The Canadian Botanical Association Bulletin

Bulletin de l'Association Botanique du Canada

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Highlights

President's Message - Winter Botany

Across Canada, most plants are hidden under the snow for the winter. Of course, southern BC is another story, but for most of us botanizing is restricted to twigs of deciduous trees and shrubs, conifers, and the bryophytes, lichens and fungi that grow on trees. Personally, as each winter goes by, I dive deeper into the mysteries of epiphytic lichens. They are so abundant in our boreal forest, in some cases entirely covering the twigs and lower branches of the coniferous trees! My children, who sigh with impatience during spring and summer hikes as we inspect each plant and piece of deadwood, now find themselves waiting while I inspect every branch. Their deception is palpable as the normally brisk winter hike slows to the summer crawl!

As the snow melts, mosses and lichens are frequently the first plants exposed to the sun as the rocks and deadwood on which they grow shed their cover of snow. Mosses, lichens and other denizens of northern ecosystems will also be in the spotlight at the 2021 annual meeting, as we participate in BL2021: Bryophytes, lichens and northern ecosystems in a changing world. The International Association of Bryologists, the American Bryological and Lichenological Association, the Société Québecoise de la Bryologie, and the CBA-ABC are organizing this exciting conference held July 6-9. Abstract submission is open. I hope many of you will attend.

Finally, we have done a major administrative reboot at the board of directors, in part inspired by the work of the IDEA (Inclusion, diversity, equity and accessibility) committee. We are making the nomination of board members more transparent, and you will find a call for nominations in this edition, and there will be a Bulletin Supplement in May outlining the larger changes in administration that aim to make the association more diverse and inclusive. The Supplement will include information on special amendments we will be bringing this spring to alter the By-Law of the association. I look forward to hearing your comments!

Botanically yours,

Nicole

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, 54(2), must be received by August 1st, 2021.

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 I'ABC.

Soumission de textes

Tous les membres de I'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 54(2), est le 1er août 2021.

Botanique d'hiver

Partout au Canada, la plupart des plantes sont cachées sous la neige pendant l'hiver. Bien que dans le sud de la Colombie-Britannique ce soit une autre histoire, pour la plupart d'entre nous, la botanique en hiver se limite aux branches d'arbres et d'arbustes à feuilles caduques, aux conifères et aux bryophytes, lichens et champignons qui poussent sur les arbres. Personnellement, au fil de chaque hiver, je plonge plus profondément dans les mystères des lichens épiphytes. Ils sont si abondants dans notre forêt boréale, recouvrant dans certains cas entièrement les branches inférieures des conifères! Mes enfants, qui soupirent d'impatience pendant les randonnées du printemps et de l'été alors que nous inspectons chaque plante et morceau de bois mort, se retrouvent maintenant à attendre pendant que j'inspecte chaque branche. Leur déception est palpable alors que la randonnée hivernale normalement plus rapide ralentit au rythme de l'été!

Au fur et à mesure que la neige fond, les mousses et les lichens sont souvent les premières plantes exposées au soleil, car les roches et le bois mort sur lesquels ils poussent perdent leur couverture de neige. Les mousses, lichens et autres habitants des écosystèmes nordiques seront à l'honneur lors de la réunion annuelle 2021, alors que nous participons à BL2021: Bryophytes, lichens et écosystèmes nordiques dans un monde en mutation. L'Association internationale des bryologues, l'American Bryological and Lichenological Association, la Société québécoise de la bryologie et l'ABC-CBA organisent cette conférence passionnante qui se tiendra du 6 au 9 juillet. La soumission des résumés est ouverte. J'espère que vous serez nombreux à y assister.

Enfin, nous avons procédé à un remaniement administratif majeur au conseil d'administration, en partie inspiré par les travaux du comité IDEA (Inclusion, diversité, équité et accessibilité). Nous rendons la nomination des membres du conseil plus transparente. Vous trouverez donc un appel à candidatures dans cette édition, et il y aura un supplément au bulletin en mai décrivant les changements administratifs plus importants qui visent à rendre l'association plus diversifiée et inclusive. Le supplément comprendra des informations sur les modifications spéciales que nous apporterons ce printemps pour modifier le règlement administratif de l'association. J'ai hâte d'entendre vos commentaires!

Botaniquement vôtre,

Nicole

New Member Publications

Chen, H. & Markham, J. (2020) Using microcontrollers and sensors to build an inexpensive CO2 control system for growth chambers. Appl. Plant Sci. 8, e11393.

Chen, H. and Markham, J. (2021) The interactive effect of elevated CO2 and herbivores on nitrogen-fixing *Alnus incana* ssp. *rugosa*. Plants 10: 440. https://doi.org/10.3390/plants10030440

Chen, H.; Markham, J. (2021) Ancient CO2 levels favor nitrogen fixing plants over a broader range of soil N compared to present. Scientific Reports 11: 3038, doi: https://doi.org/10.1038/s41598-021-82701-7.

Chen, H., Renault, S. & Markham, J. (2020) The effect of *Frankia* and multiple ectomycorrhizal fungal species on *Alnus* growing in low fertility soil. Symbiosis. 80, 207–215.

Kucheravy, C., Roth, J.D. and Markham, J. (2020) Red foxes increase reproductive output of white spruce in a non-mast year. Basic and Applied Ecology 51:11-19.

Lang, J.A, Roth, J.D. and Markham, J.H. (2021) Foxes fertilize the subarctic forest and modify vegetation through denning. Scientific Reports 11:3031.

Makar, J. and Markham, J.H. (2020) Effect of biofuel waste, urea, deer browsing and vegetation control on Pinus banksiana seedling growth. Canadian Journal of Forest Research. In Press.

Markham, J. and Fernández Otárola, M. (2021) Bryophyte and lichen abundance and nitrogen fixation in a high elevation cloud forests in Cerro de La Muerte, Costa Rica. Oecologia. 195: 489-497. DOI: https://doi.org/10.1007/s00442-020-04840-4

Markham, J. and Fernández Otárola, M. (2020) Crown shyness and asymmetry in a tropical montane forest. Biotropica 52: 1127-1130. DOI: https://doi.org/10.1111/btp.12877

Nieto-Blázquez, M.E., Peña-Castillo, L., and J. Roncal. (2020) Historical biogeography of Caribbean Podocarpus does not support the progression rule. First published: 06 December 2020 . Early view: https://doi.org/10.1111/jbi.14034

Rogers, R.D. (2020) Medicinal Mushrooms: The Human Clinical Trials. Prairie Deva Press Edmonton AB ISBN 979-8-6461-1947-7

CHANGES TO BEST PRESENTATION AWARDS AT THE ANNUAL CBA-ABC MEETING

To accommodate students at different research stages in their program, the two traditional CBA/ABC awards, Lionel Cinq-Mars and Iain and Sylvia Taylor will include each two subcategories: "proposal-stage" and "results-stage," worth $250 and $500, respectively.

Lionel Cinq-Mars Award for the best oral presentation by a student as a contributed paper at the CBA/ABC Annual Meeting.

In 1976 the CBA/ABC established a cash award "for the best oral presentation by a student of their own research, as a contributed paper at the Annual Meeting." In 1978, the award was named in memory of Lionel Cinq-Mars (1919-1973), a charter member of CBA/ABC and a member (one of the Directors) of the first Executive (1965-66). He also served another term as a Director of CBA/ABC from 1967 to 1969.

Cinq-Mars obtained a B.A. from Laval (1940), a B.Sc.Agr. from the College d'agriculture at La Pocatie (1944), and a M.Sc. from Macdonald College (1949). He worked for several years (1948-62) as a plant pathologist for the Federal Department of Agriculture (his specialty was apple diseases). He was appointed Professor of Botany at Laval in 1962, and became popular as a teacher and researcher. In 1968, he was officially appointed Conservateur de l'Herbier Louis-Marie, although he had been responsible for the reorganization of the herbarium since his arrival at Laval. Cinq-Mars was an expert field botanist, amassing a personal herbarium of about 10,000 sheets. He was considered an expert on the genera *Viola* and *Amelanchier*. He led three field trips for the Montreal Botanical Congress (1959) and headed the organizing committee for the 1970 CBA/ABC Annual Meeting at Laval.

Any student enrolled at a Canadian institution of higher learning is eligible, as well as Canadian students at foreign institutions, both undergraduate and graduate. Abstracts must be submitted for the Annual Meeting at which the student will compete for the Award. To ensure that each student in the competition has a fair evaluation, the award has two sub-categories depending on the research stage that students are at:

Proposal-stage. Value: $250. Rewards the best plan for future research outlining its rationale and significance, the questions/objectives/hypotheses adopted, and the methodology that will be used. If some preliminary results are available, they should be presented in the context of "what is next." Both undergraduate and graduate students are welcome to apply, but the latter must be in their first year of studies.

Results-stage. Value: $500. Rewards research that is completed (or nearly-completed); focusses on the results obtained, their discussion, and importance.

Students who wish to compete must indicate this by checking the appropriate box on the abstract form, including the stage of research subcategory: proposal or results. Oral presentations will be evaluated by a panel of judges (at least one from each of the sections of CBA) which is chaired by the President-Elect. For details about submission deadlines see the Annual Meeting Website.

Iain and Sylvia Taylor Award for the best student poster presented at the CBA/ABC Annual Meeting.

The Canadian Botanical Association gives an award for the best student poster presented at the CBA Annual Meeting. The award is made in honour of Iain and Sylvia Taylor, two members who have for many years actively contributed to the development of the CBA. Any student enrolled at a Canadian institution of higher learning is eligible, as well as Canadian students at foreign institutions, both undergraduate and graduate. Abstracts must be submitted for the Annual Meeting at which the student will compete for the Award. To ensure that each student in the competition has a fair evaluation, the award has two sub-categories depending on the research stage that students are at:

Proposal-stage. Value: $250. Rewards the best plan for future research outlining its rationale and significance, the questions/objectives/hypotheses adopted, and the methodology that will be used. If some preliminary results are available, they should be presented in the context of "what is next." Both undergraduate and graduate students are welcome to apply, but the latter must be in their first year of studies.

Results-stage. Value: $500. Rewards research that is completed (or nearly-completed); focusses on the results obtained, their discussion, and importance.

Students who wish to compete must indicate this by checking the appropriate box on the abstract form, including the stage of research subcategory: proposal or results. Poster presentations will be evaluated by a panel of judges (at least one from each of the sections of CBA) which is chaired by the President-Elect. For details about submission deadlines see the Annual Meeting Website.

CHANGEMENTS AUX PRIX DE LA MEILLEURE PRÉSENTATION À LA RÉUNION ANNUELLE DE L'ABC-CBA

Pour accueillir les étudiant/es qui sont à différentes étapes de la recherche, les deux prix traditionnels de l'ABC / CBA, Lionel Cinq-Mars et Iain et Sylvia Taylor, comprendront chacun deux sous-catégories: «phase de proposition» et «phase de résultats», d'une valeur respective de 250 $ et 500 $.

Prix Lionel Cinq-Mars pour la meilleure présentation orale d'un étudiant en tant que contribution à la réunion annuelle de l'ABC / CBA.

En 1976, l'ABC / CBA a créé un prix «pour la meilleure présentation orale par un/e étudiant/e de sa propre recherche, en tant que contribution à l'assemblée annuelle». En 1978, le prix a été nommé à la mémoire de Lionel Cinq-Mars (1919-1973), membre fondateur de l'ABC / CBA et membre (l'un des directeurs) du premier exécutif (1965-1966). Il a également exercé un autre mandat en tant que directeur de l'ABC / CBA de 1967 à 1969.

Cinq-Mars a obtenu un B.A. de Laval (1940), un B.Sc.Agr. du Collège d'agriculture de La Pocatie (1944), et un M.Sc. du Collège Macdonald (1949). Il a travaillé pendant plusieurs années (1948-1962) comme phytopathologiste pour le Département fédéral de l'agriculture (sa spécialité était les maladies de la pomme). Il a été nommé professeur de botanique à l'Université Laval en 1962 et est devenu un professeur et chercheur bien apprécié et connu. En 1968, il est officiellement nommé Conservateur de l'Herbier Louis-Marie, alors qu'il était responsable de la réorganisation de l'herbier depuis son arrivée à l'Université Laval. Cinq-Mars était un botaniste de terrain expert, amassant un herbier personnel d'environ 10 000 spécimens. Il était considéré comme un expert des genres *Viola* et *Amelanchier*. Il a dirigé trois sorties terrain pour le Congrès botanique de Montréal (1959) et a dirigé le comité organisateur de la réunion annuelle 1970 de l'ABC / ABC à l'Université Laval.

Tout/e étudiant/e inscrit dans un établissement d'enseignement supérieur canadien est admissible à ce prix, ainsi que les étudiant/es canadien/nes qui sont inscrit dans des établissements étrangers, tant au premier cycle qu'aux cycles supérieurs. Les résumés doivent être soumis pour l'assemblée annuelle au cours de laquelle l'étudiant/e briguera le prix. Pour s'assurer que chaque étudiant/e du concours a une évaluation juste, le prix comprend deux sous-catégories selon le stade de recherche auquel les étudiant/es se trouvent:

Phase de proposition. Valeur: 250 $. Récompense le meilleur plan pour la recherche future en décrivant sa justification et son importance; les questions / objectifs / hypothèses retenues et la méthodologie qui sera utilisée. Si certains résultats préliminaires sont disponibles, ils doivent être présentés dans le contexte de «les prochaines étapes». Les étudiant/es de premier cycle et des cycles supérieurs sont invités à postuler, mais ces derniers doivent être en première année d'études.

Stade des résultats. Valeur: 500 $. Récompense les recherches terminées (ou presque terminées); se concentre sur les résultats obtenus, leur discussion et leur importance.

Les étudiant/es qui souhaitent participer au concours doivent l'indiquer en cochant la case appropriée sur le formulaire de résumé, y compris le stade de la sous-catégorie de recherche: proposition ou résultats. Les présentations orales seront évaluées par un jury (au moins un membre de chacune des sections de l'ABC) présidé par le président élu. Pour plus de détails sur les dates limites de soumission, consultez le site Web de l'assemblée annuelle.

Prix Iain et Sylvia Taylor pour la meilleure affiche étudiante présentée à la réunion annuelle de l'ABC / ABC.

L'Association botanique canadienne remet un prix pour la meilleure affiche étudiante présentée à l'assemblée annuelle de l'ABC. Le prix est décerné en l'honneur de Iain et Sylvia Taylor, deux membres qui ont activement contribué pendant de nombreuses années au développement de l'ABC. Tout/e étudiant/e inscrit dans un établissement d'enseignement supérieur canadien est admissible, ainsi que les étudiant/es canadien/nes dans des établissements étrangers, tant au premier cycle qu'aux cycles supérieurs. Les résumés doivent être soumis pour l'assemblée annuelle au cours de laquelle l'étudiant/e briguera le prix. Pour s'assurer que chaque étudiant/e du concours a une évaluation juste, le prix comprend deux sous-catégories selon le stade de recherche auquel les étudiant/es se trouvent:

Phase de proposition. Valeur: 250 $. Récompense le meilleur plan pour la recherche future en décrivant sa justification et son importance; les questions / objectifs / hypothèses retenues et la méthodologie qui sera utilisée. Si certains résultats préliminaires sont disponibles, ils doivent être présentés dans le contexte de «les prochaines étapes». Les étudiant/es de premier cycle et des cycles supérieurs sont invités à postuler, mais ces derniers doivent être en première année d'études.

Stade des résultats. Valeur: 500 $. Récompense les recherches terminées (ou presque terminées); se concentre sur les résultats obtenus, leur discussion et leur importance.

Les étudiant/es qui souhaitent participer au concours doivent l'indiquer en cochant la case appropriée sur le formulaire de résumé, y compris le stade de la sous-catégorie de recherche: proposition ou résultats. Les présentations par affiches seront évaluées par un jury (au moins un membre de chacune des sections de l'ABC) qui est présidé par le président élu. Pour plus de détails sur les dates limites de soumission, consultez le site Web de l'assemblée annuelle.

REMINDER: Canadian Botanical Association/ Association Botanique du Canada – 2021 Call for Award Nominations and Applications

Each year the Canadian Botanical Association gives awards to botanists studying in Canada and Canadian botanists studying abroad. Many of the awards are available to non-Association members. Applications and nominations are now open for the following:

STUDENT AWARDS

For research related travel to Canada's North

Laurie Consaul Northern Research Scholarship — Value $1000

Deadline: February 28th 2021

For published papers

Porsild-Consaul Award for best paper in plant systematics or phytogeography — Value $1000

Stan Rowe Award for best paper in plant ecology — Value $500

Taylor Steeves Award for the best paper in plant development or structure — Value $500

Luella Weresub Award for the best paper in mycology or lichenology — Value $1000

Deadline: March 31st 2021

For best presentations at the Annual CBA/ABC meeting

Lionel Cinq-Mars Award is awarded for the best oral presentation — Value $500

Iain and Sylvia Taylor Award is awarded for the best poster — Value $500

For travel to attend the Annual CBA/ABC meeting

Macoun Award for graduate students presenting talks or posters. Several awards are available — Value $200-$600

Winterhalder Award for undergraduate students presenting talks or posters. Several awards are available — Value $200-$600

Deadline: Abstract submission deadline for the 2021 conference

CBA/ABC MAJOR AWARDS

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

The Magister Award is given for excellence in plant science teaching.

The Lawson Medal is the most prestigious award of the CBA. It recognizes excellence in the contribution of an individual to Canadian botany.

Nomination deadline: February 26th 2021

For more information: https://www.cba-abc.ca/awards/

Board of Directors Nominations

The CBA/ABC Nominations Committee is seeking nominations for five positions on the Board of Directors:

- Two Student/Postdoctoral Directors, one east of and one west of the Ontario/Manitoba border;
- One Director-at-large residing east of the Ontario/Manitoba border;
- Two Directors-at-large residing west of the Ontario/Manitoba Border.

This is your chance to influence the direction and future of the Association!

Directors attend two to four board meetings annually and may participate in committees. Directors-at-large serve a two-year term and are eligible for re-election to one additional successive term. Student/Postdoctoral directors serve for one year and are ineligible for re-election to a second term in the position. All positions start on July 9, 2021.

The CBA-ABC recognizes the importance of diversity in representation and encourages all members to apply, regardless of career stage or area of botanical interest.

The Process

- Directors must be association members.
- We encourage members willing to serve to self-nominate.
- Submit the nomination by email to Deb Metsger (CBA-ABC Secretary; debm@rom.on.ca) by April 15, 2021.

Please attach a short paragraph describing your current position and motivation to serve on the CBA-ABC Board of Directors and indicate which position you are interested in.

The Board will present a slate of candidates to the membership 3 weeks prior to the AGM.

If you have any questions or concerns regarding the nominations process, please contact the Nomination Committee by email: Julian.Starr@uottawa.ca

The Board of Directors looks forward to receiving your nominations.

Sincerely,

Past President,
Nominations Committee Chair
Julian Starr

Tales from the Field

Drugs & Roses

By Julian Starr

As you know, Canada and the United States have the longest undefended border in the world, stretching from sea to shining sea. At most places along the border, the little outposts that mark its official crossings are remote, and filled with people who wish they were somewhere else due to boredom. One such place lies on the border between Saskatchewan and North Dakota, near the town of Big Beaver (Fig. 1), a name which certainly conjures images in one's mind. I was again accompanied by the ever faithful Simon Joly and the hunt was for roses. It had been a pretty miserable day of dry dust and grasshoppers (a future Tale) with little collecting success, when we found ourselves pulling up to the border with North Dakota at its most westerly point. The plan was to cross, and then head towards a site where a special rose hybrid had been found years before by Walter Lewis.

Fig. 1. The port of Big Beaver closed in 2011 because it saw only five travellers per day (all botanists) and no commercial traffic (data from the Canada Border Services Agency).

As we pulled up to the little post, a customs agent came out, asked for our passports and proceeded to ask questions. It was the usual banter, you know, "where are you from, what is the purpose of your trip, where are you going, etc.", but things got more interesting as soon as he asked us to pop the trunk. It was obvious that this had been a very unrewarding day on the job, because he clearly needed some kind of distraction. "What is that?", he said, and I replied, "Oh! Those are portions of rose stems – the number and pattern of thorns can be taxonomically significant". My answer was delivered with my textbook bright smile that always seems to shorten such exchanges, but all I received in reply was "Ah, right then, hem...". He then turned to the presses, and said, "What are those", and I said, "Those are plant presses. When you put dead plants into them and tighten the straps, it dries them out fast and they can be preserved like a mummy, forever!", a brighter smile this time, but the reply was sharp, "Is there any pot in those presses!?" Taken aback at such a suggestion, I replied, "Pot! Pot, you say! I am university professor!" Let's say I fumbled on that reply, because he then said, "Are you seriously trying to tell me that university professors do not smoke pot?" I must admit he had me there, so humbly I replied, "Well, no, but this one does not!" Apparently, that was mission accomplished because he slammed down the trunk, and then asked, "What's in the cooler in the back seat?", and without batting an eyelash, I answered truthfully, "Nothing, it's empty." He seemed satisfied and sent us on our way.

Later I popped open the cooler and nearly had a heart attack. To my horror there were a few live plants with roots full of dirt! Somehow we had forgotten to press them just before we reached the border like we always do (Fig. 2). If I had not been so convincing in my reply, who knows what would have happened, and my future collecting trips would have been sheer misery every time we needed to visit our nearest neighbour (Starr = plant smuggler!). As you will see in future Tales, the word "botanist" seems to be synonymous with "pot smoker" at Canadian and American Customs. Let's just say, this would not be the last time the question would come up…

Fig. 2. Pressing plants before crossing the border – I wonder how we could have missed a few?

The show must go on – and so does socially distant research during the pandemic.

Habib ben kalifa (Brock University MSc student of Dr. Liette Vasseur, foreground) and Kasia Zgurzynski (Brock University Research Assistant also of Dr. Vasseur, background) hard at work collecting vine petiole samples for analysis. Habib's project focuses on the impacts of cover crops on vine and berry health in local vineyards. His project involves planting different species of cover crops between the rows of vines to increase the biodiversity of this agroecosystem. Habib will specifically examine plant interactions (e.g. competition, facilitation between vines, weeds and other cover crops) and how these may change under drought or heavy rainfall conditions (*photo taken September 2020 by Diana Tosato*).

Thanks to Liette Vasseur for this photo! Send your field and lab photos to cba.abc.bulletin@gmail.com to be included in the next issue.

M.Sc. Position

INtercomparison of scalE and DImensionality of predictioN tools for multi-risk assessment: erosion, coastal flooding, ice jamming (INEDINE) – RQM and MEOPAR project (2020-2022) on human coastal community health, Maritime risk and security and climate change – UNESCO Chair project

We are currently looking for a bilingual Master's student candidate who has a strong background in environmental sciences (a background in Earth Sciences and/or Biology would be considered an asset). The successful candidate will be part of a team at Brock University and will benefit from the collaboration with other universities in Québec (National Institute for Scientific Research and University of Montreal) and Ontario (University of Ottawa) under a new MEOPAR project. This position is funded for the duration of the project with the expectation that the student participates as a teaching assistant (TA) for a minimum of two undergraduate courses per annum.

Project context:

The Baie-Saint-Paul region is well known for its natural landscape, cultural heritage and high biodiversity. This wealth is the result of a symbiosis between a river, a sea and mountain ranges. It is the result of a very rich geomorphological past: the natural reasons (high seismicity zone, exposure to high tides and storms in a northern climate) that have shaped this landscape are still very active. Natural hazards (earthquakes, high tides, storms, ice jams) will be amplified in intensity by the effects of climate change. The town of Baie Saint-Paul is particularly exposed. The project proposes to develop on this pilot site a comprehensive methodology and tools to anticipate changes and define adaptation strategies based on ecosystems. The method is based on cross-sectoral cross-sectional decision-makers (federal-provincial-municipal) and users, natural sciences (ecologists, geophysics, geotechnical with field observations) and civil engineering (structure, hydraulic with physical and numerical modeling) in order to identify risks, to characterize site conditions and to define ecosystem-based adaptation. The analysis will examine the different scales and dimensionalities of the coastal erosion problem in both macro-tidal and northern areas. The results and tools (open source) will be shared at all levels.

The successful candidate will have an opportunity to conduct the main part of the project related to ecosystem-based adaptation to climate change by evaluating the natural ecosystem and examine the various options that will be possible for the natural environment. The student will be expected to carry out on-site assessments and integration into some of the modeling of the research team for future projections. The integration will include the analyses based on state-of-the-art hydraulic modeling of structures subject to current waves and northern climatic conditions. There will be opportunities to present findings at specialized conferences (e.g. MEOPAR).

Candidate Qualifications:

- Must be bilingual (as Baie St Paul is francophone and Brock is anglophone)
- Flexibility to travel
- A completed BSc in the fields/disciplines related to environmental studies, and/or biology.
- Ability to work well both independently and in teams with individuals from various backgrounds and institutions.
- Strong academic writing and oral skills (previous publications would be an asset)
- Must be Canadian or permanent resident

To apply:

Applicants should submit a letter of application, previous transcripts, a statement of research background and interest (max. 2 pages), a sample of scholarly writing, and the names of three referees by October 10, 2020. All material should be sent via email (.pdf preferred) to lvasseur@brocku.ca and addressed to Liette Vasseur, UNESCO Chair in Community Sustainability. The position is subject to final budgetary approval.

Brock University is actively committed to diversity and the principles of Employment Equity and invites applications from all qualified candidates. Women, Indigenous peoples, and members of visible minorities are especially encouraged to apply and to voluntarily self-identify as a member of a designated group as part of their application.

M.Sc. Position

Organic Science Cluster 3 (OSC3): Connecting Environmental Sustainability with the Science of Organic Production; Project "Unique Cover Crops, Rootstocks, and Irrigation Techniques for Canadian Vineyards"

We are currently looking for two Master's student candidates who have a strong background in ecology, specifically agroecology or ecophysiology (a background in Plant Physiology, Organic Agriculture, or Entomology would be considered an asset). The successful candidates will be part of a team at Brock University and will benefit from the collaboration with world class researchers from the Cool Climate Oenology and Viticulture Institute, Organic Federation of Canada, Organic Agricultural Centre of Canada, as well as partner researchers from the Summerland Research and Development Centre in British Columbia. Both positions include two-year scholarships with the expectation that each selected student participates as a teaching assistant (TA) for a minimum of two undergraduate courses per annum.

Project context:

Grape growers are increasingly interested in finding strategies to enhance vineyards long-term productivity while improving the overall ecosystem health. The market for more organic or sustainable wine is also an incentive that encourages some grape growers to adopt these practices. The boom of organic viticulture and more generally the increased demand for wine products with a smaller environmental footprint (e.g. reduced loss of nutrients, lower net greenhouse gas emissions, less energy use and pollution), underscore the need to explore the management practices that enhance ecosystem services and consequently improve the resilience of these ecosystems. This project seeks to test combinations of cover crops, rootstocks, and novel irrigation strategies to enhance vineyard resilience in the face of climate change and increase its economic and environmental sustainability.

This project first screened cover crop species and mixtures in two different regions (British Columbia, semi-arid and Ontario, humid). A short list of suitable options is now ready to be tested under field and controlled conditions. Soil and plant water status under different irrigation systems will be monitored as well as grape cultivars in terms of productivity and berry composition responses. By the end, the project seeks to understand the interactions that exist between cover crops, rootstocks and irrigation when used as vineyard management strategies as well as overall agroecosystem response to combined strategies. By its originality of being spread in two provinces where climatic conditions greatly vary, the project will benefit growers by giving them a decision tool that can guide them when adopting different strategies related to cover crops, irrigation and rootstocks.

New graduate position projects:

MSc 1: The successful candidate will have an opportunity to participate in a component of the project related to the physiological response of selected cover crop species to water stress. The student will be expected to carry out controlled greenhouse experiments in tandem with 1-2 field seasons. Greenhouse experiments will test the species' viability while exposed to various levels of water stress. Field experiments will be located at two local vineyards, one that implements mechanical irrigation, one that does not. Species used in the greenhouse will be sown beneath the vines at each property and monitored throughout the year (eg. soil sampling, vegetation surveys etc.) to determine plant response to operational conditions.

MSc2: The successful candidate will have an opportunity to participate in a component of the project related to the ecological response of selected cover crop species when grown in an operational setting. The student will be expected to carry out field experiments located at two local vineyards, one that implements mechanical irrigation, one that does not. Selected species will be sown between the rows of vines at each property and monitored throughout the year (e.g. soil sampling, vegetation surveys and invertebrate collections) to determine both cover crop and agroecological community response to vineyard management techniques.

Both students will have several opportunities to present findings at specialized conferences (e.g. Canadian Botanical Association) and industry partner meetings (e.g. Grape Growers of Ontario annual meeting), as well as several graduate student-led initiatives from OSCIII participants nation-wide.

[Continued...]

Minimum Candidate Qualifications:

- A completed BSc in the fields/disciplines related to ecology, plant physiology and/or biology.
- Ability to work well both independently and in teams with individuals from various backgrounds, institutions and industry. Be able to travel to the fields (driving licence, ideally a car)
- Strong academic writing and oral skills (previous publications would be an asset)
- Must be Canadian or permanent resident

To apply:

Applicants should submit a letter of application, previous transcripts, a statement of research background and interest (max. 2 pages), a sample of scholarly writing, and the names of three referees as soon as possible. All material should be sent via email (.pdf preferred) to lvasseur@brocku.ca and addressed to Liette Vasseur, UNESCO Chair in Community Sustainability. The positions are subject to final budgetary approval and search will stop when adequate candidates are found.

Brock University is actively committed to diversity and the principles of Employment Equity and invites applications from all qualified candidates. Women, Indigenous peoples, and members of visible minorities are especially encouraged to apply and to voluntarily self-identify as a member of a designated group as part of their application.

Section News:

The systematics section reports that Étienne Léveillé-Bourret has taken a position as assistant professor at the Université de Montréal and began his new post in January 2021.

Université de Montréal

Herbarium Specimen Annotation Utility: a simple tool for printing batch annotation labels

Paul Sokoloff, Canadian Museum of Nature
(psokoloff@nature.ca)

While updating the taxonomy of large numbers of specimens in the National Herbarium of Canada at the Canadian Museum of Nature, our collections and research team sought to develop a simple tool to quickly print off large batches of standardized annotation labels. We developed the Herbarium Specimen Annotation Utility, a form-based Microsoft Access service, for standard use at the museum, and are pleased to share it with the broader botanical community.

This utility is now available for free download at [https://nature.ca/downloads/herbarium-specimen-annotation-utility.accdb]. If you don't have Access, you can still use the utility by downloading the free Microsoft Access Runtime here: https://www.microsoft.com/en-ca/download/details.aspx?id=50040.

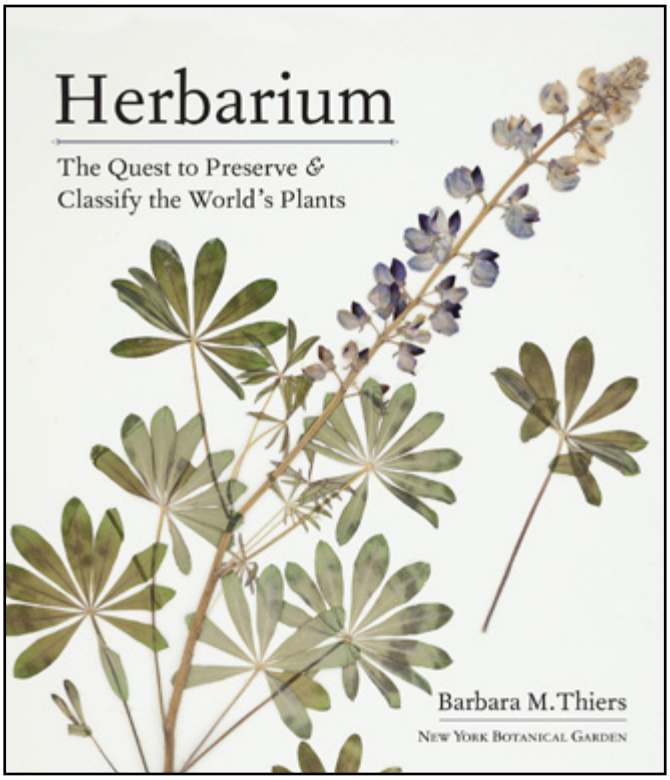
This utility will quickly generate up to 100 identical annotation labels based on the information entered in the initial form window. Users can select the annotation type: "Stet!" (which simply enters "Stet!" into the species line), "Det." (in which the species name is the only string present on the species line), or "Taxonomic examination without examination" (in which an equal sign precedes the species name, indicating that the name was updated due to synonymy without necessarily being formally re-identified). Users can also enter their institution, and any notes which they want to appear on the label (both boxes are optional). The species names for the annotation, and up to five synonyms (if so desired for the label) are entered in boxes that separate the names from the authorities and infraspecific taxon rank (if applicable) for ease of entry. Lastly, the user enters the determiners name, the determination dates, and number of labels desired. Pressing "Generate Labels" will open a Print Preview window with the formatted labels ready to print, cut, and attach to your specimens.

Happy annotating!

The author would like to thank the entire botany division at the Canadian Museum of Nature for feedback during the development of this utility, and Shaleen Azzi for showing him some important Access tricks.

Herbarium: The Quest to Preserve and Classify the World's Plants

Barbara M. Thiers
Timber Press, 304 p, ISBN 978-1-60469-930-2



I am the curator of a tiny herbarium and sometimes I receive visitors who have never seen a collection of pressed plants. Although easily dispelled with a Google search, flamboyant images about what herbarium is apparently linger in the collective public imagination: a) a fantastic greenhouse with lush flowers; b) a collection of dried flowers together with the famous love letters in which they were pressed; and c) (my favourite) an apothecary in which one can sample forbidden "botanicals." Naturally, when setting eyes on the mundane cabinets with their patient stacks of plants, the wilted enthusiasm of such visitors is hard to revive… but this book may be able to accomplish that!

Barbara Thiers doesn't need much introduction to botanists. Among others, she is the Director of the New-York Botanical Garden's Steere Herbarium, the largest in the Western Hemisphere, and the editor of Index Herbariorum, a tool that many of us use daily. This book, however, is intended for a broader audience: anybody interested in plants and nature in general, "maybe even deans or other institutional leaders" (if we gift it to them?), as the author suggests.

The book is a pleasure even only to leaf through; it is lavishly illustrated with historical herbarium specimens, artwork from old manuscripts, ancient maps, portraits of botanists/collectors, photos of famous collection sites, plants, botanical gardens and herbaria. For this reason, it could also serve as a proud coffee table book, to intrigue and delight your guests in the post-covid era.

According to the author, there are currently some 390 million herbarium specimens maintained in ca. 3,300 herbaria worldwide. The book traces the nearly six century of herbaria history in five chapters: "*Origins of Herbaria*"; "*Herbaria and the Age of Botanical Exploration*"; "*Development of Herbaria in the U.S.*"; "*Development of Herbaria Around the World*"; and the "*Future of Herbaria*". The early history of herbaria is intertwined with that of medicine, while subsequently they are inseparable from the development of botany and plant taxonomy. The history is narrated with an emphasis on people rather than the large-scale historical events in which they are trapped. This makes the stories relatable because it is the people that we can empathize with, either in their triumphs or failures, rather than the history itself, which is bleak and immutable. Particularly in the eighteenth century, the development of botanical exploration was key to the global expansion of commercial and territorial imperialistic agendas of multiple western European countries. However, the explorers who risked their health and life in perilous expeditions to bring back specimens, plants and seeds (which were occasionally forgotten after they returned!), were adventurers or idealists, and their endeavours are veiled in romanticism. It is this latter image that the book conveys. To those interested in the participation of botany to the colonial conquest of the world, there are other sources available (e.g., Miller and Reill 2011; Batsaki et al. 2017).

Many of these inspiring anecdotes, some of them previously unknown to me, would be great stories to recount to our students in the classroom. If they stimulate your curiosity, there are other resources to obtain more in-depth scholarly historical or biographical information. For example, the section about Rafinesque sparked my curiosity and I found the excellent collection of studies edited by Boewe (2003). Thus, each of these stories can represent a new beginning to other fascinating readings.

The chapter on the development of herbaria around the world is reserved for Australia, Brazil, South Africa and China. Canada or collectors from Canada are not represented, although the author acknowledges that the first herbarium specimens from North America were likely those collected by Michel Sarrazin (1659-1734) from "New France" (Quebec of today) and comprising iconic plants such as *Aralia nudicaulis* and *Sarracenia purpurea*, subsequently sent to Tournefort, and currently preserved in the Paris National Herbarium. Canada also didn't make it into the list of "select herbaria" at the end of the book. Throughout the text, I noticed a few tiny mistakes and imprecisions. For example, *Aralia nudicaulis* mentioned above is not ginseng as the author states, but wild sarsaparilla.

Considering the key administrative position of Dr. Thiers at New York Botanical Garden, I was particularly interested in the chapter about the future of herbaria. The author summarizes some of the more recent uses of herbarium specimens for "DNA studies", pollution detection and remediation, documenting past atmospheric conditions, ecology, phenology, etc., validly arguing that herbaria are relevant to addressing the contemporary crises of biodiversity and climate change. Perils to herbaria and meaningful ways in which citizens can help herbaria aptly conclude the book. However, I felt let down by this last chapter despite the plea to preserve herbaria for future generations. In contrast to the previous chapters in which people were center stage as collectors and catalogers of plant life, here they are conspicuously absent or reduced to the rank of volunteers.

In my humble (and certainly biased) opinion, the fate of herbaria is tied to that of the people who build and use them: plant taxonomists/systematists. The latter words, similarly to "taxonomy" or "systematics," are also noticeably absent and are replaced throughout the book by the more generic "botany/botanist," and more fashionable "biodiversity research." New uses of the collections are great and should be encouraged, but a reinvention of the herbarium without taxonomy/systematics is hard to conceive because it contradicts its core "*quest to classify the world's plants*", which is far from over. A herbarium without people collecting and studying specimens is like a library without readers. Bearing in mind the steady decline of education, funding, and employment opportunities for taxonomy worldwide, who will continue the "quest" in the next decades and hopefully century? The book doesn't ask this uncomfortable question.

However, overall, this book is enjoyable and its content accessible to everyone. It is for sure a great educational tool that will hopefully inspire readers with different educational backgrounds and levels of botanical knowledge. I will make sure to recommend it to my disappointed herbarium visitors. The only downside is the cost, which at ~ CAN $50 may be too expensive for some readers; it could be — cue to supervisors — a good present for the students in the lab/herbarium.

Batsaki, Y., Cahalan, S.B., and Tchikine, A. (eds.). 2017. The botany of empire in the long eighteenth century. Dumbarton Oaks Research Library and Collection. Harvard University Press. ISBN 9780884024163.

Boewe, C.E. (ed.). 2003. Profiles of Rafinesque. University of Tennessee Press. ISBN 1572332255.

Miller, D.P. and Reill, P.H. (eds.). 2011. Visions of empire: voyages, botany, and representations of nature. Cambridge University Press. ISBN 9780521172615.

Acknowledgments: I would like to thank Frédérique Guinel for her suggestions on an earlier draft.

Mihai Costea, mcostea@wlu.ca
Wilfrid Laurier University

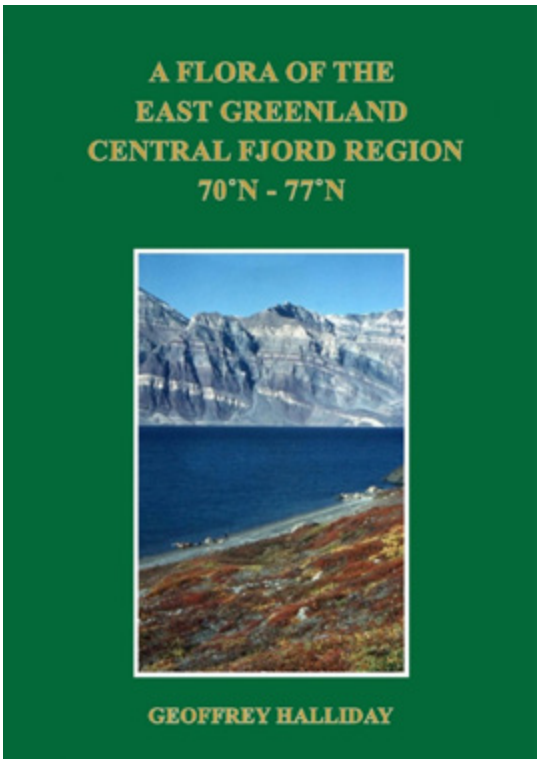
Review: A Flora of the East Greenland Central Fiord Region 70°N - 77°N

Geoffrey Halliday
Trollius Publication, 2019, £34.99

When the call went out for a book reviewer for *A Flora of the East Greenland Central Fiord Region 70°N - 77°N* by Geoffrey Halliday, I jumped at the opportunity. I have been studying Arctic plants and their responses to climate change, mostly in Nunavut, for about 10 years now, so anything Arctic plant-related is of interest to me. I was not disappointed when the Greenland flora finally arrived on my doorstep after wending its way from Geoffrey Halliday's home in Lancashire, England and being buried for weeks in the mountain of Christmas Amazon boxes at the Iqaluit Post Office. My quick thumb through the book when I first opened the parcel revealed stunning photos of Greenland's fiords and Arctic plants I recognised. I was excited to take a closer look.

The first thing that struck me were the plentiful and detailed maps. I can't count the number of books I read with maps that do not include the names of places written in the text, or even worse, no map at all. It was a real pleasure to see beautiful maps with every name in the text clearly marked on the maps. The flora starts with a general overview of the region's geology, scenery, glaciology and climate, and the maps and satellite images are truly helpful in orientating the reader. There is even a short section on the location of hot springs in the region and the unique set of species associated with the hot springs.

Dr. Geoffrey Halliday received his BSc (1955) and PhD (1958) from Cambridge University. His PhD studied the taxonomy and ecology of Arctic-alpine *Arenaria* and *Minuartia* species. He was a lecturer in the Botany Department, Leicester University (1958-1968), where he set in motion an Arctic herbarium, and lecturer/senior lecturer in the Department of Biological Sciences, Lancaster University (1968-1997). Between 1954 and 1990, he led numerous botanical expeditions to the Arctic including Scandinavia, Alaska, and six expeditions to east Greenland. He has authored several publications on the flora of Greenland. Thus, he is extremely well-qualified to write a flora for eastern Greenland. This book is the culmination of Halliday's lifetime of knowledge and observations of the plants of the eastern central region of Greenland.



In my experience, flora of the Arctic are few and far between. One of the definitive floras for Nunavut and Northwest Territories, still in use today, is Porsild and Cody's *Vascular Plants of Continental Northwest Territories, Canada* published way back in 1980. As an aside, I noticed, when doing a bit of checking for this review, that the sister flora, *The Vascular Plants of the Western Canadian Arctic Archipelago* by A. E. Porsild, published in 1955, cost just $2.50! The last floras published for portions of the East Greenland Central Fiord region were in 1933, 1934 and 1937. Since then, there have been numerous botanical expeditions to the area, many of them undertaken by Halliday, that will have greatly enhanced the knowledge of the flora of the region. The book notes that as recently as 1990, Halliday was still finding species as much as 250km north of their known range. There is likely more to be found and learnt about the flora of this region – the remoteness of Arctic regions leads to less being known about the distribution of Arctic species.

As I read the general description of the vegetation of the region, a big smile spread across my face and I found myself nodding in agreement - yes, yes, this is what I have observed in the Canadian Arctic Archipelago! With the circumpolar nature of the Arctic flora (approximately 80% of the plants species in Greenland are also found in Nunavut), the species descriptions and, in particular the habitat preferences, will be of inter-

est and relevant to anyone wanting to find information about Arctic plant species.

The species descriptions are, unusually, ordered with dicots before monocots. They describe the species' distribution, abundance, habitat and taxonomical information based on Halliday's own observations and experience, and his exhaustive knowledge of the literature. There are no keys and only rarely descriptions to help identify species, this flora is more about biogeography and a checklist of the region's flora. Each species description is accompanied by a wonderfully detailed distribution map, usually on the facing page, which is so much more convenient than the standard approach of grouping distribution maps at the end of a family section. My only gripe, and it is a minor one, is that the maps on the right-hand page are in the opposite order to the species descriptions on the left-hand page and maps appearing on left-hand pages are orientated 180° from those appearing on right-hand pages. Halliday explained to me that this was unavoidable due to the way the maps were produced.

I always find reading the history of an area fascinating. This flora includes a summary of the history of botanical exploration in the region from papers, books, and expedition reports. Halliday notes that many of the expedition reports are in his possession. One hopes that these reports will eventually find their way to a museum collection. There are other fascinating tidbits of information sprinkled throughout the book. Towards the end of the book, there are chapters on the analysis of the Greenland flora and the origins of the Greenland flora which draw on Halliday's lifetime of work studying east Greenland and Arctic flora. The later chapter is a good synthesis of geological, molecular and isotope studies related to plant survival in Arctic refugia versus migration into the Arctic after the last ice age; it makes for insightful reading irrespective of one's interest in Greenland plant species.

There are a few niggly editorial errata such as the text referencing the wrong plates and some typos, but in some ways, that adds to the charm of this flora. Geoffrey Halliday is now in his 80's and admits that computers and software are not his *forte*. This flora is a culmination of his life's work and it is special to see it in print. For those interested in the flora of various regions of the world, it is definitely a book worthy of adding to the bookshelf, though not without a good and fascinating read first! This flora has inspired me to add East Greenland Central Fiord region to my bucket list of places to visit.

Zoe Panchen
University of British Columbia

Figure 1. Southern half of the region

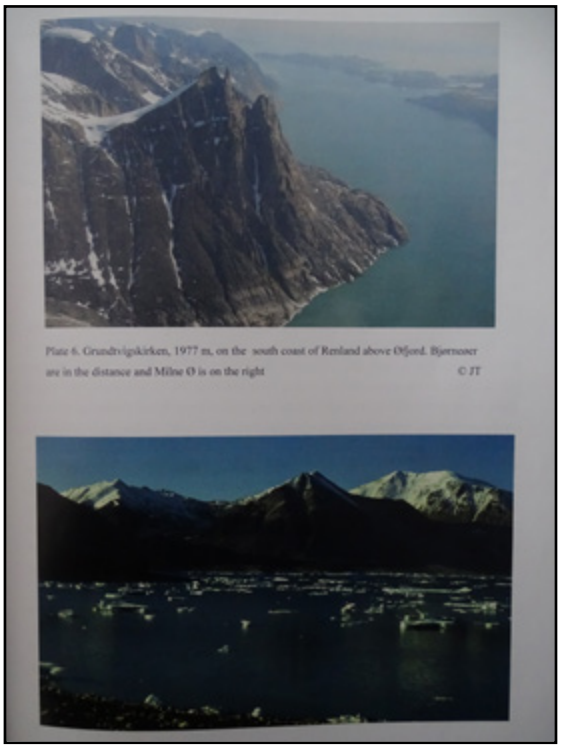


Plate 6. Grundtvigskirken, 1977 m, on the south coast of Renland above Ofjord. Bjornoser are in the distance and Milne Ø is on the right © JT

Two pages from the book, showing a map and photos from the region.

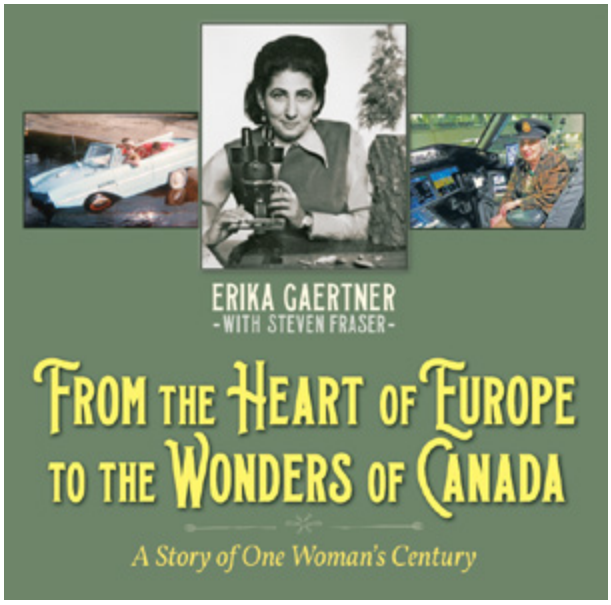
Review: From the Heart of Europe to the Wonders of Canada – A story of one woman's century

Erika Gaertner with Steven Fraser
Burnstown Publishing House, 288 p, ISBN 978-1-77257-272-8

From the Heart of Europe to the Wonders of Canada is a collection of anecdotes and memories of a woman botanist, Dr. Erika Gaertner, who has lived a full life spanning nearly a century. Having followed a somewhat similar life course to hers, I was able to appreciate many of the feelings expressed and comments made in the book. I often found myself drawn into Dr. Gaertner's story; I especially enjoyed accompanying her in her peregrinations through several countries and botanical gardens that both of us had visited.

This book, composed of 46 chapters, seven of which entirely devoted to photographs, retraces the many steps taken by Dr. Gaertner throughout her life. Following the German invasion of her home country of Czechoslovakia, her family immigrated to Canada in 1939, and purchased a small farm in Peters Corners, Ontario. In 1940, Dr. Gaertner entered the Ontario Agricultural College where she began studying *Cuscuta,* an agricultural pest. She continued this work in the lab of Dr. W. C. Muenscher at Cornell University in Ithaca, NY, and obtained her PhD in 1949. She returned to Canada in 1950 to lecture at McMaster University.

In 1953, Dr. Gaertner married Dr. Donald Fraser, a plant physiologist and a pioneer in the use of radio-isotopes in the study of trees. As was usual at the time, Dr. Gaertner followed her husband as he developed his career in Forestry at the Petawawa Forest Experiment Station; remarkably, she co-authored several papers with him on the use of radioisotopes in forestry research. In the 1960s, Dr. Gaertner turned her focus to wild edible plants and wrote a number of papers on food harvested from the wild, publishing *Harvest Without Planting: Eating and Nibbling Off the Land*, her first book, in 1967. She also wrote on mushrooms, insects, and medical botany. In 1970, the couple moved to Montreal with their two children when Dr. Fraser became Chairman of the Department of Geography at Concordia University. There, because Dr. Gaertner believed in knowledge-sharing with lay people, she became a regular contributor to a TV show presenting botany to the public. Shortly after her husband retired,



Dr. Gaertner moved with him to Trenton, and then to Ottawa in 1999 where she still lives today, and where she will soon celebrate her 100th birthday.

I found this book challenging for a few reasons. For one, the stream of anecdotes feels somewhat disjointed, as most are connected by chronology only and not by subject or character. Many lack a date or greater context, which I found confusing. (But then, it is likely difficult to write a story that covers an entire century). For another, chapters containing only text separated by chapters containing only photographs is not a reader-friendly format; embedding the photographs within the text would have increased the enjoyment of both. An additional disappointment is that Dr. Gaertner did not delve into her research on *Cuscuta*. As I understand, she was a pioneer in the study of this genus, and I was looking forward to learning more about this plant with its ephemeral root.

These drawbacks aside, Dr. Gaertner's stories in *From the Heart* entertain, educate, and inspire in equal measure. Of interest to me as a former teacher were the messages that I think young people could take from the book:

- *Always seize opportunities to meet with, and listen to, other human beings*. Among the many characters that Dr. Gaertner recounts meeting in her life are Dick Feynman, who later received a Nobel Prize in Physics; A. Y. Jackson, a member of the Group of Seven; and Mordecai Richler, the Canadian novelist.

- *Use international conferences to travel to, and learn about, other countries and cultures (and take*

some time to visit museums while there). For example, Dr. Gaertner had the chance to admire the statue of Nefertiti in Berlin in 1965.

• *While at conferences, participate in field trips: they are an effective way to botanize and network.* Following her first International Botanical Conference in 1950, Dr. Gaertner went on a field-trip to Lapland and made friends she would keep for the rest of her life.

From the Heart is also valuable for its demonstration of how much the reality of being a female scientist has changed, or not changed, over a century. For example, a woman in the late 1940s was not encouraged to pursue a career in plant pathology because farmers would likely not accept suggestions from one. Also, despite having co-authored several papers with her husband, Dr. Gaertner would never be truly recognized by his colleagues as a scientist. And at the 1966 World Forestry Congress in Madrid, Dr. Gaertner's sleeping arrangements needed to be changed upon her arrival because, like many scientists, she used initials instead of her full name, and the organizers had assumed she was a man. She was in fact the only female presenter at that Congress!

This book is inspirational as Dr. Gaertner's enthusiasm and energy can be sensed throughout. She never lost her love of travelling and discovering new boundaries. She visited 6 of the 7 continents and attended several International Botanical Congresses: Stockholm, 1950 (the first congress after the war); Paris, 1954; Montreal, 1959; and Seattle, 1969. Like many botanists, she never missed a chance to enter into a botanical garden, visiting over 50 while attending conferences or travelling.

Finally, as a member of the CBA, I was interested by the connections Dr. Gaertner made with the Association. She met Dr. Porsild, who was then Head of the Department of Botany at the National Museum of Canada, on her trip to Lapland. She later hosted him in her Petawawa home and took him to her favorite bog. Dr. Gaertner attended several annual CBA conferences: in the early 1970s when she gave a presentation on fungi she had collected while working with her husband near James Bay; in 1978 in Newfoundland when she went on a field trip guided by André Bouchard from the Montreal Botanical Garden; in 1979 at Carleton University when she participated to the field trip to Mer Bleue Conservation Area; and she joined us in 2017 when she attended the CBA banquet at the Royal Botanical Garden in Burlington.

Dr. Gaertner's life may not have turned out the way she would have imagined it when she arrived in Canada in the 1940s, but she made the most of it. Her love of life exudes from this book – she loved dancing, eating, drinking, questioning, learning, and travelling, truly living like there is no tomorrow. She is a strong and resilient woman, who paved the way for other women scientists. As such, Erika should be celebrated. We should also wish her the best for her 100th year!

In front, left to right: Dr. Erika Gaertner, Dr. Mihai Costea, and Ms. Anna Ho at the Royal Botanical Garden, during the banquet concluding the 2017 CBA annual meeting hosted at Wilfrid Laurier University.

This book can be found as an eBook (the Amazon link provides access to the opening chapters):
-https://www.amazon.com/Heart-Europe-Wonders-Canada-Century-ebook/dp/B08HVZX2VL
-https://www.kobo.com/ca/en/ebook/from-the-heart-of-europe-to-the-wonders-of-canada-a-story-of-one-woman-s-century

It can also be purchased in print through Burnstown Publishing House:
-https://burnstownpublishing.com/product/from-the-heart-of-europe-to-the-wonders-of-canada-a-story-of-one-womans-century/

It should be noted that the book's royalties will contribute to the "Dr. Erika Gaertner Scholarship in Botany", which has been set up at the University of Guelph to encourage young scientists who are passionate about botany.

Frédérique Guinel
Professor Emerita
Department of Biology, Wilfrid Laurier University

TOP CANADIAN ORNAMENTAL PLANTS. 28. Pansies & Other Violets

ERNEST SMALL[1, 2]

Pansies and other violets (*Viola* species and hybrids) rank among the most popular herbaceous bedding and container plants in the world. Modern cultivars are easy to grow and produce spectacularly colourful flowers in the spring in cold climates such as found in most of Canada. The common phrase "shrinking violet," applied to shy people, draws attention to the inconspicuous nature of violets which are among the smallest of garden ornamentals. Nevertheless the beauty of their flowers is scarcely rivalled.

Figure 1. A bed of flowering pansies (*Viola* ×*wittrockiana*) thriving in cool spring weather. © lil ms. ryce (CC BY 2.0).

Names

Scientific name: The genus name *Viola* traces to the old Latin word for the plant, *viola*, which is based on the Greek word for violet, *ion* or *vion*. Io or Ione was a nymph in Greek mythology, a mistress of Zeus who, to protect her from the jealousy of his wife, turned Io into a white cow. To console her and sweeten her diet, he turned her tears into violets for her to graze on.

English names: *Viola* species are called violets, and sometimes also violas. Several species unrelated to violets have "violet" in their names, such as African violets (*Saintpaulia*) and dog's tooth violet (*Erythronium dens-canis*). "Pansies" are popular cultivars of species in Viola section *Melanium*. "Heart's-ease" (possibly tracing to former use to treat heart ailments) is an occasional alternative name for pansy. The English word pansy evolved through the French pensée (meaning either pansy or thought) from the Latin pensare, to consider. It has been claimed that the French pensée is based on the resemblance of the flower to a face in deep thought.

French names: Violette (violet), pensée (pansy).

Symbolism

Figure 2. Purple violet (*Viola cucullata*), by Lavonia R. Stockelbach (1874–1966). Public domain image. A collection of her paintings of Canadian provincial and territorial official flowers is associated with the herbarium of Agriculture and Agri-Food Canada in Ottawa.

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

The purple violet (marsh blue violet, *V. cucullata*) is the official provincial flower of New Brunswick. The violet (no particular species) is the national symbol of Poland, and the regional symbol of North Portugal. The state flower of Wisconsin is the wood violet (*V. papilionacea*; "wood violet" is more commonly applied to an Old World species of violet). The state flower of New Jersey is the common meadow violet (*V. sororia*). The native American violet, *V. palmata*, was adopted in 1968 as the state flower of Rhode Island. Illinois adopted the "blue violet" as its state flower in 1908.

Violets are symbolically associated with the finest of human sentiments, most notably love. Blue violets = faithfulness, fidelity, and love; white violets = purity, candour, and innocence. The sweet violet (*V. odorata*) = modesty and humility (in general violets have been considered a symbol of humility because they grew close to the ground). By the Victorian era, violets represented the qualities of an ideal wife: humility, faithfulness, and modesty. Violets have long been used in love potions. The classical Greeks chose violet as their flower of fertility. In 17th century Europe, candied violets were eaten as an aphrodisiac.

As a derogatory slang term, "pansy" refers to a weak or effeminate male, or a male homosexual, meanings which appear to have become prominent about a century ago. Delicate, extremely attractive flowers naturally represent feminine characteristics, which may explain why certain ornamental plants have been associated with male homosexuality. "Violets" (both the flowers and the colour) also have a long tradition of association with lesbianism (tracing to the ancient Greek poet Sappho from the island of Lesbos), but significantly less disrespectful, and violets have been employed as symbols of organizations and movements supportive of increased protection and rights for women in general.

The Greek dramatist Aristophanes (about 450–388 BC) referred to Athens in one of his plays as the violet crowned city because the king was named Ion, which meant violet. According to legend, Ion, the founder of Athens, led his people to Attica where they were welcomed by naiads, water nymphs who could inspire men and who gave them violets as signs of their good wishes. The violet has been emblematic of Athens for many years. In the ancient Athenian games the first prize was an award in the shape of a golden violet. Ancient Athenian houses, alters, statues, and brides were decorated with violets.

Wild *Viola* species

Viola is a genus of world-wide distribution, centred in the north temperate regions, but also occurring in mountainous areas in the tropics. It has an estimated 600 species of perennial, rarely annual plants. There are about 80 native to North America, including 40 in Canada. With so many species, many of which hybridize, identification can be difficult. *Viola* species are mostly herbaceous, but are occasionally subshrubs or vines. They tend to be acaulescent (i.e. they lack an obvious stem, the leaves appearing to grow out of the ground in a basal rosette), but some have short stems. The leaves are usually simple, heart-shaped, scalloped, and arranged alternately.

Most violets bloom in the spring. *Viola* flowers have five sepals and five petals. The five petals include two symmetrical pairs and one inferior scoop-shaped petal. In the *Melanium* group, the single inferior petal is enlarged, and is thought to act as a landing platform for insect pollinators. The anthers of the stamens are clustered around the base of the solitary pistil, which has a style and stigma shaped like a club. Many species of *Viola* produce normal, showy, cross-pollinated (chasmogamous) flowers in the early spring, and also develop closed, self-pollinating (cleistogamous) flowers that lack petals, throughout the summer. This phenomenon occurs in about 60 families of plants, but *Viola* has more cleistogamous species than any other genus. In most such species, open flowers are large and showy, attracting insects for cross-pollination, whereas the closed flowers are much smaller and produce seeds by self-pollination and fertilization within the flower buds. Cleistogamy is insurance against the possibility that insects will not be available for pollination with the result that seeds will not be produced. The lower pair of petals in the cross-pollinated flowers are joined and form a spur (a hollow, tubular extension). Nectar is secreted into the bottom of the spur from the bases of the lowest two stamens. In trying to reach the nectar, insects brush against the stigma, often transferring pollen to it that has been acquired from previous visits to other flowers. Many species of violet turn their flowers toward the ground at night or when it is cloudy ("photonasty" is movement determined by light). The flowers of some *Viola* species are heliotropic (turn toward the sun), others not (see van der Kooi et al. 2019).

The seeds are produced in capsules that break open to reveal three boat-shaped valves. Many species of *Viola,* have two special methods for distributing their seeds. First, there is a short-distance dispersal method, by which seeds are explosively ejected from the capsules. As the valves of the capsule dry, an elastic tension is produced and they suddenly open lengthwise, catapulting the seeds up to a few metres. Also, more than half of *Viola* species have a long-distance dispersal method, based on a mutually beneficial relationship with ants. Myrmecochory (sometimes spelled myrmechory) is seed dispersal by ants. The violet seeds have nutritious, pale coloured, oily attachments (elaiosomes) that attract the ants, which carry the seeds back to their underground nests. Seeds that the ants lose along the way or that become buried in the ants' tunnels, often germinate far away from the parent plants. Violet seeds may also be distributed over great distances by birds.

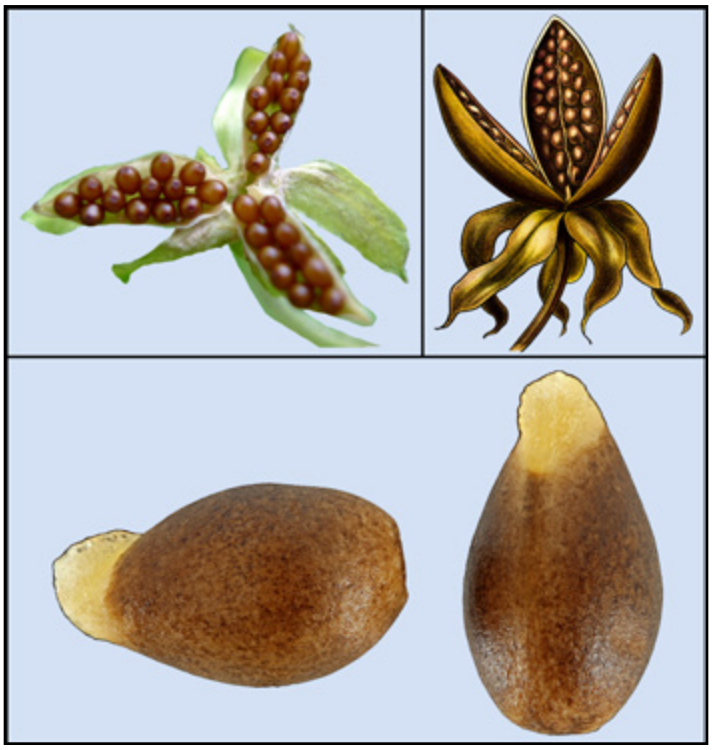


Figure 3. Fruit and seeds of *Viola.* **Top left:** Photo of opened capsule of garden pansy, showing three valves and seeds. © Ruth and Dave (CC BY 2.0). **Top right:** Diagram of a capsule of *Viola tricolor*, from a 19th century wall chart by Dodel-Port Atlas. Photo © by Paul K (CC BY 2.0). **Bottom:** Seeds of *V. elatior* tipped by a yellowish elaiosome, a fat body attracting ants to carry the seed to their nest © Hans Stuessi (CC BY 4.0).

Domesticated *Viola* species

Violets were among the first flowers cultivated, tracing back at least to Greece of 400 BC. Breeding began enthusiastically in Britain about 1800, and continued later in Europe and the U.S. Modern cultivars have mostly been bred to produce flowers quickly, although some of their wild progenitors often normally do not flower in their first year of growth. For decades, private companies have been breeding violets for larger flower size, colour diversity, and tolerance to stresses (especially heat, which notably depresses growth). Like the rose, the violet has been adopted as a colour because it is so well known. Of course, roses come in other colours than red, and violets come in almost all other colours, not just blue. An amazing range of multi-coloured flowers have been created by breeders.

Figure 4. Colour variation in pansy (*Viola ×wittrockiana*) illustrated by a plant with flowers representing different varieties. Source (public domain): The Dutch book: Witte, H. 1868. Flora: afbeeldingen en beschrijvingen van boomen, heesters, éénjarige planten, enz. voorkomende in de Nederlandsche tuinen. Wolters, Groningen. Illustrated by Abraham Jacobus Wendel.

Viola section *Melanium*

The most important horticultural selections of *Viola* belong to *V.* section *Melanium*, which has as many as 100 species. Most cultivars are hybrids, including many recent F1 selections. Cultivated species of section *Melanium* are sometimes divided into horticultural (i.e. convenient but artificial gardening) groups. The term "pansy" is applied in different ways, but is often restricted to the large-flowered domesticated forms of section *Melanium*. "Viola" is also applied in different ways – sometimes to all *Viola* species, but often to the small-flowered and more petite domesticated forms of section *Melanium*. These are often multi-flowered and

grow in clumps (hence the alternate name "tufted pansies"). The most miniature violas are sometimes termed violettas.

Garden pansy (*V.* ×*wittrockiana*)

Figure 5. Mixed cultivars of pansy (*Viola* ×*wittrockiana*). © Mark F. Levisay (CC BY 2.0).

The most familiar cultivated violet is the garden pansy, *V.* ×*wittrockiana* (commemorating the Swedish botanist V.B. Wittrock, 1839–1914, an early student of the *Melanium* violets). It is presumed to have arisen from hybridization between *V. lutea, V. tricolor*, and possibly *V. altaica* and others. Most, perhaps all, of the parent species are native to Europe and Asia Minor. Plants typically grow to about 20 cm in height. The flowers may be up to 10 cm in diameter, and are single-coloured, streaked, or patterned. Almost every flower colour is available, including white and black (actually very dark purple). Most cultivars possess a well-defined blotch in the throat of the flower, often giving the bloom a remarkably face-like appearance, which British breeders in the early 19th century deliberately accentuated. Some cultivars have wavy or crinkled petals. This short-lived perennial or biennial is usually grown as an annual bedding plant in cold climates. It grows very well in containers.

European wild pansy (field pansy, *V. tricolor*)

Viola tricolor, known as European wild pansy, miniature pansy, field pansy, and Johnny-jump-up, is perhaps the main ancestor of the garden pansy, and has been grown since ancient Greek times. Until about 1800 it was the chief ornamental violet, but has largely been

Figure 6. The "pansy face." **Top:** Face-like garden pansy flowers. © Rašo (CC BY SA 3.0). **Bottom:** Humorous illustration (public domain) of a party of guests with pansy faces. Source: Pocci, F. 1876. In: Bildern und Versen, Stroefer & Kirchner, München/New York.

Figure 7. European wild pansy (*Viola tricolor*). Painting (public domain) by the Swedish botanist C.A.M. Lindman (1856–1928), from his book Bilder ur Nordens Flora (first edition published 1901–1905).

replaced by the garden pansy. The species is naturalized in North America, where it is known as the wild or field pansy. This small pansy is well known for its three-coloured flowers that often combine different colours, such as yellow, blue, purple, red, and white.

Sweet violet (florist's violet, *V. odorata*)

Figure 8. Sweet violet (*Viola odorata*). Public domain drawing from: Sturm, J. 1900–1907. J. Sturm's Flora von Deutschland. Verlag von K. G. Lutz, Stuttgart.

Viola odorata is a member of *V.* section *Viola*, and so is not closely related to the garden pansy (of *V.* section *Melanium*) discussed above. Sweet violet grows wild in Europe, Africa, and Asia, and occurs as an occasional garden-escape to roadsides and waste places across Canada and in much of the U.S. Cultivars differ in stature (generally up to 15 cm tall). This low-growing perennial, apparently stemless herb arises from a creeping rhizome, and spreads by long, rooting stolons (runners or creeping rhizomes). The leaves are heart shaped. The flowers range considerably in size and colour, with some forms having double flowers. The flowers are usually dark violet (varying to paler shades), rose, or white. Ornamental selections generally have much larger flowers than wild plants of the species. Unlike most species of *Viola*, the seeds of *V. odorata* are not forcibly ejected from the fruit at maturity. The sweet violet is employed in the florist trade and in gardens. There are many selections that have been made for these purposes.

Economic importance

Ornamental use

On a world basis, the value of flats of pansies produced annually for the bedding and container flower markets amounts to hundreds of millions of dollars. Pansies and to a much lesser extent other violets are grown as edging or border plants, and in containers, but they are also cultivated in massed display beds, commonly in mixed colours or in alternating colour zones. Because of their low stature, they are not suitable for growing in mixtures with taller plants, but can be associated with other low-growing plants. Some wild species of *Viola* are grown in rock gardens, but their economic significance is limited.

Violets bloom early in the season, furnishing nectar for bees and butterflies. They are often grown in butterfly gardens, not just for the nectar, but also because the foliage is consumed by some caterpillars, notably fritillaries, which are large, attractive orange and brown summer butterflies sometimes confused with monarchs and viceroys.

Culinary use

Figure 9. Culinary preparations with violets. **Left:** Chocolate cake with candied violets. Photo © Lsalvay (CC BY SA 3.0). **Right:** Violet flowers garnishing a fruit smoothie served in a bowl. Source: Pxhere (public domain).

The use of violets as food is ancient, although very limited, extending back to early Greek and Roman times, when violets were used to flavour butter, oil, vinegar, and wine. Violet-flavoured sherbet has been a favourite concoction of Asia Minor and other parts of the Middle East since very early times, some considering this the national drink of Syria and Turkey. In the 15th century, violets were often used in sauces and soups, and

to make fritters, and some members of the Royalty in Great Britain during the Victorian era were extremely fond of violet preparations.

Sweet violet (*V. odorata*) is one of the few violets with petals sufficiently strong that they hold their shape when candied. Candied violet flowers are used to decorate cakes and other confections, puddings, and ice cream, and fresh flowers are sometimes put in salads. The flowers can also be processed into syrup, jellies and marmalade, and added to gelatins, ices, vinegar, honey, wines, and salad dressings.

The young leaves of violets are rich in Vitamins A and C, and can be incorporated into salads. The flowers are also edible, raw or cooked. The leaves can be added to soup as a thickener, much like okra (the leaves of wild violets were used as a substitute for okra in the South during the American Civil War). The flowers and leaves of common pansies have a stronger flavour than other violets, and are eaten in salads or used as a garnish; the flowers are also used to make tea. For decorative effect, violet leaves and the fresh flowers can be used as an edible garnish.

"Violet syrup" allegedly from *Viola* is offered commercially (largely on the internet) for culinary usage (as noted below, there are alternate sources). So-called violet syrup was sometimes used to flavour ice creams, candy, baked goods, and liqueurs, but these uses seem to be obsolete. Violet syrup is sometimes prepared by home cooks as a water extract of the flowers. It can be quite laxative.

Perfume use

Figure 10. Perfume use of violets (public domain images). **Left**: Parma violet, a traditional source of stock for perfumery. Source: Watson, W. 1896. Favourite flowers of garden and greenhouse, vol. 1. Frederick Warne & Co., New York. **Right:** Advertisement for 19th century violet-based perfume.

Some selections of sweet violet (*V. odorata*) have an exceptionally delightful odour and have been used as a source of perfume. Also, sweet-scented violets known as "Parma violets" (possibly *V. alba*) are cultivated in southern Europe as a source of essential oil for perfumery. These are hardy only in warm areas. Parma violets are sometimes thought to have been derived from *V. odorata* (which they very closely resemble) although there is evidence to suggest that they originated from other fragrant *Viola* species. "Violet absolute" is a solvent extract from the foliage of violets (*V. odorata* or Parma violets), employed in perfumery. Much so-called "violet" scent actually comes from orris "root" (rhizomes of *Iris* ×*germanica* var. *florentina* and *I. pallida*).

Medicinal use

Although very rarely used in modern Western medicine, violets have been thought to have curative properties since antiquity. In classical Roman times violets were prescribed for gout and spleen disorders. As well, violets were used to treat headaches and memory loss. Violets contain a chemical that is related to salicylic acid, the chief ingredient in aspirin, so that use for headache had some justification. (The phytohormone "salicylic acid, 2-hydroxybenzoate" functions as a defensive agent in many plants.) Violets were once commonly grown in gardens as a drug plant, primarily in Europe but also in India. The medieval herbalists used violets as an antiseptic, to sooth pain, and even for malignant tumours. Violet continue to be employed medicinally in herbal or folk medicine, especially in the Third World. The flowers are sometimes made into a jam reputed to soothe indigestion, and a syrup said to suppress a cough.

Toxicity

The seed pods, rhizomes, and roots of *Viola* species can be poisonous in large doses, causing severe gastroenteritis, nervousness, and respiratory and circulatory depression. These parts of the plant are strong laxatives, and can induce nausea and vomiting. However, cultivated violets are not considered to be potentially dangerous for cats and dogs. Violets should not be used for culinary purposes unless one is certain that they have not been sprayed with insecticides, herbicides, or fungicides. Harvesting wild plants for food use without being certain of their identity is dangerous.

Care of plants

Figure 11. Girl planting pansies. Public domain image from Pixabay.

Propagation & purchasing

Violets are easily started indoors from seed, beginning 8 to 12 weeks before transplanting outdoors. They may also self-seed in the garden, and some varieties will survive overwinter in warmer climates. Some cultivars are offered as hybrid seeds (i.e. produced by crosses between quite different parents), and for those wishing to minimize their labour, these can often be purchased as seedlings. Many of the most attractive cultivars are grown from cuttings (sometimes as offsets), and are best purchased as flats of young plants from nurseries. Pansies are so cheap that for most people establishing plants from seeds isn't worth the effort.

Figure 12. Flats of pansies for sale for the bedding and container markets. © Eileenmak (CC BY 2.0).

Soil & moisture conditions

Rich well-draining but moist soil with pH 5.4 to 5.8 is recommended. Humus-rich soil, such as a peat-based potting mix, or garden soil with considerable added organic material, is best. A slow-release fertilizer may be added to the soil after planting. Some authorities recommend weekly or biweekly fertilization of violets, especially when grown in containers. Some drought may be tolerated, but best growth results from regular watering, the soil allowed to dry at least partly between waterings.

Location

Violets or pansies are not commonly grown as interior flowering potted houseplants. African violets and other small ornamentals that are more tolerant of shade are preferred. The domesticated *Viola* species usually grow well in full sun but often prefer part shade in hotter or sunnier climates. Many of the wild species that are suited for rock and wild gardens do best in part shade. In beds, the cultivated varieties can be spaced 15 to 20 cm apart. Trailing or spreading cultivars can be planted 25 to 30 cm apart. Planting violets in the same soil consecutively for more than 3 years is inadvisable because of the possible buildup of fungi. Trailing varieties display well in hanging baskets or tumbling over the edge of window boxes.

Figure 13. Violets growing in containers. **Left:** Cultivar of European pansy (*Viola tricolor*). © Bob Collowan (CC BY SA 4.0). **Right:** Garden pansy (*V.* ×*wittrockiana*). © Rept0n1x (CC BY SA 3.0).

Temperature

Violets are adapted to cool temperatures, and grow well outdoors in the spring. Young plants tolerate some freezing, and if grown in containers these can be temporarily protected inside. Excessive heat can cause some cultivars to become dormant, and in southern climates the cultivation of violets in the heat of summer is discouraged. In warm climates with limited frost, violets often re-bloom in the fall.

Tips

To promote blooming and extend flowering, faded flowers should be removed ("deadheaded") and leggy or overgrown plants may be cut back to about 10 cm in height.

Curiosities of science and technology

- Ancient Greeks and Romans acquired the odd idea that violet wreaths relieved hangovers. Banquet tables were sometimes decorated with thousands of violets in the mistaken belief that the flowers could prevent drunkenness. Ironically, the Romans often drank a wine made from violet blossoms.

- In southern Germany during the Middle Ages, the violet was a symbol of spring. The discovery of the first violet to emerge triggered rejoicing. It was tied to a stake and a festival was held in its honour.

- Before litmus (which is obtained from lichens) became widely employed to indicate pH, syrup of violets was used (it turns red with acids, green with alkalies).

- Ionones, major chemicals (ketones) found in violet fragrance, have the ability to dull the sense of smell within a very short time, and this is why sweet-smelling violets seem to lose their fragrance quickly. The fragrance returns when the nose is rested. Shakespeare was aware of this when he wrote in Hamlet: "A violet in the youth of primy nature, Forward, not permanent; sweet, not lasting. The perfume and suppliance of a minute. No more."

- Women commonly wear beautiful flowers to enhance their own beauty, and violets are one of the leading choices. The famous romance of Queen Victoria (1819–1901) and Prince Albert (1819–1861) was associated with violets. She wore a posy of violets on her dresses. He never walked through the gardens at Windsor Castle without picking a bunch of violets. An even more celebrated love story that was intimately associated with violets concerns Napoleon Bonaparte (1769–1821) and Josephine (1763–1814). Napoleon's favourite flower was the violet, perhaps because it reminded him of his childhood in the woods of Corsica. He met Josephine at a ball, where she wore a coronet of violets and carried a bouquet of violets, which she threw to him from her carriage while departing. In memory of this, she wore a wedding gown embroidered with violets, and he gave her violets on each anniversary of their wedding. When he was sentenced to live out his days on the island of Elba, he told his followers that he would return in the spring, with violets. Napoleon's supporters sometimes determined people's political views by asking "Do you like violets?" In 1815, Napoleon returned to the royal palace in Paris, showered by violets. Accordingly, he was called by his followers Caporal Violette ("Corporal Violet") and Papa-Père la Violette ("Daddy Violet"), and the violet was adopted as the emblem of the Imperial Napoleonic party. After Josephine's death, Napoleon had her grave covered with violets. He kept some of them along with a lock of Josephine's hair in a locket near his breast until he died. Napoleon's life-long grief over the loss of Josephine, however, did not prevent his remarriage to Eugenie, who he first saw at a ball, wearing a violet gown and violets in her hair. Like Josephine, she carried violets at her wedding and received bouquets of them at her anni-

Figure 14. Feminine aspects of violets (all figures are public domain). **Top left:** Woman decorated with pansies. Source: cigarette card dated 1889, New York Public Library. **Top right:** Pansy-shaped gold and diamond brooch (ca. 1900). Source: Smithsonian Design Museum. **Bottom left:** Chromolith (late 19th century) showing two dancing female pansies. Source: Boston Public Library. **Bottom right:** Female with pansy decoration. Source: Rose, M.T. In: Gordon, E. 1910. Flower children: The little cousins of the field and garden.

versaries. When the French monarchy was restored, the wearing of violets was banned, and until 1874 French governments forbade any reproduction showing a violet, the symbol of Bonaparte supporters. Nevertheless, the violet flourished in the early days of the French Republic. France was flooded with postcards picturing innocent-looking violets with Napoleon's portrait cleverly hidden among the flowers.

Figure 15. Nineteenth century print (public domain) showing a romantic couple, the young man dressed in the style of Napoleon giving a bouquet of violets to his companion.

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Success with pansies in the winter landscape: A guide for landscape professionals. University of Georgia Extension Bulletin 1359 – https://extension.uga.edu/publications/detail.html?number=B1359&title=Success%20with%20Pansies%20in%20the%20Winter%20Landscape:%20A%20Guide%20for%20Landscape%20Professionals (Numerous agricultural universities in the US have guides to growing pansies; this is one of the more extensive presentations.)

Note: Societies dedicated to pansies or violets were not located. The "American Violet Society" which functioned as the official international registration authority for violet (*Viola*) cultivars, has been moribund in recent years, and the website is not functional. Although violets and pansies are especially popular in Great Britain, their "National Viola and Pansy Society" website also appears to be discontinued.

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