The Canadian Botanical Association Bulletin

Bulletin de l'Association Botanique du Canada

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President's Message: The future (climate) shock!

Ah the irony! As the snow continued to pile up into impressive snow banks (and record territory) after extended periods of cold in Prince George (BC), during the first week of March, I found myself giving an interview for CBC-French (Vancouver) regarding the latest media frenzy over the global change scenario recently published in the journal, Climatic Change (Coops & Waring, 2011). The article addressed the fact that a large portion of the province of British Columbia is currently a place where lodgepole pine (*Pinus contorta*) grows well and might be considered very much 'at home'. However, if warming scenarios continue and certain variables follow, models used by these authors predict that landscapes occupied by this familiar pine will be a fading memory in most portions of the province by 2070. Now, even if a fragment of this future scenario is true, we may be about to witness a suite of unprecedented changes for a great many ecosystems in the province and beyond, whether they are currently forested, agricultural or peri-urban.

The theme of our Plant Canada meeting in Halifax, "Plant adaptation to environmental change" is, therefore, most timely. Over the last decade, we have come to accept that climate change is happening. In classrooms, we discuss the consequences of such events regularly with our students, but we remain uncertain with respect to how individual plants or species, let alone entire landscapes, will

Canadian Botanical Association Bulletin

The CBA Bulletin is issued three times a year (in theory in March, September and December) and is available to all CBA members in electronic format or for an additional fee, in hard copy.

Information for submitting texts
All members are welcome to submit texts in the form of papers, reviews, comments, essays, requests, or anything related to botany or botanists. Any medium is acceptable for submission but electronic documents are likely to speed up the publication. For detailed directives on text submission please contact the Editor (see below). For general information about the CBA, go to the web site: http://www.cba-abc.ca

Association Botanique du Canada Bulletin

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 natureconcernant la botanique et les botanistes (articles, revues de publication, commentaires,requêtes, essais, etc.). Tous les supports de texte sont acceptés. L'utilisation de documents électroniques peut accélérer la publication. 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: http://www.cba-abc.ca

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Next issue / Prochain numéro
Texts for the next issue, **44(2)**, must be received **before August 5th 2011**
La date de tombée des textes du prochain numero, le no **44(2)**, est **le 5 aout 2011**

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respond to these changes over the next century. Who can make such predictions? A tremendous amount of dedicated work and great energy is being invested on behalf of all six participating societies to design a scientific program for this summer's meeting that promises to be very stimulating, informative and enjoyable. We are hopeful that many of you will be able to join us in mid-July for the Joint 2011 Plant Canada Meeting and that, if predictions hold, we'll need to pack our sunscreen! The long term forecast: a hot and dry summer!
Sincerely,
Hugues Massicotte

Coops, NC and RH Waring. 2011. A process-based approach to estimate lodgepole pine (*Pinus contorta* Dougl.) distribution in the Pacific Northwest under climate change. Climatic Change 105: 313-328.

Message du Président: "Mon pays, c'est l'hiver"…même en 2070?
Quel contraste! A Prince George (C.B.), en cette première semaine de mars, nous continuons à empiler la neige où l'on peut (la chanson de Gilles Vigneault se rejoue constamment dans ma tête!) tandis que je donne une entrevue pour la chaîne française de Radio-Canada (Vancouver) sur la dernière frénésie médiatique à propos du dernier modèle de prédiction climatique, publié récemment dans le journal "Climatic change" (Coops & Waring, 2011). Les auteurs démontrent, en utilisant des modèles de photosynthèse, que les pins tordus (*Pinus contorta*), qui poussent abondamment dans une grande partie de la province, disparaitront et seront un souvenir lointain dans les années 2070! Même si juste une fraction de ce scénario futuriste est vraie, il faut convenir que nous sommes sur le point d'assister à une série de changements sans précédent pour un grand nombre d'écosystèmes dans la province et au-delà, qu'ils soient boisés, agricoles ou péri-urbains.
Le thème de notre "Conférence Plant Canada" à Halifax "Adaptation des plantes aux changements environmentaux» est donc très opportun. Au cours de la dernière décennie, nous avons accepté la réalité incontournable des changements climatiques. En classe, nous en discutons souvent avec les étudiant(e)s. L'incertitude règne quant on pense à la réponse des plantes à ces grands changements, au niveau de la plante individuelle ou de l'espèce, mais aussi au niveau de la dynamique des communautés végétales ici et ailleurs. Qui peut le savoir?
Une quantité considérable de travail et d'énergie ont déja été investis au nom des six sociétés participantes pour la conception d'un programme scientifique pour le congrès de cet été qui promet d'être stimulant, enrichissant et agréable. Nous espérons donc que vous serez nombreux à pouvoir nous joindre à la mi-juillet pour la conférence "Plant Canada 2011". Et n'oubliez pas votre crème solaire! Les prévisions à long terme: un été chaud et sec!
Sincèrement,
Hugues Massicotte

The Federation of Canadian Plant Science Societies
La fédération canadienne des sociétés de sciences végétales

IMPORTANT ANNOUNCEMENT
EXTENDING DEADLINE DATES

Plant Canada 2011
"Plant Adaptation to Environmental Change"
Halifax, Nova Scotia
July 17–21, 2011

April 15 will be the new deadline for 'Early-Bird' Registration. Thereafter, registrations will be accepted as "late registrations"
April 15 will be the new deadline for title and abstract submissions for oral presentations.
May 20 will be the new deadline for title and abstract submissions for poster presentations.
Detailed instructions for submission of titles, abstracts and registration are available at: http://Plantcanada2011.ca.

Association News/ Nouvelles de l'association

An Honorary degree for Nancy Turner



Dr. Nancy Turner receiving her honorary doctorate from the Chancellor of Vancouver Island University, Shawn Atleo. *(Courtesy Vancouver Island University)*

Dr. Nancy Turner, a recipient of the Lawson medal, received an honorary doctorate at Vancouver Island University convocation on January 28th 2011.
"Throughout her impressive career as an author, researcher and academic, Dr. Turner has exemplified a passionate commitment to studying and documenting the sacred relationship between First Nations people and the diverse ecosystems of British Columbia," said VIU President and Vice-Chancellor Dr. Ralph Nilson.
"Nancy's close work particularly with Saanich First Nations elders will help preserve a wealth of information for future generations. We are deeply indebted to Nancy for her compelling message to protect ecosystems and use our resources wisely," Nilson said.(*From the VIU press release*)

Response to the letter sent to the Canadian Museum of Nature

At the Annual General Meeting in Ottawa on June 3rd 2010, a motion put forward by Tim Dickinson was passed to the effect "CBA applauds the reopening of the Canadian Museum of Nature but notes with considerable disappointment the absence of a botanical (plants and fungi) display, such as that which existed previously." The President was asked to write a letter to the Museum. A letter was sent, signed by both the past president and current president. It appeared in the Bulletin 43(2), page 27. The first letter was mis-directed, the letter was then sent to Ms. Maureen Dougan, Interim President and Chief Executive Officer Canadian Museum of Nature and the response appears below.

Canadian Museum of Nature
November 30, 2010
Dr. Hugues B. Massicotte
President., CBA/ABC

Dear Professor Massicotte:
Thank you for your letter of October 12th, 2010. Your interest in the renewal of the Victoria Memorial Museum Building (VMMB) is much appreciated.

As you know, a considerable amount of care and expense went into the restoration of this heritage facility and the development of over 70,000 square feet of new galleries. One of the major innovations was the creation of a Dynamic Buffer Zone, which has allowed the Museum to establish appropriate environmental conditions in the interior galleries. An associated step was establishing the appropriate protocols regarding the use of biological material in the galleries, and the introduction of more rigid pest management procedures.

I note that as a botanist, you have detected some differences from the previous gallery lay out, when the 4th floor in the east wing did contain a botany gallery. At the present time the Museum is fundraising to develop the Discovery Centre and a permanent gallery on the 4thFloor (east). Until then, the existing gallery spaces will allow us to showcase our botanical collection or the exhibitions of other botanical institutions.

Hopefully, presentations at the recent Canadian Botanical Association conference reassured you that our botany research team is well supported and that the collection continues to develop ambitiously. We endeavour to find ways to attract attention to the Museum's collection and research findings. For example, we currently have an exhibit that celebrates frogs, a part of our vertebrate collection with little representation in the Victoria Memorial Museum Building. If you had been in that same gallery in March-April 2010 you would have seen our botanical traveling exhibit, Green Legacy.

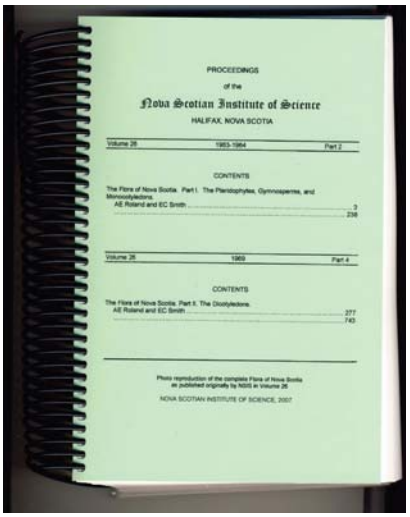
The Canadian Museum of Nature does its best to create a full range of natural history educational experiences. Thank you for taking the time to share your views with us and for offering the substantial expertise of the Canadian Botanical Association.

Yours sincerely
Maureen Dougan,
Interim President and Chief Executive Officer

Bourse d'études

À l'occasion de son 60e anniversaire de fondation, en 2010, le Cercle des mycologues de Montréal (CMM) décerne une bourse pour encourager les étudiantes et les étudiants à poursuivre des études supérieures dans le domaine de la mycologie et, plus particulièrement, l'étude des macromycètes (Eumycota macroscopiques).
Afin de connaître les conditions d'admissibilité et le montant de la bourse, lire le document.
Les dossiers seront reçus jusqu'au **16 mai 2011 à 17h**.

http://www.mycomontreal.qc.ca/actualit.htm



Flora of Nova Scotia

This is to let you know that we, at the Nova Scotian Institute of Science, have had another printing of the first edition of the flora of Nova Scotia done. It is now available for $35 a copy (the same price as the last printing) but if ten copies are purchased for class use from the NSIS, we can negotiate an attractive discount.
This first edition (see photo above), 740 pp., is ring bound and easily opens flat. Although the names are not as up-to-date as those in the much larger, very much more expensive second edition (Available from the Nova Scotia Museum), it provides a wonderful tool for teaching students to use keys etc.
Each year we sell copies to students at Dalhousie University enrolled in the plant taxonomy course, and occasional copies to amateurs and others.
If you are teaching a field course or a taxonomy course this summer, this book, the cost of which is very modest, could be very useful.
Please let me or the NSIS librarian, Sharon Longard, know if you would like to purchase one or more copies.
Professor David Richardson,
Dean Emeritus,
Editor-in-Chief for the journal 'Symbiosis'.
President, Nova Scotian Institute of Science
http://www.chebucto.ns.ca/Science/NSIS/

Donation received from SPNHC-CBA joint meeting in Ottawa.

A substantial cheque was received from the organizers of the meeting. This letter of thanks was sent to Jeffery Saarela and also to Jean-Marc Gagnon. Jeff was our Vice President last year who worked closely with the organising committee, led by Jean-Marc.

Dr. Jeffery M. Saarela, Ph.D.
Research Scientist, Canadian Museum of Nature
P.O. Box 3443
Stn "D" Ottawa ON
K1P 6P4
Prince George, March 5, 2011

Dear Jeff:

Our treasurer, Dr. Jane Young, and myself are delighted to acknowledge the receipt of a substantial donation, originating from the very successful joint meeting held in Ottawa last June between the Society for the Preservation of Natural History Collections (SPNHC) and the Canadian Botanical Association/Association Botanique du Canada. Needless to say, we are kindly accepting this cheque, which we see as a sizeable dividend representing profits from an efficiently run meeting, prudent accounting and top-notch organization witnessed by all who were at the meeting last June in Ottawa.

As stipulated by you and the Local Organizing Committee, the bulk of the donation will go to the general CBA/ABC functioning fund, and the smaller amount indicated will go directly to the Macoun and Winterhalder Funds, earmarked for graduate and undergraduate student travel support. Please be assured that the CBA/ABC has always been, and continues to be, very supportive of students, encouraging them to attend and participate at annual meetings. These funds will help finance such initiatives.

We are truly grateful for your valued and continued support, and we hope this arrangement is satisfactory to everyone concerned.

Yours sincerely,

Hugues B. Massicotte, Ph.D., President,

Jane P. Young, Ph.D.Treasurer,

Canadian Botanical Association-

Attention graduate students!

The Plant Canada Conference 2011 will be held July 17-21 at Saint Mary's University, Halifax, Nova Scotia. The theme of the conference is "Plant Adaptation to Environmental Change". On behalf of the Graduate Student Organizing Committee it is our pleasure to invite you to participate. Plant Canada 2011 will be an excellent opportunity to share your original research with the Canadian plant science community. The conference will also feature many special presentations delivered by prominent scientists on current "hot topics" addressing the theme of the conference. Additionally, there will be student oral and poster presentation competitions. There will be several recreational activities organized for you to attend. Nova Scotia has great music, food, hospitality and natural beauty which we look forward to sharing with you. For further details about the conference please refer to the Plant Canada website (http://www.plantcanada2011.ca/) and our facebook page. The Plant Canada Conference is held every four years and is the most strongly attended plant science conference in Canada.
We warmly welcome you to Halifax and to the Plant Canada Conference 2011!
Sincerely, Michel McElroy, Co Chair (PhD. Candidate, Dalhousie University), Malinda Thilakarathna, Co Chair (PhD. Candidate, Dalhousie University), Caitlin Porter (MSc. Candidate, Saint Mary's University), Zachary MacDougall (MSc. Candidate, Saint Mary's University), Kathleen Glover, Advisor (Associate Professor, Nova Scotia Agricultural College).

News From the Sections



Teaching Section

Teaching Symposium at Plant Canada – Come and join us on **Monday July 18th!**
The symposium will focus on the importance of writing in (plant) science. Following is a short description of the event. The session will start with a 40-minute presentation by our guest speaker, Dr. Lyn Baldwin of Thompson Rivers University, who will speak on: "BOTANY with a dash of SOTL--Improving Undergraduate Botany Curriculum using the Scholarship of Teaching and Learning". Lyn will explore how we can use SOTL to really find out what works and what doesn't work. This is a topic that envelopes much of the SOTL work that she's done over the last 5 years, and will include a discussion on how scholarly teaching and learning can be used to assess the success of writing assignments. The presentation will incorporate time for breakout session/discussion and will be followed by lunch.
After lunch, there will be a session of contributed talks by members of both the CBA/ABC and CSPP on the theme of **"Helping Students Write and Communicate in the Biological Sciences"**. We invite you to participate in this session. Please send abstracts to make this session the most useful possible (New abstract deadline: **April 15th, 2011).**
Finally, we will have an open-discussion Teaching Panel on **"Teaching and Evaluating Scientific Writing"** led by Dr. John Markham (University of Manitoba). John will kick off the panel by presenting the results of his nationwide survey: "Undergraduate Scientific Writing Trends in Biology Programs Across Canada". Panelists will be Dr. Lyn Baldwin from Thompson Rivers, Dr. Norm Hüner from the University of Western Ontario, Dr. Barry Shelp from the University of Guelph, and Ms. Janice Eddington from the Writing Centre of Dalhousie University. Below you will find a short biography of each panelist.

Lyn Baldwin is an Assistant Professor in the Department of Biological Sciences at Thompson Rivers University. Her disciplinary-specific research investigates the effects of large-scale forest fragmentation on the ecology of bryophytes. For the last 5 years, she has been using a SOTL (Scholarship of Teaching and Learning) approach to investigate diverse topics such as the effectiveness of specific teaching strategies, the importance of place-based education and the impact of university culture on the acceptance of SOTL. Lyn was awarded a Thompson Rivers University Teaching Excellence Award in 2010.

Janice Eddington's passions for science and writing combine in her work at the Dalhousie University Writing Centre. Rather than seeing writing as the exclusive territory of English professors, the Dal WC enthusiastically supports a Writing in the Disciplines approach to academic writing instruction: students learn to write within their academic communities; therefore, the WC employs teachers and tutors from diverse fields. Bringing a background that includes being ABD in her Biology PhD and having bachelor degrees in Science, Education, and Journalism, Janice serves as a consultant to faculty wishing to strengthen the science writing component of their courses and as a writing advisor to students. Often Janice can be found teaching a supplemental course for an introductory science writing course, offering seminars in Writing in Science, or assisting science students for whom English is a second or additional language. Helping students adapt to science through writing and translating scientific findings into narratives for the public reflect Janice's dedication to both passions.

Dr. Norm Hüner holds the Tier 1 Canada Research Chair in Environmental Stress Biology in the Department of Biology and is the founder and Principal Investigator of the Biotron Experimental Climate Research Centre at University of Western Ontario. Dr. Hüner has over 30 years of experience in university teaching at various levels and class sizes from large, first year introductory biology lectures to medium-sized advanced courses in plant biochemistry and plant physiology at the third and fourth year levels to graduate courses with small enrolments. In addition to over 250 research publications, Dr. Hüner has co-authored several books including a university textbook for use at the second and third year levels entitled Introduction to Plant Physiology (John Wiley & Sons Inc, NJ, USA) that is now in its fourth edition and has been translated into six languages.

Dr. Barry J. Shelp earned his B.Sc. and M.Sc. degrees from Brock University, and his Ph.D. from Queen's University. He was an NSERC Canada post-doctoral fellow at the University of Western Australia and Carleton University. He joined the University of Guelph in 1984 as an NSERC University Research Fellow, eventually achieving the rank of Full Professor in the Department of Plant Agriculture. His current research focuses on multidisciplinary approaches to C-N relations, amino acid and carotenoid metabolism, and stress biology. He is the author or co-author of about 120 refereed publications and a co-founder and director of ENPAR Technologies Inc., a publicly traded company specializing in water treatment. Dr. Shelp has served as Associate Editor for both the Canadian Journal of Botany and the Canadian Journal of Plant Science, and currently serves on the Advisory Board of the Journal of Experimental Botany as Co-Editor of Botany.

Frédérique Guinel.

Plant Development Section

A reminder: Students are encouraged to submit applications for the Taylor A. Steeves Award. It was established to honour Taylor Steeves for his numerous contributions to the CBA and to botany. For more information or to submit applications or nominations, please contact the current chair of the development section, Dr. Arunika Gunawardena (arunika.gunawardena@dal.ca), Biology Department, Dalhousie University, before **April 1st 2011.**

Systematics and Phytogeography Section

Nominations Wanted
A.E. Porsild Award for best paper in Systematics and Phytogeography. This award was established honoring the memory of the eminent Arctic botanist. Alf Erling Porslid. This is awarded in recognition of the best paper published in the field of systematics and phytogeography that year by a graduate student in a Canadian university or a Canadian

student in a foreign university. The work should be published while the author is still a graduate student or be based on work done while a graduate student and published within two (2) years of graduating.
Applications or nominations for students who published a paper in plant systematics and/or phytogeography as senior author during the previous year should be sent to the chair of the Systematics and Phytogeography Section of the CBA/ABC

Deadline: Applications (preferably electronic) should be sent to the chair of the Systematics and Phyogeography Section of the CBA/ABC by **May 1st, 2011** to:
J. Hugo Cota-Sanchez, Ph.D. Chair
Systematics and Phytogeography Section CBA / ABC
Email: hugo.cota@usask.ca

Ecology and Conservation Section

Talking climate change and plant changes...

Just a reminder that the section has organized a symposium entitled "**Climate change: Canada's plants on the run!**" We have great speakers including: David R. Clements, Christopher Lortie, Andrew Trant, and Liette Vasseur. We are going to cover the country and various ecosystems.
You're all invited! The session will be on **Wednesday July 20**, **2011** in Halifax!

Canada's Species at Risk Act on the stage?
Our discussion of the Canada's Species at Risk Act might become heated. Many of you may know that the Council of the North American Commission for Environmental Cooperation has asked the Secretariat to develop a factual record. What is this? Under the North American Agreement on Environmental Cooperation ("NAAEC") (parallel agreement of NAFTA), Articles 14 and 15, a submission can be made by anyone who believes that a "Party may be failing to effectively enforce its environmental law"(see http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=210&BL_ExpandID=156&AA_SiteLanguageID=1)
In this case, as cited in the press release, a submission was "filed with the Secretariat on 10 October 2006, by the Sierra Club (United States and Canada), Nature Canada, the David Suzuki Foundation, Conservation Northwest, Environmental Defence, Forest Ethics, Ontario Nature, Western Canada Wilderness Committee, BC Nature, Federation of Alberta Naturalists, the Natural History Society of Newfoundland and Labrador, Nature Nova Scotia and Nature Quebec (the "Submitters"), represented by the Sierra Legal Defence Fund (now Ecojustice), allege that Canada is failing to effectively enforce the federal Species at Risk Act (SARA) in regard to requirements for listing species for protection under the Act, recovery planning, and the issuance of emergency orders." (http://www.cec.org/Page.asp?PageID=122&ContentID=5604&SiteNodeID=532&BL_ExpandID=&AA_SiteLanguageID=1)
As you can imagine, the Ecology and Conservation Section of the CBA will continue monitoring the process and will take the opportunity to comment on the factual report. So, stay tuned as we will contacting you soon on this issue.
Rowe award nominations and applications should reach Liette by May1st 2011

Liette Vasseur, lvasseur@brocku.ca
Co-chair

Mycology Section News:



The mycology section is pleased to announce that the Weresub memorial lecture at Plant Canada 2011 will be given by Dr. Felix Baerlocher, from Mount Allison University and is entitled "Research on aquatic hyphomycetes in a changing world".
A reminder also that the Mycology section is sponsoring a Symposium organized by Dr. Michele Piercey-Normore entitled "Effects of environmental change on fungal diversity in northern ecosystems". This exciting symposium will include presentations on both lichenized and non-lichenized fungi and will feature Stephen R. Clayden (Lichens and Allied Fungi of Old Wet Cedar (*Thuja occidentalis*) Forests in Northeastern North America: Indicators of Environmental Change), Melissa Day (Decomposition of Moss by Filamentous Fungi and Its Potential Role in Arctic/Alpine Pedogenesis), Georg Hausner (The Blue-stain Fungi of Manitoba and NW Ontario), R. Troy McMullin (Monitoring Ecological Integrity and Air Quality with Lichens at Kejimkujik National Park and National Historic Site), Brinda Timsina and Michele Piercey-Normore (Effects of Environmental Change on Lichen Fungi).
In addition, a reminder to members (faculty and students) to please consider forwarding names and dossiers of those who may be eligible for the Luella K. Weresub Memorial Award for best published paper of the year authored by a student. Deadline is **May 1st, 2011.**
As always, we welcome all who might be interested in joining the Mycology section, as well as all myco-comments and thoughts for our section and for the Bulletin!

Respectfully submitted,
Hugues Massicotte and Shannon Berch



Regional Undergraduate Awards

Ontario Biology Day 2011 was held on the 12th and 13th of March at Wilfrid Laurier University in Waterloo. The event was a great success with 110 oral presentations and 30 posters from students coming from nine universities. Michael Runtz, a faculty at Carleton University, was our guest speaker. He gave his talk on naturalists and showed us some of his amazing photographs. As usual, our Society rewarded the best oral and poster presentations on plant- and fungus- related work. Brian Sutton-Quaid, from the Department of Biology at the University of Western Ontario, received the award for the Best Oral presentation. His talk was on the effect of salinity on the toxicity of *Heterosigma akashiwo*. Rachel Germain, from the Department of Integrative Biology at the University of Guelph, received the award for the Best Poster. Her work was on the functional traits that underlie adaptive drought-induced parental effects in the annual grass *Avena barbata*.



Brian Sutton-Quaid receiving his CBA/ABC award from Frédérique Guinel.



Poster display at Ontario Biology Day 2011 at Wilfrid Laurier University

Frédérique Guinel.

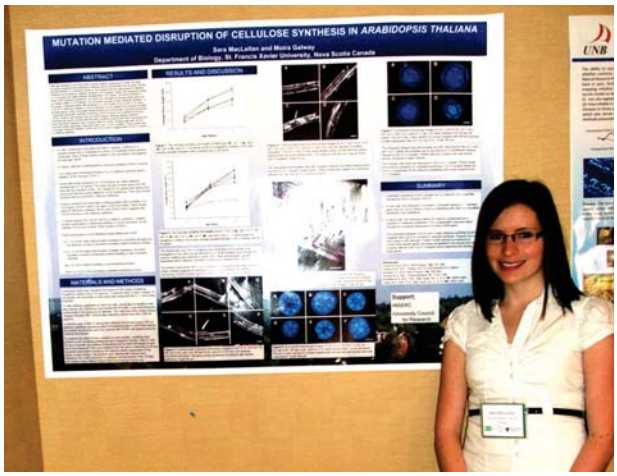
Thanks to all the judges and to Frédérique for arranging for the awards.
(We regret we have no photo of Rachel Germain)

The Atlantic Undergraduate Biology Conference was held at the Four Points Sheraton in Halifax Nova Scotia, March 11th-13th, hosted by Dalhousie University. We had both an oral and poster winner, each awarded $100.00. The best oral presentation by an undergraduate student in the discipline of botany was Jaime Wertman. Jaime is from Dalhousie University in Nova Scotia and her talk was "Do mitochondria catalyze programmed cell death in the Lace plant". Her supervisor is Dr. Arunika Gunawardena.



Jaime Wertman, winner of the oral presentation, with her supervisor, Arunika Gunawardena.

The best poster presentation by an undergraduate student in the discipline of botany was Sara MacLellan. Sara is from St. Francis Xavier University in Nova Scotia. Her poster was titled "Mutation mediated disruption of cellulose synthesis in *Arabidopsis thaliana*." Her supervisor is Dr. Moira Galway.



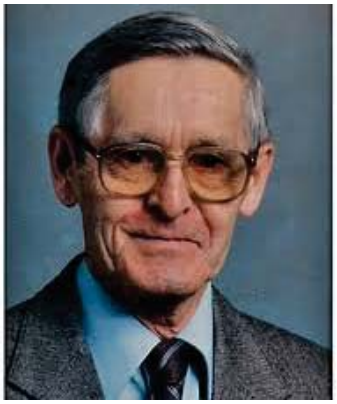
Sara MacLellan with her winning poster

There was also an "Honourable Mention" that carried no cash award. Honourable Mention for an oral presentation by an undergraduate student was Erica Fraser. Erica is from Mount Saint Vincent University in Halifax, Nova Scotia. Her talk was "Patterns of organic nitrogen utilization in fungal root endophytes". Her supervisor is Dr. Gavin Kernaghan.

Thanks to all the judges and those at Dalhousie for arranging for the CBA awards to be given.

Obituaries

M. Albert Legault (1919-2011)



Albert Legault

C'est avec grand regret que nous apprenions, début janvier 2011, la nouvelle du décès de M. Albert Legault, botaniste, qui fut professeur de botanique et conservateur de l'herbier de l'université de Sherbrooke, Québec (anciennement SFS). Il avait 91 ans. Pour ceux et celles qui l'ont connu, il était un professeur remarquable, sans doute en raison de sa formation de base en pédagogie et en psychologie. Il savait captiver l'intérêt de ses étudiants pour la botanique et la taxonomie végétale, des domaines pas toujours faciles à vulgariser, par des cours bien structurés, truffés d'exemples et d'anecdotes provenant de ses explorations du Nord québécois (Nunavik) et de ses visites de jardins botaniques nord-américains et européens. Il savait dans ses classes détecter les étudiants les plus doués et les encourager à poursuivre leur formation en science des plantes. Il préparait avec force détails ses cours et laboratoires de phycologie et de mycologie, avec un souci pédagogique rarement atteint dans nos universités.

Né à Gatineau (Hull), Québec, en 1919, M. Legault, après des études normales à Laval-des-Rapides (maintenant faisant partie de la ville de Laval), au Québec, débute sa carrière comme enseignant au primaire. Durant ses années d'enseignement il s'intéresse graduellement à la biologie et se tourne progressivement vers la botanique pour en faire sa profession. En 1950 il s'inscrit à un cours de biologie marine offert en Gaspésie par la Société canadienne d'Histoire naturelle. Il entreprend des études de premier cycle à l'université de Montréal où il obtient son diplôme en biologie en 1955, puis sa maîtrise dans la même université en 1957. Son mémoire de maîtrise, sous la direction du Dr. Pierre Dansereau, s'intitulait « Évolution végétale postglaciaire sur la terrasse au sud du mont Tremblant ».

Peu après, il débute une seconde maîtrise à l'université Yale, Connecticut (U.S.A.), sous la direction du Dr. Paul B. Sears, qu'il complète en 1959. Les travaux de sa deuxième maîtrise ciblent l'analyse pollinique de dépôts prélevés dans une douzaine de tourbières s'échelonnant de la plaine du Saint-Laurent jusqu'à Kuujjuaq (Fort-Chimo). Il semble que ces travaux furent récupérés pour l'obtention de son doctorat car, tel que mentionné dans des documents, toutes les exigences de Yale pour le Ph. D. ont été satisfaites; il ne restait plus que la rédaction de la thèse. Par la suite il devient assistant de recherche à la Station biologique du Mont-Tremblant puis, aussitôt sa deuxième maîtrise complétée, il accède au poste de directeur du laboratoire de palynologie au Service de Biogéographie de la province de Québec. Entre temps il avait joint la communauté des frères des écoles chrétiennes (f.e.c.) et prend le nom de frère M. Sylvio, sous lequel il signe ses premières publications et ses premières récoltes de plantes.

Comme le signalait Pierre J.-H. Richard (in litt.), palynologue réputé de l'université de Montréal, M. Legault fut un pionnier de la palynologie francophone au Québec. Il a travaillé avec deux spécialistes en la matière, l'un du Québec, Albert Courtemanche (1907-1985) et l'autre américain, de l'université Butler, Indiana (U.S.A.), John E. Potzger (1886-1955), tous deux pionniers de la datation au carbone 14 en palynologie.

Parmi ses travaux effectués au mont Tremblant, figurent une flore et un aperçu de la végétation de la région qu'il avait établis avec l'aide d'un collègue et ami de longue date, le frère Rolland-Germain (1881-1972), le principal collaborateur du frère Marie-Victorin. Selon le témoignage d'Andrée Thériault (in litt.), une ancienne étudiante de M. Legault, ce dernier aurait rencontré Jeanne Viau, celle qui deviendra son épouse, alors qu'elle était secrétaire de Marie-Victorin.

Après son passage à l'état laïc, il devint en 1962, professeur de botanique au département de biologie de l'université de Sherbrooke. Il ne perd pas de temps à établir en 1963, l'herbier de l'université. En 1968, son amitié et son admiration pour Rolland-Germain lui permettent d'acquérir l'herbier personnel de ce dernier, ce qui enrichit la collection de l'université de près de 7 000 spécimens et de plusieurs dizaines de milliers de duplicatas. En 1974, lors d'une cérémonie officielle, l'herbier de l'université fut baptisé l'herbier Rolland-Germain. Cette même année, la collection s'accroît à nouveau par l'acquisition de l'herbier du collège Mont-Saint-Louis, de Montréal, qui compte environ 10 000 spécimens. Cette institution était l'alma mater de l'assistant d'Albert Legault, M. Sam Brisson (1918-1982), qui se joint à lui en 1962. Les deux formeront à l'université une équipe vraiment complémentaire; Albert excelle dans l'enseignement et la direction d'étudiants, et Sam dans la préparation des laboratoires, l'assistance aux étudiants gradués sur le terrain et la gestion de l'herbier.

Les deux collègues parcoururent de fond en comble les Cantons de l'Est et se spécialisèrent, avec l'aide des étudiants gradués, dans la flore de la serpentine et des milieux aquatiques et humides. On produira une flore manuscrite quasi exhaustive de cette riche région et l'herbier devint alors une référence floristique régionale sans pareil. Des nombreuses expéditions effectuées au Nord québécois pour compléter ses études doctorales résulteront des cueillettes fort importantes de Schefferville jusqu'au lac Payne, dont les doubles se retrouvent dans plusieurs herbiers canadiens. M. Legault dirigera entre autre la thèse de Philippe Forest (1938-2009) sur la flore et la végétation de la région de Kuujjuarapik (Poste-de-la-Baleine) au Nunavik, celle de Claude Hamel sur la flore du comté de Wolfe, au Québec, et celle de Viateur Blais sur la flore de la région de Thetford-Mines. N'ayant pu compléter ces travaux phytogéographiques d'envergure, M. Legault fit don de ses données qui sont actuellement utilisées dans le cadre de divers projets.

En 1986, lors de sa retraite, l'herbier de l'université franchissait le cap des 200 000 spécimens. Il semble que l'université attendait son départ pour se départir de l'herbier. Ce dernier fit un long séjour dans un entrepôt à Sherbrooke avant d'être finalement partagé et acquis par les herbiers de l'université de Montréal (MT) et de l'université Laval (QFA).

M. Legault a été au coeur des débuts de l'ABC/CBA et en est devenu rapidement un membre très actif. Dans une de ses lettres à l'association, il mentionne qu'en 1964, il a participé en compagnie de Bernard Boivin, Lionel Cinq-Mars et Richard Cayouette au congrès de fondation de l'association. En 1965, le Dr. Paul Gorham, alors président de l'association, lui demanda de traduire en français les statuts et règlement (« By-Laws ») de l'association, malgré tous les termes légaux qui s'y trouvaient. En 1976, lors du congrès annuel de l'association, il organisa une excursion sur la serpentine de Black-Lake, Québec. Il a gardé des souvenirs très positifs de notre groupe et y fut honoré du prix Mary-Elliott en 2004. La contribution et l'influence de taxonomistes comme M. Legault ont marquéle domaine de la botanique et assurent encore aujourd'hui la renommée de cette discipline de recherche.

Liette Vasseur
Jacques Cayouette
février 2011

Mr. Albert Legault (1919-2011)

It's with deep sorrow that we learned in early January that Mr. Albert Legault, botanist, former professor, and curator of the herbarium at Université de Sherbrooke, Québec, passed away at the age of 91. For those who had known him, he was a remarkable professor, strong from his previous training in pedagogy and psychology. He knew how to captivate the interests of students in botany and plant taxonomy, fields not always easy to teach, through well structured classes filled with great examples and anecdotes from his explorations in northern Quebec (Nunavik) and his field trips to European and North American botanical gardens. He knew how to spot the brightest students in his classes and encouraged them to pursue their studies in plant sciences. Labs in phycology and mycology were prepared with great details and pedagogical care, rare to find these days in our universities.

Born in Gatineau (Hull), Québec, in 1919, Mr. Legault, began his career as a primary teacher following completion of normal school in Laval-des-Rapides (now part of the City of Laval), Québec. During his teaching years, his interest for biology gradually increased and he leant towards botany as a profession. In 1950, he registered in a marine biology course offered by the Canadian Society of Natural History, in Gaspésie. He then pursued his university studies at the University of Montreal where he graduated with a B.Sc. in Biology in 1955, then an M.Sc. in 1957. His thesis was under the supervision of Dr. Pierre Dansereau, entitled “Évolution végétale postglaciaire sur la terrasse au sud du mont Tremblant (Postglacial plant evolution on the southern terrace of Mount Tremblant).

Soon after, he decided to pursue a second M.Sc. at Yale University, Connecticut, USA, under the supervision of Dr. Paul B. Sears, which he completed in 1959. His second Masters looked at pollen analyses in peatland deposits located from the plains of St. Lawrence River to Kuujjuaq (Fort-Chimo). It seemed that his work was intended to be used for the completion of a Ph.D. as his notes mentioned that he had passed all the Ph.D. requirements at Yale; only the thesis remained to complete. He then became research assistant at the Mont Tremblant Biological Station and once his second M.Sc. was completed, he obtained the position of laboratory director of palynology with the Biogeography Service of the province of Québec. Meanwhile, he joined the community of Christian schools brotherhood and took the name of Brother M. Sylvio, under which he signed his first publications and plant specimens.

As underlined by Dr. Pierre J.-H. Richard (pers. comm.), the well known palynologist from Université de Montréal, Mr. Legault, was a pioneer of palynology in the Quebec francophony. He worked with two other specialists, Albert Courtemanche (1907-1985) in Québec and John E. Potzger (1886-1955) from Butler University, Indiana, USA, both pioneers of carbon 14 dating technique.

His work at Mont Tremblant, conducted in collaboration with a long time friend and colleague, Brother Rolland-Germain (1881-1972), provided a great deal of the knowledge of the regional flora and vegetation. Brother Rolland-Germain was a major collaborator of botanist Brother Marie-Victorin. According to Andrée Thériault (pers. comm.), a former student of Mr. Legault, he met his future wife, Jeanne Viau, when she was secretary of Marie-Victorin.

Returning to lay life, he was hired as professor of botany in the Department of Biology of the University of Sherbrooke. He did not waste anytime in establishing, in 1963, the university herbarium. In 1968, his friendship and admiration of Rolland-Germain allowed him to acquire his personal collection which contains 7000 plant specimens and several thousands of duplicates. In 1974, during an official ceremony the university herbarium was named the Rolland-Germain Herbarium. The same year, the herbarium acquired the Herbarium of College Mont-Saint-Louis, in Montréal, which included approximately 10,000 specimens. The college was the alma mater of Legault's assistant, Mr. Sam Brisson (1918-1982), who joined him in 1962 at the university. Together they formed a truly complementary team; Albert excelled in teaching and student supervision and Sam in lab preparation, graduate student field assistantship and the herbarium management.

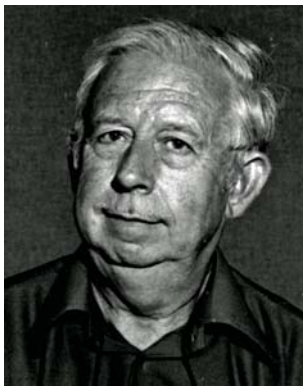
These two colleagues explored the Eastern Townships and, with help of graduate students, specialized mainly in flora of serpentine, humid and aquatic habitats. They produced an almost exhaustive flora compendium of this rich region and the herbarium became the regional focal reference point. Several field trips in Northern Quebec for his Ph.D. thesis resulted in important plant collections for the regions from Schefferville to Lake Payne with many specimen duplicates now found in other Canadian herbaria. Among many, Mr. Legault supervised the theses of Philippe Forest (1938-2009) on the flora and vegetation of Kuujjuarapik (Poste-de-la-Baleine) in Nunavik, Claude Hamel on the flora of Wolfe County in Quebec, and Viateur Blais on the flora of the region of Thetford-Mines. Unable to complete his major phytogeographic work, Mr. Legault donated his data which are still in use in various projects.
In 1986, when he retired, the herbarium reached 200,000specimens. It seemed that the university was waiting for his departure to get rid of the herbarium. It was stored for a while in a storage facility in Sherbrooke before finally being dispersed and acquired by the herbaria of the University of Montreal (MT) and Laval University (QFA).

Mr. Legault played a role in the formation of the ABC/CBA

and rapidly became an active member. In one of his letters to the Association, he mentioned that in 1964, he participated, along with Bernard Boivin, Lionel Cinq-Mars, and Richard Cayouette, in the founding congress of the Association. In 1965, Dr. Paul Gorham, then the President of the Association, asked him if he could translate the bylaws and status in French, despite all the legal terms. In 1976, during the annual meeting, he organized a field trip to Black-Lake serpentine, Quebec. All his life, he held great memories of the Association where he was honoured in 2004 with the Mary E. Elliott Award. The contribution and influence of taxonomists like Mr. Legault have marked the field of botany and provides a reason for celebration of the success of this research field.

Liette Vasseur
Jacques Cayouette.
February 2011

Remembering John K. Morton (1928 - 2011)



John K. Morton

John Morton passed away peacefully at home on Sunday, 9th January, 2011. He was the tenth president of the Association in 1974 and always a great friend to the CBA. He edited the proceedings of 1973 symposium “Man's impact on the Canadian flora” which is one of our 4 special publications. More importantly he was editor of the CBA Bulletin from 1971 until 1979. In 1978, he became the first recipient of the Association’s Mary E. Elliott Award, recognizing outstanding service to CBA (see Bulletin (11(4): 61-62) for details). He organized CBA workshops and symposia, was an active member of the CBA Systematics and Phytogeography section, active on various CBA committees, for example promoting protection of rare plants before we had a Species at Risk Act, and promoting a national botanic gardens system for Canada.

John grew up in Yorkshire, England. He received his B.Sc.(1949) & Ph.D.(1953) and D.Sc. (1987) from the King's College in Durham, now the University of Newcastle. Few Canadian botanists realize that he spent a relatively long time in West Africa, first as Lecturer (1951-58) and then as Senior Lecturer (1958-61) in the Botany Dept. at the University of Ghana. During 1961-63 he was Lecturer in Birkbeck College, University of London, UK. He was in the Botany Dept. at University of Sierra Leone as Professor and Head of Botany from 1963-1967.

John arrived in Canada in 1968 as a Professor in the Department of Biology at the University of Waterloo, Ontario, a position that he held until his retirement in 1994. He served as Chairman of Biology from 1974 to1980. John supervised 11 graduate students including Ratna Kumari Bobba, Luc Brouillet, Chendanda Chengappa (C.C.) Chinnappa, Benjamin Olukunle Babatunde Fagbemi, Lachman Singh Gill, Edward Huntington Hogg, Linda Joan Kershaw, Mentor Ralph Melville, Marie-Claude Ghislaine Trudel, Reginald Edemayibo Ugborogho, and Barry G. Warner. Luc and C.C. both later played a significant role in CBA.

John had two main research interests. Firstly in plant taxonomy it was the family Caryophyllaceae that he studied extensively, and particularly the genera *Cerastium, Stellaria, Silene*. His extensive work in these large and complex groups provided a basis for his treatments in Flora of North America (and is summarized there, - vol. 5 published in 2005). John also served the Flora of North America project as a regional editor.

As a consequence of his remarkably broad knowledge of flora, John actually published on many different groups of plants, notably while he was in Africa. However, his major early impact may have centered around his work on chromosome numbers and understanding of polyploidy (“The incidence of polyploidy in the tropical flora” – Recent Advances in Botany 2: 900-903. 1961). Use of chromosome numbers in taxonomic work had become a major focus at the time.

John was also particularly interested in mints (Lamiaceae), and the *Solidago canadensis* group (Asteraceae). His seminal work on the latter with Melville (Can. J. Bot. 60: 976-997. 1982) was a significant contribution to the vast and innovative research on classification of Asteraceae at Waterloo led by John C. Semple with his associates J. G. Chmielewski, G. Ringius, L. Brouillet and others.

Another of his important contributions was the four volumes published with the late Reginald J. Adams in the University of Waterloo Biology Series - "An atlas of pollen of the trees and shrubs of eastern Canada and the adjacent United States"(1972, 1974, 1976, 1979).

John's other major interest was in floristics and phytogeography. He did extensive floristic work in NW Africa and this work continued long after his move to Canada. However, he is best known to Canadian botanists for his works concerning Ontario published with Joan Venn. The major contributions in this area included: “A Checklist of the Flora of Ontario. Vascular Plants" published in 1990 in the University of Waterloo Biology series (No. 34); “The Flora of the Tobermory Islands" published in the University of Waterloo Biology series in 1987 (No.31); “The flora of Manitoulin Island and adjacent islands of Lake Huron, Georgian Bay and the North Channel” first published in 1977 in the University of Waterloo Biology series (No. 15), 2nd edition published in 1987 (No. 28), and third edition published in 2000 (No. 40). It may be of interest that for his studies of island floras, John designed a special boat with the help of his son David. It had a broad bottom that resembled boats used in New Zealand. It could enter shallow rocky water and still had substantial storage capacity for equipment and people. . For a period of a few decades, John was one of the experts on the flora of Ontario. During this period he developed a strong foundation that others built on leading to the authoritative information that we now have on the provincial flora.

Over the period of his career as a botanist, it is estimated that John produced 140 publications, most of these in refereed journals and including several books. Considering his work with CBA, as a teacher and as a conservationist,

this is an impressive level of productivity. John's colleagues are planning to complete several articles that reached an advanced stage before his death.

John's personal herbarium (JKM) numbering perhaps 15,000 sheets was kept separate from the general collection at WAT although some of his specimens were duplicated there as well as at CAN, DAO and TRT and many of these specimens are vouchers for his published works. It is intended that his African collections will go to Missouri (a designated location for African material in North America) and the rest of his collections are intended to go to TRT at the Royal Ontario Museum.
John had actually wanted to be an entomologist when a young student, and he was able to realize this dream in his retirement. His project was a survey of the moths of Manitoulin Island. He donated 10,000 specimens to the National Collection (CNC) in Ottawa and his specimens, even the micromoths, were "superbly mounted in the British tradition" (J.F. Landry pers. comm.). John probably had 16,000 – 18,000 of roughly 20,000 species occurring on Manitoulin Island (D. Lafontaine, pers. comm.). Although he did not quite finish the project by distributing a list of the species, he did complete a database. He also provided valuable material for ongoing research. Some of John's moth specimens are also in the British Museum.

Among his major contributions to conservation was his work with Kershaw, including her thesis and various works that arose from it including "a list of rare and potentially endangered species in the Canadian flora" that appeared in the CBA Bulletin (9: 26-30.) in 1976. Interestingly John wrote an article about "preservation of endangered species by transplantation" in the Bulletin before it became a vexing issue for the conservation committee (15: 32. 1982). He supplied a good example of the problem. (See also his work on the "Man's impact …" symposium outlined above). John was always ready to oppose loss of rare plant habitat and to provide information. Later in his retirement he served on recovery teams for threatened species including Pitcher's Thistle, Lakeside Daisy, Hill's Thistle, and Dwarf Lake Iris. He was also a valued member of the Dune Grasslands and Alvar Recovery Teams. Among numerous other committees that he served on that were involved with conservation work was the Carolinian Canada Committee and various Nature Conservancy Committees.

John was an outstanding plant taxonomist and phytogeographer, a respected teacher and administrator, a devoted entomologist, as well as a dedicated conservationist, an advocate for botanical science, and a friend of CBA. John did it all and he did it with passion.

Joan Venn and Paul Catling

Dr. Sam Peter Vander Kloet

On the evening of January 21, 2011, Sam Vander Kloet passed away suddenly while out for an evening walk. This was indeed a tremendous shock to his family, friends and colleagues.

Born on February 18th, 1942 in Hiedenskip, Friesland (the Netherlands), Sam moved with his family to Canada in 1947.



Dr. Sam Peter Vander Kloet
Photo: M. Priesnitz

They eventually bought a farm and settled near Petrolia, Ontario. Not satisfied with working on the family farm, Sam's curiosity and love of reading led him to take courses from Queens University in Kingston, Ontario. He eventually received a B.A. in Classical Studies in 1968. His study focus subsequently changed, however, upon taking botany courses from Dr. Roland Beschel. Sam went on to complete his Ph.D. in Botany in 1972 initially under the supervision of Dr. Beschel and subsequently under the guidance of Dr. John McNeill upon Beschel's untimely death.

Sam's thesis was entitled 'The North American Blueberries Revisited: A Taxonomic Study of *Vaccinium* § *Cyanococcus* Gray. Blueberries became a lifelong passion for Sam. He ultimately went on to become one of the world's foremost authorities on this group of plants.

Sam began his teaching career in the Biology Department of Acadia University in Wolfville, Nova Scotia in 1972. In addition to his professorial duties, he was also Curator of the E.C. Smith Herbarium and took on the added responsibility and challenge of keeping the small dilapidated greenhouse in back of Patterson Hall (then home of the Biology department) in working order. This was where he kept his expanding research collection of living blueberry plants gathered during numerous forays around the world, and where he conducted his germination and pollination experiments. Problems with the heating system or water supply or even an occasional broken pane of glass, would necessitate an immediately visit or call to the University President. He believed in going right to the top to ensure the problem was remedied as soon as possible, and nothing happened to any of his beloved blueberries.

During his tenure at Acadia University, Sam taught a variety of botany courses, but amongst students and colleagues he was best known for Biol. 3293 (Flora of Nova Scotia). Sam strongly believed in the educational value of getting students into the field, and thus, the first six weeks of flora class entailed multiple field trips. Sam's field trips were not only educational but often memorable. There exists a lighthearted exposé about Sam which was written and illustrated by students in the Acadia University Biology Department many years ago. It is entitled "The Illustrated Art and Science of Vanderkloeting". It begins by defining the term "vanderkloeting" as the practice of overcoming an

impenetrable natural obstacle course at an unbearable speed for the purpose of observing living plants before they get away. It further defines other vanderisms such as vanderspeed, vanderboots and vanderberry.

Sam was a dedicated researcher and prolific writer of scientific papers and articles, including a monograph on the genus *Vaccinium* in North America, published in 1988 by the Research Branch of Agriculture Canada. This project was the culmination of seventeen years of research with the goal of providing a classification of blueberries that was, as Sam wrote, both "biological sound and taxonomically robust". Judging from the ensuing demand for this publication, he successfully achieved his goal.

Sam collaborated with many fellow researchers over the years as is evidenced by his numerous joint publications. He was responsible for describing six species and three sections within the genus *Vaccinium*.
During his career he participated in the Acadia Arctic Biological Expeditions (NORPLOY) (1973, 1974), the Herbert Expedition to Mt. Kumbak, Papua New Guinea (1975), an expedition to Mt. Annapurna Region of Nepal (1992), and the Hiep Expedition to northernmost Vietnam (1997).
In 1998, he was elected a Fellow of the Linnean Society, London, UK.

Although Sam officially retired from the Biology Department of Acadia University on June 30th, 2001, his research on blueberries never stopped or even slowed down. He was made an Honorary Research Associate in the Biology Department and for a number of years acted as University Botanist making contributions to both the E.C. Smith herbarium and the recently established Harriet Irving Botanical Gardens. He continued to maintain his now sizable collection of living blueberry plants from around the world in the new greenhouse facility at the K.C. Irving Environmental Science Centre. He also was an integral part of an annual biology field course held at the Las Cuevas Research Station in Belize. He continued to travel extensively conducting field work and visiting herbaria.

Sam was a respected scholar and a beloved mentor for many students. Amongst many other things, he will be remembered for his larger than life personality, his successful avoidance of using a computer, his laugh which was frequently heard emanating from the Acadia Biology Department coffee room, and his amazing knowledge of Latin. He took great delight in enlightening his colleagues during coffee room discussions with respect to this language. Sam's favorite mode of transportation was the bicycle, and he could be seen daily in all seasons travelling Hwy. 1 between Wolfville and Kentville or in outlying communities. In the warmer months, he would use this road time to keep an eye out for interesting plants.

Sam leaves his wife Carol, son Peter, daughter, Julie, sisters Anne and Teresa and brothers Albert and John. A celebration of his life will take place in the Harriet Irving Botanical Gardens at Acadia amongst the flowering blueberries this coming spring (date tentatively set for June 3rd 2011). Donations in memory of Sam may be made to the Sam Vander Kloet Memorial Fund at Acadia University (https://central.acadiau.ca/development/donation).

Ruth E. Newell

Graduate Student Profile

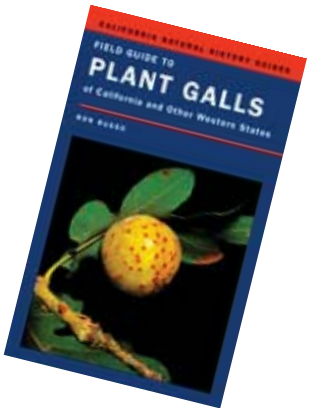
Julia Nowak



Julia Nowak

I am in my third year of my Ph.D. with Dr. Quentin Cronk, at the University of British Columbia. My interest in botany started with anatomy and morphology, but it is clear that it is important to also look at the genetic mechanisms behind the amazing differences in form and structure of leaves that we see today. I have been very fortunate to be mentored by great botanists like Dr. Nancy Dengler, Dr. Usher Posluszny, Dr. Barry Tomlinson, Dr. Quentin Cronk, and others that I have met through my graduate career thus far. They've had a profound influence on the path that I have taken during my graduate work, for which I am very grateful!
My primary interest is in leaf development and evolution. This field in botany is so interesting that it is very difficult to choose a single topic which to study. Rather than focusing on a single project, I have tried to learn as much as possible about leaves and their development by studying many different things. The projects on which I am currently working encompass a single theme of dorsiventral polarity in leaves and include: determination of the cause of the abaxial greening phenotype in poplar (and Eucalyptus), phylogenetic analysis of the leaf polarity gene families (YABBY, KANADI, and HD-ZIPIII), anatomical and molecular analyses of an adaxialized mutant of canola, anatomy of the Krishna fig, phylogenetic analysis of North American poplar species, and anatomy and phylogenetic placement of *Subularia aquatica* (Brassicaceae).
Editor's Note: Julia is also one of two student reps on the CBA board. We are interested in receiving more grad student profiles!

Book Review



The Weird World of Plant Galls

A Review of *Field Guide to Plant Galls of California and Other Western States*,

by Ronald Russo:

University of California Press

$60.00 USD hardcover; $24.95 USD paperback

by Jennifer Rempel

Did you know that the 1945 treaty between the Allied Forces and Japan that formally ended World War II was signed with gall ink? Or that first-century Roman naturalist Pliny noted that certain plant gall products were thought to prevent hair loss? These are just a few of the interesting tidbits to be discovered in Ron Russo's *Field Guide to the Plant Galls of California and Other Western States*, a detailed look at the strange world of plant galls.

"Gall" is the name given to a wide variety of tumour-like growths and deformative swellings on plants caused by bacteria, fungi, and insects, and this book is both a field guide and a concise introduction to these phenomena for the non-specialist. The book is divided into three main sections, the first devoted to a general discussion of gall formation and the history of galls within the fossil record. Russo also discusses herein the complex symbiotic relationships between plants, gall-inducers, and gall-consumers, as well as the various uses to which humans have put galls over the centuries.

The second section of the *Field Guide* takes a closer look at gall-inducers, those bacteria, fungi and insects that create galls. Particular attention is paid in this section to the cynipid wasp – a tiny, unassuming insect that is the major gall inducer in the Western states, as well as the "architect" of the most bizarre and beautiful varieties of plant gall.

The major section of the book is dedicated to the identification guide proper. The "Gall Accounts" are arranged according to host species, and each type of gall and its inducer (where known) is described in detail, usually accompanied by a line drawing or colour photograph. Many unique and wonderful varieties of gall are described here, from the miniscule pumpkin-shaped gall of the Pumpkin Gall Wasp (*Drycocosmus minusculus*) to the bright-pink, starburst shaped gall of the Spined Turban Gall Wasp (*Antron douglasii*). Other fantastic galls include the uncannily tooth-shaped gall of the Willow Tooth Gall Midge (*Iteomyia*), and the swollen, misshapen needle galls created when the Douglas-Fir Needle Midge (*Contarinia pseudotsugae*) injects an egg into the healthy needle.

These are just a few examples of the fascinating insights into this strange realm to be gleaned from the *Field Guide to the Plant Galls of California and Other Western States*, a delightful natural history guide that is sure to appeal to professional and amateur botanist alike. The book also includes a helpful glossary of terms, as well as a comprehensive bibliography and index.



Eagle Hill seminars, courses, and workshops on Lichens and Bryophytes Summer 2011

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FIFTY YEARS AGO

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As we approach the half-century anniversary of the founding of our Association (2014), those of us in the cohort of 'living relics' can reminisce about Canadian botanical events from those times. Here is one that might be of interest.

Exactly fifty years ago events in the European communist world were stirring in variably interesting and important ways. Noisy rejoicing broke out in the Soviet Union in 1961 when Yuri Gagarin became the first human into space. Gloomier thoughts accompanied the building of the Berlin Wall, a reminder from the communist world that the 'de-stalinisation' process begun by Khrushchev had its limitations. Khrushchev was attempting to "…stabilize relations with the West", and to "…gingerly establish some controlled reform" (Judt, 2005, p.310). But one positive outcome of these relatively eased relations between the USSR and the West, was the establishment in 1959 of an agreement between the Soviet Academy of Science and the National Research Council of Canada (NRC), to establish exchange visits of scientists. In 1961, two plant ecologists, then based at universities in Western Canada, were among the first to take advantage of that opportunity. Their experiences cast an interesting light on the state of Soviet botany in those Cold War days, as well as providing some commentary on the life of scientists and people in general.

The first exchange scientist was the late Professor Robert Coupland, then Head of the Department of Plant Ecology, University of Saskatchewan. He was a founding member of the CBA/ABC, and the first chair of the Ecology Section. He was an international authority on grassland ecology. During his exchange visit he travelled in the steppe regions of what is today southern Russia and adjacent Ukraine, and visited research stations devoted primarily to agricultural endeavours, geared strictly to the five-year plans that Stalin had introduced in the 1930's. On one hand he was fulsome in his praise for the warm welcome and generous hospitality of his hosts, but on the other was thoughtfully sceptical about some of the underlying science. In particular, the core of plant genetics and plant breeding had been corrupted by the contrived and falsified claims and findings of T. D. Lysenko, a favourite of Stalin. Coupland noted some of these disastrous trends that set the sciences of plant genetics and evolution in the USSR back an entire generation. Plant geneticists who protested against the erroneous theory and spurious results of Lysenko and his colleagues were sent to prisons, often in remote Siberia, or suffered worse fates (Frazier, 2010). One of the most tragic results of Lysenko's evil influence was his role in the arrest in 1940 of Nikolai Vavilov, who died in prison in 1943. Vavilov was a brilliant scientist, acknowledged internationally as the pioneer in elucidating the origin and genetics of cereal crops, and in establishing the basis for understanding of the origins of cultivated plants (Vavilov, 1926, 1931, and many others, and posthumously his classic 1951 book). Vavilov's original large collection of seeds survived the massive destruction of much of Leningrad during World War II, and today it forms part of the important collection of botanical genetic material in the appropriately named Vavilov Institute in St Petersburg, formerly Leningrad.

Bob Coupland and I met in Moscow on the final day of his visit and the first of mine, and he gave me excellent advice. For example, it was important to realise that as a continuing legacy of the Stalin era, western visitors were considered officially to be potential spies, so our hotel rooms were bugged, our daily and especially weekend movements were monitored, although it was obvious to most of our scientific hosts and colleagues that our interests and activities were innocent!

I had been met at the airport and asked if there was anyone in particular whom I wished to meet. To my pleasant surprise, my optimistic suggestion was realised, and I was taken to meet Academician V.N.Sukachev in the Forestry Laboratory of the Academy of Sciences, on Lenin Prospect. It was a great privilege to spend time with the most senior (then aged 81) and eminent Russian plant ecologist, and it was the first real test of my competence in Russian. I explained my interests and later learned that the success of my time in Moscow in meeting several leading figures in arctic-boreal ecology and palaeoecology, was due to the unobtrusive but effective influence of Sukachev, a past-president of the Academy. The weeks that followed, based at the Komarov Botanical Institute in Leningrad (St Petersburg) were very different, largely because the scientist in charge of my visit, Boris Tikhomirov, was an active Party member, ambitious to be elected to the Academy, and deeply apprehensive that I might be a source of political embarrassment. Prior to my visit, NRC had asked me to suggest various locations that I wished to visit, so I consulted the texts and detailed vegetation maps of the USSR (Lavrenko and Sochava, 1954, 1956) and proposed such northern localities as Vorkuta, Norilsk, Yakutsk and even remote Magadan, in total ignorance at the time that most were sites of prison camps or military (rocket) installations!

After long, friendly but pointed discussions with Tikhomirov, it became clear that visits to the north, the main aim of my visit, were not going to happen, and later private strictly 'unofficial' conversations with non-Party colleagues confirmed that letting a plant ecologist with knowledge of the language travel to these areas where the Stalin five-year plans to expand agriculture into the arctic had failed totally, and where massive gulag prison camps were located (Frazier, 2010), would be out of the question.

It transpired that officially, during my time in Leningrad, I was confined to areas within a radius of 150 km, though a few

excursions into boreal forest and mire landscapes were arranged. Otherwise useful time was spent in libraries gaining access to literature on past and present northern flora and vegetation, not readily available in the West in those days, and in visiting the laboratories of colleagues, many of whom became firm friends.

The over-riding impression of that period in USSR history was the profound impact of politics on the practice of Botany, in research, teaching and on scientific careers. Some influences were positive. For example, part of the first Soviet five-year plan in 1920 gave new impetus to the compilation of precise inventories of the nature and extent of the plant resources of the entire Union. In 1927 the first sheet of the 1:1,050,000 geobotanical map of the European part of USSR was published. In 1934 the first volume of the monumental Flora USSR appeared – the final, 30th volume appeared in 1960.

A less positive effect, in the opinion of most of the young botanists I met, was that while candidates for the equivalent of a Ph.D. in the West were required to submit an acceptable research thesis and to pass a foreign language exam, an essential third requirement was successful passing of an oral examination on Marxist-Leninist philosophy, based on a reading of 30 to 40 texts. The exam was conducted by two Professors of Philosophy from the Ministry of Higher Education and a local representative of the Institute, always a Party member. Many young aspirants had been thoroughly indoctrinated in school and university so this hurdle was not serious, though significantly time-consuming, but others found it too formidable and any career advancement terminated at that point.

My inability to visit northern areas for primarily political reasons was the only unsatisfactory part of the exchange, but a year or two later "the wheel is come full circle"! Boris Tikhomirov came to Canada as part of the NRC-Soviet Academy exchange programme. NRC asked me to look after him while in Winnipeg, and I agreed enthusiastically, proposing a field trip to Churchill to examine subarctic flora and vegetation. To my astonishment I was told: "No, no Ritchie, after the way they treated you that is out of the question, and besides there is a rocket base up there". The rocket base in question was designed for the investigation of the physics of the aurora borealis!! I made plans to take him north privately, but when he arrived he was accompanied by a Canadian security agent who made it plain to me that Tikhomirov was not going anywhere northward!! At a final party before Boris left he and I, sharing a bottle of good vodka, agreed that some aspects of life are little different regardless of geography!

Of course in those years neither Bob Coupland nor I, and probably not Tikhomirov, was aware of the acts of massive genocide that occurred in eastern Europe and adjacent USSR (Snyder, 2010).

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The Geobotanical Laboratory of the Komarov Botanical Institute, St Petersburg 1961. Appearaces can be deceptive!



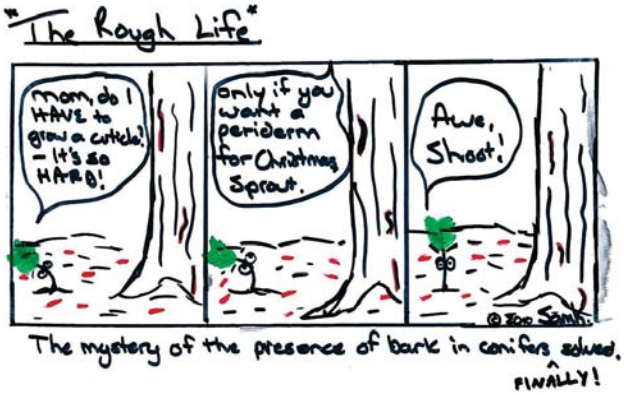
A closely supervised field trip in the boreal forest, 50km north of St Petersburg. 1961

2012 Annual Meeting: Joint Meeting with BSA in Columbus, Ohio. July 7th- July 11th 2012

“The Pun’kin Patch”

a new addition to the our Bulletin…featuring ten botany puns from our students!

We welcome botany puns from undergraduate and graduate students! Please send them along to Jane Young, CBA (email: youngj@unbc.ca).



Samantha Krause, UNBC

Q. What do you call a hormone that's always getting into brawls?
A. A phyto-hormone!
… James Jones, UNB



Q. What did the well- watered plant say to the withered plant?
A. What's the stomata with you?
…Kallie Smith & Chanel Lewis, UNBC

Q. What do you call it when your crazy relatives come over to visit?
A. Psycho-kin-in
… Simran Lehal and Crystal-Lynn Lloyd, UNBC

Q What happens to trees when the weather gets colder?
A. They have to make an abscission: stay or pack up their trunk and leaf.
… Angela Grob & Heather Heim, UNBC

I know you may be feeling down that we have our midterm next week, but I'm rooting for you!
… Cassandra Whelan, UNBC

Q. Why are people always sad around ferns?
A. They make people feel sori.
… Michael Horianopoulos, UNBC

Q. What did the cork say to the epidermis?
A. Slough off.
… Meghan Allan, UNBC

Q. Why could the tulip not go out?
A. Because her perennials would not allow it.
… Elaine McAloney & Rachel Doherty, UNBC

Q. Why was the short-day plant angry with its botanist?
A. The botanist kept irradiating him.
… Natasha Jawanda & Erik Pawluk, UNBC

Dr. Jane P. Young

NATIVE PLANT EMBLEMS OF CANADA
15. Maple

E. Small and P.M. Catling, National Environmental Program, Biodiversity Section, Agriculture and Agri-Food Canada, Saunders Bldg., Central Experimental Farm, Ottawa ON K1A 0C6



Fig. 1. The national flag of Canada, adopted in 1965. This features an 11-pointed generalized maple leaf. February 15, the official anniversary, is celebrated as National Flag of Canada Day.

NATIONAL EMBLEM: MAPLE

Although no particular species is honoured as the official emblem of Canada, as detailed below, tradition and legislation make it clear that the native species are the basis of the emblem. The “maple leaf” and “the maple”, both in a generic sense, constitute the most important Canadian icons. Various artistic renditions of the maple leaf are employed on the Canadian flag and other official symbols of Canada, and while these are not consistently identifiable as a particular native Canadian species, they tend to be closest to sugar maple and red maple. The five-lobed stylized leaf on the Canadian flag is most similar to the sugar maple, which is the national tree of Canada. The nation does not have an “official flower” or “official floral emblem”, although sometimes the maple is claimed to have this status.

SYMBOLISM

As the arboreal emblem of Canada, the sugar maple tree reflects the extraordinary forest resources of the nation, which have played important roles in the social and economic development of the country. Many forestry companies display the maple tree as a symbol of Canada's efforts to promote sustainable forest management. However, the maple leaf considerably surpasses the maple tree in symbolic importance. The maple leaf is not only Canada's national emblem, it has become the nation's leading symbol, adorning the Canadian flag and innumerable other governmental artefacts and commercial products. The maple leaf is Canada's most recognizable and respected icon, both within the country and internationally. Maple leaf pins are proudly displayed by Canadians while travelling abroad, and they are a reminder of Canadian values, including respect for the wild, natural environment and the protection of its biota.



Fig. 2. Important Canadian heraldic symbols featuring the maple leaf. Top: The Arms of Canada represents the authority of government agencies and officials, including the Prime Minster, Cabinet, Speaker of the House of Commons, Parliament, and most courts, including the Supreme Court. It is present on all Canadian paper currency, and on the cover of Canadian passports. Bottom: The Royal Standard of Canada is the Queen's personal Canadian flag, deployed only when the monarch is in Canada or represents the country at an official event. As the monarch personifies the Canadian state, her flag takes precedence over all other Canadian flags, including the national flag.



Fig. 3. “The maple in four seasons”, a stamp set issued in 1971. Stamp images supplied by and reproduced with the permission of ©Canada Post Corporation.



Fig. 4. Canada Day maple tree stamp set issued in 1994. The stamps are arrayed in the following positions:

A. macrophyllum	*A. saccharum*	*A. saccharinum*	*A. pensylvanicum*
A. platanoides	*A. negundo*	*A. nigrum*	*A. glabrum var. douglasii*
A. spicatum	*A. circinatum*	*A. campestre*	*A. rubrum*

Acer nigrum is considered here to be *A. saccharum* subsp. *nigrum*. *Acer platanoides* (Norway maple) and *A. campestre* (hedge maple) are native to Eurasia, but grown in Canada as ornamentals. They are not native to Canada, and were inappropriately honoured by being included in this stamp set. *Acer platanoides* is a beautiful tree, but it has escaped from cultivation and become invasive, crowding out some native Canadian maples. (Ornamental forms of Norway maple, such as the extremely popular 'Crimson King', are not considered to be invasive.) Stamp images supplied by and reproduced with the permission of ©Canada Post Corporation.



Fig. 5. Several of the many Canadian maple leaf stamps. Bottom left issued 1964, top left issued 1966; right: sugar maple stamp issued in 2003. Stamp images supplied by and reproduced with the permission of ©Canada Post Corporation.

Names of native Canadian maple species

Latin names	English names	French names
A. saccharum Marsh.	Sugar maple (bird's-eye maple, Caddo maple (for the cultivar Caddo), curly maple, hard maple, head maple, rock maple, sugartree, sweet maple)	Érable à sucre (érable du Canada, érable dur, érable franc, érable franche, érable moiré, érable ondé, érable piqué, érable sucrier)
A. saccharum subsp. *nigrum* (Michx. f.) Desmarais (*A. nigrum* Michx. f.)	Black maple (black sugar maple)	Érable noir
A. macrophyllum Pursh	Bigleaf maple (British Columbia maple, broadleaf maple, broadleaved maple, common maple, Oregon maple)	Érable à grandes feuilles (érable grandifolié, érable de l'Oregon)
A. rubrum L.	Red maple (curled maple, scarlet maple, soft maple, scarlet maple, swamp maple, water maple)	Érable rouge (érable tendre, plaine, plaine rouge, plane rouge)
A. saccharinum L.	Silver maple (river maple, soft maple, white maple)	Érable argenté (érable à fruits cotonneux, érable blanc, plaine blanche, plaine de France, plane blanche)
A. negundo L.	Manitoba maple (ashleaf maple, ash-leaved maple, box elder)	Érable négundo (érable à feuille(s) de frêne, (érable à feuilles composées, érable à Giguère, érable du Manitoba, érable négondo, frêne à fruits d'érable, plaine à Giguère, plane négundo)
A. spicatum Lam.	Mountain maple (dwarf maple, low-moose maple, whiterod, white maple, whitewood (in New Brunswick)	Érable à épis (bâtarde, érable bâtard, fouéreux, plaine, plaine bâtarde, plaine bleue, plâne bâtard)
A. pensylvanicum L.	Striped maple (goosefoot maple, moose maple, moosewood, moosewood maple, whistle wood)	Érable de Pennsylvanie (bois barré, bois d'orignal, bois noir, érable jaspé (France), érable strié, érable barré)
A. glabrum Torr. var. *douglasii* (Hook.) Dipp.	Douglas maple (dwarf maple, Rocky Mountain maple, western mountain maple)	Érable circiné, (érable glabre (France), érable nain)
A. circinatum Pursh	Vine maple	Érable circiné (érable à feuilles rondes)



Fig. 6. Some of the many Canadian maple image coins. The four coloured coins at left were issued from 2001 to 2004 to illustrate the four seasons. They were nominally $5.00 coins, but sold uncirculated for $34.95 each. The coin at upper right was part of a set of six bimetallic gold coins issued from 1979 to 2004 that sold as a set for $2,500.00. The coin at lower right is a one-ounce gold coin, nominally $50.00, issued from 1979 to 2005, with a purchase price ranging from less than $100.00 to almost $2,000.00 depending on year. Coin images supplied by and reproduced with the permission of ©The Canadian Mint.

DERIVATION OF NAMES

The genus name *Acer* is derived from *acer*, the classical Latin word for maple. The Latin word means hard, referring to the wood. The name “maple” apparently originated in England, based on the Old English *mapul*, which may be related to *möpurr*, the Old Norse name for the maple. The names “flowering maple” and “parlour maple” refer to species of the genus *Abutilon*, which is quite unrelated to *Acer*.

HISTORY

a. Canada

Well before the arrival of European settlers, Canada's aboriginal peoples used maples for various purposes, particularly for production of maple syrup. The maple leaf began to serve as a Canadian symbol as early as 1700. In 1834 the Société Saint-Jean Baptiste reportedly adopted the maple leaf as its emblem (other accounts state that the maple leaf was simply given consideration as the possible emblem of Canada during the 1834 founding of the organization). In 1836, *Le Canadien*, a newspaper published in Lower Canada, characterized the maple leaf as a suitable emblem for Canada. In 1848 the Toronto literary annual *The Maple Leaf* called it the chosen emblem of Canada. The maple leaf was incorporated into the badge of the Queen's Own rifles of Canada in 1860. That same year the maple leaf was used extensively in emblematic decorations for the visit of the Prince of Wales. In 1867, Toronto schoolmaster and poet Alexander Muir wrote the Maple Leaf Forever as Canada's confederation song, and it was regarded as Canada's national song for several decades. In 1868 both Ontario and Quebec included the maple leaf in their new coats of arms. Between 1876 and 1901, all Canadian coins displayed the maple leaf, which continues to appear on Canadian currency. During the First World War the badges of many Canadian regiments included the maple leaf. Since 1921, the Royal Arms of Canada have included three maple leaves. With the start of World War II, many Canadian troops displayed the maple leaf on regimental badges and Canadian military equipment. In 1965 the red and white maple leaf flag was inaugurated as the National Flag of Canada. In 1996, the maple leaf was formally recognized as Canada's national emblem.

b. Foreign

The sugar maple is the state tree of New York (declared in 1956), Vermont (in 1949), West Virginia (in 1949), and Wisconsin (in 1949). The red maple has been the state tree of Rhode Island since 1964. Maple was declared to be the “state flavour” of Vermont in 1993.

CLASSIFICATION

Family: Soapberry family (Sapindaceae; formerly placed in the maple family, Aceraceae).

The genus *Acer* has about 125 species, mostly deciduous trees and some shrubs, the majority native to the North Temperate Zone, particularly to eastern Asia, with about a dozen species indigenous to North America and several in Central America and North Africa. Nine species are native to Canada (ten if *A. nigrum* is considered to be separate from *A. saccharum*).

APPEARANCE

Maple leaves are arranged in opposite pairs on the stems, and are usually simple and palmately lobed, although sometimes they are compound (i.e., with several leaflets). Individual trees may bear unisexual flowers, or hermaphrodite flowers, or a mixture of both. Some species produce nectar and are insect pollinated, others are wind pollinated, and still others are both insect and wind pollinated. The distinctive fruit consists of two attached seeds, each encased by a protective fruit wall which expands into a wing on both sides of the pair of seeds. The wings rotate like the blades of a helicopter, parachuting the seeds some distance away from the parent tree.

Proclamation Designating the Maple Tree as National Arboreal Emblem of Canada (Officially proclaimed April 25, 1996; published in the Canada Gazette 15 May 1996)
Whereas the maple leaf is recognized nationally and internationally as representing Canada and Canadians, as a symbol of our natural heritage and national identity;
And Whereas the maple tree has played a meaningful role in the historical development of Canada, first as discovered and utilized by the First Nations, later contributing to the lifestyles and economy of the European settlers, and more recently for its commercial, environmental and aesthetic importance to all Canadians;
And Whereas the maple tree is an important and environmentally sustainable source of economic activity;
And Whereas the maple tree (genus *Acer*) has ten species native to Canada;
Now Know You that We, by and with the advice of Our Privy Council for Canada, do by this Our Proclamation designate the maple tree (genus *Acer*) as national arboreal emblem of Canada.

Identification Key to the Native and Commonly Cultivated Foreign Maples of Canada

Note: Several maple species are widely grown as ornamental trees in lawns and parks, and along streets. The following key includes the most popular foreign species of *Acer* grown in Canada (indicated by * in the key). This key is based mostly on J.L. Farrar's *Trees in Canada*.

1. Leaves pinnately compound (with 3-9 stalked, coarsely toothed or lobed leaflets) .....Manitoba maple (*A. negundo*)
1. Leaves simple, lobed, or rarely with 3 leaflets lacking stalks 2

2. Leaves typically 7-9 lobed, outline of blade broadly oval to circular 3
2. Leaves typically 3-7 lobed, outline of blade square or rectangular.....4

3. Leaf lobes triangular (about as long as wide), widest at their base; margins with short-pointed single or double teeth. Seed wings forming angle of about 180º .....Vine maple (*A. circinatum*)
3. Leaf lobes elongated (notably longer than wide), widest about their middle, leaf margins with long-pointed double teeth. Seed wings forming an angle of about 100º .....Japanese maple (*A. palmatum*)*

4. Central leaf lobe narrowing gradually from base to tip.....5
4. Central leaf lobe with sides parallel or diverging above the base.....7

5. Leaf blades longer than wide, margins coarsely and irregularly single-toothed; seeds wings forming and angle of less than 90º .....Mountain maple (*A. spicatum*)
5. Leaf blades as wide as or wider than their length, margins double-toothed 6

6. Leaves unlobed or shallowly 3-lobed; marginal teeth fine and regular. Bark conspicuously striped. Seed wings forming an angle of 90º .....Striped maple (*A. pensylvanicum*)
6. Leaves 3 or 5-lobed (lobing sometimes indistinct or 3 unstalked leaflets present); marginal teeth coarse and irregular. Bark not striped. Seed wings forming an angle of less than 45º .....Douglas maple (*A. glabrum* var. *douglasii*)

7. Leaves more than 15 cm (6 inches) wide, central and lateral lobes often overlapping. Seeds hairy .....Bigleaf maple (*A. macrophyllum*)
7. Leaves less than 15 cm (6 inches) wide, central and lateral lobes rarely overlapping. Seeds hairless. 8

8. Leaves with numerous double teeth on the margin. Fruit maturing and falling before midsummer.....9
8. Leaves with coarse, single teeth on the margin. Fruit maturing and falling in autumn. 10

9. Leaves deeply notched between central and lateral lobes, central lobe with sides diverging above the base. Seeds ribbed, often only one developed. Seed wings more than 4 cm (1.6 inch) long, forming an angle of 90º .....Silver maple (*A. saccharinum*)
9. Leaves shallowly notched between the central and lateral lobes, central lobe with sides parallel to the midrib. Seeds swollen, both seeds developing. Seed wings less than 2.6 cm (1 inch) long, forming an angle of 60º .....Red maple (*A. rubrum*)

10. Central lobe not less than twice the length of the lateral lobes .....Amur maple (*A. ginnala*)*
10. Central lobe about equal in length to the lateral lobes 11

11. Leaves thick wrinkled, lobes with numerous coarse teeth and white hair on each side of the main vein on the lower surface. Mature bark scaly, shedding. Seeds occasionally in groups of 3 .....Sycamore maple (*A. pseudoplatanus*)*
11. Leaves thin, smooth, lobes with a few irregular, wavy teeth, hairless or entirely covered with hair on the lower surface. Mature bark ridged, not shedding. Seeds always in pairs 12

12. Leaves 5-7 lobed, teeth and lobes bristle-tipped, leaf stalks exuding milky sap when cut. Flowers appearing with the leaves in the spring. Seeds flattened, seed wings 3.5-5 cm (1.4-2 inches) long, forming an angle of 180º .....Norway maple (*A. platanoides*)*
12. Leaves 3-5 lobed, teeth and lobes blunt-tipped, leaf stalks not exuding milky sap when cut. Flowers appearing before the leaves in the spring. Seeds plump, seed wing 3-3.6 cm (1.2-1.4 inches) long, almost parallel.....13

13. Leaves typically 5-lobed, not appearing wilted and droopy, pale green and hairless below, central lobe square, separated from lateral lobes by wide, round notches, brilliant orange or scarlet in autumn .....Sugar maple (*A. saccharum*)
13. Leaves typically 3-lobed, appearing wilted and droopy, yellowing-green and covered with dense, velvety brown hair below, central lobe slightly tapered, separated from the lateral lobes by shallow, open notches, yellow in autumn .....Black maple (*A. saccharum* subp. *nigrum*)

Sugar maple (*Acer saccharum*)

The sugar maple is probably the most important maple species in the world. It is one of the most common trees of eastern North America. There are several subspecies, best known of which is the widely distributed subsp. *saccharum*, which includes the majority of Canadian trees. The black maple (*A. saccharum* subsp. *nigrum*) is discussed below. When growing in a forest, the sugar maple develops a straight, branch-free trunk as high as 40 m (131 feet). Open-grown trees produce a rounded crown. The trunk may exceed 1.5 m (5 feet) in diameter at maturity. Sugar maples are widely planted as shade trees, valued for their spectacular yellow, gold, orange, and red autumn foliage.

Sugar maple is known of course for sugar maple products. Squirrels are fond of maple sap, and commonly lap it up from natural wounds on maple trees. The eastern grey squirrel (*Sciurus carolinensis*) is said to deliberately bite into maple trees to stimulate the flow of sap, upon which it can later feed. Legends relate how observing such squirrel behaviour led North American Native People to prepare maple syrup. Virtually all indigenous people within the range of sugar maple used the tree. Indeed it was often important to native people and colonists during the “hungry months” when food stocks were low, some mammals still hibernating, and fishing difficult due to melting ice. Spring runs of fish had not begun, nor had migratory birds returned, and the ground would be frozen for another several weeks so that tubers could not be dug. Native people collected sap in wooden (particularly birchbark) or pottery vessels in the early spring. Since metal buckets were not available prior to Columbus' discovery of the New World, present-day technology of lighting fires under containers of sap could not be used. The sap was concentrated by boiling, achieved by dropping hot rocks into the filled vessels that were available. Alternatively, the containers of sap were left until a layer of ice formed at the top; this (mostly sugar-free) ice was removed, and the process repeated until the sap was sufficiently concentrated. Maple syrup was the principal confection of the Eastern Woodlands Indians, who used the syrup to flavour and season vegetables, fruits, stews, cereals, and fish. A variety of beverages, including fermented drinks, were also prepared from sugar maple. By the 17th century, European colonists improved on the native techniques of collection, and boiled the sap to obtain sugar. Until cane sugar became available, about 1860 in New England, maple syrup was an important component of the colonists' limited culinary fare. During the maple syrup season, New Englanders used to drink collected sap as a spring tonic. North American colonists often apologized for serving maple sugar instead of the scarce manufactured brown sugar of the time, which was actually more costly and rather inferior. Today, the mantle of inferiority has passed to sugared, maple-flavored imitations of real maple syrup.

Sugar maple syrup is now generally considered to be a luxury item, since cane and beet sugar, and corn syrup are produced very much more cheaply. The quantity of sugar maple syrup is only commercially important in primarily northern or alpine areas, where alternate spring freezing and thawing produces an exceptionally high sap yield. Sugar maple production is a uniquely North American industry, with over 10 million L (188 000 American gallons) often produced annually. Canada accounts for three quarters of world production, with Quebec yielding three quarters of Canada's output. In the remainder of Canada the industry is located in eastern Ontario, Nova Scotia, and New Brunswick. In the United States, maple sugar syrup is produced commercially in 13 northern states from Maine to Minnesota. The leading states are Vermont, New York, Pennsylvania, Michigan, and Ohio. Sugar maple syrup production is a seasonal industry, conveniently occurring during a farm's slack season. Although a multi-million dollar industry, few producers rely on it as the chief source of income. Some operations have expanded to sugar bush attractions, with sleigh rides and breakfast pancakes with maple syrup. Harvesting syrup is labour-intensive, and in North America approximately 60 000 part-time workers are employed each year. There are more than 10 000 maple syrup producers in Canada. Preparing maple syrup is generally a task for professionals, although the syrup has been made in home kitchens, boiling sap down on the kitchen stove. A frequent result is that the huge volume of water vapour produced has condensed on walls, sometimes peeling wallpaper away.

Sugar concentration averages less than 3% sucrose in the sap (some trees have as much as 8% sugar content), so that 30-40 units of sap often must be boiled down to produce one unit of syrup. Production varies considerably from year to year, and the factors responsible for this are largely unknown. The running of sap in the spring is poorly understood. In the previous growing season, sugars formed in the leaves by photosynthesis and moved down to the trunk and roots, where they were converted into starch and stored in living ray cells of the wood. When the trunk warms up sufficiently in the spring, the starch is first converted into glucose sugar, then into invert sugar (a mixture of glucose and fructose), and finally into sucrose. Ideal temperatures for the sap to run are 7 ºC (45 ºF) in the daytime and -4 ºC (25 ºF) at night. Warm days and freezing nights create a pumping action. Cold nights induce a negative pressure within the tree, with moisture being absorbed through the roots. Warm days provide positive pressure, forcing the sap out of the tree. However, the actual physiological mechanisms causing the development of positive and negative pressure in maple trees are poorly appreciated. Only a small percentage of the sap of the tree is removed each year, and trees can be used repeatedly for a century or more. An excessive number of holes in the trees or extra-large holes may damage trees by encouraging decay.

The early runs of sap produce light-coloured, aromatic “fancy” grades of syrup, slightly less concentrated in sugar. However, sugar concentration remains more or less constant during the season. As the season progresses the syrup darkens, and eventually the maple taste becomes strong and almost unpleasant, so that the product is used mainly to flavour breakfast cereals and junk food. Although high in sugar content, maple syrup spoils at room temperature; once opened, containers should be stored in the refrigerator. Commercially, potassium sorbate and sodium citrate are widely used as preservatives. Maple sugar is prepared by concentrating the sucrose to the point that it will crystallize out of solution when the syrup cools; this occurs at -114 ºC (-173 ºF) at sea level. Maple cream is a malleable mixture of very fine crystals in a small amount of dispersed syrup, prepared by cooling the syrup very rapidly to about 21 ºC (70 ºF) by immersing a pan of syrup in a bath of iced water, and then beating it continuously until it become very stiff. The mass of material is then rewarmed in a double boiler, becoming smooth and semisoft.

As well as being a source of syrup, the sugar maple is one

of the most valuable commercial hardwoods in Canada and the northern United States. Maple wood is in great demand for flooring, furniture, cabinetry, and interior decorative woodwork, veneer, small woodenware, and even walking sticks. It is the preferred wood for bowling pins, piano frames, shoe lasts, billiard cues, and many other products. Its strength makes it an outstanding choice for factory, dance-hall, and bowling-alley floors. One of the most widely recognized woods is “birdseye maple”. This distinctive pattern results from a distortion of the grain in sugar maple wood, associated with conical indentations in the growth rings. Its causes are poorly understood, but the attractive pattern of “eyes” in the wood grain make the lumber from affected trees as much as 40 times as valuable as normal sugar maple lumber. Not surprisingly, birdseye has been widely copied on synthetic “wood” veneers

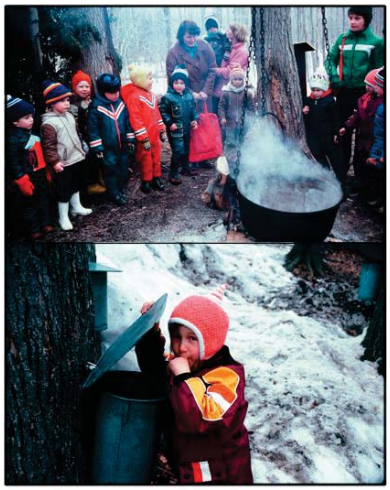


Fig. 7. Children enjoying maple sugar excursion at Upper Canada Village, Ontario.



Fig. 8. Sugar maple autumn foliage. Top photo courtesy of J. O'Brien, USDA Forest Service, and Bugwood.org; bottom photo courtesy of Jean-Pol Grandmont.



Fig. 9. A sugar maple forest. Photo courtesy of J. O'Brien, USDA Forest Service, and Bugwood.org.

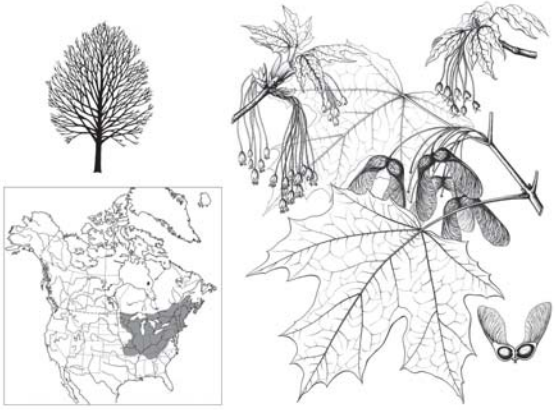


Fig. 10. Sugar maple (*Acer saccharum*): key features and distribution.



Fig. 11. Nineteenth century paintings of maple sugar harvests. Currier & Ives published lithographic prints of the top painting (titled Maple Sugaring) in 1872, and the bottom painting (titled American Forest Scene - Maple Sugaring) in 1856.

Black maple (*Acer saccharum* subsp. *nigrum*)

The black maple (*A. saccharum* subsp. *nigrum*) is so-named for its relatively black bark. This subspecies is quite similar to sugar maple (*A. saccharum* subsp. *saccharum*) discussed above, but usually has leaves with three rather than five lobes, and these often have a wilted appearance, the ends of the leaf lobes curving downwards. The two subspecies hybridize, and trees of intermediate appearance are common. Black maple has a limited distribution in Canada, ranging from southern Ontario and Quebec to southern Minnesota, south to West Virginia and Arkansas, but it is abundant only in the eastern portion of its range. Black maple is used in the same ways as sugar maple, i.e. primarily for lumber and maple syrup, neither of which has been found to differ significantly between sugar maple and black maple. There are a few ornamental cultivars available, but far fewer than for *A. saccharum* subsp. *saccharum*. It has been speculated that global warming will cause black maple to increase (because it is better adapted to a warmer, drier climate) while sugar maple decreases in the northern part of its range.

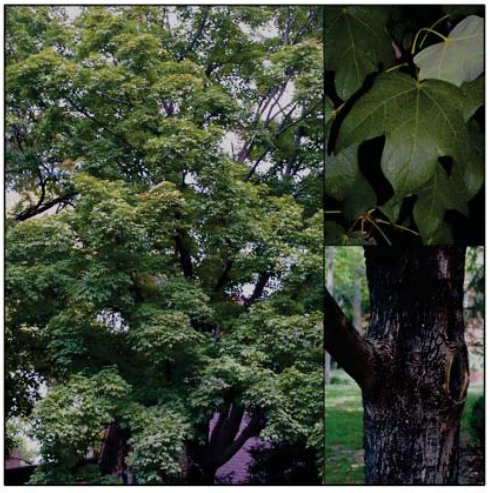


Fig. 12. Black maple (*Acer saccharum* subsp. *nigrum*) in Tennessee on Oct. 13, 2005. Photos courtesy of S.J. Baskauf. Note the dark bark and the droopy appearance of the leaves.

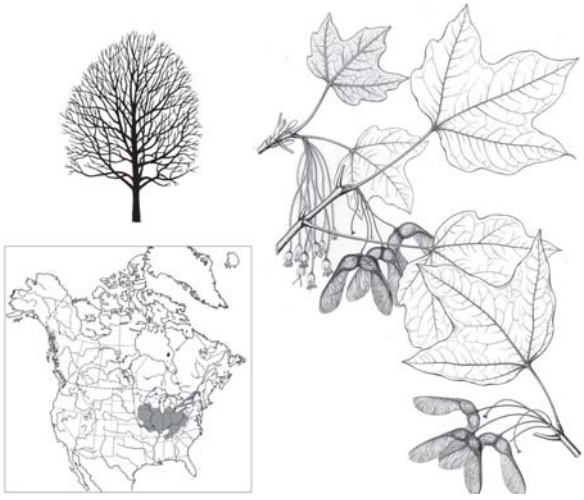


Fig. 13. Black maple (*Acer saccharum* subsp. *nigrum*): key features and distribution.

Bigleaf maple (*Acer macrophyllum*)

Bigleaf maple is native to western North America, from southern Alaska to southern California, mostly near the Pacific Ocean. It occurs in the forests of southwestern British Columbia. It is easily recognized by its large leaves, the largest of any maple in the world. The leaves regularly reach 30 cm (1 foot) in width, and are sometimes as wide as 60 cm (2 feet). When the leaf stalks are broken, they exude a milky sap (the same occurs with the introduced Norway maple). The bark retains moisture, and in the warm, moist climate of the West Coast the trunk and larger branches are often covered with mosses, ferns, and other plants (see Fig. 14). In Canada the trees grow as high as 30 m (98 feet) with a diameter at breast height up to 1 m (about a yard). Bigleaf maple is considered to be the largest native maple species in Canada, and is the only native maple species that reaches notable tree size on the Pacific coast (compare Douglas maple and vine maple, described below). Bigleaf maple is the only maple species significantly harvested for lumber on the west coast of North America. The wood is used for much the same purposes as sugar maple, described above, but the supply is quite limited. Many aboriginal groups made paddles out of the wood and called the species “paddle tree”. It produces very attractive yellow and orange foliage in the fall and is planted as an ornamental. Big-leaf maple was used as food to a minor extent by various tribes in Canada: the Lower Nlaka'pamux (Thompson) of British Columbia ate raw young shoots and boiled, sprouted seeds; the Sechelt also consumed the seeds of this species and the Saanich ate the inner bark. Today, wild food enthusiasts sometimes consume the flowers. The trees have been tapped for sugar syrup, but are less suitable for this purpose than sugar maple. Honeybees visiting the flowers produce a delicious honey.



Fig. 14. Bigleaf maple (*Acer macrophyllum*), photographed Nov. 29, 2003 in Quinault Rain Forest, Olympic National Park, Washington. Note the epiphytes growing on the branches, a phenomenon that is possible because of the humid environment. Reproduced by courtesy of the photographer, W. Leonard.

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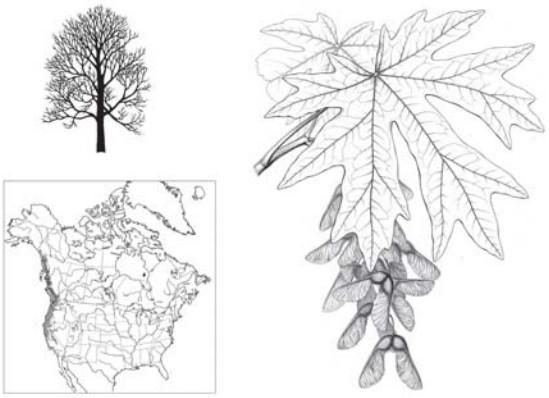


Fig. 15. Bigleaf maple (*Acer macrophyllum*): key features and distribution.

Red maple (*Acer rubrum*)

Red maple is one of the most common and widespread trees in the forests of eastern North America, occurring in Canada from Ontario to Newfoundland. The species grows in an extensive range of habitats, including drylands and swamps. In Canada, trees grow up to 25 m (82 feet) in height, and 60 cm (2 feet) in diameter. True to its name, the leaves usually turn a striking scarlet in the autumn, and the twigs, buds, flowers, immature fruits, and leaf-stalks are also often bright red. The species hybridizes extensively with silver maple, described below, and many trees are difficult to distinguish. The wood is used for various purposes, but red maple is considered to be a minor source of lumber. There are numerous cultivars of red maple, and the species is often grown as a shade and park tree because it is exceptionally tolerant of urban conditions. Red maple is sometimes tapped for maple sugar. The Iroquois of the Lake Ontario region pounded the dried bark of red maple into flour for bread. Although the leaves of maples are consumed by many animals, and sometimes are fed to livestock, the foliage of red maple (even when dead) is extremely toxic to horses, consumption of 1.4 kg (3 pounds) leading to death. The toxin is probably gallic acid, which also occurs in other maples, but in lesser amounts. Obviously horse pastures should not include red maple trees.



Fig. 16. Red maple (*Acer rubrum*) foliage in autumn. Photo courtesy of R. Gillis, Dow Gardens (Michigan) and Bugwood.org.



Fig. 17. Red maple (*Acer rubrum*) cultivar 'Northwood'. Photo courtesy of R. Gillis, Dow Gardens (Michigan) and Bugwood.org.



Fig. 18. Red maple (*Acer rubrum*) growing near water. Photo courtesy of C. Evans (River to River CWMA), and Bugwood.org.

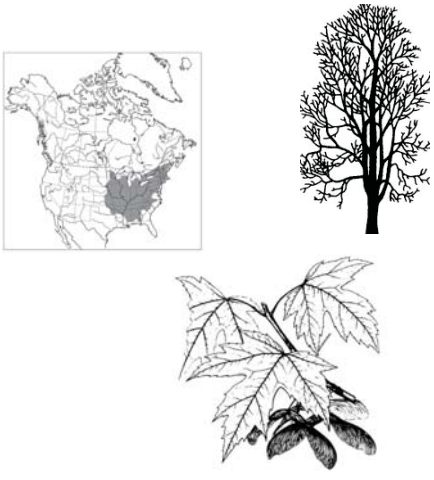


Fig. 19. Red maple (*Acer rubrum*): key features and distribution.

Silver maple (*Acer saccharinum*)

Silver maple resembles red maple, described above, and hybridizes with it extensively, so that many trees are difficult to distinguish. The leaves of silver maple normally have much deeper lobes than the leaves of red maple, and have a silvery-white appearance on their underside (hence the “silver” in the name). Like red maple, silver maple is also an eastern Canadian tree, but has a more restricted distribution, and is frequently found growing beside streams and in wet soil. In Canada it grows to 35 m (115 feet) in height and 100 cm (40 inches) in diameter. Silver maple is the first native maple to flower in the spring. The relatively soft wood is used to a small extent for various purposes, but the supply is limited. Silver maple is exceptionally impressive in form, relatively tolerant of air pollution and urban conditions, and quite fast growing. Accordingly, it is widely planted as a shade and street tree, although its foliage is not particularly colourful in the autumn (mostly pale yellow, but rarely orange or red). Many cultivated varieties have exceptionally deeply lobed leaves. Unfortunately because the roots are adapted to wet soil, when planted near sewer pipes the roots often clog them. The roots can also crack sidewalks and foundations, and the extensive roots near the soil surface make it difficult to mow grass or plant shrubs near the tree. The Iroquois pounded the bark to make flour for bread, but native peoples used the tree mostly as a source of sugar and syrup. The seeds are the largest of the native North American maples, and are a food source for wildlife, particularly squirrels (wild food enthusiasts sometimes roast and consume the seeds). Squirrels also heavily consume the youngest buds in the spring.



Fig. 20. Silver maple (*Acer saccharinum*) growing on the Central Experimental Farm, Ottawa.



Fig. 21. Foliage of silver maple (*Acer saccharinum*). Photo courtesy of Thomas Voekler.

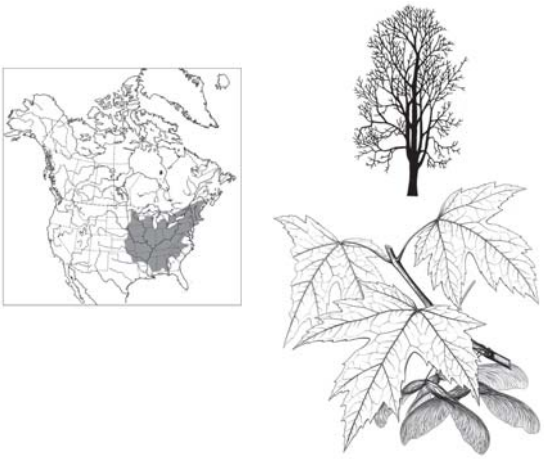


Fig. 22. Silver maple (*Acer saccharinum*): key features and distribution.

Manitoba maple (*Acer negundo*)

In Canada, Manitoba maple appears to have once been confined to Manitoba and adjacent provinces (hence the “Manitoba” in the name), but it has been spread quite widely to other provinces. This fast-growing tree can become 20 m (66 feet) in height and 75 cm (30 inches) in diameter, sometimes larger. The trunk frequently branches irregularly, producing a rather asymmetrical appearance that discourages use of the tree as an ornamental. However, the species is hardier than most other hardwood trees in the Prairie Provinces, and accordingly has been widely planted there. Male and female flowers occur on different trees. Manitoba maple has weedy and invasive tendencies, and is difficult to eradicate because it sprouts readily from stumps. There are variegated-leaf cultivars, such as 'Flamingo', which are considered to be non-invasive. The alternative names “box elder” and “ashleaf maple” (the much more frequently encountered common names in the United States) reflect the fact that the leaves, uniquely for Canadian maples, are compound, with three or more leaflets (like elder and ash trees). Very young plants with three leaflets are often confused with poison ivy. The “box” in the name box elder reflects the occasional past use of the lumber for making boxes, although Manitoba maple is not a significant source of lumber. First Nations peoples and prairie settlers used the tree as a source of maple sugar, although it is a very poor producer.

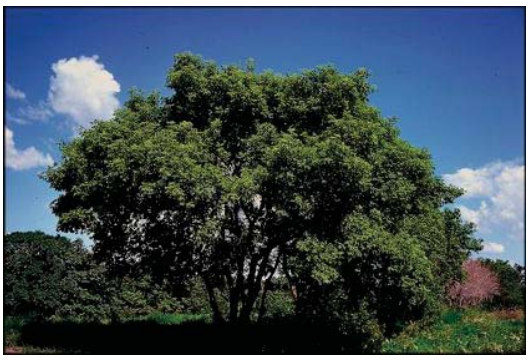


Fig. 23. Manitoba maple (*Acer negundo*). Public domain photo from Wikimedia Commons (from Herman, D.E. et al. 1996. North Dakota tree handbook.).



Fig. 24. Squirrel eating seeds of Manitoba maple (*Acer negundo*). Photographed Oct 27, 2009 in Calgary, Alberta. Photo courtesy of Aires Mario da Cruz.

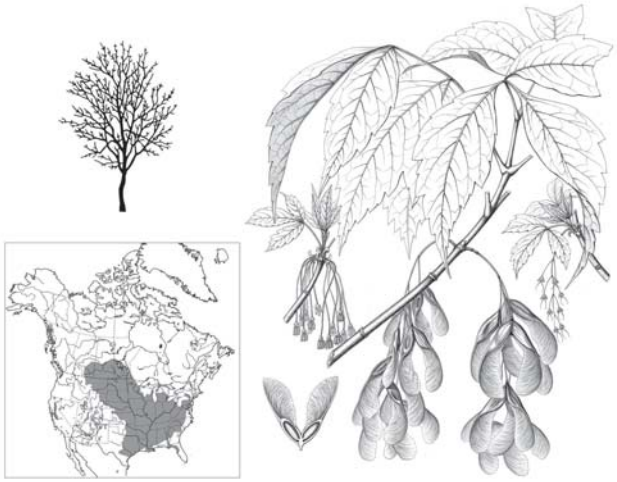


Fig. 25. Manitoba maple (*Acer negundo*): key features and distribution.

Mountain maple (*Acer spicatum*)

Mountain maple is a large shrub or very small tree rarely taller than 5 m (16 feet) in height and 15 cm (6 inches) in diameter. The species is the smallest and the most adapted to northern conditions of the Canadian maples. It grows in the shade of the forests of eastern Canada and in the northeastern United States. The “mountain” in the name has been questioned. Mountain maple does grow in the southern Appalachian Mountains in the southern part of its range, but the name is somewhat inappropriate and can lead to confusion with other maples called mountain maple (particularly *A. glabrum*, called Douglas maple in this presentation). Mountain maple has no value as lumber, but the species is sometimes planted as an ornamental. It produces brilliant yellow, orange, and especially red foliage in the autumn, and forms with strikingly reddish fruits have been selected. Extracts have been used to flavour tobacco, non-alcoholic beverages, ice cream, candy, and baked goods. The species provides food for deer and birds, and is important in prevention erosion on banks and steep slopes.



Fig. 26. Mountain maple (*Acer spicatum*) growing in the Dominion Arboretum in Ottawa. Photographed May 7, 2010.



Fig. 27. Foliage of mountain maple (*Acer spicatum*). Photo courtesy of Jean-Pol Grandmont.

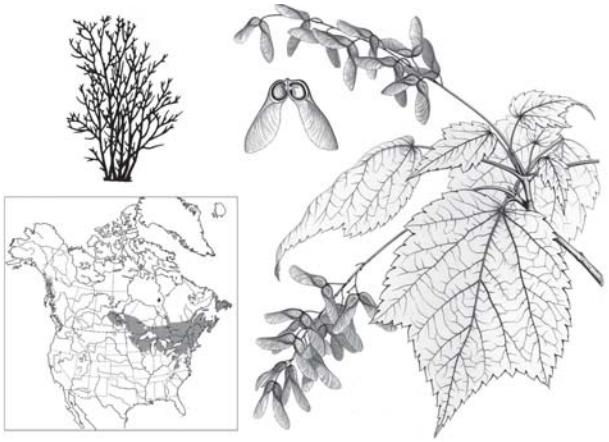


Fig. 28. Mountain maple (*Acer spicatum*): key features and distribution.

(Continued)

Striped maple (*Acer pensylvanicum*)

Striped maple is a large shrub or very small tree, in Canada rarely taller than 10 m (33 feet) and with a trunk more than 25 cm (10 inches) in diameter. The species is distinctive in having striped bark. The long, vertical, greenish-white stripes are particularly conspicuous when young, but with age become grayish. Sex expression is curious in striped maple, some trees always producing only male flowers, others only female flowers, still others both kinds of flowers, and some trees producing male flowers in some years and female flowers in other years. Striped maple has been called "goosefoot maple" because of the shape of the leaf. The species is a native of southeastern Canada and northeastern United States. It occurs in the shade of eastern Canadian forests from Ontario to the Maritimes, often in association with mountain maple. Striped maple is occasionally planted as an ornamental, valued for its striking bark and tolerance to shade. The leaves turn pale yellow in the autumn. The wood is soft and does not have commercial value. The expression "(tiger) striped maple" refers to wood with stripes like those of a tiger, used for very high quality ornamental applications; it is not obtained from striped maple. The Micmacs of the Maritimes made tea from the bark. An anti-tumour substance has been isolated from the plant. The alternative names "moosewood" and "moose maple" reflect the fact that the leaves and young shoots are a favourite food of moose, but a wide variety of wildlife also consume the plant. Buck deer are fond of rubbing the velvet off their antlers against striped maple prior to the late-autumn breeding season, and consequently the resulting scars on the branches and trunks are called "buck rubs". The spelling *pensylvanicum* (with one n) is the original spelling, which must be retained according to the rules of botanical nomenclature.



Fig. 29. Striped maple (*Acer pensylvanicum*) growing at the edge of a forest at Zena, New York, with pine and hickory in the background. Source: Wikipedia (public domain photo).



Fig. 30. Bark of young tree (left) and mature tree (right) of striped maple (*Acer pensylvanicum*) growing in Great Smoky Mountains National Park, Tennessee. Photos courtesy of C. Evans (River to River CWMA), and Bugwood.org.



Fig. 31. Foliage of striped maple (*Acer pensylvanicum*). Photo courtesy of Jean-Pol Grandmont.

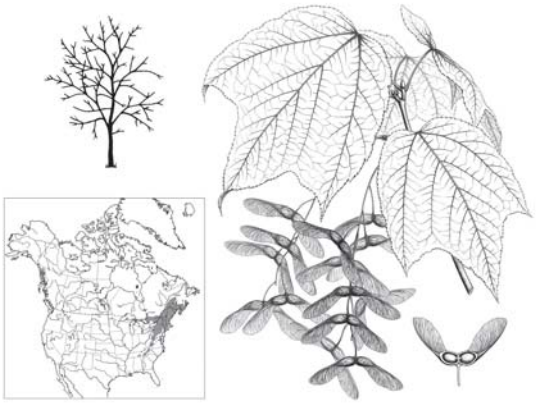


Fig. 32. Striped maple (*Acer pensylvanicum*): key features and distribution

Douglas maple (*Acer glabrum* var. *douglasii*)

Douglas maple commemorates David Douglas (1799-1834), a famous Scottish botanist who traveled through the interior of British Columbia, and introduced over 200 North American plants to Britain. The species is usually a large shrub but sometimes becomes a very small tree in its southern Canadian range, growing up to 10 m (33 feet) and 25 cm (10 inches) in diameter. Unlike most other Canadian maples, male and female flowers usually are on different trees. Variety *douglasii* of the species is the main variety in Canada. This western North American maple is found from southeastern Alaska to the southwestern United States. It occurs along streams and other moist sites in southwestern Alberta and in much of British Columbia (but is not native to northern British Columbia or the Queen Charlotte Islands). Unlike another British Columbia maple, the vine maple, it does not tolerate shade and usually grows in open habitats. The tough, pliable wood has no commercial importance, but was used by aboriginal people to make tools and ornamental items. The Blackfoot used the dry, crushed leaves to spice stored meat. The Saanich of southern Vancouver Island used the bark to make an antidote for poisoning. The species has attractive fall foliage (but not as brilliant as the vine maple discussed next); it is particularly suitable for dry areas, and is planted occasionally as an ornamental.

(*Continued*)



Fig. 33. Douglas maple (*Acer glabrum* var. *douglasii*) growing in Crater Lake National Park, Oregon, Sept. 9, 2006. Photo courtesy of K. Morse.



Fig. 34. David Douglas. Portrait published in Curtis's Botanical Magazine in 1834.

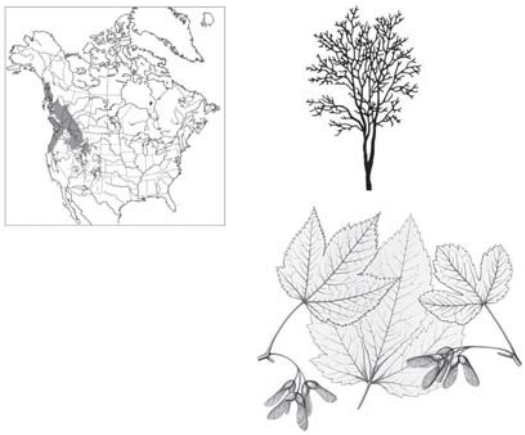


Fig. 35. Douglas maple (*Acer glabrum* var. *douglasii*): key features and distribution.

Vine maple (*Acer circinatum*)

Vine maple is a large, contorted, gnarled, crooked, multi-stemmed shrub or very small tree up to 10 m (33 feet) in height and (if it has a single trunk) up to 15 cm (6 inches) in diameter. Branches sometimes touch the ground and take root. The species occurs along stream banks and in the shade of forests, from southwestern British Columbia to northern California, within 300 km (186 miles) of the Pacific Ocean. Dense thickets are sometimes formed. *Circinatum* in the scientific name means coiled, referring to the branches, which tend to coil around other trees, like a vine; also, the branches often become depressed by snow, extending horizontally as far as the height of the plant (another characteristic leading to the name “vine maple”). The coureurs de bois called the plant “Devil's wood” because they often stumbled over the low-spreading branches as they carried heavy loads through the forests. (They were mostly French-Canadians who voyaged by canoe in eastern Canada in the late 17th and 18th centuries, trading with First Nations peoples for furs, which they sold to companies in Montreal and elsewhere. They often carried more than their own weight, resulting in crippling injuries and short careers.) The wood has very little commercial value, but is occasionally used for tool handles and fuel. First Nations people also carved household objects such as bowls, spoons, and platters, as well as a variety of tools from the wood. Aboriginal people on the West Coast boiled the bark of the roots to make a tea for colds, and used teas prepared with burned wood to combat dysentery and polio; they ritually collected the bark and wood early in the morning from the sunrise side of the tree. Karok Indian women of California made a love potion out of the branches. There are several ornamental cultivars of vine maple, which is often grown in its native area. The species is browsed to some extent by wildlife.



Fig. 36. Vine maple (*Acer circinatum*), growing in an exposed site within E.C. Manning Provincial Park, British Columbia. Plants in sunny areas tend to develop much more intense autumn colouration, as shown here. Photo courtesy of D. Mosquin.



Fig. 37. A range of leaf colouration in vine maple (*Acer circinatum*). Leaves collected by D. Otis, photo courtesy of D. Mosquin.



Fig. 38. Vine maple (*Acer circinatum*), photograph Oct. 1, 1959 in Oregon. Photo courtesy of G. Dallas and M. Hanna, and the California Academy of Sciences.

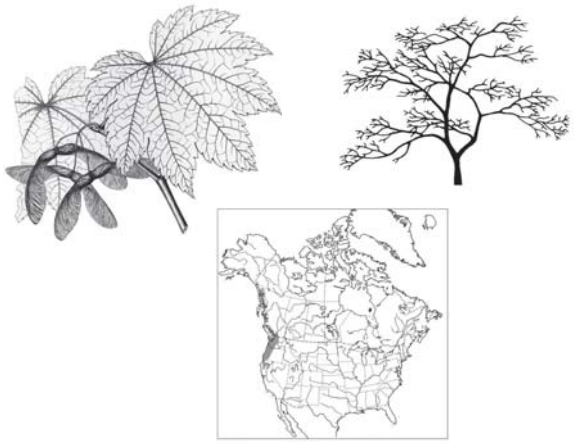


Fig. 39. Vine maple (*Acer circinatum*): key features and distribution.

CONSERVATION STATUS

About a third of the world's maples are considered to be in danger of extinction, most of these native to China (see *The Red list of Maples*, cited below). However, North American maple species are not considered to be endangered, although there is concern that populations at the range limits, which almost certainly are genetically distinct, are in danger of elimination. Decline of certain forest tree species in parts of their distribution range has been documented in various regions of the world for hundreds of years, but especially during the last century. Maple dieback or decline in recent years has caused great concern in the sugar maple industry. It seems clear that a primary cause is insect defoliation followed by fungus attack. Deep soil freezing at times of low snow cover can also result in dieback. Atmospheric deposition, notably acid rain, has been hypothesized as an important additional factor stressing trees and resulting in dieback. Acidic substances, perhaps ozone and heavy metals, might be causal agents. However, there is disagreement regarding the role, if any, of atmospheric deposition in maple decline.

MYTHS, LEGENDS, TALES, FOLKLORE, AND INTERESTING FACTS

- On journeys, the Iroquois carried maple syrup in empty quail and duck eggs, the first “no-deposit-no-return” biodegradable containers.
- Indigenous peoples of northeastern North America sometimes used maple products as currency.
- In pioneering days of the United States, apples and such root crops as carrots and potatoes were stored separately between layers of maple leaves to help in their preservation
- In the Alsace region of France, it was believed that storks place a piece of maple in their nests to frighten away bats, fearing that the touch of the bats would make the eggs infertile.
- The most prolific composer of ragtime music was Scott Joplin (1868-1917). He published approximately 50 rags, but probably composed about 600. The most famous of Joplin's rags was *Maple Leaf Rag*, which sold hundreds of thousands of copies in the first ten years it was published.
- All maples are “hardwoods”, a term used to designate most deciduous trees, as opposed to the “softwoods”, the contrasting term referring in general to coniferous, evergreen

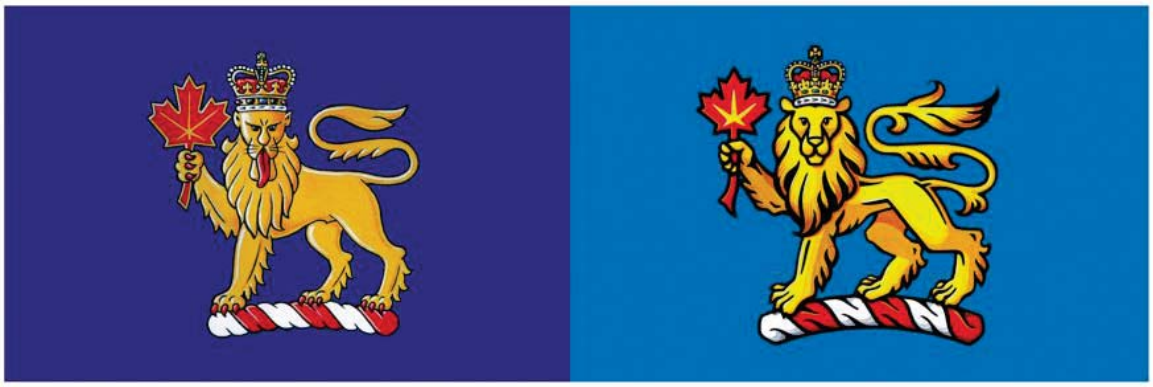


Fig. 40. The taming of the Canadian lion. The Governor General's standard, a symbol of the Sovereignty of Canada, is composed of an imperially crowned gold lion on a wreath of the official colours of Canada, holding the maple leaf, emblematic of the country. Roméo LeBlanc (Governor General 1994-1999) had the official crest redrawn from the ferocious tongue-protruding version shown above left to the less offensive Disneyesque rendition shown above right. While sticking one's tongue out is in bad taste today, the protruding tongue is traditional in heraldry, and has been said to emphasize the readiness of the animal to be in the service of the bearer of the heraldic symbol. Along with the loss of his tongue and his scowl, the new lion was de-whiskered, declawed, neutered, and hair styled. The modifications were reversed by LeBlanc's successor.

trees, which generally have softer wood than the hardwoods. Most North American species of *Acer*, including sugar maple, are “hard maples”, so-called because of the very hard texture of the wood. Some maples, like silver maple and red maple are “soft maples”, with wood that is softer, although still quite hard. Maple wood can be identified as hard or soft by applying a solution of ferric salt to the sapwood; blue stain indicates a soft maple and green stain identifies the tree as a hard maple. In Maine, it was once thought that too much fertilizer and rich earth could change a hard maple into a soft maple.

- Maple sap that flows in the spring appears to come from all directions (not just from the roots): from above, below, and sideways within the tree, apparently to prepare critical areas of the plant for growth. The lateral flow provides sugar to the growing part of the tree trunk (cambium), near the bark, for active growth in the spring.
- Maple keys (the winged seeds, technically called samaras) have an exquisite aerodynamic design. With a moderate wind blowing, these can travel as much as 160 m (525 feet) away from the tree. The key design features that seem to provide better flight performance are the thickened leading edge of the wing part and the roughened surface, characteristics similar to bird wings. The samaras are often compared to helicopters but, in flight, they cut into the air at very sharp angles that would cause stalling in a helicopter.
- Some large red maple trees can produce a million seeds in one season.
- “Big Yo”, the worlds largest yo-yo, displayed in the National Yo-yo Museum in Chico, California, weighs 116 kg (256 pounds) and is partly made of maple.
- The Canadian botanist W.G. Dore (1912-1996) pointed out that two North American maples, silver maple and red maple, widely hybridize and intermingle in Canada to produce “a tree of mixed parentage, a vigorous and vital breed, newly sprung from the particular milieu which pertains to Canada!” Dr. Dore proposed the name “united maple” for the hybrid tree, and recommended that it be identified as Canada’s emblematic maple.
- The Toronto Maple Leaf hockey team of the National Hockey League has a problem with the plural of leaf. The usual spelling when referring to the team collectively is “Toronto Maple Leafs”, although occasionally those who are offended by this ungrammatical spelling call them the “Toronto Maple Leaves”. As pointed out on one website, “Maple Leafs? Did Elmer Fudd name this team? I guess they have chifes on their baked potatoes, and cut them with knifes.”
- According to an ancient Oriental gardening rule, maples should always be planted on the western side of a house. Whether or not this is rational, it does mean that in the fall the late afternoon sun streaming through the crown will show up the colourful foliage in its most attractive light.

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Fig. 41. The world's largest coin. Five copies of this coin featuring a sprig of three maple leaves were produced in 2007 by the Canadian Mint. The coin measures 53 cm (almost 21 inches) in diameter, 3 cm (1.2 inches) in width, weighs 100 kg (220 pounds), and is 99.999% pure gold. It is listed in the Guinness Book of World Records as the world's largest coin. Although it carries a face value of $1 million Canadian, with the current high price of gold the bullion in the coin is worth considerably more. In 2010, one of the coins was sold at auction for more than $4 million. Coin image supplied by and reproduced with the permission of ©The Canadian Mint.

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Fig. 42. Foliage of Japanese maple (*Acer palmatum*), cultivar 'Osakazuki'. This colourful shrubby tree native to eastern Asia is widely grown as an ornamental in Canada. Photo courtesy of Jean-Pol Grandmont.

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