



The Canadian Botanical Association Bulletin

Bulletin de l'Association Botanique du Canada

Volume 54 Number 3 - December/décembre 2021

Highlights

President's Message	Pg. 1
Letter to the Editor	Pg. 3
Member News & Notices	Pg. 4
CBA/ABC Board Nomination Call	Pg. 8
The IDEA Committee	Pg. 10
The CBA sections, past & future	Pg. 11
Section Update: Plant Development	Pg. 12
From the Archives	Pg. 13
Lawson Medal Winner Profile	Pg. 14
Book Review: <i>Field Study</i>	Pg. 16
Hyacinth, by Ernie Small	Pg. 19

President's Message

Opportunities to shape the future!

The CBA-ABC is continuing to evolve to better promote plants and plant science and to support its members. At the last AGM, we adopted a new purpose for the association that highlights education and research on plants and the organisms associated with them among people from all spheres of society, and promoting the importance of botanical research to decision makers (the entire text of the modified purpose is found at the end of this message).

As a consequence of this change, some new initiatives are underway. The IDEA committee has been formed and is actively pursuing several objectives for the year 2021-2022, including the establishment of a code of conduct for association meetings. There is a call to action on conservation issues, as expressed in a letter and response in this issue of the bulletin. The section chairs are actively discussing how to re-invigorate section life and to better reflect the multiple disciplines the CBA represents with new names and initiatives. There is a membership committee that is examining how we can better reach and serve other members of the larger botanical community. In addition, the board is looking for new members. Announcements in the bulletin can be found about most of these initiatives.

These initiatives are all carried by members of the CBA-ABC. If one of these initiatives speaks to you and you would like to be involved, please contact us! Being active within the association brings many rewards, including getting to know people who are passionate about plants from across the country, learning about new topics, and having a chance to shape the botanical community of Canada.

~Nicole

"The purpose of the association is to advance education and research in the scientific discipline of botany by: promoting botanical research and understanding by gathering, developing, and sharing botanical knowledge with academics, professionals, and lay people from all spheres of society; providing inclusive forums for discussion of botanical teaching, research, outreach and knowledge regardless of origin including through conferences, symposia, workshops publications and activities with local



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

Executive Editor

Dr. Erin Zimmerman

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Next issue

Texts for the next issue, 55(1), must be received by February 11, 2022

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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

Rédactrice en chef

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Prochain numéro

La date de tombée des textes du prochain numéro, le no 55(1), est le 11 février 2022

communities; providing awards for achievements in different fields of botany to students, professors and professional botanists; and informing governments, leaders, decision makers and the general public issues of botanical and conservation concern."

Modeler le futur!

Le ABC-CBA continue d'évoluer pour mieux promouvoir les plantes et la botanique et pour soutenir ses membres. Lors de la dernière AGA, nous avons adopté un nouvel objectif pour l'association qui met l'accent sur 1) l'éducation et la recherche impliquant les plantes et les organismes qui leur sont associés et ce parmi les personnes de toutes les sphères de la société, et 2) la promotion des résultats de recherche botanique auprès des décideurs (le texte entier de l'objectif se trouve à la fin de ce message).

En conséquence, de nouvelles initiatives sont en cours. Le comité IDEA a été constitué et poursuit activement plusieurs objectifs pour l'année 2021-2022, dont la mise en place d'un code de conduite pour les réunions annuels de l'association. Il y a un appel à l'action sur les questions de conservation, tel qu'exprimé dans une lettre et une réponse dans ce numéro du bulletin. Les présidents de section discutent activement de la façon de revigorer les sections et de mieux refléter les multiples disciplines que l'ABC représente avec de nouveaux noms et initiatives. Il existe un comité des membres qui examine comment nous pouvons mieux atteindre et servir les autres membres de la communauté botanique plus large. De plus, le conseil d'administration est à la recherche de nouveaux membres. Des annonces dans le bulletin peuvent être trouvées au sujet de la plupart de ces initiatives.

Ces initiatives sont toutes portées par les membres du ABC-CBA. Si l'une de ces initiatives vous parle et que vous souhaitez vous impliquer, contactez-nous ! Être actif au sein de l'association apporte de nombreuses récompenses, notamment faire la connaissance de personnes passionnées par les plantes de partout au pays, découvrir de nouveaux sujets et avoir la chance de façonner la communauté botanique du Canada.

~Nicole

« Le but de l'association est de faire progresser l'éducation et la recherche dans la discipline scientifique de la botanique en : promouvant la recherche et la compréhension botaniques en rassemblant, développant et partageant des connaissances botaniques avec des universitaires, des professionnels et des personnes de toutes les sphères de la société ; fournir des forums inclusifs pour la discussion sur l'enseignement, la recherche, la sensibilisation et les connaissances botaniques quelle que soit leur origine, y compris par le biais de conférences, de colloques, d'ateliers, de publications et d'activités avec les communautés locales ; offre de prix pour des réalisations dans différents domaines de la botanique à des étudiants, des professeurs et des botanistes professionnels ; et informer les gouvernements, les dirigeants, les décideurs et le grand public des problèmes de botanique et de conservation.

Letter to the Editor

Climate?

Unless I've missed something, climate change hasn't been mentioned very much in the Bulletin recently, which seems somewhat strange given the awareness and concern of members and people generally. Might this be related to inactivity of the association's Conservation Committee? Many members today, even officers, are unaware of its existence, which is not surprising because it fell into disuse some years ago. However, this committee once addressed environmental and conservation issues on behalf of the association, and it should be still on the books somewhere.

The need for such a body became painfully obvious about 40 years ago, when individual botanists were attempting to block destructive development and resource extraction in highly significant natural areas. Unfortunately, their efforts were not enough to prevent irreplaceable sites from being lost. Part of the problem was that paralegal officials could not distinguish between the qualifications of opposing witnesses. To them, the opinions of experts were of no more consequence than those of less experienced people paid by developers. So to address this problem, the CBA/ABC established a Conservation Committee composed of five members specializing in different areas of botany, and it took up identification and study of conservation and environmental issues. The committee's recommendations, transmitted through the association president to the parties responsible, were then recognized as the voice of a national organization of professionals.

Dissatisfaction with the environmental situation today may be similar to that of times past as increasingly destructive activities and decisions affect species, habitats and climate: coal mining, deforestation, decommissioning of protected areas, etc. The list is long. If individuals are feeling their efforts to object and protect are coming to nothing, they may be interested in kick-starting the old Conservation Committee.

Perhaps the CBA/ABC President could remind the membership of its forgotten committee and invite involvement in its restoration and improvement. Although now in its dotage, the committee could be expanded and updated to reflect current challenges and communication possibilities. It might be made more visible, more vocal and more prepared to publicly challenge misguided agencies and politicians.

To quote one editor of the Bulletin, "... expertise and knowledge [within the CBA/ABC] of environmental issues are needed more than they've ever been needed before." Interestingly, the author of that statement was Usher Posluszny and he was referring to the situation as it stood 30 years ago. Sadly, his words still ring true today. However, now that climate has been officially declared in crisis mode, the message is even more urgent! This is especially true for young people, who are understandably throwing themselves into all kinds of environmental and climate-related action.

The Bulletin could inform and encourage by featuring developments and progress, and if such coverage became a practice, there would never again be a lack of copy!

The original Conservation Committee was conceived at meetings in St. John's in 1978, officially recognized in Winnipeg in 1979 (CBA/ABC Bulletin 12(1)), and active for more than 25 years. Its method of operation was described in Vol 15(1), 1982, and early policy papers are shown in Vol 24(4), 1991. An idea of typically handled topics can be seen in Vol 24(3) where issues of 1990-1991 are listed.

Dianne Fahselt

(See the following page for a response from the CBA/ABC leadership.)

New Member Publications

Anderson, P. and Markham, J. (2021) Soil temperature limits nitrogen fixation, photosynthesis, and growth in a boreal actinorhizal shrub. Plant and Soil. DOI: [10.1007/s11104-021-05127-0](https://doi.org/10.1007/s11104-021-05127-0)

Markham, J. and Anderson, P. (2021) Soil moisture, N, P, and forest cover effects on N fixation in alders in the southern boreal forest. Ecosphere. 12(9): e03708. <https://doi.org/10.1002/ecs2.3708>

Panchen, Zoe A., Frei, Esther R. and Greg H. R. Henry. (2021) Increased Arctic climate extremes constrain expected higher plant reproductive success in a warmer climate. Arctic Science. <https://doi.org/10.1139/as-2020-0045>

(Continued from previous page.)

A response from Nicole Fenton & Richard Caners:

Thank you, Dianne, for your timely letter outlining the need for the CBA/ABC to regain our focus on conservation issues. Perhaps now more than ever, we need a unified voice through our national organization for botanists in Canada on issues pertaining to conservation, such as climate change, landscape modification, and biodiversity conservation. As you mention, the Conservation Committee that was established in 1979 and that was active for more than 25 years was an important voice in this regard. However, the Conservation Committee, which is a component of the Ecology section, has not convened for many years and needs to be restored. We are therefore formally reviving the Conservation committee within the CBA/ABC Ecology Section, which is chaired by Richard Caners, by restoring the “Ecology and Conservation Section” name, in order to emphasize the need to revive our conservation-related dialogue. For any members interested in taking on the role or in developing conservation related projects, please contact Richard directly. The CBA/ABC greatly appreciates receiving feedback from members such as Dianne, who strive to see the organization reach its full potential.

Editor’s Note:

Though this is our first in some time, letters to the editor are welcome on matters of opinion, current events facing the scientific community, or in response to the contents of previous issues of the Bulletin, provided they are written respectfully and succinctly.

Specific to the letter above, the Bulletin enthusiastically welcomes submissions dealing with climate change and conservation as they relate to botany and Canadian botanists.

Please reach out with article ideas and letters to the editor to cba.abc.bulletin@gmail.com



Save the date!

The next annual meeting of the Canadian Botanical association will take place in hybrid mode in Rouyn-Noranda, Québec, Canada, from June 5 to 10, 2022.

Three keynote speakers will provide different perspectives on the theme *Rooted together for the North*: Mélanie Roy (<https://www.researchgate.net/profile/Melanie-Roy-5>), Melanie Jones (<https://www.researchgate.net/profile/Melanie-Jones-8>) and Annie Desrochers (<https://www.researchgate.net/profile/Annie-Desrochers>). We will also be offering pre-conference workshops and post-conference field trips.

The website (<https://abc-cba2022.uqat.ca>) will be online soon, and abstract submission will open February 7th, 2022.

For more information, please contact nicole.fenton@uqat.ca or annie.desrochers@uqat.ca

À vos agendas!

La prochaine réunion annuelle de l'Association Botanique du Canada aura lieu en mode hybride à Rouyn-Noranda, Québec, Canada, du 5 au 10 juin 2022.

Trois conférencières invitées vont examiner la thème *Enracinés ensemble pour le Nord* sous différentes angles: Mélanie Roy (<https://www.researchgate.net/profile/Melanie-Roy-5>), Melanie Jones (<https://www.researchgate.net/profile/Melanie-Jones-8>) and Annie Desrochers (<https://www.researchgate.net/profile/Annie-Desrochers>). De plus, la réunion offrira des ateliers de formations avant la réunion et des sorties terrain après le colloque.

Le site Web (<https://abc-cba2022.uqat.ca>) sera disponible bientôt et la soumission de résumés sera ouvert à partir du 7 février 2022.

Pour plus d'informations, contactez nicole.fenton@uqat.ca ou annie.desrochers@uqat.ca

Membership Notice

You can now purchase your CBA membership online at our website! Just click on the “Membership” link, and you’ll be able to sign yourself up, without sending us any additional paperwork. This should be a straightforward process, all you need is a credit card.

A few notes:

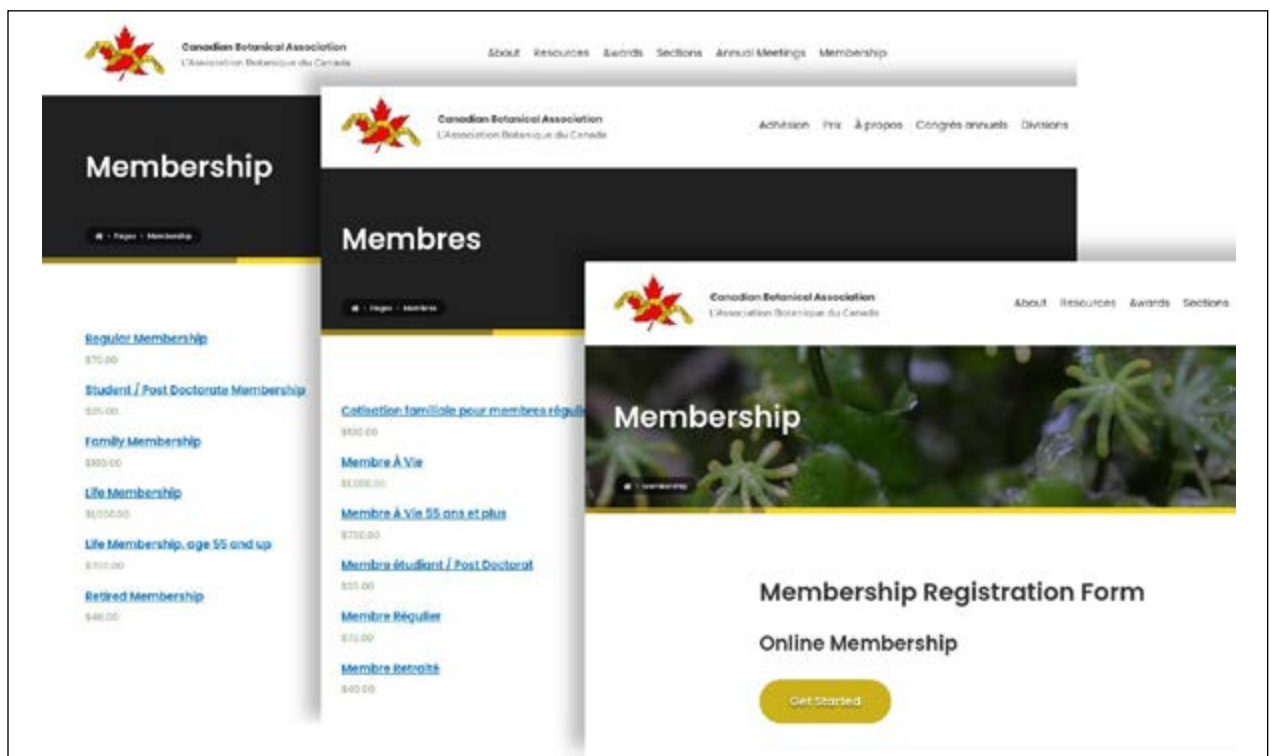
- we haven’t transferred existing regular/student members over to the new system, so these people will be registering for a ‘new’ account this year
- existing Lifetime members do **not** need to register, we will transfer your accounts for you
- while both French and English interfaces are available, we’re still working through some issues with the French translation. Let me know if you have any problems!
- you can make donations through this interface, and also pay for a hardcopy subscription to the bulletin
- we don’t yet have a way to purchase gift memberships, but we’re working on it. In the meantime, you can contact me directly to arrange gifts for your students or colleagues in other countries
- once you’ve registered for an account, you’ll be added to our new mailing list. You can expect to see a few messages a year coming from ‘membership@cba-abc.ca’, including renewal reminders, and special announcements from the association

We hope you find this long-overdue service helpful and convenient.

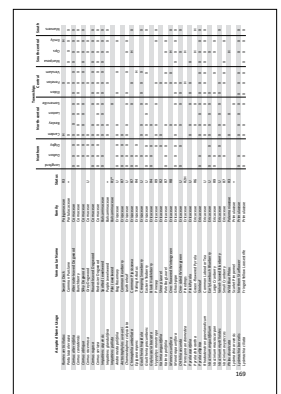
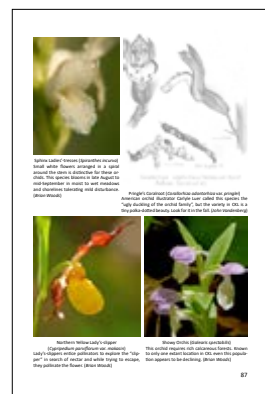
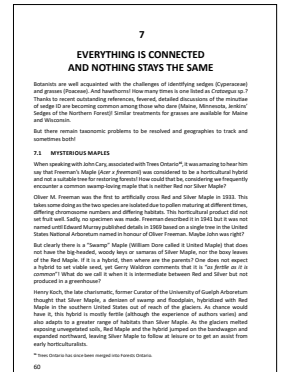
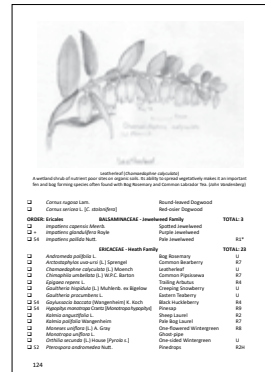
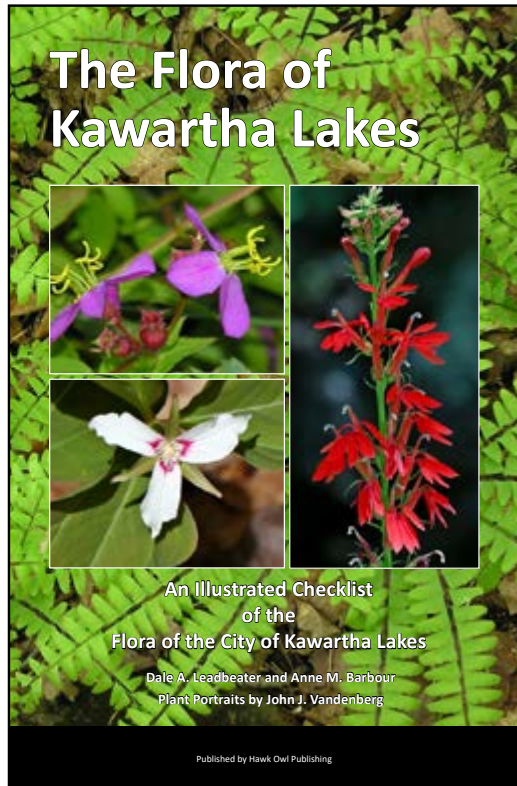
If you have any questions about it, or problems signing up, please contact me at membership@cba-abc.ca

Thanks!

Tyler Smith



New Publication



The Flora of Kawartha Lakes

An Illustrated Checklist

of the

Flora of the City of Kawartha Lakes

Dale A. Leadbeater and Anne M. Barbour

Plant Portraits by John J. Vandenberg

A fully researched, current and historical list of all documented plant species found in this wonderfully diverse part of Ontario. Introductory chapters cover history, geography and geology.

The main list has the status of each species and a complete matrix lists all plant records as of 2021 geographically by CKL Townships. 216 pages with over 150 photographs and illustrations.

Spiral bound for ease of use.

\$39.00 Inc. Taxes

Available from:

www.hawkowlpublishing.ca

Dale Leadbeater: ckl4flora@gmail.com

Anne Barbour: anne.barbour31@yahoo.com

For more details contact Phill at Hawk Owl Publishing: hawkowl@bell.net

CBA/ABC Invites Nominations for 2022

The CBA/ABC is seeking nominations for three important positions:

- One Director-at-large residing west of the Ontario/Manitoba Border
- Treasurer
- President-Elect

The CBA/ABC recognizes the importance of diversity in representation and encourages all members to self-nominate, regardless of career stage or area of botanical interest. This is your chance to make a difference in our Association and botany in Canada!

Directors serve a two-year term and are eligible for re-election to one additional successive term. They attend two to four board meetings annually and participate in committees of their choice.

The Treasurer is elected for a period of two years and may serve for up to two terms (a total of 4 years) if re-elected. The treasurer fulfills a variety of duties that are critical to the Society, including:

- Maintains the CBA/ABC accounts in compliance with the By-law and the rules of the Not-for-Profit Organizations Act.
- Ensures that all Federal and Provincial Financial Filing Deadlines are met.
- Is responsible for all financial activities of CBA/ABC in conjunction with the hired Executive-Assistant who is responsible for all tasks related to membership fees, day-to-day finances, and year-end statements.
- Manages the annual review of the financial records conducted by a certified public accountant.

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.
- To liaise for the Laurie Consaul Northern Research Award.
- To administer all Travel Awards to the annual conference.

The three positions will start in June 2022.

If you are interested in these essential volunteer positions for CBA/ABC, please submit a brief (1/2–1 page) statement describing your current position and/or motivation for the position via email to Mihai Costea, mcostea@wlu.ca by February 28. 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 2022

L'ABC lance un appel de candidatures pour trois postes importants :

- Un directeur résidant à l'ouest de la frontière Ontario/Manitoba
- Trésorier
- Président élu

L'ABC reconnaît l'importance de la diversité dans la représentation et encourage tous les membres à proposer leur candidature, quel que soit leur stade de carrière ou leur domaine d'intérêt. C'est votre chance de faire une différence dans notre Association et dans la botanique au Canada !

Les directeurs ont un mandat de deux ans et peuvent être réélus pour un mandat successif. Ils assistent de deux à quatre réunions du conseil d'administration par an et participent aux comités de leur choix.

Le trésorier est élu pour une période de deux ans et peut servir pour un maximum de deux mandats (un total de 4 ans) s'il est réélu. A ce poste, le trésorier remplit diverses fonctions essentielles pour l'Association, notamment :

- Tenir les comptes de l'ABC en conformité avec son Règlement et la Loi sur les organismes à but non-lucratif.
- S'assurer que toutes les dates limites de dépôt des documents financiers fédéraux et provinciaux sont respectées.
- Est responsable de toutes les activités financières de l'ABC en collaboration avec l'adjoint exécutif qui est embauché et est responsable de toutes les tâches liées aux cotisations des membres, aux finances quotidiennes et aux déclarations de fin d'année.
- Gérer l'examen annuel des dossiers financiers effectué par un expert-comptable.

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.
- Assurer la liaison pour la bourse de recherche nordique Laurie Consaul.
- Gérer toutes les bourses de voyage pour la conférence annuelle.

Ces trois postes débiteront en juin 2022.

Si vous êtes intéressé(e) par ces postes bénévoles essentiels pour l'ABC, veuillez soumettre une brève déclaration (1/2-1 page) décrivant votre position actuelle et/ou votre motivation pour le poste par courriel à Mihai Costea, mcostea@wlu.ca avant le 28 février 2022. 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.

Traduit avec www.DeepL.com/Translator (version gratuite); revu et corrigé par Frédérique Guinel

CBA-ABC IDEA committee

The Canadian Botanical Association/Association Botanique du Canada strongly believes that botanical knowledge, research, and outreach must support all people whatever their race, culture, age, ability, experience, or stage of life. It recognizes that our diversity includes LGBTQS2+ and BIPOC from Canada and coming from other countries. It also believes that its membership should represent the reality of Canada as a diverse, multicultural, and inclusive community of botanists who all promote meaningful engagement to all spheres of society. Recognizing that there are different ways of knowing, the CBA/ABC encourages greater reconciliation of worldviews, cultures and identities.

To foster and uphold an environment of **Inclusion, Diversity, Equity, and Accessibility** within the Association, the CBA/ABC formed an IDEA (inclusion, diversity, equity, and accessibility) committee. While maintaining such an environment is the collective obligation of the entire membership, the committee oversees and unifies the efforts of the Association in this area.

The board of the CBA/ABC is pleased to announce the members of the 2021-2022 IDEA committee that represents a variety of career stages and sectors within the botanical community:

Retired professor Frédérique Guinel, and active professors Liette Vasseur (Brock), Jana Vamosi (Calgary), Mihai Costea (Wilfred Laurier), Nicole Fenton (committee Chair, UQAT); Graduate students Laura Super (UBC), Colin Bonner (Guelph); Post-doc Sam Livingston (UBC); Research professional Kate Brown; Curator Jennifer Doubt (CMN).

Comité ABC-CBA IDEA

L'Association botanique du Canada/ Canadian Botanical Association croit fermement que les connaissances, la recherche et la sensibilisation en botanique doivent soutenir toutes les personnes, quelle que soit leur race, leur culture, leur âge, leurs capacités, leur expérience ou leur stade de vie. L'association reconnaît que notre diversité comprend les LGBTQS2+ et BIPOC du Canada et provenant d'autres pays. Elle croit également que ses membres devraient représenter la réalité du Canada en tant que communauté diversifiée, multiculturelle et inclusive de botanistes qui promeuvent tous un engagement significatif dans toutes les sphères de la société. Reconnaisant qu'il existe différentes façons de savoir, l'ABC/CBA encourage une plus grande réconciliation des visions du monde, des cultures et des identités.

Pour favoriser et maintenir un environnement d'**Inclusion, de Diversité, d'Équité et d'Accessibilité** au sein de l'Association, l'ABC/CBA a formé un comité IDEA. Bien que le maintien d'un tel environnement soit l'obligation collective de tous les membres, le comité supervise et unifie les efforts de l'Association dans ce domaine.

Le conseil d'administration du ABC/CBA est heureux d'annoncer les membres du comité IDEA 2021-2022 qui représente une variété d'étapes de carrière et de secteurs au sein de la communauté botanique :

Professeure à la retraite Frédérique Guinel, et professeures actives Liette Vasseur (Brock), Jana Vamosi (Calgary), Mihai Costea (Wilfred Laurier), Nicole Fenton (présidente du comité, UQAT); Doctorants Laura Super (UBC), Colin Bonner (Guelph); Postdoctorant Sam Livingston (UBC); Professionnelle de la recherche Kate Brown; Curatrice Jennifer Doubt (CMN).

CBA Sections: where did we come from and where are we going?

Scientific associations have historically been organised by organism type – like the Canadian Botanical Association (est. 1964), the Canadian Zoological Association (est. 1994) or the International Association of Bryologists (est. 1969) for example. The presence of scientists and practitioners from a variety of disciplines, all interested in a subset of the tree of life is what makes our meetings so stimulating, in my opinion. In order to present opportunities for members working in similar disciplines to discuss current topics and issues, the CBA also has “sections”: Systematics and Phytogeography, Mycology, Ecology and Conservation, Plant Development, and Teaching. In addition to section-specific activities, the different sections propose symposia, run the best student paper awards for the discipline, provide judges for the student poster and presentation awards at annual meetings, and hold section meetings at the annual meeting.

In the past few years some of the sections have been less active than others, and in an optic of re-energizing these groups, the section chairs of the CBA, the president, the future president, and the secretary met in October 2021. We discussed a number of points including populating the section pages of the websites, and strategies for recruiting members. Two more substantive issues were also discussed. First, do we need to update our section names? Some new disciplines are difficult to place within the current scheme, and the definition of the different sections is not always clear, e.g. what are the conceptual limits of “Plant Development”? Second, as research becomes increasingly transdisciplinary, do we need to revise our section meeting format, so that CBA members can participate in multiple sections?

If you are interested in joining this discussion, please contact a section chair!

Shelley Hepworth and Elizabeth Schultz, co-chairs Plant Development; Gerri Allen and Julissa Roncal, co-chairs Systematics and Phytogeography; Richard Caners, chair Ecology and Conservation; Patrick von Aderkas and Laura Super, co-chairs Teaching; Allison Walker and Mélissande Nagati co-chairs Mycology; Mihai Costea future president; Deb Metsger secretary; and Nicole Fenton, president.

Sections de l'ABC : d'où venons-nous et où allons-nous ?

Les associations scientifiques ont historiquement été organisées par type d'organisme – comme l'Association botanique du Canada (créée en 1964), l'Association canadienne de zoologie (créée en 1994) ou l'Association internationale des bryologistes (créée en 1969) par exemple. La présence de scientifiques et de praticiens de diverses disciplines, tous et toutes intéressés par un sous-ensemble de l'arbre de vie, est ce qui rend nos rencontres si stimulantes, à mon avis. Afin de stimuler les discussions entre membres travaillant dans des disciplines similaires, l'ABC a également des « sections » : Systématique et Phytogéographie, Mycologie, Écologie et Conservation, Développement des plantes et l'Enseignement. En plus des activités propres aux sections, elles proposent des symposiums, organisent les prix du meilleur article étudiant pour la discipline, fournissent des juges pour les prix des affiches et des présentations des étudiants et des étudiantes et organisent des réunions de section lors de la réunion annuelle.

Au cours des dernières années, certaines sections ont été moins actives que d'autres, et dans une optique de redynamisation de ces groupes, les présidents de section de l'ABC, le président, le futur président et le secrétaire se sont réunis en octobre 2021. Nous avons discuté d'un nombre de points, y compris comment peupler les pages de section du site Web de l'Association, et les stratégies de recrutement de membres. Deux autres questions de fond ont également été abordées. Tout d'abord, devons-nous mettre à jour nos noms de section ? Certaines nouvelles disciplines sont difficiles à placer dans le schéma actuel, et la définition des différentes sections n'est pas toujours claire, par ex. quelles sont les limites conceptuelles du « Développement Végétal » ? Deuxièmement, alors que la recherche devient de plus en plus transdisciplinaire, devons-nous revoir le format de nos réunions de section, afin que les membres de l'ABC puissent participer à plusieurs sections ?

Si vous êtes intéressé à vous joindre à cette discussion, veuillez communiquer avec un président de section!

Plant Development Section Update

Some exciting initiatives are currently underway:

- Campaign to reach new members with an invitation to join the section
- Updating information about our Plant Development section on the website
- Membership poll on the question of renaming our Plant Development section to be more inclusive of other disciplines in plant biology
- Symposium on “Tree Development” planned for the 2022 CBA Annual Meeting in Rouyn-Noranda
- Notice good work? Reminder to submit entries for the Taylor A. Steeves Award for best student paper in plant development, structure, or morphology. Due March 1, 2022. Value: \$500.

What's our five-year plan?

Please send your comments and ideas for future priorities to: Elizabeth Schultz (schultz@uleth.ca) and Shelley Hepworth (shelley.hepworth@carleton.ca).



Photo courtesy of Tyler Smith

From the Archives

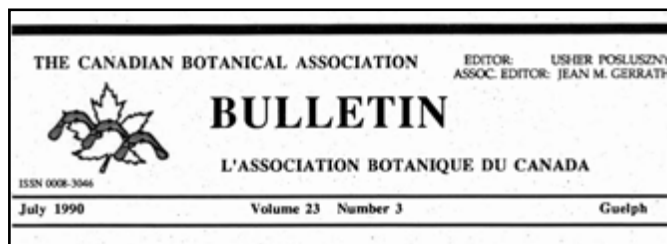
ISI Upgrades Current Contents on Diskette

The Institute for Scientific Information has announced that it will release an upgraded version of its Current Contents on Diskette journal awareness system in mid-summer. The upgrade will incorporate several enhancements including **Keywords Plus**, a powerful new search feature offered exclusively by ISI.

Current Contents on Diskette is an information database for scientific researchers that provides weekly access to the latest contents listings from leading scientific journals. Users can electronically browse through the listings or develop customized search profiles to pinpoint items of particular interest.

The new **Keywords Plus** feature expands the product's searching capabilities beyond title words and author-assigned keywords, and will make it much easier for users to determine if an article is relevant.

For complete information about Current Contents on Diskette, call toll-free 1-800-336-4474 or write to the Institute for Scientific Information, Customer Services Department, 3501 Market Street, Philadelphia, PA 19104 U.S.A.



From the archives, in the July 1990 edition of the *Bulletin*, the Institute for Scientific Information offers the “Current Contents on Diskette journal awareness system.”

Photo courtesy of Tyler Smith



2021 Lawson Medal Winner Patrick von Aderkas for Lifetime Achievement

The Lawson medal is the most prestigious award presented by the Canadian Botanical Association and is presented as a formal expression of the admiration and respect of botanists in Canada to Canadian botanists who have significantly contributed to botany in Canada via a single contribution or a lifetime of achievement. First awarded in 1969, it is named after Dr George Lawson who was generally believed to be Canada's first professional botanist, as understood at that time.

In July 2021, at the annual meeting, held jointly with the International Association of Bryologists, the American Bryological and Lichenological Association and the Société Québécoise de la Bryologie, University of Victoria professor Patrick von Aderkas was awarded the Lawson Medal for lifetime achievement. Dr von Aderkas started off working in ferns, with a PhD on archegoniogenesis in the fern *Todea barbara* (L.) T. Moore from the University of Manchester under the supervision of Elizabeth Cutter. Conifers were, however, to be the center of Dr von Aderkas' work over the following decades, after working on a haploid larch tree as a post-doc in Jan Bonga's lab in the Fredericton labs of the Canadian Forestry Service. Dr von Aderkas' research career exemplifies that of the broad-reaching scientist, as he has worked on a mind-boggling array of techniques and subjects related to conifers during his 30+ year career at the University of Victoria. A short trip to Google Scholar proposes books and articles on *in vitro* culture of trees and embryogenesis, ovular secretions (see the amazing photos in Fig 1 <https://link.springer.com/article/10.1007/s00497-018-0348-z>), and plant responses to pathogens and parasites, to mention a few. His work has used a variety of techniques – cytogenetics, electron microscopy, metabolomics, phenology, proteomics, transcriptomics and population genetics.



Dr. von Aderkas shows the 2021 Lawson Medal

While this research career would have merited the Lawson Medal by itself, Dr von Aderkas has also had an extraordinary teaching career, as many many students who have passed through his laboratory can testify. Beyond simply being a good teacher, Dr von Aderkas has spent time reflecting on his teaching and communicating his teaching research, including co-authoring a book aimed at helping undergraduate students to succeed, *Making Sense in the Life Sciences: A Guide to Research and Writing*. His expertise in teaching has been recognised by his institution on more than one occasion, receiving both the Biology Undergrad Society Teaching Award (1993) and the University of Victoria Faculty of Science Excellence in Teaching Award in 2016. More recently, Dr von Aderkas has accepted the role of co-chair of the CBA's teaching section (with co-chair PhD student Laura Super) and has been promoting the importance of the kindness pedagogy in the STEMM disciplines.

In conclusion, it was a sincere pleasure to honour a colleague who has excelled in not only developing botanical knowledge in Canada, but also in transmitting his passion to future generations of botanists.

~ Nicole Fenton

Patrick von Aderkas, lauréat de la médaille Lawson 2021 pour l'ensemble de sa carrière

La médaille Lawson est le prix le plus prestigieux décerné par l'Association botanique du Canada et est présentée comme une expression officielle de l'admiration et du respect des botanistes du Canada envers les botanistes canadiens qui ont contribué de manière significative à la botanique au Canada par une seule contribution ou l'œuvre d'une vie. Décerné pour la première fois en 1969, il porte le nom du Dr George Lawson, qui était généralement considéré comme le premier botaniste professionnel du Canada, tel qu'on le comprenait à l'époque.

En juillet 2021, lors de l'assemblée annuelle, tenue conjointement avec l'International Association of Bryologists, l'American and Bryological and Lichenological Association et la Société Québécoise de la Bryologie, le professeur de l'Université de Victoria Patrick von Aderkas a reçu la médaille Lawson pour l'ensemble de ses réalisations. Le Dr von Aderkas a débuté sa carrière dans l'étude des fougères et a été octroyé un doctorat sur l'archégoniogenèse chez la fougère *Todea barbara* (L.) T. Moore de l'Université de Manchester sous la direction d'Elizabeth Cutter. Les conifères ont cependant été au centre des travaux du Dr von Aderkas au cours des décennies suivantes, après avoir travaillé sur un mélèze haploïde en tant que post-doctorant dans



Dr. von Aderkas tenant la médaille Lawson 2021.

le laboratoire de Jan Bonga dans les laboratoires de Fredericton du Service canadien des forêts. La carrière de recherche du Dr von Aderkas illustre celle d'un scientifique de grande envergure puisqu'il a travaillé sur un éventail époustoufflant de techniques et de sujets liés aux conifères au cours de ses 30 ans de carrière à l'Université de Victoria. Un court voyage sur Google Scholar propose des livres et des articles sur la culture *in vitro* d'arbres et l'embryogenèse, les sécrétions ovulaires (voir les photos incroyables dans le Fig. 1 <https://link.springer.com/article/10.1007/s00497-018-0348-z>) et les réponses des plantes aux agents pathogènes et aux parasites, pour n'en citer que quelques-uns. Ses travaux ont utilisé une variété de techniques – la cytogénétique, la microscopie électronique, la métabolomique, la phénologie, la protéomique, la transcriptomique et la génétique des populations.

Alors que cette carrière de chercheur aurait mérité la médaille Lawson à elle seule, le Dr von Aderkas a également eu une carrière d'enseignant extraordinaire, comme peuvent en témoigner de nombreux étudiants et étudiantes qui sont passés par son laboratoire. Au-delà d'être simplement un bon enseignant, le Dr von Aderkas a passé du temps à réfléchir sur son enseignement et à communiquer ses recherches en enseignement, notamment en co-écrivant un livre visant à aider les étudiants de premier cycle à réussir, *Making Sense in the Life Sciences: A Guide to Research and Writing*. Son expertise en enseignement a été reconnue par son université à plus d'une occasion, recevant à la fois le Biology Undergrad Society Teaching Award (1993) et le University of Victoria Faculty of Science Excellence in Teaching Award en 2016. Plus récemment, le Dr von Aderkas a accepté le poste de coprésident de la section d'enseignement de l'ABC (avec la coprésidente de la doctorante Laura Super) et a fait la promotion de l'importance de la pédagogie de la bienveillance dans les disciplines STEMM.

En conclusion, ce fut un plaisir sincère d'honorer un collègue qui a excellé non seulement dans le développement des connaissances botaniques au Canada mais aussi dans la transmission de sa passion aux futures générations de botanistes.

~ Nicole Fenton

Book Review

Field Study: Meditations on a Year at the Herbarium

Helen Humphreys, 2021. E.C. W. Press, Toronto

In *Field Study*, Canadian author and poet Helen Humphreys shares her journey on which she attempts to reconcile the juxtaposition of the cumulative, seemingly irreversible human destruction of the natural world, and our emotional and even physical need to interact with it. She chose the herbarium as a “landscape” or “wilderness” in which to explore human connections with nature through time. Over the course of a year, she embarks on a foray through Queen’s University’s Fowler Herbarium, and through the environs of Kingston, Ontario, where she lives, and in which some of the people she discovers once collected.

The Fowler Herbarium, known to the international herbarium community by the acronym QK, is now housed an hour north of Kingston in a specially built facility at the Queen’s University Biological Station. Its specimens date from the mid 1800’s to the present day, with an emphasis on the plants of the Kingston Region. Helen Humphreys sets out to examine each of the Fowler Herbarium’s 140,000 specimens, one by one, approaching them in systematic order according to their evolutionary history. From each specimen label, she focuses on the collectors and tries to understand why and how they interacted with a particular plant at a particular time. She comes to know the collectors from their handwriting and the nature of their inscriptions. She then uses outside sources to learn about the collectors lives and how their plant collecting intersected with their personal circumstances and activities. Through her sleuthing we meet internationally famous botanists like Joseph Dalton Hooker, numerous Victorian women, including Annie Boyd, a prolific local collector at the turn of the 19th century, and more recent 20th century Canadian botanists including William George Dore, a plant systematist with Agriculture Canada, Ottawa (who was also a CBA member). The biographical sketches and observations about collectors are all fascinating and insightful. They traverse the continent and particularly celebrate the expertise and contribution of amateur botanists in the late 19th and early 20th century.

Helen Humphreys asserts that in the 20th century, modern science eschews the contributions and expertise of amateur botanists moving to a model of “science first.” She therefore views the herbarium as a “memorial to a kind of (intellectual) democracy that no longer exists in science.” From my experience, this is thankfully not true. While the nature of plant taxonomy has changed substantially in the last one hundred years, the importance of amateur botanists in documenting biodiversity, publishing on individual taxa, writing regional floras, and contributing to herbaria and other natural history collections has not. Indeed, the contributions of amateur botanists is increasingly important and sought after. In Ontario alone, publications like *The Orchids of Ontario* (Whiting and Catling 1986), *The Vascular Plants of the Bruce Peninsula* (Johnson, 2016) and the just published, *Flora of Kawartha Lakes* (Leadbeater and Barbour, 2021) are all testament to the significant contributions of amateur botanists.

As Helen Humphreys recounts her year-long journey and quest, she moves back and forth between the collection and her personal excursions into natural areas. She reminds us that events in our daily lives intersect with our work, sometimes interrupting the creative process and at others propelling it forward, but always informing and shaping it. She takes the reader along with her as she jumps from discovery to discovery, all of which begin to connect. She uses the herbarium specimen label as a compass to guide her back to collecting locations, just as a botanist would do, though focusing more on the aesthetic experience of the place rather than its botanical attributes. She discovers the importance of observation – looking closely at plants – with art as her medium.



Through her observations of plants in the wild, she begins to view the plants in the herbarium in a different light. At the outset, she embraces the herbarium as a repository of flattened dead plants stacked on top of each other. Plants separated in life, brought together in death. Gradually, as she progresses through the collection, she marvels at the occasionally life-like properties of the dead plants – the retention of fragrance in the pines or textures in the leaves of grasses. She comes to appreciate the plants that retain their life-like characteristics most, and she is pleasantly surprised by the life that breathes through this repository of dead things.

One of the delights of this book is the revelations that Helen Humphreys shares as she explores the herbarium and her precious natural places in tandem. She is not entrenched in her original thesis or assumptions, but allows her research to evolve naturally. As she does so, she adjusts her approach. She writes, “often with writing, the very thing that is the bright idea at the beginning of a book is the thing that trips you up further in. My idea for this project was to show the interaction between people and nature through time, but this becomes problematic when the people are mostly white colonial settlers. Perhaps I should pay less attention to the collectors and more to the plants themselves.” She does begin to focus more on the plants and in doing so, comes to appreciate the relatedness of species and the cohesiveness of the specimens as a body. By the end of the book, she no longer describes the herbarium as a wilderness but “as a garden with equal reverence to all plants and all collectors with no one and nothing preferred above something else.” In fact, *Hortus Hiemalis* (winter garden) or *Hortus Siccus* (dry garden) were the names given to the earliest herbaria, founded by Luca Ghini in Spain circa 1530 (Thiers, 2020). As she studies individual species in the collection, and in the field, Humphreys gains an appreciation of the role of plants within an ecosystem, in summer, when alive, and in winter when they are standing dead. She begins to articulate the interconnectedness of plant and animal species in the landscapes that she frequents.

Field Study is a small, charming book that is beautifully illustrated and laid out. It is an enjoyable, easy read woven with anecdote and poetic symbolism. The text is neatly interspersed with images of herbarium specimens in whole or in part, along with details of labels from the Fowler Herbarium and from the collections of Victorian poet Emily Dickinson, and botanical artwork by the author and others.

As I read *Field Study*, I realized that as botanist, plant systematist and museum curator, my perceptions of herbaria and herbarium specimens are very different and flow from different assumptions than those that the author starts out with. The book afforded me the opportunity to look at the objects and subject matter that I have dealt with for over forty years - plant specimens and their many applications - through someone else’s eyes and from their very different perspective. Ironically, my first botanical pursuits were in the Fowler Herbarium.

To me, a herbarium is a collection of preserved, pressed plants, not dead ones. I only describe the herbarium as housing “dead” plants when contrasting it with a living plant collection – a botanic garden. Herbarium specimens have seeds that may be viable, plant tissue from which DNA can be obtained, and in the case of bryophytes, leaves that can be rehydrated and brought to life (though I have never tried to grow one again). The dimensions of plant parts, the characters used for identification, are the same for dried and fresh specimens. The difference between them is that fresh specimens are three dimensional, have vivid colours and can continue to grow under the right conditions. People who press plants go to great lengths to preserve them in such a way that the colour is retained and that they remain as life-like as possible. Plant specimens are vouchers for a living plant population and the label data brings the plant to life by evoking the habitat and the associated species that grew with it. As specimens are examined and documented, they become a record of changes in taxonomic concepts. As Barbara Thiers writes in *Herbarium* (2020), “These preserved organisms give us information about our world and clues to its future that we cannot learn any other way.” Helen Humphreys does not share these perspectives at the beginning of her journey. However, by the end, she reverses her opinions, coming to recognize the resilience of plants and nature and the fragility of humankind. The plants revealed their own stories to her and promoted their own purpose.

Helen Humphreys’ honesty and openness in taking us on her journey is the book’s charm. I recommend it to all who love nature, and especially to those who seek to promote botany and collections and to inspire others to study plants.

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Acknowledgements

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Deborah Metsger, debm@rom.on.ca
Royal Ontario Museum



Photo courtesy of Tyler Smith

TOP CANADIAN ORNAMENTAL PLANTS. 30. Hyacinth

ERNEST SMALL^{1,2}

Hyacinths are iconic, easily-grown, miniature early-season plants with gorgeous flower clusters and unforgettable intense perfume. They are standard ornamentals for containers, gardens, landscapes, and short-term houseplants.

Names

Scientific name: *Hyacinthus orientalis*. The genus name *Hyacinthus* is thought to trace to the classical Greek and Latin names for hyacinth or (more likely) some other blue-flowered plant (larkspur and iris have been suggested). *Hyacinthus* is a member of the Hyacinthaceae or Asparagaceae (see <https://www.pacific-bulbsociety.org/pbswiki/index.php/Hyacinthaceae> for a justification of placement in the latter).

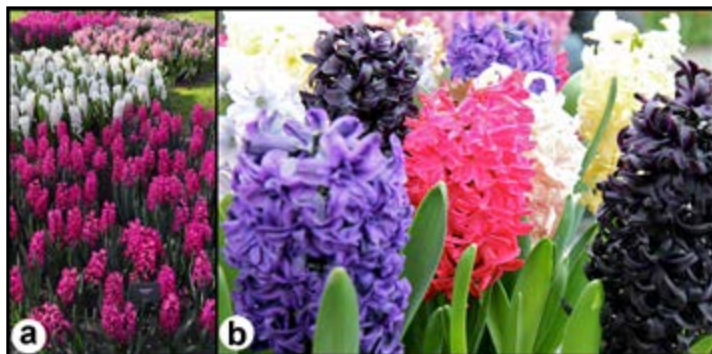


Figure 1. Hyacinths. (a) Photo by Davric (CC BY SA 4.0). (b) Photo by Marianne Bevis (CC BY ND 2.0).

English names: Hyacinth, common hyacinth, Dutch hyacinth, garden hyacinth. Rarely called jacinth (a word of Anglo-French origin). One needs to be careful when reading information about plants called “hyacinth” because they could belong to other genera, for example:

Grape hyacinth (*Muscari* species; Liliaceae, or Asparagaceae)

Hyacinth bean (*Lablab purpureus*, *Dolichos lablab*; Fabaceae)

Water hyacinth (*Eichhornia crassipes*, *Pontederia crassipes*; Pontederiaceae)

Wild hyacinth (*Camassia scilloides*; Liliaceae or Asparagaceae)

Wild hyacinth (*Brodiaea* species; Liliaceae, Asparagaceae or Themidaceae)

Wood hyacinth (*Hyacinthoides hispanica*; Asparagaceae)



Figure 2. “The Death of Hyacinth,” public domain painting by Alexandre Kisseliov (1838–1911). Apollo is holding the fallen Hyacinth whom he has just accidentally killed with his discus.

Symbolism

A pre-Hellenic mythological figure who came to be called Hyakinthos by the Greeks is often interpreted as the basis of the names *Hyacinthus* and hyacinth. In one of many imaginative accounts, a Spartan prince with this name was killed by Apollo in an unfortunate throw of his discus. The hyacinth plant grew from the youth’s

¹ Science and Technology Branch, Agriculture and Agri-Food Canada, Neatby Bldg., Central Experimental Farm, Ottawa ON, K1A 0C6

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blood, planted by the regretful Apollo. The event is portrayed in several paintings by European masters. Apollo and Hyacinth are often alleged to be lovers, and so representatives of homosexual concerns. “The hyacinth is sometimes regarded as a Christian symbol of prudence, peace of mind, and the desire for Heaven. This was derived from the myth of Hyacinthus, upon whose death the flower sprung forth” (<http://www.catholictradition.org/Saints/signs4.htm>).

Wild *Hyacinth* species

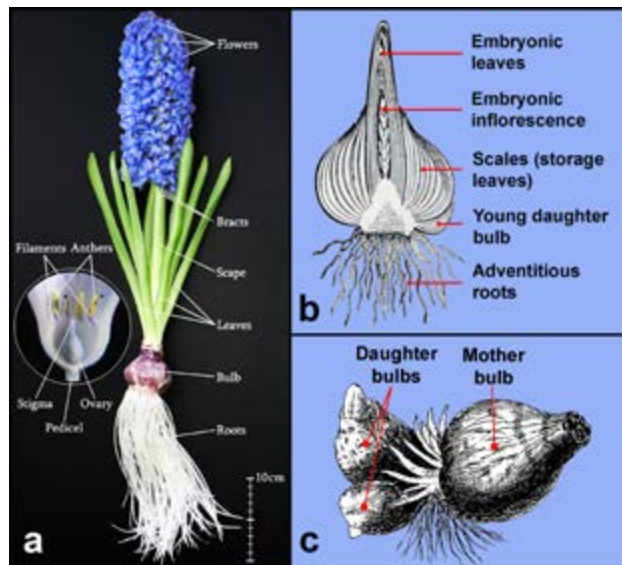


Figure 3. Morphology and anatomy of *Hyacinthus orientalis* (public domain diagrams). (a) Figure credit: QuazDelaCruz. (b). Longitudinal section of bulb. Image source: Bergen, J.Y. 1896. Elements of botany. Ginn, Boston. Text added. (c) Mature offsets from a hyacinth bulb. Image source: Weathers, J. 1867. The bulb book. J. Murray, London. Text added.

The genus *Hyacinthus* has three species (more were recognised in the past, but they were transferred to other genera). The other two species, *H. litwinovii* and *H. transcaspicus*, occur in Turkmenistan and Iran, and some authorities place them in the related genus *Hyacinthella*. These do not appear to have contributed to the ancestry of domesticated hyacinths. Wild *H. orientalis*, the ancestor of domesticated hyacinths, is native to the eastern Mediterranean region from Turkey to Iran, and Syria to northern Israel. The species occasionally occurs elsewhere as a feral introduction (not in Canada, although so-called wild “hyacinths” are present). It is a perennial, long-lived bulbous herb with a few basal, fleshy, narrow, strap-shaped leaves. The very fragrant flowers are produced in the spring, usually singly on an erect stalk (“scape”) 20–30 cm (sometimes as much

as 40 cm) tall. The 6-petalled, bell- or funnel-shaped florets range in length from 0.5 to 2.5 cm long, with 5–40 densely packed on the upper part of the stalk. The wild plants usually have blue flowers. The bulbs are overwintering, starch-storing reproductive organs, which when mature are 3–7 cm in diameter. Hyacinth bulbs are “tunicate,” i.e. they have an outer layer of dry, protective scales. The original (mother) bulbs produce smaller adventitious bulbs from the base, and these vegetatively reproduce the species. As in many other bulb-producing perennials, some contractile roots are present, which pull the new bulbs downward to prevent them from popping out of the soil. Hyacinths also reproduce sexually, and in nature the seeds are ant-dispersed, employing an edible portion (i.e. an elaiosome) to attract the ants.

Domesticated *Hyacinthus*



Figure 4. Some of the many colours available for hyacinth flowers. Photo by Jennifer Kramer (CC BY 2.0).

Wild hyacinths allegedly were grown in classical Greece and Rome, but interpreting names used in ancient literature is hazardous. Hyacinth, like tulip and other popular bulb ornamentals, was domesticated in Asia Minor. The plant was valued in the gardens of the rulers of the Ottoman Empire in the 15th century. By the 1550s it was imported into Europe, particularly into the Netherlands which subsequently developed the world-famous Dutch bulb industry. In the 1730s, a market frenzy was based on double-flowered hyacinth clones, which sold for preposterously inflated prices, just as had occurred with tulips a century earlier.

Unlike numerous garden plants, ornamental hyacinths originated from just one species, *H. orientalis*. “Hy-

brids” are intra-specific combinations of selections, not interspecific. Thousands of cultivars have been named, but most are extinct, and only a few dozen clones dominate current markets. Flower colours include shades of blue, purple, pink, red, yellow, and white. Blue- or purple-flowered cultivars are frequent. Double-flowered forms are also available in the trade, although they were more popular in past times. A few cultivars produce plants with more than a single flowering stem. Varieties differ notably in how closely the flowers are packed together.

In the earlier part of the 20th century, the low-growing bulb ornamentals, especially hyacinths, were often laid out in elaborate geometric patterns in lawns and in front of large buildings. This labour-intensive practice is still sometimes observed in large commercial and public spaces.



Figure 5. Elaborate landscape layout patterns of hyacinths. Such artistic creations used to be very popular, but are uncommon today. (a) Long row of blue and white hyacinths at Keukenhof Gardens in the Netherlands. Photo by Will Bakker (CC BY SA 2.0). (b) Hyacinth garden at Anglesey Abbey, U.K. Photo by Andrew Stawarz (CC BY ND 2.0). (c, d) Early 20th century hyacinth catalogues (public domain) featuring hyacinths.

Economic importance

Hyacinths are one of the world’s major ornamentals, ranking behind tulips and daffodils in the “bulb” class (which includes not just true bulbs but also corms, rhizomes, and other underground storage organs that

serve for annual regeneration). Hyacinth bulbs and potted plants represent important commodities in international trade. The Netherlands, the chief trader, regularly exports about 30 million euros worth of “hyacinth” species (mostly Dutch hyacinth; <https://www.statista.com/statistics/581418/value-of-the-import-and-export-of-hyacinth-bulbs-in-the-netherlands/>). There are a few additional minor uses. As early as the 17th century, the French began making perfumes from the flowers, and extraction of essential oil for scent still occurs in France. Flowering potted plants are so pungent that they are sometimes marketed as natural plant deodorizers for the home kitchen or bathroom.

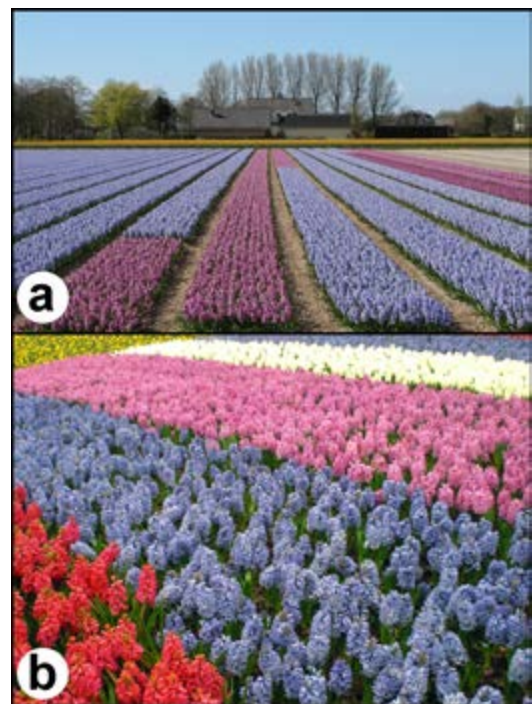


Figure 6. Commercial fields of hyacinths in the Netherlands. (a) Photo by Olga Khomitsevich (CC BY 2.0). (b) Photo by Mulberry 24 (CC BY 2.0).

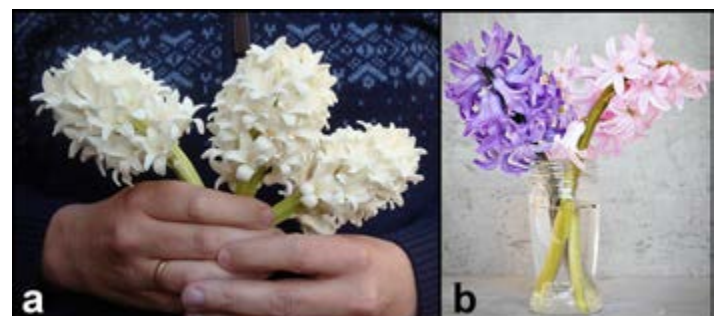


Figure 7. Hyacinth stalks employed as cut flowers (public domain photos, Pixabay.com). (a) Photo credit: FotoRieth. (b) Photo credit: Pezibear.

Ornamental use



Figure 8. Hyacinth in containers. (a) A large container for outdoor display. Photo by Dguendel (CC BY 4.0). (b) A gift pot of flowering hyacinth packaged to sell in supermarkets. Photo credit: JillWellkgton, Pixabay.com (public domain).

For the most part, hyacinths are grown in public landscapes, residential gardens, and as houseplants, but occasionally they are used as cut flowers. Hyacinths are widely employed in landscaping as massed beds, in borders, and occasionally in rock or alpine gardens. The bulbs are frequently grown in containers, especially when forced for interior winter bloom as described later.

Medicinal use

In traditional (folk or herbal) medicine, foliage and bulbs were used as a hemostat (to control bleeding), promote healing, treat prostate disease and haemorrhoids, and other conditions. There are no current approved medicinal applications, but as with numerous other plants, experiments are underway to assess the value of its chemical constituents.

Toxicity

Hyacinths contain quite toxic alkaloids (notably lycorine), especially in the bulbs, which are the most toxic part of the plant. The outer bulb scales contain calcium oxalate crystals in the form of bundles of raphides (needle-like crystals) which act as mechanical irritants. Up to 6% of the bulbs may be calcium oxalate. Ingestion could cause severe gastrointestinal problems. Contact can cause allergic skin reactions (known as “hyacinth itch” and “hyacinth fingers”) and eye irritation. Gloves are advisable when handling. Breathing in dust from the bulbs can irritate the lungs and trigger an asthma attack in some people. Workers who professionally handle hyacinth bulbs are at special risk. Dogs and cats

are also susceptible to being poisoned from both indoor and outdoor plants. Nevertheless, squirrels, chipmunks, voles, and other rodents will excavate and consume the bulbs and also eat the flowers (the plants are claimed to be resistant to deer and rabbits). The intense cloying scent is off-putting to some people when potted plants are in a confined space.

Care of outdoor plants



Figure 9. Early (public domain) 20th century garden catalogues featuring hyacinths. (a) Note double-flowered cultivar at left, normal-flowered cultivar at right. Photo credit: Swallowtail Garden Seeds. (b) Photo credit: Internet Archive.

Purchasing

Hyacinth bulbs are commonly sold in chain stores and garden outlets. A wider choice is available online, and there are many Canadian suppliers, where one is more likely to obtain hardier cultivars. Out-of-season, discounted ornamental bulbs may not be of good quality.

Planting & location

Bulbs are best planted in late fall, preferably between first frost and soil freezing. The pointy end should face up, the flatter side down. Outdoors, grouped or massed plantings are strongly recommended because the plants are small. Suggested spacing in a garden: about 15 cm apart, 10–15 cm deep. A general recommendation is that the bulbs should be covered with soil three times their vertical diameter, so the smaller bulbs are planted more shallowly. Hyacinth is heliophilous (adapted to full sunlight) but also grows well in light shade. Outdoor plants are sometimes strategically located (easier

when they are in containers) near doors, paths, patios, decks, and picnic tables where their fragrance will be easily noticed. Commercial growers recommend against replanting the bulbs in the same place unless about 4 years have elapsed.

Propagation

Hyacinth is mostly reproduced by bulb segments commercially (by skillful cutting, professionals can obtain up to 40 segments), or by bulbs by home growers. The mature bulbs naturally produce 1–3 daughter bulbs (termed bulblets or offsets), and if planted these will produce flowers in 2 or 3 years (the mother bulb itself may also regenerate annually). Seeds are available, but often won't breed true to type, and it will require years before flowering occurs.

Soil & moisture conditions

Hyacinth does best in moderately rich soils, preferably with appreciable organic content. The soils should be well-drained and maintained medium-moist during the growth period. Loose-textured soil is desirable but not essential. A circumneutral soil is preferable, although the plants grow in a range of pH. However, strongly acidic substrates are not tolerated. Once established, hyacinth can endure summer drought.

Temperature

Hyacinth is considered to be moderately heat tolerant in the summer. The plants require an annual period of dormancy (4–7°C, 12–14 weeks) to re-flower. In hot climates where adequate winter vernalization cannot occur, hyacinths are often grown outdoors as annuals or lifted and replanted every year after artificial chilling. In Canada, an adequate cold period is usually available. The literature is ambiguous regarding how much freezing the bulbs can tolerate, or the lowest temperatures that can be survived, some authorities recommending that freezing should be avoided. Hyacinths are cold tolerant, but not as winter hardy or resistant to spring frosts as tulips, daffodils, or crocuses. In colder areas, mulching of beds to provide insulation over winter may be necessary. Various references to the cold hardiness of hyacinth state that its northern limit is U.S.D.A. Zone 3 (defined as average annual minimum air temperature no lower than -40°C) or Zone 4 (average annual mini-

mum air temperature no lower than -34.4°C), but neither measure accurately indicates freezing tolerance. At the northern limit of hardiness, the bulbs may be planted 5 cm deeper than normal to promote survival.

Tips

Spent flower spikes should be removed so the plants do not use their reserves on seed production. Following flowering, as the plants go into dormancy, reduce watering. The foliage should not be cut down until the leaves have senesced naturally, in order to allow starch reserves to build up in the bulbs. Outdoor plants maintained for several years may produce less vigorous plants with smaller flowers, requiring replanting with new stock. Shorter cultivars are better suited to containers than to culture in the ground.

Care of indoor plants



Figure 10. Massed hyacinth bulbs forced in a pot of soil. Photo by Tiger (CC BY 2.0).

Hyacinth bulbs are among the easiest to force. High-quality, large bulbs of cultivars known to be suitable for forcing should be chosen (these are often available in stores). The bulbs require 8 to 16 weeks of chilling at 4–7°C to flower. For most people, a refrigerator is the most available suitable place. If stored in a refrigerator, the bulbs should be kept slightly moist in a plastic bag to prevent ethylene gas (from any ripening fruit

also present) from inhibiting development of the bulbs. Pre-cooled bulbs are sometimes available, but these may nevertheless require at least a shortened chilling. After the cold period, the bulbs can be placed in a well-drained (porous) commercial potting mix, the tops of the bulbs remaining uncovered by soil. The container should have drainage holes. Alternatively, the bulbs can be grown in water. Forcing vases designed for the large bulbs of hyacinths are often available from florist shops, garden centres, and online. “Hyacinth glasses” hold the bulb (generally just a single bulb) so that just the very bottom of the base touches the water. These containers are frequently transparent so the roots can be viewed. (Narrow-topped jam jars can be employed as a cheap alternative.) Because changing the water is difficult, charcoal is typically added to the water to limit bacteria. Chilled bulbs initiate flowering about 5 weeks after being moved to room temperature. After flowering, hyacinths and indeed most other spring-flowering bulbs that have been forced indoors are usually discarded because they have been so significantly weakened that they are unlikely to perform well if planted outdoors. Nevertheless, replanting takes little effort.

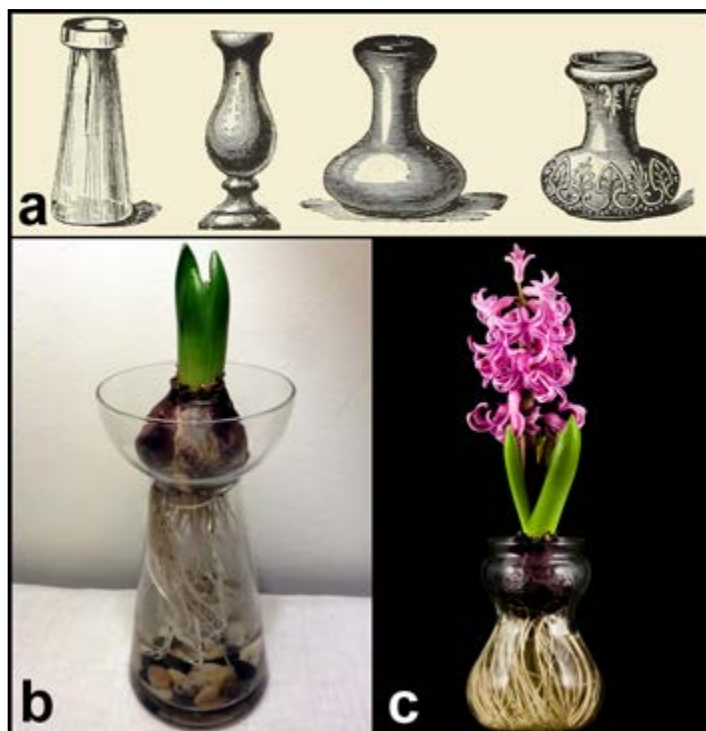


Figure 11. Special narrow-necked containers (“hyacinth glasses,” “hyacinth vases”) for forcing bulbs. The hourglass constrictions are designed to hold the bulbs above water while the roots grow into the water. (a) Source (public domain): Peter Henderson & Co. 1892. Catalogue: Bulbs, plants, seeds for autumn planting. (b) Photo by Vitavia (CC BY SA 4.0). (c) Photo by Paul VanDerWerf (CC BY 2.0).

Curiosities of science and technology

- Cyril Darlington, Professor of Botany in Oxford’s Department of Botany, conducted pioneering investigations of the fundamental behaviours of plant chromosomes during the 1930s and 1940s. He employed the large, distinctive chromosomes of *Hyacinthus orientalis* as his most important model (note Darlington et al. 1951).
- The British navy named many of its boats after flowers. The HMS Hyacinth was an 18-gun Royal Navy combat ship launched in 1829, which destroyed dozen of Chinese junks during the First Opium War, and was eventually broken up in 1871. Another HMS Hyacinth was a cruiser built for the Royal Navy in the 1890s which was involved in hostilities during the First World War before being sold for scrap in 1923.
- The U.S. National Garden Bureau, a non-profit organization, annually highlights one annual, one perennial, one vegetable, one shrub, and one bulb. The hyacinth was chosen as the bulb for 2021.
- Words can be remarkably ambiguous. The adjective “hyacinthine” can refer to the purplish-blue colour typical of numerous hyacinth flowers. However, it also has unusual literary meanings tracing to translations from classical Greek literature pertaining to descriptions of the hair of Odysseus (also known by the Latin Ulysses), the hero of Homer’s epic poem the *Odyssey* (Irwin 1990). Thus hyacinthine in reference to hair sometimes means golden, reddish-gold, black, or curly (supposedly like the inflorescence of hyacinth – a rather obscure description).
- Czech artist Alphonse Mucha (1860–1939) is known for his distinctly stylized and decorative posters, many of which featured flowers, including hyacinths.



Figure 12. Floral-themed posters (public domain) by Alphonse Mucha.

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