press, Inc. Co-published with CRC Press (Taylor & Francis). Pp. 267-273.

Rahamtulla, M. & Khasim, S.M. (2022). In vitro regeneration of an epiphytic orchid, *Dendrobium aphyllum* using leaf explants. *J. Orchid Soc. India*, 36: 121-129.

Ramudu, J. & Khasim, S.M. (2022). Genetic diversity of an endemic orchid, *Coelogyne nervosa* A. Rich from Southern India using morphological and molecular markers. *J. Orchid Soc. India*, 36: 113-119.

Venkatesh, R. & Khasim, S.M. (2023). Phytochemical and pharmacological profile of *Cymbidium aloifolium* (L.) Sw. In: T. Pullaiah (Ed.) *Phytochemical Composition and Pharmacy of Medicinal Plants*, Vol. 1, Apple Academic Press, Inc. Co-published with CRC Press (Taylor & Francis). Pp. 241-248.

CBA/ABC Invites Nominations for a New President-Elect

The President-Elect serves a 2-year term before assuming the President role, and shall originally have served a term as a Director or an equivalent service elsewhere in the Corporation (e.g., as an officer of a Section). The President-Elect's main duties are:

- To chair the Lionel Cinq-Mars and Iain and Sylvia Taylor committee awards, including the presentation of the awards.
- To manage the CBA/ABC undergraduate awards offered at the different regional competitions held across Canada.

The position will start in July 2024.

If you are interested in these essential volunteer positions for CBA/ABC, please submit a brief (1/2 page) statement describing your current position and/or motivation for the position via email to Mihai Costea, mcostea@wlu.ca by March 1st, 2024. If you have questions, please feel free to inquire using the same email address. The Board of Directors is looking forward to receiving your nominations and will present a slate of candidates to the membership several weeks prior to the AGM.

L'ABC lance un appel de candidatures pour un nouveau président élu

Le président élu remplit un mandat de deux ans avant d'assumer le rôle de président, et doit au départ avoir rempli un mandat de directeur ou un service équivalent ailleurs dans la société (par exemple, en tant que dirigeant d'une section). Les principales fonctions du président élu sont les suivantes :

- Présider les prix des comités Lionel Cinq-Mars et Iain et Sylvia Taylor, y compris la remise des prix.
- Gérer les prix de premier cycle de l'ABC offerts lors des différents concours régionaux tenus au Canada.

Ces trois postes débiteront en juillet 2024.

Si vous êtes intéressé(e) par ces postes bénévoles essentiels pour l'ABC, veuillez soumettre une brève déclaration (1/2 page) décrivant votre position actuelle et/ou votre motivation pour le poste par courriel à Mihai Costea, mcostea@wlu.ca avant le 1er mars 2024. Si vous avez des questions, n'hésitez pas à vous renseigner en utilisant la même adresse électronique. Le conseil d'administration de l'Association se réjouit de recevoir vos nominations et présentera une liste de candidats aux membres plusieurs semaines avant l'AGM.

Teaching Section is seeking a co-Chair

After many years, Dr. Patrick von Aderkas has decided to step down as a co-Chair of the Teaching Section, which, thanks to him and Dr. Laura Super, the other co-Chair, has been one of the most active sections of the Association.

Section Chairs are not elected; they volunteer, and Laura is now seeking an enthusiastic person to join her as a new co-Chair, preferably someone who is already teaching at one of the Canadian institutions. The role of this position is flexible. As you know, CBA Sections have one annual meeting during the conference of that particular year, they may organize different events, keep the Section webpage updated, write articles for the Bulletin, and in general, pursue any initiative compatible with the interests of the Section.

Laura recently defended her PhD and is working on publications and doing some outreach relevant to botany, such as the following:

1. Plant walk in Pacific Regional Spirit Park with a STEAM (STEM + Arts) and phytobiome focus;
2. Applying to do phytobiome and conservation teaching material and mentorship through a faculty network: the Spring 2024 BioGraphI FMN is now accepting applications until December 1 (<https://qubeshub.org/community/groups/biographi/getinvolved/fmns>).

Please contact Laura (leslaura@gmail.com) and Mihai (mcostea@wlu.ca) if interested in this position.



CBA/ABC field trip, Montreal meeting, 2014. Photo compliments of Mihai Costea.



*Don't forget to save the
date for Plant Canada
2024!*



CBA/ABC Awards 2024

By Mihai Costea

Considering the small size of the CBA, we sponsor as many or more [awards](#) than much larger Associations/Societies, and we honour all the stages of education and professional development. In 2023, the CBA gave ca. \$15,000 for the student awards! Many of the past student winners have continued their studies in botany or have become valued established professionals. We hope that the encouragement and recognition conferred by these awards contributed at least in a small measure to their success. Among the student awards, [Laurie Consaul Northern Research Scholarship](#) has an earlier deadline compared to the paper awards: February 28, 2024. This award is intended for those undertaking field research in Botany in the northern regions (north of 60°) of Canada in the upcoming field season.

Please also consider nominating a colleague for one of our three major awards: the Lawson, the Mary E. Elliott and the Magister. The deadline for these awards is January 29, 2024 (or contact mcostea@wlu.ca if you need an extension).

Canada has had brilliant botanists – the previous winners of the [Lawson Medal Award](#) clearly prove that. Let's continue the tradition and recognize exceptional colleagues (members or non-members) in one of the two categories: a) one outstanding contribution to botanical knowledge (monograph, book or series of papers) and b) recognition of cumulative, lifetime contributions to Canadian botany by a senior researcher, teacher, or administrator.

The [Mary E. Elliott Award](#) is given to an individual for meritorious service to the CBA. Among the CBA members, some have selflessly dedicated a tremendous amount of time, energy and ingenuity for the benefit of the Association. This noble effort deserves our full recognition and gratitude.

[The Magister Award](#) is aimed at recognizing an outstanding post-secondary teacher (member or not member) who has sustained a high level of teaching excellence in botany or plant biology over at least 10 years. This is our least awarded CBA prize, and I cannot believe that we do not have great botany teachers in Canada. Please help us to discover them and show the appreciation they deserve!

Prix de la CBA/ABC 2024

Compte tenu de la petite taille de l'ABC, nous parrainons autant de [prix](#), voire plus, que des associations/sociétés beaucoup plus grandes, et nous honorons toutes les étapes de l'éducation et du développement professionnel. En 2023, l'ABC a dépensé environ 15 000 dollars pour les prix décernés aux étudiants ! De nombreux lauréats étudiants ont poursuivi leurs études en botanique ou sont devenus des professionnels reconnus. Nous espérons que l'encouragement et la reconnaissance conférés par ces prix ont contribué, ne serait-ce que dans une faible mesure, à leur réussite. Parmi les prix décernés aux étudiants, la [Bourse de recherche nordique Laurie Consaul](#) a une date limite antérieure à celle des prix décernés aux auteurs d'articles : le 28 février 2024. Cette bourse est destinée à ceux/celles entreprenant des recherches en botanique dans les régions septentrionales (au nord du 60° parallèle) du Canada au cours de la prochaine saison de terrain.

Nous vous invitons également à proposer la candidature d'un(e) collègue pour l'un de nos trois prix majeurs: le Lawson, le Mary E. Elliott et le Magister. La date limite pour ces prix est le 28 février 2024 (ou contactez mcostea@wlu.ca si vous avez besoin d'un délai supplémentaire).

Le Canada a eu de brillants botanistes – les précédents lauréats du [prix Lawson](#) le prouvent clairement. Poursuivons la tradition et reconnaissons des collègues exceptionnels (membres ou non-membres) dans l'une des deux

catégories suivantes : a) une contribution exceptionnelle à la connaissance de la botanique (monographie, livre ou série d'articles) et b) la reconnaissance des contributions cumulatives de toute une vie à la botanique canadienne par un chercheur principal, un enseignant ou un administrateur.

Le [prix Mary E. Elliott](#) est décerné à une personne pour services méritoires rendus à l'ABC. Parmi nos membres, certains ont consacré de façon désintéressée une quantité énorme de temps, d'énergie et d'ingéniosité au profit de l'Association. Ces nobles efforts méritent toute notre reconnaissance et notre gratitude.

Le [prix Magister](#) vise à reconnaître un enseignant post-secondaire exceptionnel (membre ou non) qui a maintenu un haut niveau d'excellence en enseignement de la botanique ou de la biologie végétale pendant au moins 10 ans. Il s'agit du prix de l'ABC le moins attribué, et je ne peux croire que nous n'ayons pas de grands professeurs de botanique au Canada. S'il vous plaît, aidez-nous à les découvrir et à leur montrer l'appréciation qu'ils méritent !

Translated in French by Frédérique Guinel



CBA/ABC field trip to Bruce Peninsula, Laurier meeting, 2017.
Photo compliments of Mihai Costea.



CBA/ABC field trip to Royal Botanical Gardens, Laurier meeting, 2017.
Photo compliments of Mihai Costea.

Laurie Consaul Northern Research Scholarship 2023

The award was established in honor of Dr. Laurie Consaul (1960-2012) through the generous financial support of her husband, Mr. Mark Armstrong. After several years of interruption caused by Covid-19, the presentation of the award has been resumed in 2023, and Mr. Armstrong kindly sponsored two students and their research projects in the North, each with \$1,500. The award committee consisted of Jennifer Doubt, Jana Vamosi, and Christine Petersen.

The 2023 award recipients are:

Anne-Marie Blanchette, Laval University

Supervisors: Dr. Dominique Fauteux and Dr. Pierre Legagneux

Project: Effects of predation and herbivory pressure on high arctic tundra vegetation in Bylot Island (Nunavut).

Claire O'Brien, Wilfrid Laurier University

Supervisor: Dr. Jennifer Baltzer

Project: Shrubbing off disturbance: Are tall, deciduous shrubs more productive in arctic disturbances? [Please see Bulletin 56(2): 26].

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Dr. Laurie Consaul was an internationally recognized plant systematist, and an expert in Arctic plants and the taxonomically-challenging grass genus *Puccinellia*. During her 22-year career as Research Assistant in the Botany section at the Canadian Museum of Nature, she spent many summers undertaking botanical fieldwork in the Canadian Arctic and gained an excellent knowledge of the Arctic flora. Laurie obtained her PhD in 2008 with her research focused on the systematics of Canadian Arctic *Puccinellia*. In 2011, after obtaining her PhD for her research on the systematics of Canadian Arctic *Puccinellia*, Laurie accepted a position as Assistant Professor in the Biology Department at Memorial University, St. John's, Newfoundland and Labrador. Just prior to moving to St. John's, Laurie became ill and she lost her battle with cancer on December 18, 2012. She was a long-time member of the CBA as a student member in the 1980s, a regular member from 1994, and serving as the Association Secretary from 2009-2011.



This research award is open to all undergraduate or graduate students who will be undertaking their field research in Botany in the northern regions (north of 60°) of Canada in the upcoming field season. It might be able to apply for more southern regions if the application is well justified. The student or his/her/their supervisor must be a member of the CBA. Applications for this award must follow the [instructions in the application form](#) and must be submitted by February 28 of each year. Decisions will be made public by mid-March at the latest to ensure that fieldwork can be conducted in appropriate times.

Consaul Award Research Report

Anne-Marie Blanchette, Laval University

Résumé: Effets en cascade de la predation sur la vegetation de la toundra du Haut-Arctique

A file Bylot, Nunavut, les lemmings font des cycles aux 3-4 ans dont les amplitudes menent la population a se multiplier jusqu'a 100 fois a l'interieur d'une annee. Les consequences de ces cycles de lemmings sont notamment une nette augmentation du succes reproducteur des predateurs. Cependant, les consequences sur la nourriture des lemmings, i.e. les plantes vasculaires et les mousses, sont encore peu connues dans le haut Arctique. Alors que certaines etudes en Norvege suggerent que les lemmings peuvent grandement reduire l'abondance de leur propre nourriture, d'autres menees dans l'Arctique canadien montrent plutot une absence d'effet. Ceci pourrait possiblement s'expliquer par une trop forte predation qui empeche le surbroutement dans le haut Arctique. De 2012 a 2022, un exclos a predateur a ete construit afin d'etudier l'impact de la predation sur les lemmings, doublant ainsi la densite de rongeurs. Pour le present projet, l'objectif est de determiner si le retrait de la predation a mene a une augmentation du broutement par les lemmings au point de diminuer significativement la richesse, la diversite et la biomasse des plantes preferees par les lemmings. Grace a un design experimental base sur un broutement normal (sans exclos), broutement augmente (dans le grand exclos) et aucun broutement (petits exclos a lemmings dans le grand exclos), je pourrai remplir cet objectif. Brievement, nous nous attendons a une diminution de la richesse, diversite et biomasse des plantes preferees par les lemmings, et l'oppose pour les plantes peu consommees.

Summary: Cascading effects on High Arctic tundra vegetation caused by predation

On Bylot Island, Nunavut, lemmings cycle every 3-4 years, with amplitudes that lead the population to increase up to 100 times within a year. The consequences of these lemming cycles include a marked increase in the reproductive success of the predators. However, little is known about the consequences for lemming food, i.e. vascular plants and mosses, in the high Arctic. While certain studies in Norway suggest that lemmings can greatly reduce the abundance of their own food, others carried out in the Canadian Arctic show rather an absence of an effect. This may be explained by excessive predation, which prevents overgrazing of the vegetation in the high Arctic. From 2012 to 2022, a predator enclosure was built to study the impact of predation on lemmings, doubling the density of rodents. The aim of the current project is to determine whether the removal of predation has led to an increase in lemming browsing to the point of significantly reducing the richness, diversity and biomass of plants preferred by lemmings. Using an experimental design based on normal grazing (without exclosures), increased grazing (in the large exclosure) and no grazing (small exclosures with lemmings in the large exclosure), I will be able to complete this objective. In summary, we expect a decrease in the richness, diversity and biomass of plants preferred by lemmings, and the opposite for plants that are not grazed very much.



Impressions de Goose camp, Qarlikturvik, Bylot Island (Nunavut)

Deux mois avec une vue à couper le souffle en sortant de ma tente : des glaciers à gauche, des icebergs et Baffin à droite, des montagnes enneigées au loin et une vallée abritant une faune et une flore incroyables. Je ne peux être plus reconnaissant d'avoir eu la chance de participer à divers projets scientifiques à cet endroit avec des gens passionnés et généreux.

Lorsqu'on pense à l'Arctique, il est fréquent d'imaginer des paysages désertiques, avec une flore presque absente ou encore très peu diversifiée. Pourtant, il y a plus d'une centaine d'espèces de plantes vasculaires sur l'île Bylot. À mon grand bonheur, j'ai pu identifier et récolter de nombreux spécimens pour mon projet de maîtrise.

J'espère que ces fragments de paysages vous feront voyager un peu avec moi !

Par ailleurs, je remercie énormément le CBA de m'avoir remis la bourse de recherche Laurie Consaul avant mon départ pour l'île Bylot. Cela m'a permis de m'équiper adéquatement pour les conditions du climat arctique, afin d'être beaucoup plus efficace et confortable. J'ai hâte d'y retourner l'été prochain pour poursuivre ma collecte de données.

Impressions from Goose camp, Qarlikturvik, Bylot Island (Nunavut)

Two months with a breathtaking view from my tent: glaciers on the left, icebergs and Baffin on the right, snow-capped mountains in the distance, and a valley home to incredible flora and fauna. I couldn't be more grateful to have had the chance to take part in various scientific projects there with passionate and generous people.

When we think of the Arctic, we often imagine barren landscapes, with little or no flora. Yet there are over a hundred species of vascular plants on Bylot Island. To my great delight, I was able to identify and collect many specimens for my master's project.

I hope that these fragments of landscape will take you on a little journey with me!

I'd also like to say a huge thank you to the CBA for awarding me the Laurie Consaul research grant before I left for Bylot Island. It has enabled me to equip myself properly for the Arctic climate, so that I can be much more efficient and comfortable. I'm looking forward to returning next summer to continue my data collection.



Erysimum pallasii



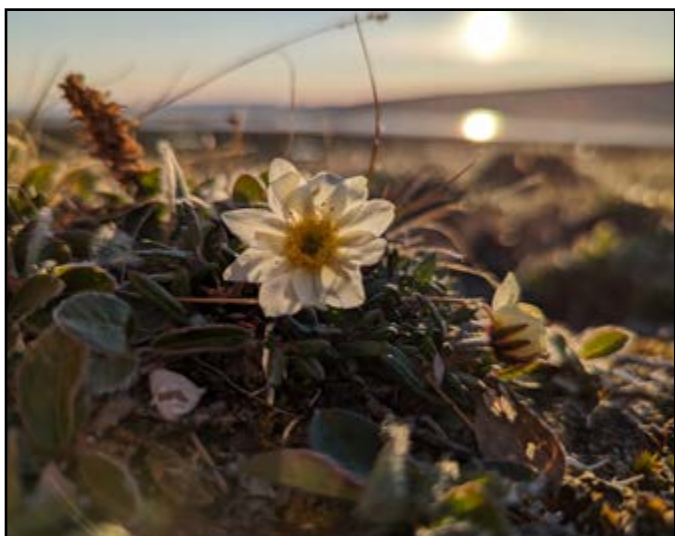
Pedicularis lanata



Salix arctica



Salix richardsonii



Dryas integrifolia



Eriophorum sp.



Arnica angustifolia



Chamerion latifolium

Planting seeds for the future: increasing access to fieldwork and research experience by breaking down barriers

By: Vanessa Nhan (Forest Analyst, Silvacom Ltd.) and Rachel Giles (Rochman Lab, University of Toronto)

For many field biologists, one's connection to nature is intricately linked to captivating memories outdoors, whether it was their parents taking them on their first camping trip, going to summer camps with friends, or learning to canoe on a lake at the summer cottage. These experiences nurture an inherent love and appreciation for nature, grow our comfort with being outdoors, and instill a responsibility and desire to care for nature and wildlife, especially in the context of the current climate crisis.

My (Vanessa's) adoration for plants first sprouted in my last year of my undergraduate degree on my first trip to Algonquin Park for a lab retreat. It was the middle of April, cold and snowy, and most of the park looked lackluster, dull, and brown - at least to my naive eyes. My professor was adamant to show us otherwise. Walking on a frozen lake and bog mats, he plucked a pitcher plant from the middle of the mat, showing us a magnificent carnivorous organism that was living just below our feet. He pointed out Eastern white cedars, white pines, balsam firs, and black spruce trees that lined the hiking trail, revealing the diversity of trees that, to me at the time, was just part of the background scenery. It felt as though a veil had lifted from my eyes and I was able to observe the forest for so much more. No longer did the forest look dull and lifeless, but instead I saw the golden bark of yellow birches, the stunning whites of paper birches, and the vibrant shades of green from pines, spruces, and firs. These moments were formative in nurturing my connection to nature and to ultimately pursue forestry as a career path. However, not everyone has had the opportunity and privilege to foster that connection to nature early on.

For many people who identify as Indigenous, Black, and/or Racialized (BIPOC), the privilege and opportunity to realize personal connections with nature is disproportionately stifled by lack of access to green spaces and careers. Some of the main barriers to access include financial constraints, societal and familial expectations, culture and religion, racial stereotypes, mental and physical health, and simple lack of representation. A lack of access stems in part from historical and ongoing colonial practices and racial biases. Naturalist work started as a colonial enterprise with European explorers – often men – who collected specimens, 'discovered' species in 'exotic' places, and stole knowledge from local Indigenous groups. These actions culminated in the foundation and blueprint for conducting Western science that is still pervasive today. It also led to



FREED instructor Jaime Grimm (University of Toronto) points out features of plants during her invasive species workshop at Cache Lake. Jaime highlighted the language used around invasive species, such as "alien" and "eradication" which often holds a negative connotation. She used this conversation as a gateway to encourage participants to think about the relationship that we hold with all living things in the natural world. Credit: Samantha Stephens



Students, instructors, and research station staff gather at Canoe Beach for a discussion about the Indigenous history of the land and the importance of our relationships with non-human kin by Christine Luckasavitch (Waaseyaa Consulting). Christine provided guidance to all instructors on how to incorporate Indigenous knowledge into their workshops. Credit: Aranya Iyer



FREED students scribble down notes and drawings in their field notebooks while Vanessa Nhan (Silvacom) describes native tree species in Algonquin Park. Vanessa's workshop also included a site visit to one of few prescribed burn sites in Mew Lake Campground. Credit: Samantha Stephens



Students practice their newly acquired canoeing skills after a donated "Learn-to-Canoe" workshop hosted by the Friends of Algonquin Park. For many students, this was their first time on the water or carrying a canoe! Credit: Aranya Iyer



FREED Students gather after their aquatic ecology workshop, led by Sally Ju (Minnow Consulting). During this workshop, students tried on waders for the first time, and learned how to collect and identify benthic macroinvertebrates for biomonitoring. Credit: Blue Merve

the creation of institutions and practices that favored the ideologies and lifestyles of these early researchers. These institutions, like universities and government, are now pressed to find ways to engage communities for whom these structures were not built. To tackle these issues face-on, Field Research in Ecology and Evolution Diversified (FREED) was born.

FREED is a grassroots organization that increases access to field research, outdoor and naturalist experience, community building, and career mentorship for BIPOC students. In 2023, led by current or recent graduates from ecology, evolution and conservation, FREED organized three events at the Toronto Zoo, Bronte Creek Provincial Park, and Algonquin Provincial Park for students from the University of Toronto, University of Guelph, McMaster University, and Western University. During each event, students, or FREEDlings as we affectionately call them, participated in a series of naturalist-based courses where they learned and developed skills in identification, sampling, and research. To address financial barriers, FREED covers transportation, accommodation, food, and even provides students with equipment subsidies and wage bursaries. It was incredible to see students grow their own connection to botany when they learned from Jaime Grimm (PhD Student, University of Toronto), Jenna Siu (Canadian Wildlife Service), and myself (Vanessa Nhan), on subjects ranging from invasive plant identification, land stewardship, and tree identification and forest management. In addition, FREEDlings participated in a series of skills-based workshops like learn-to-canoe (Friends of Algonquin Park), fly fishing (Brown Girl Outdoor World), and camping. For many, this was their first foray into nature, putting up a tent, or counting plants in a quadrat - some of the field skills that we so often take for granted as field biologists. Last and perhaps most meaningfully, students engaged in consistent discussion throughout the event about their relationship to the land and our non-human kin. With guidance from Waaseyaa Consulting founder Christine Luckasavitch, and Chief Lady Bird, lessons about Indigenous Knowledge were interwoven into every thread of the event.

One of the highlights of this years' events was a "letter to the land" activity where, on the last day, students were prompted to reflect on and write a thank you letter to the land. After several days reflecting on the reciprocity between humans, the land, and our non-human kin, what emerged were beautiful expressions of gratitude,

belonging, and connectedness, both to each other and to the land. One student wrote “You gave us space to grow and to allow ourselves to breathe and just smell the flowers.” It is moments like these that continue to motivate the work that we do, and plan this event year-over-year.

For 2024, we are excited to continue our adventure at Algonquin Provincial Park - this time for two weeks instead of one, and partnering with multiple universities! This work is only possible because of the generous support from communities that have uplifted and amplified our work! Together, we have led 56 students through our programs, guided 39 instructors on workshop planning and instruction, and have grown a network of over 80 individuals from 43 different organizations, all dedicated to reducing barriers and increasing access to field work. We are hopeful that the ripple effects will bring more programs like FREED to other universities, conservation organizations, and an overall increased representation of BIPOC individuals in our sector to foster a safe and supportive environment that will change the course of conservation to be more inclusive and equitable. We can’t wait to see where the future takes us!

Want to learn more? Check out our website for more information about [FREED](#), and read our [annual report](#) from 2023. Below, we provide a reading list for you to learn more about the knowledge, practices, and research that inform our work. If you’d like to get in touch, please send us an email at directorsfreed@utoronto.ca

Reading List

1. [A Brief History of the Madaoueskarini-Algonquin People](#), Christine Luckasavitch (Website)
2. Anishnabe 101: The basics of what you need to know to begin your journey on the Red Road. (2000). Written and published by The Circle of Turtle Lodge and Aimee Bailey. (Book)
3. Favaro, B., & Hind-Ozan, E. (2020). SciSpends: an exploratory survey investigating non-reimbursed expenses in biological sciences. FACETS, 5(1), 989-1005 (Journal)
4. Massey, M. D. B., Arif, S., Albury, C., & Cluney, V. A. (2021). Ecology and evolutionary biology must elevate BIPOC scholars. Ecology Letters, 24(5), 913-919 (Journal)
5. Bailey, K., Morales, N., & Newberry, M. (2020). Inclusive conservation requires amplifying experiences of diverse scientists. Nature Ecology & Evolution, 4(10), 1294-1295 (Journal)

IN MEMORIAM: DR. PAUL B. CAVERS

David R. Clements, Trinity Western University

On April 18th, 2023, we lost a great plant ecologist who had influenced many aspiring botanists and weed scientists in Canada, and whose legacy continues to shape plant science in Canada and throughout the world.

Paul B. Cavers died peacefully at age 85, in London, Ontario leaving behind his wife Joan, three daughters, one son and nine grandchildren. He also left behind many loyal members of his professional family.

Born and raised in Toronto, it was in London that he built an illustrious career at Western University spanning four decades, beginning in 1963. He was a well-liked undergraduate professor at Western, where he supervised 45 graduate students, numerous undergraduate research students, research technicians and postdocs. There are many of us who grew from this nourishing connection with Dr. Cavers, going on to our careers elsewhere but never really leaving his deep bank of knowledge and wisdom behind us.



In turn, Cavers traced his intellectual pedigree to that great pioneer of plant ecology, John L. Harper. Cavers had done his undergrad in the late 1950s at Ontario Agricultural College in Guelph, which at that time was under the auspices of the University of Toronto. Although the emphasis there was crop breeding and killing weeds with ever more powerful herbicide technologies, Paul was always intrigued by the variety of weed flora that remained despite these control efforts. He was also mindful of the fact that so little was known of the basic biology of many of these weed species, a gap that he was to address throughout his career.

When Paul enrolled in a course in plant geography taught by Hugh Dale in his fourth year, Paul was quite captivated by the course content. This despite the fact it was an optional course for which the grade did not even count towards his average. Course readings included some cutting edge publications on plant ecology from Great Britain that got him thinking about pursuing graduate work across the pond, and Dale encouraged and helped him to pursue this goal.

However, Cavers encountered quite a few roadblocks looking for funding to support such an endeavour and it was not until he switched from aiming for Master's funding to the loftier goal of pursuing a Ph.D. that he was awarded a 3-year scholarship by the Agricultural Institute of Canada. Then it was just a matter of getting there, to the University of Wales in Bangor, and completing a Ph.D. under John Harper. Harper was arriving to become the new head of the Department of Agricultural Botany the same year, 1960.

When I say "it was just a matter of getting there," it is a deliberate understatement. I have at my disposal a wonderful account of the journey penned by Cavers himself, provided to me by his family. Paul loved to tell stories and I have many fond memories of listening to his stories over tea in the lab at Western, or at scientific meetings, and in many other venues. You had to watch for that characteristic twinkle in his eyes when the story took on a dramatic turn. So I will continue the story now in his own words from the aforementioned account, with his suggested title "Of Research in Wales."

"I boarded the Empress of England in early September [1960] and found that the majority of students on board were the Rhodes Scholars, headed for Oxford...I was told they were also looking for passengers to wait on tables in the dining room. Since I had often served as a banquet waiter during my undergraduate days, I was pleased to apply for one of these positions. Unfortunately, the Rhodes Scholars had filled all the available

positions but I was able to put my name on a reserve list...Within four days this turned out to be a most interesting decision!”

“Once we were out on the open Atlantic, the waves caused the Empress to undergo some unpleasant pitching and rolling...On the first night, I had just settled into a sound slumber by about 6am when there was a loud knock on the cabin door and I was invited to join the other novice waiters since several of the original volunteers were too seasick to leave their beds.”

“My most challenging table consisted of a family of four – mother, father and two young children. The initial part of the meal went well and I was congratulating myself on being able to adapt my movements to avoid falling down with a tray of food in my hands. The juice or fruit course had been served and the glasses and bowls removed but as I went to serve a large bowl of oatmeal cereal to the mother, the ship plunged into a wave and the bowl went sailing up towards the ceiling. The bowl described a couple of complete flips above the unsuspecting lady before coming to rest, right side up, in my hand, which was positioned just above her head. I then proceeded to place it in front of her as if nothing had happened...”

The Empress of England steamship arrived in Liverpool, from which point Cavers had to take quite a number of trains to get to Bangor, complicated by the fact he had with him several large cases. The transfer at Crewe Station was particularly onerous...

“Crewe Station eventually was reached and I laboriously removed my suitcases into a warm station. After several attempts to find the platform for the train to Bangor, I was told that it was on the far side of the station. I realized that I would have to transport all of my belongings to the platform for Wales since there was a total absence of porters and, in any case, I had insufficient funds with me to pay for help. My anxiety level soon began to rise as quickly as my body temperature as I made three trips to move all of my belongings from Platform 6 to Platform 1. This involved climbing a very large number of steps to an aisle that took me across the platforms and then down an equal number of steps to the platform for the Welsh train. Fortunately, none of the cases disappeared while they were left alone during this lengthy and tiring process.”

When he finally arrived in Bangor, there were numerous cultural and language barriers to overcome, but eventually Paul reveled in the invigorating culture fostered at the University of Wales. Harper and the other faculty in the department provided fertile ground for young scholars, just as Cavers was to provide a rich soil for the numerous students he nurtured at Western. As Cavers recalled:

“The big advantage of a small Department was that everyone soon knew all the other members and when a relevant topic of conversation was introduced at tea and coffee breaks, everyone was able to contribute; faculty, postgraduate students, undergraduates and staff. These discussions were often lively, interesting and educational. Whenever a visiting scientist came to the Department, he/she was introduced to all of us. If someone had made an interesting discovery in their research or if they had read a stimulating publication, they were encouraged to describe their findings to all of us. It was only after I had visited Departments in other British universities, where there was very little daily interaction between faculty and students, that I realized how lucky I had been to wind up in the Agricultural Botany Department in Bangor!”

When Cavers started his work, Harper himself was still getting the lay of the land and formulating new ways of looking at plant ecology. Cavers provided a colorful picture of those early days, and his relationship with his iconic supervisor.

“My most important activity at this stage was to travel the area around Bangor with John Harper to look intensively at populations of *Rumex obtusifolius* and both weedy and shoreline populations of *Rumex crispus*. I am sure that Professor Harper had three main purposes for these trips. First, he needed to learn more about this Canadian whom he had at least provisionally accepted as a Ph.D. student. Secondly, he needed to find

where there were populations of these *Rumex* biotypes that would be suitable for intensive study by me. Thirdly, he needed to meet people in the area around Bangor with the aim of discovering possible sites for field experiments and meeting people who had excellent knowledge of the crop and weed floras of the area. One further aim of these trips was to allow Professor Harper to gain experience of driving in North Wales. A particular hazard was that most of the roads that were not highways were not straight and, instead of fences, many were lined with solid stone walls about the height of a car. Vehicles that travelled frequently on such roads often acquired a number of dents after sliding into these obstacles. John Harper had celebrated his appointment of Head of Department by buying a large attractive Jaguar sedan. Unfortunately, he was relatively short in stature and this made it difficult for him to spot low stone walls in time to avoid them. Geoff Sagar soon began to observe the Professor's arrival each morning and to determine whether there were any "new dimples on the Oppressorial Chariot." However, my experience on these trips was entirely positive. I learned where good-sized populations of all three *Rumex* biotypes could be found, met landowners who were willing to allow me to set up experiments to study these biotypes on their land and had the opportunity for a month of detailed conversations with John Harper about the population dynamics of weeds."

After this success in getting his Ph.D. work underway, Cavers returned to Canada in 1961 to begin another very significant journey – to marry Joan Goudge, who had just graduated from Ontario Veterinary College. Joan and Paul were married on June 3, 1961. Joan subsequently got to experience the joys of the Ph.D. adventures in Wales with Paul, often helping him out with his extensive library research. As well as conducting field experiments with his chosen species, Cavers ended up writing an account on his study species *Rumex obtusifolius* and *R. crispus* for the Biological Flora of the British Isles series in the *Journal of Ecology*. Cavers had become very taken by this series and was thrilled when Harper had said that such a review could be part of his Ph.D. thesis. This experience was to become the spark that led Cavers and Gerry Mulligan to establish the Biology of Canadian Weeds series in the *Canadian Journal of Plant Science* in 1972.

My own scientific career followed a very similar pattern, with Cavers encouraging me first to write a Biology of Canadian Weeds account on the plant I studied as an undergraduate, *Linaria vulgaris*. After completing a few more accounts, I became an editor of the Biology of Canadian Weeds series as cheered on by Cavers. I also helped initiate two other similar series: The Biology and Impacts of Invasive Species in the Pacific Islands (*Pacific Science*) and the Biology of Invasive Plants (*Invasive Plant Science and Management*). Throughout his career, Cavers was a tireless advocate for the Biology of Canadian Weeds series and the sister series, Biology of Alien Invasive Plants in Canada also in CJPS, launched in 2003. Cavers had seen the example of Harper's advocacy for a thorough understanding species biology in Britain and was glad to carry on the tradition in Canada.

With only three years of funding, Cavers' adventures in Bangor all too soon had to come to an end.

"After two and a half years as a PhD student, I realized that my funding would run out within six months so I would have to prepare my thesis for examination, find out which alternatives I could explore for my future life and where I would like to spend it. Since I had lived through a comparatively brief graduate program I decided to explore possible places for a postdoctorate program and we had to explore possibilities for Joan to apply to for her career in Veterinary Medicine. We both felt that we should return to Canada."

"When I began to search for a university advertising postdoctoral appointments in Canada I found that there were very few choices. One possibility was the University of Western Ontario in London. Their position seemed to be primarily described with a focus on plant physiology but with a general inclusion of many areas of botany. I wrote a letter to the Department in London, which included an outline of my PhD studies. They replied that I did not fit into the postdoctoral position but they were impressed with my PhD studies and they asked if I would consider a faculty position in plant ecology. Within a few weeks I had accepted their offer with a starting date for the coming fall. I then knew that I would need to work intensively to meet this deadline."

Just when all seemed to be falling in place, the Ph.D. thesis was successfully defended and Joan and Paul were

sailing back to Canada for him to take on the position at Western, the Prime Minister of Canada got in the way. Yes, it really happened like that!

“Our ship soon reached Quebec City where we were supposed to land and then drive to London, Ontario. However, the ship was anchored just offshore and the ship’s captain told us that there was a dockers’ strike and we would not be allowed to land anywhere in Canada. We then were anchored off the Ile d’Orleans for five days. Prime Minister Pearson then told our Captain that we would have to return to England. Despite many protests he did not change his mind. Joan and I began to fear that my new job might be in jeopardy. Our next problem arose when we were met with a hurricane off the coast of Cape Breton Island. By then our problem had been headlined the news across Canada. The leader of the Opposition, John Diefenbaker, had travelled to Halifax and met with the Premier of Nova Scotia. They convinced Prime Minister Pearson to allow us to disembark in Halifax and then we could arrange to return home.”

And so the rest is history...Paul Cavers thereafter completed a 40-year career at Western. He was very active in several professional organizations, most notably the Canadian Botanical Association (CBA), the Canadian Weed Science Society (CWSS), Plant Canada, and the National Research Council Monograph Program. He served as President of the CBA as well as taking on numerous other roles and was also very active in CWSS always advocating for the biology of weeds series and Plant Canada. He was the editor for the NRC Monograph series for many years until it was discontinued in 2009, travelling to various conferences to promote the series and liaising with authors and the NRC. When the Monograph series was terminated as reported in CBA *Bulletin* 42(2), Paul argued passionately that in Canada “we need information on living organisms and their environment in Canada. Unless we know where our fauna, flora, and other organisms can be found and what environmental conditions they require for survival, we cannot make intelligent decisions to combat the effects of climate change, habitat degradation, effects of invasive species and environmental pollution.”

Paul received numerous awards throughout his career, including Outstanding Contributor with the Canadian Weed Science Society, Fellow of the Canadian Weed Science Society, Outstanding Teacher Award from the Weed Science Society of America, and the Mary Elliott Award for service as well as the Lawson Medal for lifetime contribution to the Canadian Botanical Association. He served as an editor for several journals and on numerous scientific committees. He was especially proud of his contributions to the formation of the Canadian Botanical Association, Biology of Canadian Weeds and his time as chair and editor of the Monograph Publishing Program.

Paul’s career allowed him to travel, speak and conduct research around the world. During a sabbatical in England in 1971-72, Paul earned his Diploma of Imperial College. On sabbatical in 1987-88 he studied thistles at the Commonwealth Scientific and Industrial Research Organization in Canberra, Australia.

Paul and Joan attended St. George’s Anglican Church together for over 50 years, where he served as church warden, president of the BAC, sidesman, and lay assistant. Paul was also past-president of the Diocesan Brotherhood of Anglican Churchmen.

With his numerous publications and contributions to the way we look at weed seed banks, plant competition, and weed ecology, along with his careful and caring mentorship of so many of us, it is difficult to ascertain the size of the footprint of Paul Cavers on the discipline of plant ecology in Canada and beyond. Yet all of us who knew him have stories of his personal touch, like my own memory of the fateful day when I was in my third year of my undergraduate when he passed me in the hall and casually asked “are you thinking of working for us this summer?” It was in that moment that I realized that he recognized my potential and my great interest in the field that he had reveled in for so many years. As his students we joked that people joined the Cavers lab just “counted seeds” for the summer but there was much more to it than that. Even the act of counting seeds – though repetitive – was somehow therapeutic and highlighted the importance of these tiny propagules to life on earth. As John Harper famously said: “plants are merely the mechanism by which seeds produce more seeds.”

Paul enjoyed many athletic pursuits over his lifetime, pursuing competitive swimming in high school, enrolling

in both the sailing club and basketball league during his Ph.D., and doing a lot of running while at Western, often joining a regular running group there. Just as the weeds he studied are renowned for their persistence, in everything he did, Paul went the distance. Clearly, he ran the good race and fought the good fight, in his own unique way, gentle yet persuasive, planting numerous seeds that are certain to grow into flourishing trees to bear fruit for years to come.



Cypripedium reginae
Photo compliments of Mihai Costea.



Parnassia glauca
Photo compliments of Mihai Costea.

Book Review: A Field Guide to Trees of Ontario

by James E. Eckenwalder, Deborah A. Metsger, Timothy A. Dickinson, and Sarah H. Hodges

Picking up *A Field Guide to Trees of Ontario* gives one the immediate tactile information that this is a **field guide**. Tall and narrow, dense pages, sharp edges, that shiny but slightly rough binding, and just the right weight. This is a book that goes with you; one whose spine you will crack, pages you will dog-ear, and that you are likely to drop in a puddle or a bog at some point. You will dry it back out when you get home, propped open near your radiator or in the sun by the window and the pages will get that wavy, wrinkled look of a field guide that is well loved.

All of that will happen because this is a book you will use.

Before I go on, I would like to state my biases. I love every field guide I have ever laid hands on. Okay, perhaps that is an exaggeration, but I have certainly kept every field guide that I have ever gotten my hands on. I have three copies of *Flora of the Yukon Territory* (I am counting that as a field guide rather than a desktop regional flora, a title earned during its days living in a gravel pit on the Dempster Highway), two *Wetlands of Ontario* filled with pressed specimens, and countless *Plants of the Western Boreal Forest and Aspen Parklands* are scattered through our research lab. *Fleurs printanières* by Gisèle Lamoureux is one of my most cherished, and when it comes to the field it does so double ziplocked. *Shrubs of Ontario* has more dog ears and scribbles in the corner than most. In sum, it would be challenging to get a bad review of a field guide out of me. That doesn't mean that every field guide is perfect, and I think *Trees of Ontario* beautifully fills an Anthropocene-created gap: a truly inclusive guide to (nearly) all trees currently present in Ontario.



Note that the title of this guide is not “native trees” of Ontario. Here, the authors are inclusive of most trees found in the province, regardless of origin, making this guide particularly useful to those new to the wonderful world of tree identification. By including species commonly found in urban settings, street trees, parks, and backyards, *Trees of Ontario* becomes inclusive of users that may not have (or want!) the opportunity to go out into non-urban forests. It allows folks who interact with trees daily to learn more about them, learn their names and traits, and potentially catch that wonderful disease I like to call “identification itch” – that sudden urge to figure out the name of everything around you.

To foster an attachment to the natural world across intersecting communities, we need to make the resources to do so inclusive of all aspects of the natural world, from street tree to continuous forest. This inclusion is particularly present in two aspects of the book; first, within the front-end section of “trees and their habitats.” Here, the authors really embrace the full range of treed areas in Ontario, with descriptions of habitats ranging from old-growth forests to hedgerows to urban forests. Second, of course, is the inclusion of non-native tree species within the guide, as well as an introductory description outlining the categories of trees based on their origin (e.g., native, endemic, introduced, cultivated, escaped, naturalized, invasive).

For the newer user, the first ~75 pages of this guide contain a rich summary of information from “what is a tree” to a description of the field of taxonomy, ecozones and vegetation, “trees and their habitats,” pests and pathogens, how to observe a tree, tools for identification, how to use the field guide, followed by a rich section filled with photos and line drawings of plant parts, including a beautiful few pages on flower and fruit types. For more experienced users, all-weather folks, or those with a particularly bad case of “identification itch,” *Trees of Ontario* allows one to navigate the key during winter months, in addition to via the usual summer traits.



Members of Memorial University's Northern EDGE lab test out the field guide on campus.

Once into the species descriptions proper, the guide is organized by family, ordered by ancestral lineage as plant guides often are: starting with our beloved relict Ginkgoaceae, and then through the contemporary conifer families following by angiosperm families, with Magnoliaceae taking its usual place at the start of the angiosperms. Each family opens with a description that includes information on its richness and characteristic traits. Other information for some families includes some evolutionary history, native versus non-native representation within Ontario, and sometimes information on its broader distribution.

Now for the nitty-gritty: how does the key perform? During our weekly lab meeting, we in the Northern EDGE Lab in the Geography

Department at Memorial University took the guide around campus to try out the key (yes, in Newfoundland!). The main testers were folks in our research group that were less experienced with tree identification and key-navigation. We found the key pretty easy to navigate, and the questions in each step were clear and corresponded to traits that were described or pictured earlier in the book. We appreciated the many beautiful photographs in the guide, both in the traits section and species description. We also noted the utility of the appendices that covered less-common species and varieties that are found around Ontario but do not quite fit in the key.

No field guide has everything the user wants, and in the case of *Trees of Ontario*, the main points on our wish list would be heartier paper stock (we used it in wet snow; recall: this was Newfoundland in the fall), bigger font in the key (but we do understand there were likely page size limits), and distribution maps that extend beyond the borders of Ontario. We understand the book is published by the Royal Ontario Museum and it is a guide to trees within that province, but as biogeographers we also note that borders are a social construct and we would very much love to see the broader distribution of each species.

When I get the question "what tree is this" during an urban ecology field lab with students, or when I'm stopped in the hall by a colleague, or sent a blurry photo via text from a friend or relative, more often than not that tree is non-native. That tree is also something that caught their attention, and for those moments, gave them a connection to the natural world. That connection is something that I strive to strengthen, and with a book like *Trees of Ontario*, I will no longer have to reply "oh you won't find that one in the field guide." From beginner naturalists to well-seasoned forest professionals, *A Field Guide to Trees of Ontario* (herein: *Trees of Ontario*) has something for all users, both within Ontario and more broadly within the ranges of the trees. Inclusive of species, habitats, and seasonal identification, it is a wonderful compliment to the Royal Ontario Museum's series of field guides, and it will take its place on my shelf (ahem, shelves) until my next stroll in the woods, down the road, through a park, or even across a campus on an island in the North Atlantic.

Carissa Brown, with field testing by the Northern EDGE Lab
Memorial University

The Saga of Kew Herbarium's (K) Relocation

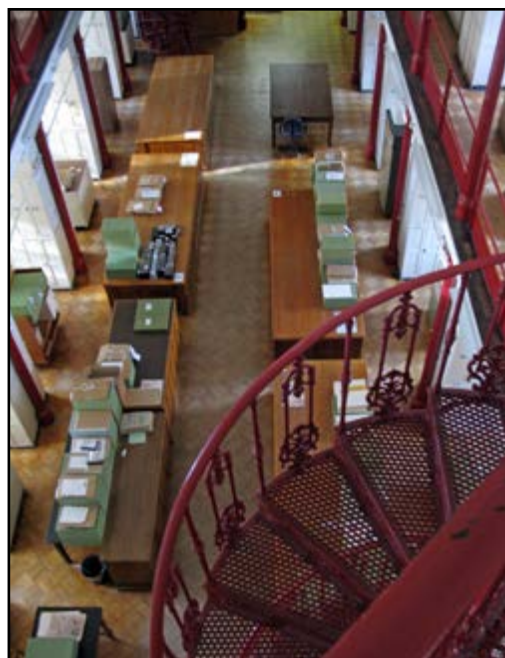
Mihai Costea, Jennifer Doubt, Julian Starr

Many of us have greatly benefited in our research by studying specimens from the Kew Herbarium (K) at the Royal Botanic Gardens in Richmond, London, whether kindly sent on loan or through visits to the herbarium. With over 7 million specimens, there is probably not a single plant genus on earth that does not have at least some species represented at Kew. Moreover, the collection contains at least 300,000 types, those invaluable specimens that allow scientists to unambiguously connect taxonomic names to real biological entities. Resolving what name should be applied to an organism (nomenclature) is one of the most difficult, yet vital tasks in taxonomy, and countless past or lingering name issues have had their solution at Kew. Hence, CBA systematists and other botanical researchers, together with the international taxonomic community, genuinely care about the fate of the Kew Herbarium.

You might have recently signed a petition on Change.org (Curator Botanist 2023) that opposed the plan to relocate Kew Herbarium to the Thames Valley Science Park, a location south of Reading that is approximately one hour's drive from Kew. Following discussions with colleagues at Kew, the CBA/ABC Board of Directors unanimously passed a resolution in September (copied below in its entirety) that urged the Royal Botanic Gardens Kew Board of Trustees to reconsider their decision to move the collection. We forwarded this resolution to the Director of Kew Botanic Gardens, Mr. Richard Deverell, who kindly answered our concerns. This correspondence is also included below.

Despite significant opposition (as of November 5th, the Change.org petition had garnered over 16,250 signatures), some people, including taxonomists and staff at Kew, do support the relocation. Potential long-term negative consequences of the move are counterbalanced by equally strong potential long-term benefits (and vice-versa). But as Barbara Thiers, former Director of the New York Botanical Garden Herbarium, underscored the widespread opposition in a recent Science paper (Stokstad 2023): *“There are very few people in my field who think this is probably a good thing. It might be in the end, but the devil is definitely in the details.”* These details are numerous and not all of them are known or can be foreseen for now, but the declared purpose of relocating the herbarium is to protect the collection and to provide space for Kew Science, which is envisioned to grow and expand on the current site of the Royal Botanic Gardens (RBG) in London. **The key question is whether the herbarium would be able to maintain its central role within Kew Science if separated from the RBG, or whether it would gradually diminish in significance and become merely a repository of specimens visited by a decreasing number of scientists.** Anecdotal experience from other institutions suggests that the latter has often been the case.

The Kew Board of Trustees will make a final decision in December. If the UK government approves the project, it will take more than five years to design and build the new herbarium and to transfer the collections,



leaving many more questions to be answered and outcomes to be understood. We will watch with interest and concern as the saga continues.

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Resolution to support the preservation of Kew Herbarium in its current location

Thank you to Jenny McCune, Tim Dickinson, Jennifer Doubt, and Julian Starr who helped to draft the resolution.

CBA/ABC urges the Royal Botanic Gardens Kew Board of Trustees to reconsider the decision to separate the Herbarium from living collections and to relocate the herbarium to the Thames Valley Science Park.

Preamble:

Kew Herbarium is one of the most important herbaria in the world, safeguarding about seven million specimens of which over 300,000 are type specimens (<https://www.kew.org/science/collections-and-resources/collections/herbarium>). The Royal Botanic Gardens at Kew were established over 260 years ago with the herbarium and its living collections at the core of the institution's mission to document the Earth's plant diversity. Because of their enormous scientific and cultural value, the living collections and the herbarium are an essential resource not only to U.K. scientists, but also to thousands of international researchers who visit Kew every year, or request specimen loans, to conduct research on the taxonomy, evolution, biogeography, conservation, ecology, and horticulture of plants and fungi. This research has global significance for understanding the effects of climate change on biodiversity, and on the remedial actions that could be taken to minimize its impact.

Recently, the Board of Trustees of the Royal Botanic Gardens, Kew announced their intent to relocate the entire Kew Herbarium to the Thames Valley Science Park (TVSP). This decision was said to be motivated by perceived safety risks from fire, flood, and pests in the existing historical buildings, including concerns about a lack of space for the future growth of the collection. However, a large and diverse group of Kew staff and students have opposed this plan. They contend that safety concerns are unfounded, and that the existing 2010 building extension at Kew has ample space to accommodate an additional one million specimens, sufficient to sustain the growth of Kew Herbarium well into the 22nd century. They further contend that the long-term safety of the collection is not assured at the TVSP site as it is adjacent to an historic flood zone.

Kew staff, along with members of the global scientific community, have raised concerns of potential irreversible damage to the organization's global scientific and educational mission as a result of the separation of the herbarium from the garden's living collections, laboratories, and botanical library. A [petition](#) has already garnered the support of over 15,500 scientists, students, and concerned citizens worldwide.

In particular, accessibility challenges posed by the TVSP site will prevent scientific visitors from playing their pivotal role in updating identifications and identifying curation issues. Public transport from Kew Gardens to the TVSP is difficult and renting a car is not affordable for many visitors, particularly students. Many Canadian and international researchers will thus be excluded from research and educational activities at Kew Herbarium to the detriment of the institution's reputation and its global scientific impact.

Further, the relocation of collections would unavoidably cause significant research disturbances for an extended period. This disruption would affect not only on-site investigations, but also the work of numerous researchers worldwide who depend on specimen loans.

There are also apprehensions regarding the additional operating costs associated with the new site, particularly when funding for the existing sites is already under strain.

Overall, the proposed relocation will damage the standing of Kew as an international botanical centre, it will harm international biodiversity research, and it will detrimentally affect society at large due to the weakening of cultural links between the Garden and scientific activities based in the Herbarium; links that took centuries of investment to create and make strong.

Resolution: Be it resolved therefore that the Canadian Botanical Association / l'Association Botanique du Canada (CBA/ABC) advocates for the preservation of the Kew Herbarium in its present location on the site of the Royal Botanic Gardens, Kew, Richmond, London, TW9 3AE. The CBA/ABC urges the Board of Trustees of the Royal Botanic Gardens, Kew, to reconsider the concerns voiced by their dedicated staff and by the international scientific community, and to explore alternative solutions that involve the long-term curation and expansion of the collections on their current site. Maintaining the collections in their historical location alongside the Gardens holds paramount significance to global botany and horticulture initiatives. The accessibility of these specimens is more critical than ever for understanding and protecting the Earth's biodiversity during a scientifically recognized period of accelerated extinction.

Resolution unanimously approved by the CBA/ABC Board of Directors on September 27, 2023.



Mihai Costea, President



Jennifer Doubt, Secretary



Canadian Botanical Association / Association Botanique Du Canada

Correspondence with Mr. Richard Deverell, Director of Kew Botanic Gardens

From: Mihai Costea <mcostea@wlu.ca>

Sent: Sunday, October 29, 2023 8:38 PM

To: Richard Deverell <R.Deverell@kew.org>

Subject: Re: [EXTERNAL *] Re: Concerns about the proposed relocation of Kew Herbarium

Dear Richard,

I appreciate your message. The key “position” of Kew ensures that some of us either have personal connections or collaborators at Kew. As such, the resolution I shared with you is, in part, a reflection of our communication with Kew staff, but I do not know if Prof. Antonelli or Dr. Patton were spoken with. But most importantly, we are concerned about the short and long-term consequences of separating the herbarium, independent of the concerns of Kew staff.

The idea of a new building with modern facilities for the herbarium is commendable. If this new facility could be located within or near the gardens, it would be great. However, considering the functional integration and unity of the herbarium, living collections and library, the only justifiable grounds for considering separation would be either the inability to adequately preserve the specimens under current conditions, or the genuine lack of space to grow the collection. It is true that having mechanical environmental control is considered desirable by modern practice, but this is not absolutely necessary in a temperate climate, as evidenced by the experience of Kew and other European and N American herbaria over the past two centuries. Temperature and humidity can be reasonably well controlled, or deficiencies can be addressed locally. Besides, environmental control can fail in modern facilities too. It is worth noting that if the library stays, it would require the same environmental control as the herbarium. Space, we have been told, is still available. The accessibility is another issue for the international visitors. I could go on, but I am sure you have heard these arguments voiced on numerous occasions... It is not my intention to enter in a polemic/debate and I sincerely hope that my personal message does not come off as antagonistic. The curatorial staff at Kew is undeniably professional and has the highest level of experience and

expertise in the field. They deserve to be listened to. Despite the divergent opinions, I believe that all parties have the best intentions at heart, and I hope that the optimal solution that serves best Kew and the international scientific community will be reached.

Sincerely,

Mihai

~~~~~  
From: Richard Deverell <R.Deverell@kew.org>

Sent: Wednesday, November 1, 2023 5:59 AM

To: Mihai Costea <mcostea@wlu.ca>

Subject: RE: [EXTERNAL \*] Re: Concerns about the proposed relocation of Kew Herbarium

Dear Mihai,

Thank you for responding. I hope we would both agree that the most important issue here is the long-term care of the collections. This certainly is my primary duty, and one Kew's Trustees share.

Our view is that the status quo represents an unacceptable risk, both of a possible (though unlikely) catastrophic event (e.g. fire or flood) but also from the long-term deterioration of the specimens, and the DNA therein, due to variations in temperature and humidity.

Kew's Herbarium is the only globally significant collection that is not in proper environmental conditions (low constant temperature and humidity, fire, flood and pest control).

Furthermore, with accessions forecast at 20-25k pa and a 270k backlog of specimens we will soon (20-30 years) run out of space at Kew.

We spent 2 years looking at a solution whereby a new herbarium was built at Kew. However, Kew is a World Heritage Site, Metropolitan Open Land and it is also a flood plain (albeit mitigated by the Thames Flood Barrier). We took independent planning advice 3 times and I personally spoke with the Leader of the local Council and his head of planning and the Director of Heritage England. This led us to conclude that we would not get planning permission to build a large (1.5 acre footprint) new building at Kew.

At this point (summer 2019) we started to look at alternative options.

A further 3 years of work, that included evaluating c.25 possible sites against 10 criteria, developed by the science teams, led us to propose Thames Valley Science Park. This is c.35 miles down the M4 from Kew and we will be immediately adjacent to our colleagues at the Natural History Museum (who are moving 40m specimens to this site) and the British Museum. I also believe that the NHM over time will co-locate their herbarium with Kew's – creating a globally unique resource for plant taxonomy. It makes total sense to combine these two geographically and taxonomically complementary collections.

Another important consideration with this move is the urgent need to create space at Kew Gardens to accommodate the expansion of Kew Science. We now have 500 staff employed at Kew Science (double the number in 2014) plus c.170 post-graduate students and a large community of volunteers and HRAs. We urgently need more and better facilities – and the redevelopment of the Herbarium complex is the only credible option for achieving this at Kew Gardens.

There has been full and open communication with all staff at Kew, including extensive consultation with the relevant scientists, throughout this period. They have been listened to. However, for those who believe the status

quo is acceptable, or a new building would be permitted at Kew, they have not been agreed with. I understand that this is a difficult and emotional issue given the nearly 200 years that the collections have been at Kew. However, I believe it is essential that we prioritise the long-term care and capacity for this collection (and by long-term, I mean c.100 years).

I would also stress that whilst some current and retired staff have voiced concerns about the proposed move, many are fully supportive. These include Dr Alan Paton (Head of Collections) and Dr Isabel Larridon (Head of Taxonomy). My two predecessors as Director, Sir Peter Crane and Prof. Steve Hopper both support it as does Sir Charles Godfray who led the last independent review of Kew's science. Needless to say, our 3 science trustees are fully supportive (and they have met the concerned staff at Kew on 3 separate occasions). They include a Nobel Laureate, Sir Paul Nurse, who is particularly concerned that our collections are kept at low and steady temperatures to preserve the DNA.

I hope this email gives you some reassurance about the extensive work undertaken to address these three fundamental challenges we face: the need to care for the collections; to provide capacity for long-term growth; and to expand the science research and Kew Gardens. I see no credible solution to these challenges other than moving the herbarium off-site and I further believe TVSP will provide hugely exciting opportunities to collaborate with the NHM and Reading University. We will create a new global centre of excellence for plant taxonomy.

Of course, the easy thing to do would have been to kick the can down the road and leave this problem to my successor in perhaps 10 years. However, that would represent a further 10 years of risk and would effectively cap the rapid growth of Kew Science. I am not willing to do that.

Yours sincerely,

Richard

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From: Mihai Costea <mcostea@wlu.ca>
Sent: Wednesday, November 1, 2023 11:37 PM
To: Richard Deverell <R.Deverell@kew.org>

Subject: Re: [EXTERNAL *] Re: Concerns about the proposed relocation of Kew Herbarium

Dear Richard,

Thank you so much for your message. With your permission, I am going to include it in the next CBA Bulletin, which will be published in early December.

I am wondering how you will alleviate the separation of the herbarium at TVSP? For example, do you envision the organisation of some form of transportation between Kew Gardens and the herbarium for staff/researchers? Will you also move there research facilities and functions, to reunite them in support of herbarium staff and researchers? I am asking this because I do not know the vision for Kew Science. My herbarium is very tiny by any standard, but is located right across from the lab, which is very convenient. I collaborate with colleagues at other universities/herbaria, but even a one-hour drive, which is considered a short distance in Canada, makes things very difficult for lab activities or even to examine some samples or herbarium material.

Finally, strategically, I think the herbarium should remain as much as possible in the view of the public. Often, the essential role of herbaria (in general) is little known to the wider public, and removing Kew Herbarium from its charismatic location, will only accentuate that at a time when we need all the support from the communities around us.

Thank you again for your time and openness.

Sincerely,

Mihai

~~~~~

From: Richard Deverell <R.Deverell@kew.org>

Sent: Thursday, November 2, 2023 4:44 AM

To: Mihai Costea <mcostea@wlu.ca>

Cc: New Herbarium <newherbarium@kew.org>

Subject: RE: [EXTERNAL \*] Re: Concerns about the proposed relocation of Kew Herbarium

Dear Mihai,

Of course – do please share my email. And I should have added (you raised this in your email) that the relevant parts of the library will also move to the New Herbarium – so we are not separating the books from the specimens.

Regarding your further questions:

We are currently assuming that about 40 staff will be based at the New Herbarium, the curators. The researchers will remain at Kew (though they can choose to be based at the new herbarium if they prefer). We are currently assuming that there will be a daily shuttle bus between the two sites. There will also be a lab at the New Herbarium.

The current Kew Herbarium is not accessible to the public. We are yet to decide what public access, and education programmes (if any – no decisions yet made) will be provided for at Reading. This is something that needs to be determined in the coming year.

We have been entirely open with staff, volunteers and external stakeholders throughout this project. All the information I have sent you has been shared internally through staff meetings and on our intranet. We have monthly meetings with staff specifically on the New Herbarium and there is also a programme of consultation on all the relevant design details for the new building. I am afraid it is a myth, if you have been told this, that staff have not been informed or consulted about this project.

With best wishes,

Richard

## Correspondence with Kew staff

The extent of our correspondence with Kew staff surpasses that with Mr. Deverell; however, we are unable to provide you with these emails as staff wished to maintain their anonymity for fear of disciplinary action. What we can say, is that the content of this communication differed markedly from the official answers to our concerns. For example,

1. A secret ballot at a recent staff union meeting revealed a very strong opposition to relocating the herbarium.
2. Most of the staff did not perceive the meetings with management (“townhalls”) on moving the herbarium as either “open communication” or “extensive consultation”, but as one-sided management communiques. The relocation decision has been presented internally as a “fait accompli.”
3. Despite a presentation made to the Board of Trustees by 20 scientists, challenging management’s assertion that the collection’s future and safety are at risk from a lack of space and other factors (fire, flood, pests), supporting evidence for these claims has not yet been made available to staff or the broader Kew community.
4. Attempts to contact Trustees or express public dissent was discouraged, and labeled as “unprofessional behavior,” with potential reprimand and disciplinary action strongly implied (and apparently exercised in two cases for volunteers who are no longer allowed on site). Two emails containing a questionnaire seeking staff opinions on the move were blocked by IT on instructions from senior management.

In summary, our communications with staff suggest an atmosphere of intimidation and apprehension, and that a profound chasm exists between senior management and the majority staff, with respect to the rationale, methods and outcomes of this decision.



Specimen of *Cuscuta gymnocarpa* collected by Darwin from Galapagos, where it is endemic and flower dissection based on it.



Our own Julian Starr works in the Kew Herbarium.

# The George Lawson Medal Honourees...by the Numbers

Jennifer Doubt<sup>1</sup> and Frédérique Guinel<sup>2</sup>

1. Curator, Botany, Canadian Museum of Nature

2. Professor Emerita, Biology Department, Wilfrid Laurier University

Nomination season for CBA awards is right around the corner! What better time to draw inspiration from 54 years of past Lawson medals? To date, 69 Lawson awards have been conferred (one of which was shared among three people), which is enough to reveal some patterns and potential gaps (Figures 1 & 2).

Up to two Lawson awards can be given in a single year: one for a single, Special Contribution (category A), and one for Lifetime Achievement (category B). However, **two medals have been given on only 15 occasions (less than 30% of the time)**. There was no award in either category in 1980, due to a lack of nominations.

**Category A winners have been relatively rare, accounting for just 19 awards (28%) so far.** That said, there were three honourees in 2011, when the team composed of Carol Peterson, Larry Peterson and Lewis Melville were recognized for their collaborative achievement in category A.

Given that category B awards are reserved for “senior” investigator[s], teacher[s], or administrator[s], and that most medals so far have been awarded in category B, it is no surprise that the **honourees tend to be...well, senior...averaging 64 years of age** at the time of receiving their medals. However, honourees have ranged in age from 38 (Rolf Sattler, 1974, Category A) to 86 (James S. Pringle, 2023, Category B). Once in the medal’s history, the award was given posthumously (John Coulson, 1974, Category B).

Women are under-represented among Lawson honourees; only **nine (14%) people who have received the award have names that are traditionally associated with women**. Women were long under-represented in STEM, and are only recently reaching advanced botanical career stages in larger numbers, so one might expect fewer category B honourees to be women. However, there are also just three women who have been honoured for their contribution in category A.

Honourees are unevenly distributed across the country. **Ontario boasts the most honourees from a single province (36), whereas four provinces (Manitoba, Newfoundland and Labrador, New Brunswick, Prince Edward Island) and all three territories still await their first Lawson recognition.** Correcting for the number of botanical institutions in each jurisdiction proved too complicated for this short article, but dividing the number of honourees by million people in the present-day population of each province (Statistics Canada quarterly population estimates from Q3, 2022) suggests that the **greatest number of per capita honourees (three honourees per million) are in Saskatchewan** (Figure 2).

**Thirty-six honourees worked on vascular plants**, dominating the field of botanists who were recognized for their work within a single broad botanical group. Meanwhile, **13 mycologists, three lichenologists, three phycologists and two bryologists so far have received a Lawson medal**. The remaining award winners were recognized for their work in more taxonomically-inclusive pursuits (“cross-taxon” in Figure 1) such as ecology, ethnobotany and botanical instruction / administration.

About **half (35) of the honourees were/are CBA members**, seven of whom were founding members. Seven honourees were so active in the organization that they also received a Mary E. Elliott Award. **Seven Lawson medalists have had the distinction of being members of the Order of Canada**. Honourees also include a member of the Royal Society of Arts, a member of the National Academy of Sciences, and two members of the Linnean Society of London.

# CBA GEORGE LAWSON MEDAL

## DEMOGRAPHICS

14%

FEMALE HONOREES



MEAN HONOREE AGE

36  
ONTARIO HONOREES  
(most from one province)

3  
SASKATCHEWAN  
HONOREES  
(most per capita)

## HIGHLIGHTS

7

HONOREES in the  
ORDER OF CANADA

HONOREES also  
receiving the **Mary E.  
Elliott Award**

HONOREES who were  
CBA FOUNDERS

Jacques Rousseau



FIRST HONOREE

## RECOGNITION FOR...

SPECIAL CONTRIBUTION (Category A)



LIFETIME ACHIEVEMENT (Category B)

WORK WITH...



VASCULAR PLANTS

FUNGI

CROSS-TAXON (e.g., Ecology)

ALGAE

LICHENS

BRYOPHYTES

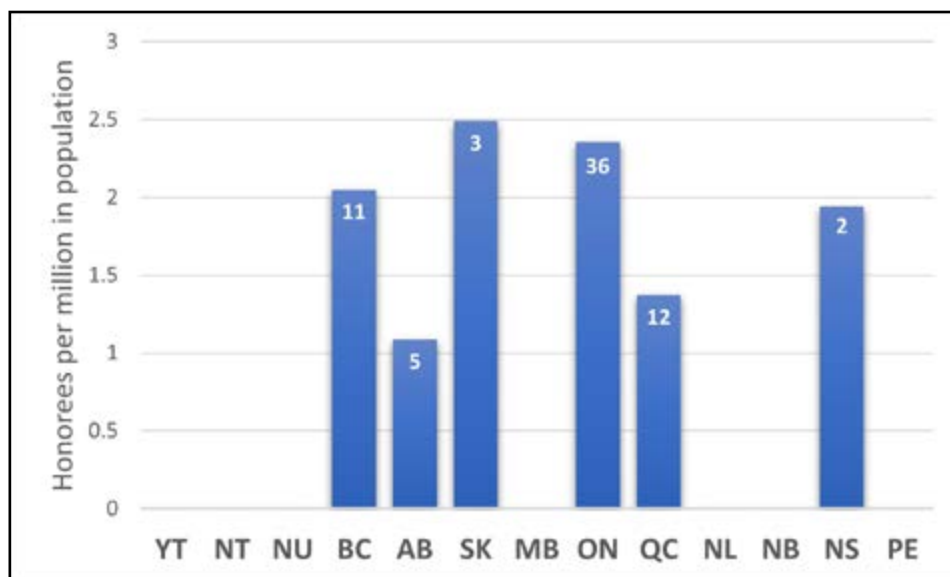


Figure 1 (previous page). Summary of some milestones and demographic highlights of the prestigious group of people who have been honoured with a CBA Lawson Medal.

Figure 2. The number of Lawson honourees from each province and territory. The absolute number of honourees is given at the top of each bar, while the bars themselves correspond to the number of honourees per million in the present-day population (Statistics Canada quarterly population estimates from Q3, 2022) of each jurisdiction.

We hope you've enjoyed this glance back at the CBA's Lawson Medal winners. Please stay tuned for the next issue of the Bulletin, for a look at the Botanical Society of Canada: the organization, founded by Lawson, that so inspired the founders of the CBA.

But for now, enough about the past...the future is in our hands! Happy nominating!

## Acknowledgements

Many thanks to Anne Bruneau for helpful comments on the text. Lyn (Galyna) Vakulenko's expert guidance was pivotal for Figure 1. Thank you, Lyn!

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