

THE CANADIAN BOTANICAL ASSOCIATION  
**BULLETIN**  
DE L'ASSOCIATION BOTANIQUE DU CANADA

February / février 1999

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Montréal



Patron / Président d'honneur  
His Excellency the Right Honourable / Son excellence le très honorable  
Roméo Leblanc, P.C., C.C., C.M.M., C.D.  
Governor General of Canada / Gouverneur général du Canada



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**President's message / Le mot du président**

When I look at the scientific and academic achievements of the members of the Canadian Botanical Association, I have a very optimistic outlook as I write these words. We all remember with pleasure the excellent organisation of last June's meeting in Saskatoon. All the participants were able to appreciate that the scientific quality of a meeting and a friendly atmosphere can go hand in hand. This year our annual meeting is being replaced by the CBA's official participation at the XVI International Botanical Congress in St. Louis, Missouri. Some will say that it is easier and more agreeable to get together at our own annual meeting than to participate in larger joint meetings with other associations. I would have to agree. On the other hand, the joint meetings that we organise periodically with the Botanical Society of America or with the Canadian Society of Plant Physiology do create a special opportunity for discussion with foreign colleagues and people from other disciplines. This is particularly true for students because they have the opportunity to present their work to a larger audience and benefit by meeting some of the brighter lights in their field of research.

This year, the CBA is helping to sponsor four symposiums that are being held at the IBC: Progress in root biology - a tribute to Margaret McCully; The phenological response to climate change; Seed population dynamics; Ecology of purple loosestrife (*Lythrum salicaria*). I want to thank the organisers of these symposiums (Larry Peterson, Elisabeth Beaubien, Paul Cavers and Peter Nosko) for helping to augment the international visibility of CBA. I also want to mention that, thanks to surplus funds from the local organizing committee of last year's meeting in Saskatoon, we are able to offer 10 additional John Macoun travel bursaries, worth \$ 500 each, in order to encourage students to attend the IBC in St. Louis (see the rules for eligibility on page 4).

I also want to remind you that in the year 2000, the annual meeting of the CBA will be held jointly with the Canadian Society of Plant Physiology at the University of Western Ontario in London. The section heads have already started planning activities in anticipation of this event. Now is the time to mark your agenda for this congress which shaping up to be full of promise.

The annual meetings must not eclipse the other activities of our Association. Among these, the trimestrial publication of the Bulletin is an excellent way to publicize our activities and assure our visibility. Of course, the bulletin could not exist without the constant effort on the part of members who write articles or accept to review new books, etc. While on this topic, I would like to thank Ernest Small and Paul Catling for their regular contribution on the "Poorly Known Economic Plants of Canada". These articles help to show the importance of taxon-

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## Editors / La rédaction

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### Information for submitting texts / Soumission des textes

Texts and illustrations for the Bulletin must be sent to the Editor preferably via the electronic mail (attached file) or on a diskette. Texts should be saved under "Word" and illustrations under the "TIFF" format.

If you have any question about text submission please contact the Editor.

Les textes et les illustrations pour le bulletin doivent de préférence être envoyés par courrier électronique (sous forme de fichier attaché) ou encore sur une disquette.

Les textes doivent être enregistrés sous « Word » et les illustrations sous le format « TIFF ».

N'hésitez pas à contacter le rédacteur pour toute information sur l'envoi de documents.

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### CBA Bulletin / Bulletin de l'ABC

The CBA Bulletin is issued quarterly (February, May, August, November) and sent to all CBA members.

Le Bulletin de l'ABC paraît quatre fois par année (février, mai, août, novembre) et est envoyé à tous les membres de l'ABC.

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To ensure continuous delivery of the Bulletin please notify the Treasurer promptly of any change of address.

Veuillez communiquer tout changement d'adresse au trésorier afin de recevoir tous les numéros du bulletin.

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If you have any comments or suggestions about the Bulletin, please contact the Editor at the above address.

Si vous avez des commentaires ou suggestions concernant le bulletin, veuillez s'il vous plaît contacter le rédacteur à l'adresse mentionnée plus haut.

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**Texts for the May issue must be received before April 1, 1999.  
Les textes pour le bulletin de mai doivent arriver au plus tard le 1<sup>er</sup> avril 1999.**

## CBA Section and Committee Chairs

### Section Chairs (1998-2000)

#### Ecology

Dr. Ed Reekie  
Biology Department  
Acadia University  
Wolfville, NS, B0P 1X0  
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Tel. : (902) 585-1162; fax : (902) 542-3466

#### Mycology

Dr. James Traquair  
Agriculture & Agri-Food Canada, Research Centre  
1391 Sanford St.  
London, ON, N5V 4T3  
traquairj@em.agr.ca  
Tel. : (519) 645-4452; fax : (519) 645-5476

#### Structure & Development

Dr. Ron Dengler  
Life Sciences Division  
University of Toronto at Scarborough  
1265 Military Trail  
Scarborough, ON, M1C 1A4  
dengler@tsunami.scar.utoronto.ca  
Tel. : (416) 287-7426; fax : (416) 287-7642

#### Systematics & Phytogeography

Dr. Luc Brouillet  
IRBV-Université de Montréal  
4101, rue Sherbrooke Est  
Montréal, QC, H1X 2B2  
luc.brouillet@umontreal.ca  
Tel. : (514) 872-8490; fax : (514) 872-9406

### Committee Chairs (1998-2000)

#### Conservation

Dr. Pam Krannitz  
Pacific Wildlife Research Centre  
5421 Robertson Road, R.R. 1  
Delta, BC, V4K 3N2  
pamk@interchange.ubc.ca  
Tel. : (604) 946-4676; fax : (604) 946-7022

#### Science Policy

Dr. Joe Gerrath  
Department of Botany  
University of Guelph  
Guelph, ON, N1G 2W1  
jfgerrath@uoguelph.ca  
Tel. : (519) 824-4120; fax : (519) 767-1991

#### Development

Dr. Vipen Sawhney  
Department of Biology  
University of Saskatchewan  
Saskatoon, SK, S7N 5E2  
sawhney@admin.usask.ca  
Tel. : (306) 966-4417; fax : (306) 966-4461

#### Membership

Dr. Hugues Massicotte  
Forestry Program  
Faculty of Natural Resources and Environmental Studies  
University of Northern British Columbia  
Prince George, BC, V2N 4Z9  
hugues@unbc.ca  
Tel. : (250) 960-5813; fax : (250) 960-5538

## Membership Committee

### To be or not to be... a CBA member

Yes, it is that time of the year when you should be renewing your affiliation with the Canadian Botanical Association. The CBA continues to be an important venue for following botanical issues both in Canada and abroad and for sharing information with colleagues from all areas of the plant sciences, all this culminating in the Annual CBA meeting. Membership is imperative to maintain a vibrant and diverse organization! If you have not renewed yet, please send your cheque to:

Mikisiw Computing Ltd.  
CBA Membership  
103 Kenosee Court  
Saskatoon, SK, S7J 3S7

Please also consider asking a colleague to join the CBA ranks or sign up a student or a post-doctoral fellow (only \$ 25.00!). If you have lost your Membership Form or need some more, please contact me.

Hugues Massicotte, hugues@unbc.ca  
CBA Membership Committee

### Être ou ne pas être... membre de l'ABC

Oui, c'est la période de l'année où l'on doit renouveler notre adhésion à l'Association botanique du Canada. L'ABC est un outil qui permet de suivre les débats de l'heure en botanique, au Canada et ailleurs, de partager de l'information avec nos collègues impliqués dans toutes les sphères d'activité de la biologie végétale, et finalement de se rencontrer une fois l'an durant le congrès annuel. Chacun des membres constitue une cellule essentielle pour maintenir le tissu vital de l'organisation. Si vous n'avez pas encore renouvelé votre adhésion, veuillez retourner votre chèque à :

Mikisiw Computing Ltd.  
ABC Adhésion  
103 Kenosee Court  
Saskatoon, SK, S7J 3S7

De plus, demandez à un collègue s'il est intéressé à joindre l'ABC ou encore parrainez un étudiant ou un chercheur post-doctoral (c'est seulement 25.00 \$!). Si vous avez égaré votre formulaire d'adhésion ou si vous en désirez d'autres, veuillez s.-v.-p. me contacter.

Hugues Massicotte, hugues@unbc.ca  
CBA Membership Committee

## President's message (continued) / Le mot du président

omy to our knowledge of biodiversity.

We must not lose sight of the importance of the membership in the growth of our association. In this regard, each of us should be making an effort to recruit new members in order to insure the relève (see the text from the Membership Committee on this page). It is only through new members that CBA will continue to grow and progress.

Finally, I would like to wish you all a happy and fruitful year.

Denis Barabé, president.

Devant le dynamisme scientifique et académique dont font preuve les membres de l'Association botanique du Canada, je ne peux qu'être optimiste en écrivant ce billet. On se souviendra avec plaisir de l'excellente organisation du congrès de Saskatoon. Tous les participants ont pu se rendre compte que qualité scientifique et atmosphère chaleureuse ne sont pas incompatibles. Cette année notre congrès annuel sera remplacé par une participation officielle de l'ABC au XVI International Botanical Congress (IBC) de St. Louis, Missouri. D'aucuns diront qu'il est plus facile et même plus agréable de se rencontrer lors des congrès de l'ABC que lors d'événements conjoints avec d'autres organismes. Je suis d'accord avec eux. D'un autre côté, les rencontres conjointes que nous avons périodiquement avec la Botanical Society of America ou la Canadian Society of Plant Physiology permettent des échanges fructueux avec des collègues étrangers ou d'autres disciplines. Ceci est particulièrement important pour les étudiants qui ont alors la chance de présenter leur travaux devant un plus grand auditoire et de rencontrer des scientifiques prestigieux.

Cette année, l'ABC parrainera en partie quatre symposiums qui seront présentés à l'IBC : Progress in root biology - a tribute to Margaret E. Mc Cully; The phenological response to climate change; Seed population dynamics; Ecology of purple loosestrife (*Lythrum salicaria*). J'aimerais remercier les organisateurs de ces symposiums (Larry Peterson, Elisabeth Beaubien, Paul Cavers et Peter Nosko) qui contribuent au rayonnement international de l'ABC. Je veux aussi souligner que, grâce à des surplus accumulés par le comité local de Saskatoon, il sera possible d'offrir 10 bourses John Macoun supplémentaires (500 \$) pour des étudiants qui veulent participer à l'IBC (voir règlements à la page 4).

J'aimerais aussi vous rappeler qu'en l'an 2000 le congrès annuel de l'ABC se tiendra conjointement avec la Société canadienne de physiologie végétale à l'University of Western Ontario. Je sais que les responsables des sections ont déjà commencé à planifier des activités pour cette rencontre. Il n'est donc pas trop tôt pour mettre à votre agenda ce congrès qui s'annonce des plus prometteurs.

Les congrès ne doivent pas nous faire oublier les autres activités de l'Association. Parmi celles-ci, la publication trimestrielle du bulletin demeure un excellent moyen de faire connaître nos activités et d'assurer notre rayonnement. Or, un bulletin comme le nôtre ne pourrait exister sans l'apport permanent des gens qui écrivent des articles ou acceptent de critiquer des livres. Dans cet ordre de pensée, j'aimerais remercier Ernest Small et Paul Catling pour leur chronique régulière sur les plantes utiles du Canada. Leurs articles montrent clairement l'importance de la taxonomie dans la connaissance de la biodiversité.

Le dynamisme de l'ABC ne doit pas nous faire oublier l'importance du « membership » dans la croissance de notre association. Je crois que chacun d'entre nous doit faire un effort pour recruter de nouveaux membres afin d'assurer la relève (voir le texte du « Membership Committee » sur cette page). Ce n'est que par l'ajout de nouveaux membre que l'ABC continuera à progresser.

J'aimerais terminer en souhaitant à tous une bonne et fructueuse année.

Denis Barabé, président.

**JOHN MACOUN TRAVEL BURSARY  
AND SPECIAL TRAVEL BURSERIES  
FOR STUDENTS TO ATTEND  
THE XVI INTERNATIONAL  
BOTANICAL CONGRESS (IBC)**

The John Macoun Travel Bursary, named in honour of the man who served as official botanist on five major expeditions throughout Canada during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, is awarded to a graduate student who presents an oral paper (a poster at the IBC) in the Lionel Cinq-Mars Competition.

This year, there will be a total of 12 travel bursaries (including the two John Macoun bursaries), worth \$ 500 each, to encourage students to attend the IBC. The funds for 10 of these burseries come from the local organizing committee of last summer's Annual Meeting in Saskatoon.

**Eligibility**

1. Competition for these bursaries (Macoun and Special) is open to student members of CBA.
2. Students must present a poster in the Lionel Cinq-Mars Competition at the 1999 IBC in St. Louis, Missouri.
3. No student may receive more than one travel bursary while registered for the same degree.

**Procedures**

1. Students applying for an award must do so no later than April 15, 1999.
2. The application must contain the following documents :
  - a) a copy of the abstract of the poster to be given in the Lionel Cinq-Mars Competition at the IBC;
  - b) a supporting letter from the student's Supervisor of research that also includes a statement that the student is engaged in a M.Sc. or Ph.D. program;
  - c) the student's curriculum vitae (one page);
  - d) a letter of recommendation from a member of the student's research committee (not the Supervisor).

3. Send the complete set of application documents to :

Mr. Denis Barabé  
IRBV- Jardin Botanique de Montréal  
4101, rue Sherbrooke Est  
Montréal QC  
H1X 2B2  
Tél. : (514) 872-1436  
Fax : (514) 872-3765

E-mail : barabed@ere.umontreal.ca

4. The CBA President will appoint a committee to screen all applications and to recommend the candidates for the bursaries. The sole selection criteria shall be those of academic merit.
5. Bursary winners will possibly be notified before the registration deadline for the IBC, and awards will be paid at that time.

**BOURSE DE VOYAGE JOHN MACOUN  
ET BOURSES SPÉCIALES DE VOYAGE  
POUR LES ÉTUDIANTS QUI PAR-  
TICIPENT AU XVI INTERNATIONAL  
BOTANICAL CONGRESS (IBC)**

La bourse de voyage John Macoun est décernée en l'honneur de John Macoun, qui dans l'exercice de ses fonctions en tant que botaniste a participé à cinq expéditions majeures à travers le Canada de la fin du 19<sup>e</sup> siècle au début du 20<sup>e</sup> siècle, à un étudiant qui présente une communication orale (un poster à l'IBC) dans le cadre de la compétition Lionel Cinq-Mars.

Cette année, il y aura un total de 12 bourses de voyage (incluant deux bourses de voyage John Macoun) de 500 \$ chacune, pour participer à l'IBC (St. Louis). Les fonds pour payer 10 de ces bourses proviennent du comité local responsable de l'organisation du Congrès annuel de l'ABC qui a eu lieu à Saskatoon l'été dernier.

**Admissibilité**

1. La compétition pour les bourses (Macoun et spéciales) est ouverte aux étudiants membres de l'ABC.
2. L'étudiant doit présenter un poster dans le cadre de la compétition Lionel Cinq-Mars à l'IBC (1999) à St. Louis.
3. Un étudiant ne peut pas recevoir plus d'une bourse de voyage pour la période durant laquelle il est inscrit à un programme spécifique.

**Marche à suivre**

1. Les étudiants doivent faire parvenir leur demande pour la bourse de voyage au plus tard le 15 avril 1999.
2. La demande doit contenir les documents suivants :
  - a) une copie du résumé du poster pour la compétition Lionel Cinq-Mars à l'IBC;
  - b) une lettre de recommandation de la part du directeur de thèse de l'étudiant et une preuve que l'étudiant en question est inscrit à un programme de maîtrise ou de doctorat;
  - c) le curriculum vitae de l'étudiant (une page seulement);
  - d) une lettre de référence d'un membre du comité de direction de l'étudiant (directeur de thèse exclu).

3. Veuillez faire parvenir la demande complète à :

M. Denis Barabé  
IRBV- Jardin Botanique de Montréal  
4101, rue Sherbrooke Est  
Montréal QC  
H1X 2B2  
Tél. : (514) 872-1436  
Télec. : (514) 872-3765

Courriel : barabed@ere.umontreal.ca

4. Le président de l'ABC mettra sur pied un comité de sélection qui examinera les demandes et recommandera les candidats pour les bourses. Le seul critère d'évaluation sera celui du mérite académique.
5. Les gagnants des bourses seront avisés, si possible, avant la date finale d'inscription pour l'IBC. Les prix leur seront remis à ce moment-là.

**LIONEL-CINQ-MARS AWARD  
FOR THE BEST STUDENT POSTER  
PRESENTED AT THE XVI  
INTERNATIONAL  
BOTANICAL CONGRESS (IBC)**

Each year the Canadian Botanical Association gives an award for the best student oral paper presented at the CBA Annual Meeting. The award is made in memory of Lionel Cinq-Mars, a founding member of the Association and a widely admired teacher.

Any bona fide student enrolled at a Canadian institution of higher learning is eligible, as well as Canadian students at foreign institutions, both undergraduate or graduate. This year the Lionel Cinq-Mars Award will be given to the best poster presented at the IBC in St. Louis. Every effort will be made to ensure that each student in the competition has a fair evaluation and an equal chance of winning the award.

Posters will be evaluated by a panel of judges (at least one from each of the sections of CBA) which is chaired by the President-Elect, Joe Gerrath. The merit of each poster will be judged on the basis of content (60 %) and presentation (40 %). We hope that there will be many participants in St. Louis. All students who wish to compete for this award must send a copy of their abstract before April 15, 1999 to:

Dr. Joe Gerrath  
Department of Botany  
University of Guelph  
Guelph ON  
N1G 2W1  
Tel. : (519) 824-4120  
Fax : (519) 767-1991  
E-mail : jfgerrath@uoguelph.ca

**PRIX LIONEL-CINQ-MARS  
POUR LE MEILLEUR POSTER  
PRÉSENTÉ PAR UN ÉTUDIANT AU  
XVI INTERNATIONAL  
BOTANICAL CONGRESS (IBC)**

Chaque année l'Association botanique du Canada décerne un prix pour la meilleure communication orale présentée par un étudiant lors du congrès annuel de l'ABC. La récompense est remise à la mémoire de Lionel Cinq-Mars, un des membres fondateurs de l'Association et un professeur fort admiré.

Tout étudiant inscrit à une institution canadienne d'études supérieures ou tout étudiant canadien inscrit à une université étrangère, qu'il soit de 1er, 2e ou 3e cycle, est éligible à ce prix. Cette année, le prix Lionel Cinq-Mars sera décerné pour le meilleur poster présenté à l'IBC à St. Louis. Tout sera mis en oeuvre afin d'assurer que chaque étudiant soit évalué justement et qu'il ait une chance égale de remporter ce prix.

La décision finale sera rendue par un jury comprenant au moins un membre de chaque section de l'ABC. Le jury sera dirigé par le président désigné, Joe Gerrath. La qualité du poster sera jugée en fonction du contenu (60%) et de la présentation (40%). Nous espérons qu'il y aura un grand nombre de participants à St. Louis. Les étudiants qui désirent participer à la compétition Lionel Cinq-Mars doivent envoyer une copie de leur résumé avant le 15 avril 1999 à :

Dr. Joe Gerrath  
Department of Botany  
University of Guelph  
Guelph ON  
N1G 2W1  
Tel. : 519-824-4120  
Fax : 519-767-1991  
E-mail : jfgerrath@uoguelph.ca

**Program and abstracts of  
1998 CBA Annual Meeting**

There are some copies of the book of "Program and Abstracts" of the CBA Meeting, held in Saskatoon in 1998, available for distribution to members at no cost. If interested, please write or e-mail to:

Dr. Vipen Sawhney  
Department of Biology  
University of Saskatchewan  
112 Science Plac  
Saskatoon SK  
S7N 5E2  
E-mail: sawhney@admin.usask.ca

**Student director:  
Special ballot to amend the CBA By-Laws  
Directeur étudiant :  
Scrutin spécial pour modifier les  
règlements de l'ABC**

Do not forget to send back the ballot form included in this copy of the Bulletin to the CBA secretary, Liette Vasseur. It concerns a motion adopted by the board of directors at the CBA 1998 Annual General Meeting in Saskatoon that has to be ratified by CBA members.

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N'oubliez pas de retourner le bulletin de vote inclus dans ce bulletin à la secrétaire de l'ABC, Liette Vasseur. Ce scrutin est effectué dans le but d'entériner une résolution qui a été adoptée par le Bureau de direction de l'ABC lors du dernier congrès annuel tenu à Saskatoon. Cette résolution doit être adoptée par les membres de l'ABC.

Best Student Papers Awards (Rowe, Steeves, Weresub and Porsild)

**J.S. ROWE ECOLOGY AWARD**

for the best student paper in plant ecology

This annual award was established to honour the contributions of Professor J. Stan Rowe who was the first chairman of the Ecological Section of the CBA. Professor Rowe contributed much to the advancement of ecology in Canada through his initiatives to encourage Canadian plant ecologists to join the CBA and to foster communication with their colleagues from around the world. He is well known for his seminal research on the relationship between land form and forest communities and as an enthusiastic and dedicated teacher.

Applications should be sent, before April 30, 1999, to:

Dr. Ed Reekie  
Biology Department  
Acadia University  
Wolfville, NS, B0P 1X0

Tel. : (902) 542-2201; Fax : (902) 542-3466

E-mail : ereekie@ace.acadiau.ca

**TAYLOR A. STEEVES AWARD**

for the best student paper in plant structure and development

This annual award was established to honour the many-faceted contributions of Professor Taylor A. Steeves to the advancement of Botany in Canada. Professor Steeves has made significant contributions to our current understanding of plant morphology and development through research papers and textbooks. He was the editor of both the Canadian Journal of Botany and the Botanical Gazette. As a teacher and researcher, he displays an enthusiasm for plants and an ability to make even the most complex concepts seem understandable. The award is intended to symbolize these attributes so aptly displayed by Professor Steeves.

Applications should be sent, before April 30, 1999, to:

Dr. Ron Dengler  
Life Science Division  
University of Toronto at Scarborough  
1265 Military Trail  
Scarborough, ON, M1C 1A4

Tel. : (416) 287-7426; Fax : (416) 287-7642

E-mail : dengler@tsunami.scar.utoronto.ca

**L. K. WERESUB AWARD**

for the best student paper in mycology

The income for this annual award comes from the Luella K. Weresub Memorial Fund in recognition of the original gift from Miss Matilda Weresub in memory of her sister.

Applications should be sent, before April 30, 1999, to:

Dr. James A. Traquair  
Agriculture & Agri-Food Canada  
1391 Sanford St.,  
London, ON, N5V 4T3

Tel. : (519) 645-4452 Ext.224; Fax. : (519) 645-5476

E-mail : traquairj@em.agr.ca

**A. E. PORSILD AWARD**

for the best student paper in systematics and phytogeography

The Porsild award is dedicated to the memory of Dr. Alf Erling Porsild for his many scientific contributions, especially his pioneering works in the Canadian North. Dr Porsild collected well over 100 000 plant specimens and published many papers, including major publications on the floras of Alaska, the Arctic Islands, the Northwest Territories, the Rocky Mountains, and the Yukon Territory.

Applications should be sent, before April 30, 1999, to:

Dr. Luc Brouillet  
Institut de recherche en biologie végétale  
Université de Montréal  
4101, rue Sherbrooke Est  
Montréal, QC, H1X 2B2

Tel. : (514) 872-8490, Fax : (514) 872-9406

E-mail : luc.brouillet@umontreal.ca

**TERMS OF REFERENCE FOR THE AWARDS**

1. All students who have graduated from or are currently enrolled in a Canadian university, or Canadian students who have studied abroad are eligible.
2. These awards are for work published while the author is still a student or based on work done while a student and published within two years of graduating. This make allowance for students who do not write until after thesis (graduate or undergraduate) completion and journal publication delays.
3. Students do not have to be CBA members to be eligible for the Rowe, Steeves, Weresub and Porsild awards.
4. No candidate may submit a paper for more than one award.
5. The student must be the sole or first author of the paper.
6. The paper must have been published during 1998. Papers published in late 1997 but not available in reprint form in time for the 1998 deadline (April 30, 1998) will be considered eligible.
7. Joint papers must be accompanied by a statement on university letterhead, signed by all the authors, estimating the percentage responsibility of each author for :
  - a) the ideas that led to the initiation of the project;
  - b) the actual research skill demonstrated;
  - c) the writing of the manuscript.
8. All applications should include four copies of each of the following:
  - a) a reprint of the paper (or a proof copy of the paper plus a letter from the editor of the journal stating that this paper is in press with a 1998 publication date);
  - b) the candidate's curriculum vitae, including current address and e-mail information;
  - c) a statement indicating that this student is currently enrolled in a degree program, or has completed such a program during the calendar year for which the award is to be made (except for extenuating circumstances with respect to timing of publication as noted above in (2));
  - d) a statement from the supervisor, the student, and any co-author, establishing responsibility for the paper as outlined above in (6).
9. Student award winners receive a one (1) year's membership in the CBA.
10. Applications and supporting document must be sent, before April 30, 1999, to the section chair responsible for the prize.

**Prix pour les meilleurs articles écrits par les étudiants (Rowe, Steeves, Porsild et Weresub)**

**LE PRIX J.S. ROWE**

pour le meilleur article en écologie

Ce prix annuel a été établi en l'honneur du professeur J. Stan Rowe qui fut le premier président de la section écologie de l'ABC. Le professeur Rowe a contribué au développement de l'écologie au Canada en encourageant les écologistes canadiens à joindre les rangs de l'ABC et à échanger avec leurs collègues du reste du monde. Le professeur Rowe est reconnu pour ses recherches sur les communautés forestières et son enseignement dynamique et enthousiaste.

Les candidatures doivent être envoyées avant le 30 avril 1999

à :

Dr. Ed Reekie  
Biology Department  
Acadia University  
Wolfville, NS, B0P 1X0

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Courriel : ereekie@ace.acadiau.ca

**LE PRIX TAYLOR A. STEEVES**

pour le meilleur article en  
structure et développement des plantes

Ce prix annuel a été établi pour honorer les divers types de contributions du professeur Taylor A. Steeves à l'avancement de la botanique au Canada. Le Dr. Steeves a apporté une importante contribution à notre connaissance de la morphologie et du développement des végétaux par la publications de livres et d'articles scientifiques originaux. Il a été directeur scientifique des revues scientifiques Canadian Journal of Botany et Botanical Gazette. Comme professeur, il manifeste une habileté exceptionnelle pour rendre intelligible des concepts scientifiques souvent complexes. Ce prix a pour objectif de mettre en valeur les qualités qui font la renommée du Dr. Taylor A. Steeves.

Les candidatures doivent être envoyées avant le 30 avril, 1999

à :

Dr. Ron Dengler  
Life Science Division  
University of Toronto at Scarborough  
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Scarborough, ON, M1C 1A4

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**LE PRIX A.E. PORSILD**

pour le meilleur article en systématique et en phytogéographie

Ce prix est décerné en l'honneur du Dr. Alf Erling Porsild pour ses nombreuses contributions scientifiques, particulièrement ses travaux portant sur le Nord canadien. Le Dr. Porsild a récolter plus de 100 000 spécimens de plantes et à publier un grand nombre d'articles, incluant des publications importantes sur la flore de l'Alaska, des Îles Arctiques, des Territoires du Nord Ouest, des Montagnes Rocheuses et du Territoire du Yukon.

Les candidatures doivent être envoyées avant le 30 avril, 1999

à :

Dr. Luc Brouillet  
Institut de recherche en biologie végétale  
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4101, rue Sherbrooke est  
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**PRIX L.K. WERESUB**

pour le meilleur article en mycologie

Les sources de revenu pour ce prix annuel proviennent du Luella K. Weresub Memorial Fund. Ce fonds provient d'un don fait par madame Matilda Weresub en l'honneur de sa soeur.

Les candidatures doivent être envoyées avant le 30 avril, 1999

à :

Dr. James A. Traquair  
Agriculture & Agri-Food Canada  
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London, ON, N5V 4T3

Tél. : (519) 645-4452 Ext.224; Téléc. : (519) 645-5476

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**RÈGLEMENTS POUR LES PRIX**

1. Les étudiants qui viennent de terminer leurs études ou qui sont actuellement inscrits dans une université canadienne, de même que les étudiants canadiens qui étudient à l'étranger sont admissibles à ce prix.
2. Ces prix sont décernés pour des travaux publiés pendant que l'étudiant est encore aux études ou pour des travaux réalisés en tant qu'étudiant et publiés durant les deux ans suivant la promotion. Ceci permet de tenir compte des étudiants qui rédigent des publications après avoir obtenu leur diplôme et des délais de publication.
3. Les étudiants n'ont pas à être membre de l'ABC pour être admissibles aux prix Rowe, Steeves, Porsild et Weresub.
4. Les candidats ne peuvent soumettre un article à plus d'un prix.
5. L'étudiant doit être le seul ou le premier auteur de l'article.
6. L'article doit avoir été publié durant l'année 1998. Les articles qui ont été publiés à la fin de 1997 mais qui n'étaient pas disponibles sous forme de tirés à part pour le concours de 1998 (30 avril 1998) sont admissibles.
7. Les articles écrits en collaboration doivent être accompagnés d'une lettre avec l'en-tête de l'Université, signée par tous les auteurs, indiquant la participation de chacun aux aspects suivants :
  - a) les idées qui ont amené la mise sur pied du projet;
  - b) la réalisation de la recherche;
  - c) la rédaction du manuscrit.
8. Les dossiers doivent contenir quatre copies des documents suivants:
  - a) un tiré à part de l'article (ou une copie des épreuves avec une lettre de l'éditeur de la revue indiquant que l'article aura l'année 1998 comme date de publication);
  - b) le curriculum vitae du candidat, incluant son adresse postale et électronique;
  - c) une preuve démontrant que l'étudiant est inscrit dans un programme d'études ou qu'il vient de compléter un tel programme durant l'année pour lequel le prix est offert (ce règlement ne s'applique pas pour ceux qui répondent aux critères d'extension du délai tel qu'indiqué plus haut(2));
  - d) une lettre du directeur de recherche signée par tous les auteurs de l'article indiquant leur contribution respective dans la réalisation de la publication, tel que décrit précédemment (6).
9. Les lauréats recevront une adhésion d'un an à l'ABC.
10. Les candidatures et tous les documents requis doivent être envoyés avant le 30 avril 1999 au président de la section dans laquelle est attribuée le prix.

## Poorly Known Economic Plants of Canada

### 20. Cranberry, *Vaccinium macrocarpon*

Ait.

**E. Small and P.M. Catling**, Eastern Cereal and Oilseed Research Centre, Research Branch, Agriculture and Agri-Food Canada, Saunders Bldg., Central Experimental Farm, Ottawa K1A 0C6.

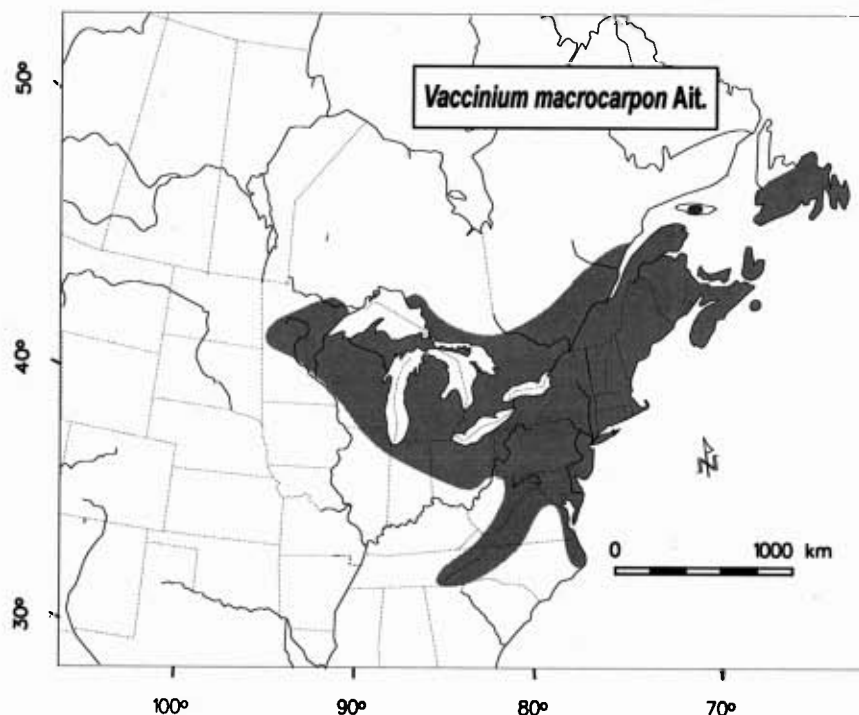
**Common Names:** Cranberry, large cranberry, American cranberry. French: canneberge, airelle à gros fruits, gros atocas (Îles de la Madeleine: graines, pommes de pré).

Red-fruited species of *Vaccinium* are almost universally called cranberries in North America. "Cranberry" is a corruption of "crane-berry," an early American name for the plant (the slender curving pedicel, calyx and corolla of the flower bud are said to simulate respectively the neck, head and beak of a crane). The taxonomically complex genus *Vaccinium* is often divided into several subgenera or sections, including the subgenus or genus *Oxycoccus*, in which about four species are placed, including *V. macrocarpon* and its close relative *V. oxycoccus* L., sometimes called the "true cranberries." The partridgeberry or mountain cranberry (*V. vitis-idaea* L.) is segregated in a different subgenus of *Vaccinium*, but is somewhat similar. The American cranberry-bush, *Viburnum trilobum* Marsh., also called "highbush cranberry," is not related to the true cranberry; this species is a close relative of the elderberry. The Florida cranberry, *Hibiscus sabdariffa* L., is also quite unrelated to *Vaccinium*, but the fleshy calyx

which surrounds the mature fruit is cooked and served as "cranberry."

The large cranberry, *V. macrocarpon*, occurs in open acid bogs, swamps, wet shores, and damp heaths. It is adapted to highly acidic soils (thriving at pH 3.2-4.5). However, the species also occurs in circumneutral substrates. It is distributed from Newfoundland to central Minnesota, south to Nova Scotia, New England, Long Island (New York), West Virginia, northern Ohio, central Indiana, northern Illinois, and rarely Arkansas, and the Appalachian Mountains of Tennessee and North Carolina. The large cranberry is grown within its native range, but also in parts of British Columbia, Washington and Oregon, where it has escaped and established in the wild. Plants are cultivated in parts of northern and central Europe, and the species has also escaped and become naturalized in Britain, Germany, the Netherlands and Switzerland. Numerous cultivars were selected in the 19th century. Most cranberry cultivars originated as single vine selections from native populations, but breeding has produced some improved cultivars. Cultivars include 'Early Black,' 'Howes,' 'Stevens,' 'Searles,' 'McFarlin,' 'Bergman,' 'Crowley,' and 'Ben Lear.'

The cranberry can self-pollinate, although bees increase fruit yield, and for this purpose bee colonies are frequently brought into cranberry bogs during flowering. A variety of natural pollinators have been reported, most important of which are bumble bees. The berries of *V. macrocarpon* are dispersed by water and shore birds. Muskrat and deer are also fond of the berries.



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The genetic diversity of the large cranberry is threatened as a consequence of the general decline of natural wetland habitats. Genetic diversity appears to be low in the northern part of the range, but relict populations in the southern Appalachians south of land glaciated during the Pleistocene period may be more variable. A recent study suggested that DNA analysis (ssRAPDs) can be used effectively in assessment of genetic diversity and varietal identification.

*Vaccinium oxycoccus*, the small cranberry or mossberry, is closely related and very similar to the large cranberry. The small cranberry is a very widespread species of boggy or peaty soil, occurring from Greenland and Labrador to Alaska, south to New Jersey, Pennsylvania, Ohio, Indiana and Minnesota, in the west to California, and also in Eurasia. The species is variable and is sometimes treated as a complex of several species. It has been interpreted as a tetraploid hybrid (with 48 chromosomes) of the diploid *V. macrocarpon* (with 24 chromosomes) and the diploid *V. microcarpon* (Turcz.) Hook. of boreal America and Eurasia. The small cranberry may be distinguished from the large cranberry by the pedicels bearing a pair of smaller red bractlets less than 1 mm broad near or below their middle (whereas the bractlets are closer to the flowers in *V. macrocarpon*, green and mostly 1-3 mm broad) and the smaller fruit (5-13 mm in diameter vs. 10-25 mm for *V. macrocarpon*). The leaves of the small cranberry are pointed whereas those of the large cranberry are blunt or rounded at the tip. Berries are gathered from the wild,

but the smaller fruits and relatively limited productivity of the small cranberry have discouraged interest in its domestication.

The large cranberry is an evergreen, creeping, mat-forming plant with slender, intricately forking woody horizontal stems 30-150 cm long, and upright flowering stems arising from the leaf axils. Although often referred to as a vine, it is a trailing shrub, rather than a true vine. The leaves are 5-18 (generally 7-10) mm long, somewhat leathery, with a very short leaf stalk. One to ten nodding pink flowers are borne on young upright shoots 4-15 cm high. Each flower is on a pedicel 10-30 mm long, in the axil of a small leaf. Flower buds form in late summer, open in midsummer (late June - early July) of the following year and, after insect pollination, the fruits mature late in the autumn (mid- to late October). The berries are typically bright red at maturity, 1-2.5 cm thick, globose, ellipsoid, or pear-shaped, with hard, shiny skin. Some plants produce white berries and attempts have been made to commercialize such forms; however, because the dark pigments of the fruit contribute substantially to the taste and medicinal quality of cranberries, the value of white cranberries is debatable. Fruits of cranberry cultivars may be bell-shaped, bugle-shaped, or cherry-shaped, and color may vary from a light yellow through to dark red to almost black. The berries are high in acid and pectin, and extremely tart (astringent) due to their low sugar content. The fruits ripen in early to mid-fall, at which time they become loosely attached to the stem.



Cranberries have long been in demand as a food plant. The fruit was prized by Native Americans, who used it in many ways, notably in pemmican, a dried mixture of animal fat and fruit, which was the precursor of the dehydrated foods used by present-day hikers during camping trips. Benzoic acid in the berries likely aided in preservation. The Pilgrims on arriving in the New World found cranberries growing profusely in the area about Cape Cod, and observed that the Indians used the fruit as a source of a brilliant red dye for their clothes. Today, cranberries provide a tasty sauce to accompany meat and poultry, as well as being incorporated in salads, juice, cocktails, pies, tarts, jellies and preserves. In fact, at least 700 consumer products contain cranberries in one form or another. The cranberry is a beautiful fruit, and this has led to its use especially during the Christmas and Thanksgiving festive seasons. Most cranberries are frozen for storage or marketing. Damaged cranberries often sink in water, so that simply washing berries in water can reveal the superior berries. Another method that has been recommended to judge the quality of cranberries is to bounce them: the more times they bounce, the better the berry.

European colonists appreciated the value of cranberry in warding off scurvy, a legitimate medicinal use, since the berries are exceptionally high in vitamin C. Cranberries are also moderately high in vitamin A, and quite high in fiber and anthocyanins, all components that have health-giving qualities.

Cranberry also acquired a folk reputation as a treatment for urinary tract problems, and this application has also been validated. Cranberry is a strong diuretic (promoting urination), and the juice is often prescribed as dietary treatment for urinary tract infections, kidney disorders and other conditions where the passing of fluids is desirable. Many women suffer from cystitis, an inflammation and/or infection of the bladder, at some time in their lives, with as many as one in five women estimated to have urinary tract discomfort at least once a year. Cystitis is most frequently caused by bacteria that travel from the urethra, and because women have a shorter urethra which is more easily contaminated by organisms from the vagina and surrounding areas, urinary tract infections are about 50 times more common in females than in males. Antibiotics are an effective therapy, but antibiotic use sometimes results in adverse reactions, can be costly, and can lead to the development of resistant organisms. Cranberry can be used both as a preventive and as an adjunct treatment for urinary tract infections. Cranberry juice therapy may require drinking a liter (or pint) of straight cranberry juice daily, which few are willing to do. Fortunately cranberry capsules are easily swallowed. Consumers should be aware that some of the "cranberry juice" on the market may have much sugar and water added, but the pure form or a concentrate is likely to be more beneficial. In addition to preventing urinary tract infections, cranberry is reported to have the added benefit of deodorizing the urinary tract. Cranberries are not considered toxic, although drinking more than 4 liters a day can result in diarrhea and other gastrointestinal problems.

There are several theories to explain why cranberry is effective for maintaining urinary tract health: the juice may make the urine more acidic, and the bacteria that cause infection are not likely to flourish in an acid environment (there is relatively little support today for this explanation); cranberries may cause relatively large amounts of the bacteriostatic hippuric acid to be excreted in the urine; components of cranberry juice may interfere with the ability of bacteria to stick to the lining of the bladder and urethra, and so they are washed away in the urinary stream. The last interpretation is generally favored today. It appears that the most common bacterium responsible for urinary tract infection, *Escherichia coli*, produces constituents known as adhesins to anchor to tissues, and that there are anti-adhesin factors in cranberry juice.

Preliminary tests conducted by University of Wisconsin researchers have suggested that cranberry juice may have an anti-oxidant effect on clogged heart arteries, thus reducing cardiovascular disease.

In 1959 many cranberry growers in the United States applied the weed killer aminotriazole prematurely, before the cranberries were harvested, rather than following the usual practice of waiting until the crop was removed. As a result the berries were contaminated. The incident led to sensationalistic publicity after it was disclosed that the chemical was capable of producing cancer in mice, and the resulting suspension of cranberry sales led to millions of dollars of losses for the cranberry industry.

Cranberry culture was developed in the New World. Henry Hall of Dennis, Massachusetts, on Cape Cod, was first to cultivate the crop at the beginning of the 19th century. Commercial (engineered) bogs became common soon after that. By the late 19th century, commercial cultivation had spread north to Nova Scotia.

The center of cranberry cultivation and production is Massachusetts. In 1970, cranberry juice was named the state beverage. In 1992, a fifth-grade class adopted the cause of making the cranberry the official berry of the state. Their 2 years of lobbying, petitions, and hearings were finally rewarded in 1994. Large quantities of cranberry are also raised in the peatlands of British Columbia, New Jersey, Washington and Oregon. Considerable cranberry culture also occurs in Wisconsin, and in limited degree in Ontario, Quebec, and the maritime provinces. In Canada, native people have harvested cranberries on a small scale for many years, for example in the Parry Sound region of Ontario. For a long period the major area of cranberry production in Canada was Lulu Island at the mouth of the Fraser River. Currently Canadian cranberry growing is carried out primarily in the lower portions of the Fraser River Valley of British Columbia, an area near Drummondville Quebec, and in several parts of Nova Scotia. There are over 1,000 cranberry growers in the United States, utilizing almost 14,000 ha and producing over \$1 billion in retail sales annually. Ocean Spray Inc., a growers'

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cooperative comprising 950 cranberry and grapefruit growers in the US and Canada, markets about 90 percent of the cranberries grown in North America.

Cranberries are confined to cool, moist regions, and culture of them is largely restricted to acid soils along the edges of streams, and ponds, and in bogs of temperate North America. Cranberry culture is a highly specialized form of small fruit production. Although cranberries are adapted to moist habitats, too high a water level encourages rushes, sedges and other competing plants, which then crowd the crop and interfere with pest control and picking. *Sphagnum* bogs are unsuitable until drained and the substrate allowed to decay to muck. Muck soils are particularly desirable because of their moisture-holding capacity. Cranberries have also been successfully planted on relatively dry soils near the sea, where relatively low summer temperatures retard evaporation. Bogs are occasionally built on sand or clay with little or no muck, but these usually require considerable fertilization, normally supplied by the decaying organic matter.

The development of a cranberry bog is a complex operation requiring considerable capital outlay. Typically a series of planting beds about a ha in size, serviced by a single reservoir of water, is laid out. A cranberry bog is usually established by pressing stem cuttings into the surface of a freshly sanded bed. A coating of sand is provided annually or every 2 years. Sand is a favorable rooting medium, suppressing weeds, and protecting the plants from mild frosts by holding absorbed heat from the sun. Cranberry vines bear some fruit in the second and third season, but 3-5 years are necessary for full production. Because of high labor costs and a short picking season, mechanical harvesters are widely used. Bogs are typically flooded at harvest time to a depth of 15-20 cm. The berries are shaken off the bushes and as they float on the surface they are easily raked or vacuumed into containers for cleaning and sorting. All of these operations can be carried out by some mechanical harvesters. Flooding during the winter season is practised to protect the plants from freezing damage (encasing the vines in ice insulates the buds against winter injury). Properly maintained bogs are almost permanent, some plantings remaining productive for over 75 years. Yield usually ranges from 8000-10000 kg/ha.

Pests of cranberry crops may account for almost 35% of field costs. The pests include at least 26 insects, 35 fungi, 6 nematodes, several viruses, and many weeds (mostly grasses and sedges), as well as two parasitic dodder plants (genus *Cuscuta*). Larvae of the cranberry fruit worm moth consume the berries. These and some of the fireworm moth pests can be effectively controlled by appropriate cycles of flooding. Frost damage has been a major cause of periodic crop losses. Yield of cranberries has increased by five times between 1909 and the present due to gradual and continuous improvements in management, including frost injury prevention, improved harvest technology and modern control of pests. The substantial increases in productivity have been stimulated by a combination of scientific research and pro-

ducer innovations.

In 1955 20% of US households used cranberry juice products. By 1985 this had increased to 70%, and the popularity of cranberry continues to expand. There has been concern that environmentally sensitive wetlands might be eliminated or damaged by development of new cranberry bogs, but technology is available to control damage to wetland sites, and even to develop bogs on dryland sites. Demand for the fruit has almost always exceeded the supply, keeping prices high. However, the potential for increasing productivity is good. There are a number of locally adapted cultivars, and newer hybrid cultivars are expected to become increasingly available as a result of accelerated breeding programs. Experts have suggested that considerable improvements could be realized with a sustained breeding program for insect resistance, as well as other traits. A wealth of information on cultivation procedures exists in books and regional agriculture department pamphlets. Current markets are reported to require several thousand acres of new plantings in the near future, and demand is expected to continue to increase. Although the cost of initial establishment is relatively high and costs are not recovered quickly, cranberry appears to be a good investment. With a large potential area of cultivation in the eastern provinces and British Columbia, cranberry could become a much more important Canadian crop.

## Book Reviews

*The following publications have not yet been spoken for:  
If you are willing to review one of these books please  
contact the editor at the address indicated at the  
beginning of the bulletin (page 2).  
On request, the book you wish to review will be sent to you.*

**Plant Family Album,  
an interactive botanical review  
Vol. 1 The Rosidae (CD ROM)**  
by M.J. Waterway and H.C. Rimmer  
McGill University, 1997

**Pollen Biotechnology for  
Crop Production and Improvement**  
by K.R. Shivana and V.K. Sawhney  
Cambridge University Press, 1997

**Symmetry in Plants**  
by R.V. Jean and D. Barabé (Editors)  
World Scientific, 1997  
(Series in Mathematical Biology and Medicine, Vol. 4)

**The Shoot Apical Meristem**  
Its Growth and Development  
by R.F. Lindon  
Cambridge University Press, 1998

### **Molecular Genetics of Plant Development**

by S.H. Howell  
Cambridge University Press, 1998

### **British Plant Communities**

Edited by J.S. Rodwell  
Volume 1: Woodlands and scrub  
Volume 3: Grasslands and montane communities  
Cambridge University Press, 1998

### **Plant Responses to Elevated CO<sub>2</sub>: Evidence from Natural Springs**

Edited by A. Raschi, F. Migletta,  
R. Tognetti and P. R. van Gardingen  
Cambridge University Press  
New York, 1997  
(US \$ 69.95)

As the authors note, the rise in the concentration of CO<sub>2</sub> in the atmosphere since the industrial revolution, and the global warming associated with this greenhouse gas has stimulated research into the response of plants to elevated levels of CO<sub>2</sub>. While much of this work has been carried out in controlled environments in simple experiments of short duration, this collection discusses long-term effects of CO<sub>2</sub> on vegetation. This is achieved through the study of plant communities found near CO<sub>2</sub>-emitting mineral springs. These communities have endured over many generations at naturally elevated levels of CO<sub>2</sub>, and are considered by the authors to provide unique natural laboratories in the investigation of this aspect of climate change. All of the research presented is drawn from these naturally occurring areas that exhibit elevated levels of CO<sub>2</sub>.

Rather than being divided into subsections, this volume assumes a quasi-temporal progression through implied topics. The book begins with a general discussion of sites of naturally elevated CO<sub>2</sub>, migration of CO<sub>2</sub> in the ground, and levels of CO<sub>2</sub> leakage in relation to geology. The authors then proceed to investigate specific geographic areas exhibiting elevated CO<sub>2</sub> and discuss some of the long-term plant responses and research opportunities in each of these locales. The text then turns toward changes in community structure and ecology and morpho-physiological responses. The majority of the book then focuses on various physiological aspects including carbon metabolism, growth, stomatal numbers, nitrogen assimilation and oxidative risk. The book concludes with a discussion of the effects of elevated CO<sub>2</sub> levels on decomposition processes in forest ecosystems.

Although certainly not exhaustive of the topic, this book

does provide a good synopsis of the major effects of elevated CO<sub>2</sub> on plant communities. It is greatly restricted in its coverage of the subject as a result of its subtitle. It makes a good complement to other sources that report research conducted under manipulated experimental conditions. It seems that the authors have attempted to cover the topic in a temporal manner by beginning with the origins of atmospheric CO<sub>2</sub> and then progressing through discussions of the natural sites being used for study, effects on plant community structure, physiological processes, and litter decomposition. If this is in fact the case then the one obvious area that is lacking in the volume is a section dealing with the effects of elevated CO<sub>2</sub> on seed germination and early seedling growth and establishment since these may be paramount in the determination of community structure and hence the subjects available for physiological experimentation at later times. In general it is a well illustrated and referenced volume.

**Michael Downs**, Agriculture and Agrifood Canada, Greenhouse and Processing Crops Research Center, Harrow, Ontario

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### **Les arbres du Canada sur CD-ROM**

par John Laird Farrar  
(Ressources naturelles du Canada,  
Service canadien des forêts)  
Les Éditions Fides  
Saint Laurent, QC  
(54,95 \$ CA)

(English translation follows the French text)

Le livre *Les arbres du Canada*, par John Laird Farrar, est considéré par plus d'un comme une des meilleures références pour l'identification des arbres indigènes. À la Maison de l'arbre du Jardin botanique de Montréal, les animatrices y réfèrent fréquemment pour répondre aux questions du public. Qu'en est-il de la toute récente version sur CD-ROM?

De façon générale, la qualité du texte et des photos est indéniable. On retrouve évidemment toutes les informations contenues dans le livre mais présentées de façon plus dynamique et interactive. On trouve les sections suivantes : guide de l'utilisateur, recherche d'un arbre, identification et description, clefs botaniques, dendrologie, régions forestières, listes thématiques, salle des cartes, documentation.

Les habitués de ces nouvelles bibliothèques électroniques que sont les CD-ROM, ouvrent spontanément la page qui démontre schématiquement l'architecture du CD. Bien construite, celle-ci ne donne toutefois pas d'accès direct à une rubrique choisie. Il faut donc revenir au menu principal.

La recherche d'un arbre, comme on feuilletterait le livre, fonctionne à partir des lettres de l'alphabet. En choisissant une lettre, on arrive dans une liste des genres et des espèces. En cliquant sur la

rubrique de son choix, on obtient une page descriptive comme celle du livre à laquelle on a ajouté un élément sonore, la prononciation latine des espèces. Cette page donne accès à toutes les parties de l'arbre. De plus, à tous moments on peut cliquer sur le groupe correspondant à l'espèce ou encore aux clefs botaniques.

La section dendrologie est plus complète, la banque de photos plus importantes que celles retrouvées dans le livre. Les régions forestières du Canada sont décrites et agrémentées de plusieurs photos. Si une région forestière couvre plus d'une province, on peut choisir la province pour y voir des photos correspondant à la région en question.

Un ajout intéressant sur ce CD-ROM permet d'avoir accès à des listes thématiques fort utiles:

- Les espèces décrites dans *Les arbres du Canada*, les espèces introduites et les espèces introduites et naturalisées. Cette liste est interactive;
- Les arbres indigènes du Canada;
- Les arbres indigènes «en péril» du Canada, soit les espèces vulnérables, menacées et en danger de disparition. Ces listes sont basées sur les données du Comité sur le statut des espèces menacées de disparition au Canada (CSEMDC).
- Les noms scientifiques synonymes. Cette liste contient plus de 60 espèces.
- Liste basée sur les différenciations sexuelles (espèces monoïques, espèces dioïques, espèces synoïques, espèces polygames).

Une section appelée « la salle des cartes », regroupe toutes les cartes des *Arbres du Canada* pour consultation rapide. Elle comprend une carte des zones de rusticité pour les plantes du Canada. On trouve également une carte des régions forestières du Canada divisée en 12 zones. De plus, une carte inusitée, celle des écozones terrestres du Canada est présentée. On souligne que parce qu'elles tiennent compte d'une grande variété de facteurs biologiques et physiques, les écozones seront de plus en plus utilisées comme outil privilégié pour analyser et situer l'information sur l'environnement.

Finalement, et c'est sûrement le cas pour plus d'un CD-ROM, le texte est parfois difficile à lire, le contraste et le caractère choisis n'étaient pas toujours les meilleurs. Notons aussi que la version française comporte quelques erreurs (un arbre mûr plutôt qu'un arbre mature!). En définitive, il est intéressant et instructif de naviguer sur ce CD-ROM, mais rien de remplacera le livre sur le terrain ou au coin du feu...

Andrée Hallé, responsable, Maison de l'arbre, Jardin botanique de Montréal

### **Trees in Canada on CD-ROM**

by John Laird Farrar  
Natural Resources Canada  
Canadian Forest Service  
Fitzhenry and Whiteside  
Markham, ON, (Cdn \$ 54.95)

The book *Trees in Canada* by John Laird Farrar is considered by many to be one of the best references for the identification of our

native trees. At the Maison de l'Arbre of the Jardin botanique de Montréal, where we have firsthand experience, the staff often use it to reply to questions from the public. The book is now available on CD-ROM and my review concerns this electronic version.

In general, the quality of the texts and photos is irreproachable. Naturally, all the information found in the hard copy format is also found on the CD, but it is presented in a more dynamic and interactive manner. The information is broken down in sections identified as follows: User's Guide, Tree Search, Identification and Description, Botanical Keys, Dendrology, Forest Regions, Species Lists, Map Room, Reference Section. The menus are interactive.

People already familiar with these new electronic libraries will automatically open the page that displays the architectural diagram of the CD. This page is well laid out, however, it does not permit you to go directly to a particular subject. You must go back to the main menu.

To look up a particular tree, as you would if you were using the book, you use the letters of the alphabet. By choosing a letter, you display a corresponding list of genera and species. By clicking on the name of choice, you obtain a descriptive page for the species including illustrations and a range map. A sound track has been added giving the proper latin pronunciation of the species name. This page also gives you access to further descriptive information concerning all the parts of the tree. At any moment you can click on the identification keys or on the group of related species into which the tree has been classified based on leaf characters.

The section on dendrology is more complete than in the book and the number of pictures (580 color images) stored in the photo bank is also larger. The forest regions of Canada are well described and illustrated with numerous pictures. If a particular forest region extends over territory in more than one province, you can choose the province for which you wish to see corresponding pictures.

An interesting addition to the CD-ROM version permits you to access a list of topics of particular interest:

- A list of all the species described including the introduced and naturalized species. This list is interactive.
- A list of the native tree species.
- A list of the endangered or "at risk" native trees of Canada based on information compiled by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- A list of synonyms (more than 60) for scientific names.
- A break down of species based on the type of sexual reproduction (monaceous, diaceous, synaceous, etc...)

A section called the "map room" contains all the range maps for easy consultation. It also contains a map of the hardiness zones for ornamental plants in Canada, a map of the 12 forest regions of Canada, and a map of the terrestrial ecozones of Canada. The latter map is particularly interesting because ecozones are being used more and more for analysing environmental information as it pertains to spatial distributions.

Finally, and this is probably the case for more than one CD-ROM, the text is sometimes difficult to read. The contrast and the font that is used are not always the best. I would also point out that the French version contains some errors such as "arbre mûr" instead of

"arbre mature". Although it is certainly interesting and instructive to navigate on the CD-ROM version of the *Trees in Canada*, in my mind, the electronic version won't replace the book either for its usefulness in the field or its place by the fireplace.

Andrée Hallé, Curator, Maison de l'arbre, Jardin botanique de Montréal

Translation, Stuart Hay, IRBV, Université de Montréal

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### The Ferns of Great Britain and Ireland

Second Edition

By C.N. Page

Cambridge University Press

New York, 1997

(US \$ 64.95, Paperback)

If the fifteen years since publication of the first edition of this standard field guide to the pteridophytes of Great Britain and Ireland, significant advances have occurred in knowledge of the taxonomy, reproductive biology and ecology of these plants. In addition, the great success of the first edition as a field guide and a stimulus to research prompted the publisher and author to bring forward this new edition. While Canadian botanists will use the book infrequently as a field guide to Canadian representatives, for obvious reasons, they will be greatly rewarded by careful consultation of the book. In organisation and illustration, it is a model of clarity, utility, and richness of detail, accessible equally to professionals and non-specialists.

In the first twenty pages the essential prerequisites for effective use of the guide are set out clearly - a concise introduction, an explanation of pteridophyte morphology, a glossary, and two keys to the identification of groups, genera and species. A graphical summary of the altitudinal ranges of the native taxa is followed by a cartographic display of the environmental factors influencing native pteridophyte ranges. (Map 10 serves to dispel the popular Canadian myth that "Britain is such a rainy place", showing the full range of precipitation from <600mm to >3200mm).

There follow almost 500 pages of description of the species and hybrids of the native ferns and fern-allies (Club mosses, Quillworts and Horsetails) of the British Isles. Here is a rich repository of biological information that goes far beyond the scope of a traditional field guide, providing new data on such topics as gametophyte development, morphology and ecology; cytotaxonomy and molecular biology; detailed accounts of the biogeography and ecology, and, where relevant, details of the influence of certain taxa on human health and landscape management. Each taxon has a dot-map of its occurrence, a terse statement of its salient features for recognition, and a summary

of its occurrence in the area and elsewhere. The core text for each taxon consists of details of identification, variation, possible confusion with other taxa, technical details including chromosome number, and information on habitats, indicator value and associated taxa. A graphical summary is included for each taxon of the phenology of sporulation, frond expansion, spore release, frond die-back and disappearance, and each taxon is illustrated by superb silhouette diagrams produced directly from specimens by the xerographic copier method. Monochromatic photographs of selected whole plants, plant parts and plant communities provide useful additional illustrative material.

A wide range of botanists, professional and amateur, will find much of great interest in this excellent book.

Jim Ritchie, University of Wales at Aberystwyth, UK

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### EUCLID

#### Eucalypts of south-eastern Australia

M.I.H. Brooker, J.R. Connors et A.V. Slee

Centre for Plant Biodiversity Research,

CSIRO, Collingwood

Australia, 1997

(128,00 \$ US)

(English translation will be published  
in the next issue of the Bulletin)

Les eucalyptus, originaires d'Australie, sont aujourd'hui plantés dans le Monde entier. Cependant, leur identification restait toujours difficile. Heureusement, depuis l'année dernière, il existe un moyen rapide, commode et efficace pour résoudre ce problème. Il s'appelle EUCLID (Brooker *et al.* 1997). De quoi s'agit-il?

EUCLID (EUCaLyptus IDentification) représente le premier système informatique interactif d'identification des eucalyptus au Monde, présenté sur cédérom. Il a été réalisé au Centre de recherche sur la biodiversité végétale du CSIRO, en utilisant la base des données de l'Herbier national d'Australie. Cette dernière base comprend les renseignements concernant 60 000 spécimens d'eucalyptus et les informations dérivées des études morphologiques expérimentales menées en serre ou obtenues lors des observations extensives sur le terrain.

EUCLID concerne 310 espèces et sous-espèces du Sud-Est de l'Australie, c.-à-d., de la Nouvelle-Galles du Sud, du Territoire de la capitale nationale, de Victoria, de la Tasmanie et de la partie sud-est de l'Australie-Méridionale. Le système contient les données les plus complètes, qu'il soit, sur la morpholo-

gie (aspect général, écorce, fleurs, fruits, graines et feuilles), les synonymes, la distribution et les possibilités d'utilisation (bois, fibres, essences, miel, valeur ornementale, etc.) de ces taxons. Il comprend, en outre, de nombreux dessins et plus de 2 000 photographies en couleurs.

L'avantage de ce système, par rapport aux clefs d'identification traditionnelles, est que les caractères d'identification qui ne sont pas présents sur l'échantillon à identifier, ou dont la reconnaissance pose des problèmes, peuvent être tout simplement éliminés, sans pour autant compromettre la suite du processus d'identification. De plus, EUCLID peut être utilisé même sur des échantillons incomplets ou réduits à un seul fruit ou à une seule feuille, par exemple.

Voyons maintenant comment ce système fonctionne. Au tout début apparaissent à l'écran, côte à côte, quatre fenêtres comprenant, de gauche à droite et de haut en bas : (1) les 116 caractères utilisables; (2) les caractères choisis (cette fenêtre est au début vide); (3) les taxons éliminés (cette fenêtre est aussi vide au tout début); et (4) les taxons qui restent disponibles (310 au départ). Le problème qui se pose alors est le suivant : quelle est la meilleure façon de décrire l'échantillon à identifier pour que EUCLID puisse trouver le nom du taxon auquel il appartient?

La plupart des 116 caractères listés dans la 1<sup>re</sup> fenêtre offrent plusieurs choix. En ce qui concerne la forme générale, par exemple, il y a deux possibilités : s'agit-il (1) d'un arbre ou (2) d'un arbuste? Si nous choisissons « arbre », EUCLID l'inscrirait dans la 2<sup>e</sup> fenêtre et, en même temps, séparerait les 310 taxons en deux groupes : (1) les taxons éliminés, c.-à-d., ceux qui sont arbustifs et dont les noms sont transférés dans la 3<sup>e</sup> fenêtre et (2) les taxons restants, c.-à-d., ceux qui sont arborescents et dont les noms resteront dans la 4<sup>e</sup> fenêtre, celles des taxons « disponibles ». De la même façon, on utilisera les autres caractères « restants », en raccourcissant ainsi progressivement la liste des taxons « disponibles » jusqu'à ce qu'il n'en reste qu'un seul. À ce moment là, l'identification est terminée.

Oui, mais qu'est-ce qu'il arriverait si nous ne connaissions pas suffisamment un caractère d'identification, ce qui nous empêcherait de choisir une des possibilités offertes? Eh bien, dans ce cas, il suffirait de cliquer sur le bouton portant un point d'interrogation pour obtenir soit l'illustration appropriée, soit une courte description du caractère examiné. S'il arrivait que, malgré tout, nous ne comprenions pas de quoi il s'agit, il serait possible de laisser tomber ce caractère. Et, si jamais nous ne savions même pas quel autre caractère choisir, alors en cliquant sur le bouton « Best », EUCLID nous en proposerait un pour que nous puissions continuer le processus d'identification.

Une fois l'identité du taxon déterminé, on peut cliquer sur le bouton « i », situé en avant du nom latin, pour ouvrir une nouvelle fenêtre comprenant la description morphologique, l'écologie, les différences diagnostiques avec les taxons similaires,

les possibilités d'utilisations, etc., du taxon en question. En outre, le bouton du « carnet » permet à l'utilisateur d'y inscrire ses propres notes, afin de pouvoir les réutiliser lors d'une nouvelle identification.

On vient de le voir, cette excellente clef a été conçue autant pour les spécialistes que pour les non-spécialistes possédant des connaissances botaniques de base. Elle sera donc utile à la fois aux botanistes, dendrologistes, forestiers, écologistes, enseignants, chercheurs, étudiants, horticulteurs, fermiers, pépiniéristes et jardiniers. Je la recommande, en plus, à toute personne intéressée par un système d'identification électronique moderne et accueillant, applicable à n'importe quel problème d'identification, par exemple, à d'autres plantes et à leurs communautés, aux animaux, aux sols, aux minéraux, etc. Tout ce dont cette personne aura besoin est d'avoir accès à un ordinateur IBM ou compatible, de type 486 DX ou meilleur (par exemple Pentium). La vitesse d'accès au cédérom doit être 2x ou supérieure, et l'écran en couleurs doit posséder au minimum 640 x 480 pixels et disposer d'au moins 256 couleurs. Sur le disque dur, il lui faudra au moins 5 millions d'octets (5 MB) et dans l'ordinateur 8 millions d'octets (8 MB) de mémoire vive (RAM). L'environnement doit être celui de Windows 3.1 ou meilleur, par exemple, Windows 95. Ces conditions ne sont pas particulièrement exigeantes. Elles correspondent, de nos jours, à un ordinateur bien normal.

Pour terminer, on peut regretter seulement deux choses : d'abord, que ce cédérom n'existe pas pour les Macintosh et, ensuite, que son prix soit assez élevé (128,00 \$ US), ce qui réduira certainement le nombre de ses utilisateurs.

**Miroslav M. Grandtner**, Département des sciences du bois et de la forêt, Université Laval, Québec

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