

Canadian Chestnut Council (CCC)

...on the Chestnut Trail



NEWSLETTER # 37

April 2005

<http://www.uoguelph.ca/~chestnut>

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Ontario Trillium Foundation Grant

The Canadian Chestnut Council's autumn application for a follow-on grant from the Ontario Trillium Foundation (OTF) was submitted in October, and is being considered by the OTF Board. Approval is hoped for by the end of April.

Ms Nuala Doherty, OTF grant manager, reported this year that many applications have been received and adjudication will take time.

Last October, Dr. Terry Anderson, Deputy Chairman and head of the Planning Committee, drafted the new OTF application. It was submitted to the OTF by 15 October in

hope of an early decision. The OTF was swamped with grant requests, however, and has deferred announcements.

The CCC requested funds to underwrite planting guidance and record-keeping by our technician Mr. Dragan Galic, and to hire a part-time educator to satisfy the many appeals for presentations. Much of the latter fund requirement has been withdrawn from our request to increase the probability of approval, and some budgetting will be needed to finance him/her.

- CEH

Letters

Dear Sir,

I have been a member of the CCC for a few years now, and have tried growing chestnut trees from a considerable number of nuts provided by a friend, but without any success. I know now that storing the nuts here in Sault Ste Marie in the winter where the ambient temperature can be as low as -10° to -20°C lead to a futile effort.

The enclosed "Site Record" confirms that this species can survive this far north. The mature chestnut on Simpson Street appears to be quite healthy, and its size may qualify it to be added to the gene pool as a "mother tree." In fact I know very little about Silviculture. I think this tree was likely reported to the CCC by the Ontario Forest Research Institute Lab here in the Sault.

I believe it would be worth trying to pollinate this specific tree in the hope that it will at least broaden the gene pool. I spoke to Ms Cavanagh about it, and she gave her approval to proceed as we wish. Please check the enclosed "Site Record."

- Yours truly, Ron Bridge

[Note: Mr Bridge also enclosed a leaf from the tree.]

Response

The Board of Directors is very interested in this chestnut. The data and leaf that Mr Bridge sent confirm that the tree is an American chestnut.

The Board debated whether a chestnut growing in the Sault area can produce nuts, and came to no conclusion. An experiment is therefore in order.

It has been decided to send Mr. Bridge a set of materials to pollinate the tree: bags, tags and fresh hybrid pollen from Sandy's Tree in Connecticut. The shipment will likely be sent in June.

We have asked Mr. Bridge to pollinate the tree in accordance with the instructions included in the package.

The object will be to grow chestnuts from a tree with obviously high endurance for a cold climate, and to add its genes to the CCC chestnut gene pool as Mr Bridge has recommended.

We look forward to this experiment, and will report on its outcome. Mr Bridge is requested to continue to advise the CCC on his chestnut-growing activities.

- CEH

The Canadian Chestnut Council

The CCC is a scientific and charitable organization with the mission to restore the American chestnut. All its officers volunteer their services both in the field and at the desk. The CCC annual meeting, the web site and this Newsletter dispense information to generate support for saving and restoring this once-important forest tree.

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EDITORIALS

April is supposed to be the month of early flowers and daffodils. We were, however, thrown off balance by two days of wet snow commencing on the second of the month - the same day as the first Directors' Meeting of the year. As this is written, snow continues to fall.

Other surprises arose in 2005. A beaver appeared in our brook for the first time in three years, during the snowstorm. A mink preceded him by a month, and eleven deer graze regularly among the saplings growing in our former pasture. The existence of an American chestnut tree in Sault Ste Marie was confirmed by a letter, accompanied by a leaf sample, from a CCC correspondent. From British Columbia came a request for seedlings, to extend the range of our favourite tree across the continent.

Will we hear from Yukon next?

We await with high hopes grant approval from the Ontario Trillium Foundation. Although our hybrid seedlings have all been transplanted to Onondaga and Riverbend Farms from the Simcoe research Station, they still require constant attention and Dragan Galic's service will be needed over the next two to three years.

GENERAL MEETING

The **Annual General Meeting** of all CCC members will be held on 29 October this year, at a site to be determined.

We hope to be briefed by an expert on the population of American chestnut trees in Ontario, but the topics of presentations are yet to be determined.

Just be sure to circle **29 October** on your calendar.

CHESTNUT HISTORY

Have you a story to tell about American chestnuts? Tell us your experience in growing the trees from seedlings or nuts. Don't be shy; we can all learn from others' discoveries.

If you submit it, we will publish it. This is *your* newsletter.

WORDS OF WISDOM

Murray Alward, genius tree grower and CCC director, claims he has a new technique for watering seedlings. Just bury a 1/2 potato and a 1/2 onion in each pot; the onion will cause the potato's eyes to weep...

Wangari Maathai Awarded Nobel Peace Prize

Wangari Maathai became, in October, 2004, the most recent winner of the Nobel Peace Prize. She is renowned for her proclamations as an environmentalist and human rights activist.

Very few of the world's biologists focussing on agriculture have won that high honour.

In 1970, Dr Norman E Borlaug received the Nobel Peace Prize (CCC Newsletter # 34, April 2004). He was awarded this prize for his scientific work resulting in more than doubling the yields of cereal crops (primarily wheat and maize) in several of the underdeveloped countries of the world. He is often regarded as the father of the Green Revolution. Dr Borlaug began his scientific career in forestry, and has been an honorary director of The American Chestnut Foundation for more than twenty years.

Now Dr Maathai has been honoured in this special category of the Nobel Foundation. For at least two reasons, her award is of special significance.

First, she is a native of Kenya (Africa), an underdeveloped nation that has been receiving financial and scientific aid from Canada through the Canadian International development Agency (CIDA).

Secondly, and perhaps even more notably, she is a woman - an environmentalist and a human rights activist.

Dr Maathai began her professional career in the biological sciences. Now, one might confidently conclude that the Nobel Peace Prize institution is recognizing universally the scientific contribution of environmentally conscious biologists.

Dr Maathai obtained her Baccalaureate at Mont St Scholastica College, Atcheson, Kansas, USA in 1964, and a Master's degree from the University of Pittsburgh in 1966. She pursued doctoral studies in Germany and at the University of Nairobi, Kenya,

receiving a PhD in 1971. She became a full professor in the Department of Veterinary Anatomy, University of Nairobi.

Professor Maathai became active in Kenya's National Council of Women (NCW) in 1976, and its Chair in 1981-7. While serving in the NCW she introduced the idea of planting trees, which soon became a popular practice among rural women. This plan was established by 1976.

It continued to develop into a broad-based, grassroots organization where rural women might fulfil their duties of gathering firewood. Simultaneously, tree-planting would protect the barren soil from erosion. She taught that leaving the soil fallow was to be abhorred. Through the Greenbelt movement she has assisted women in planting more than 20 million trees on their farms and on school and church grounds.

In 1998, as Chair of the Jubilee 200 Campaign, she sought cancellation of the unpayable backlog of debts of Africa's poor countries. Her campaign against land-grabbing and the rapacious destruction of forest lands has caught the limelight.

Professor Maathai has received many honorary degrees. She has been serving on several national and international boards - even one of the United Nations Secretary-General's international boards.

Through her efforts, more and more of Africa's native people - and indeed people elsewhere in the world - are becoming aware of the essential role that trees play in our environments, both rural and urban.

To us in North America, who hope to see a blight-resistant American chestnut returned to our woodlots, the story of Wangari Maathai should be an inspiration. - CD McKeen

**Dr and Mrs Colin McKeen
escort Dr and Mrs Mark
Double to Onondaga Farms
for the 2004 Annual General
Meeting.**



Meet Your Directors

George Collin joined the CCC Board of Directors in November, 2002 and has been a loyal supporter ever since. He sits quietly, listening intently to heated debate, and then injects a word or two to put us back on track.

George grew up in Vancouver and worked summers on the family cattle ranch north of Kamloops. He received his Bachelor degree in Horticulture at the University of British Columbia. His first job was "Horticulturalist" at Agric Canada's Research Station near Prince George in central B. C.

In 1956 he moved to Cornell University in Utica, New York and earned Master and PhD degrees in Vegetable Crops. His research trials were into potato quality as affected by new mechanized harvesting practices. In July 1961 he reported for work at the Vineland Horticultural Experimental Station where his lonely life changed: he met and married Dorothy!

In 1964 the pair moved to the new Ontario research station at Simcoe, where George developed programs in support of horticultural production practices for fruit & vegetable crops grown in the central Erie area.

George moved Dorothy and their four daughters to Brooks, Alberta in 1974 to direct horticulture and irrigation research. Three years later he returned to

Toronto to chair the Ontario Farm Products Marketing Board, and then progressed to Executive Director of Production & Rural Development, Director of the Horticultural Research Institute and (in 1985) Assistant Deputy Minister of Marketing & Quality Standards.

In 1992 George took early retirement for health reasons. Not satisfied with his quantity of education, he enrolled in Landscape Architecture at the University of Guelph and graduated in 1996 with a Masters Degree in Landscape Architecture. Since then he has worked as a contract designer for landscapers in Guelph and Kitchener.

He is a charter member of the Wellington Society for the Countryside and a Director of Wellington GreenSpaces. George & Dorothy operate the MapleCrest Bed & Breakfast, and are active in Elora-Fergus Tourism.

In more direct support of the CCC - and to fill his leisure(!) hours - last year George planted chestnut seedlings at four test sites in Wellington County to evaluate the winter hardiness of chestnut selections showing



resistance to blight.

We are very fortunate to enjoy the expertise of this well-travelled and well-educated gentleman. - CEH

Successes and Failures in Chestnut Plantings in Southwestern Ontario

The Canadian Chestnut Council has been unable to maintain an adequate record of the successes and failures of chestnut plantings initiated in 1990 and subsequently. Only a few of them can be reported as success stories. If peoples' livelihoods depended upon their successes with chestnut plantings, as frequently happens on harvests of vegetable garden crops, many would starve to death. Obviously, a much improved knowledge of chestnut trees and how

to grow them is an urgent concern and need. Perhaps this is an indictment of our secular education system, where botany, and perhaps biology, are perhaps being poorly taught.

Nonetheless, there is a glimmer of optimism. Many people have learned from their mistakes and are anxious to do better. The upshot of these findings is that young trees require a lot of protection and TLC (tender loving care). (Continued Page 8)

The Dynamics of Chestnut Growth

Plant growth is an intriguing phenomenon. Every plant has its own growth characteristics. Learning about these peculiarities is a challenging experience for botanists, horticulturists and growers alike.

Three external factors profoundly influence growth, namely: light, heat and moisture (including mineral nutrients). To each of these factors, every plant has its own response; so this characteristic of unique, dynamic growth applies to perennials and annuals alike. Among the perennials, coniferous and deciduous trees constitute an important group.

Many of us are quite familiar with the growth of vegetables, small fruits, cereals and other farm and garden crops. With deciduous hardwoods, we are less familiar because we haven't spent the necessary time watching how they grow. Chestnut is one of these hardwoods that challenge us to try to understand the nature of their growth.

What follows are some observational findings on the growth of American chestnut and American chestnut hybrids - s seedlings in containers indoors and outdoors, in cold frames, and as one-, two- and three-year-old seedlings in field sites.

Buds and Break-In

A stem bud is much akin to the embryo in a seed or nut. Just as the embryo contains the blueprint for the form of growth of the seedling, the bud serves a similar function.

Buds on the stem follow a hierarchy of action. Normally the terminal bud exerts the controlling influence; it is the dominant bud. Buds located below the growing point on the stem are termed secondary, tertiary, etc. Yet any bud below the growing point may be called into action by damage to the stem tissues above it.

Activation of a secondary bud requires time (days or even weeks) to spring into action. Therefore, if the uninterrupted growth of the main vertical stem is a top priority, it is important that the terminal bud not be damaged or removed.

Bud Development and Its significance

Buds produced in the autumn are the organs determining the nature of the new growth the following Spring. At an appropriate time, when ambient air and soil temperatures rise to a critical level, buds swell, the bud scales open and a flush of growth begins. The unfolding stem growth represents what was enfolded in the bud. The number of leaves developing on the new shoot is already determined in the bud.

Development during the Growing Season

During the first flush of new stem growth, a new set of buds is formed in the axis of the expanding leaves. After a growth period of five to seven weeks, stem elongation slows and ultimately appears to come to a halt. During this period the stem is preparing for a second flush of growth. The lull in growth between the first and second flushes might be termed a rest period. It is a normal part of the regime of plant (seedling) growth.

This occurs at a critical time in the summer growth period. The beginning of the second flush of growth may be delayed by a number of factors; the most important of these is soil moisture. If that is adequate, the second flush of growth will follow soon after the first. However if moisture is critically low the second flush of growth may be delayed by days or weeks. Any abnormal delay is undesirable and is to be avoided if possible.

It must be remembered that, at midsummer, solar radiation is highest. Evaporation of moisture from the leaves is also very high. The demand on the trees' root systems to find moisture is excessive. If a moisture deficiency occurs in the cells of the plant, its growth will be shut down.

It is at the midseason growth period when it is advisable for a grower to give his plants some daily observational attention. This is particularly true if seedlings are being grown in containers, because soil moisture is difficult to maintain at appropriate levels.

While a deficit in soil moisture may be a serious problem, an excess of it may also become a serious one. This can occur with container-grown seedlings when frequent waterings seem necessary. Unabsorbed water in an inadequately drained soil mix can initiate root rot. If root rot sets in, the plant will stop growing and may not grow again for the rest of the season. The plant also die.

The key point about soil moisture is adequacy - neither too little nor too much.

In a well-drained sandy field soil there is unlikely to be an excess of moisture. By contrast, moisture deficiencies are not uncommon. As a general rule, fewer difficulties are encountered with field-grown plantings than with container-grown ones.

As has been mentioned in several previous CCC Newsletters, chestnut seedlings and young trees are unable to compete with grasses and weeds for soil moisture. That is why it is always recommended that competing vegetation be eliminated by applying effective herbicides or smothering them by keeping an adequate depth of mulch on the soil around the tree.

- CD McKeen

Ecological Status of American chestnut in its Native Range in Canada

- by Dr. Greg J. Boland¹ and Dr. Brian Husband²

Departments of Environmental Biology¹ and Botany², University of Guelph

American chestnut is one of more than 300 wildlife species in Canada that have been determined to be at risk of extinction by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Following the introduction of Chestnut blight to North America in 1904, and the resulting pandemic that dramatically reduced the prevalence of American chestnut throughout its native range, chestnut was designated as a threatened species in Canada in 1987. In 2004, COSEWIC reviewed and changed its status to an endangered species.

A recovery plan is being developed for American chestnut that summarizes the current status of this species, and proposes methods to promote the recovery of the species to self-sustaining populations throughout its native range in Canada (Boland *et al.*, 2001). One of the recommended objectives of the recovery plan is to assess the status and population viability of American chestnut in its native range in southern Ontario. This information would provide more accurate information on the current status of this species, and assist with the restoration and management of this species.

During 2001-03, researchers at the University of Guelph completed an inventory of the distribution and size of trees throughout southern Ontario, and characterized the habitat and incidence of chestnut blight.

Trees were located throughout southern Ontario from records of previous surveys, observations of landowners and members of conservation authorities, and the National Heritage Information Centre (OMNR). Individual trees were assigned numbered metal tags and a GPS (global positioning system) location, and were assessed for height, diameter, number of stems, percentage of dieback, reproductive maturity, presence and type of chestnut blight cankers, and the presence of epicormic shoots. The habitat around each tree was also characterized by recording the type of forest ecosite, canopy cover, associated forest canopy species, slope, aspect, thickness of litter, and soil pH and texture.

In total, 682 American chestnut trees, including seedlings and regenerating coppices, were identified during this study. Eighty-one of these trees were considered to be cultivated, and the remaining 601 trees were considered to be native trees distributed through 93 locations (woodlots) in 22 townships and 9 counties.

The majority of these trees were located in Haldimand-Norfolk county (63%), but Middlesex (13%), Hamilton-Wentworth (7%), Kent-Chatham (6%), and Elgin (4.5%) counties also had significant numbers of trees.

The number of American chestnut individuals at each site ranged from 1 to 74, and averaged 6.5, although more individuals were present in some locations than were completely sampled. Most trees were small (80% were less than 20 cm in diameter) and were not flowering or producing burs or nuts (86% nonreproductive). Individual trees were more likely to occur in deciduous forest habitats with high canopy cover (more than 50%), gentle slopes (0-10°), and acidic (pH 4-6) sandy (more than 75%) soils.



Jeff Tindall from the University of Guelph completing an assessment of American chestnut in southern Ontario in 2003. The young tree to the left died of Chestnut blight.

- Photo courtesy John Gerrath

Chestnut blight cankers, including virulent, healing and healed cankers, were observed on only 25% of the trees. More cankers were observed on large or tall trees, or in habitats with high canopy cover and low litter depth. Several features of the habitat of American chestnut appeared to affect the presence of blight, or the type of blight cankers that were present. For example, the proportion of chestnuts with any blight cankers and the number of cankers per tree were lower than expected in habitats with trees of the genera *Acer* (maple) and *Quercus* (oak), and higher with *Carya* (hickory) as a dominant species. Most surprisingly, there also appeared to be an association between other tree species and the presence of virulent, healing or healed cankers. For example, the frequency of trees with healing and (or) healed

Successes and Failures in Chestnut Plantings (continued from Page 4)

Dufferin County Efforts

One stand of about 100 American chestnut trees in Dufferin County, ranging in age from 10 to 15 years, has done quite well, with a 90% survival rate of planted seedlings reported. The trees range in height from 4-10 meters. The largest of them have trunks of up to 12 cm DBH.

No nuts have been harvested yet, but many of the trees have produced male catkins for 1-2 years.

Several trees suffered from severe summer and autumn droughts, weed and grass competition in early years, deer browsing and trunk thrashing, late Spring frosts and cold damage from the severe winter of 2002-3.

Because Dufferin County frequently experiences low winter temperatures, it was previously thought to be of doubtful suitability for chestnut growth.

Another planting of 32 seedlings in a Dufferin County Forest woodlot has shown a 92% survival rate after four years of growth. Because of low soil moisture during the growing season, the average height of these trees is under 1.3 meters. Barring unforeseen circumstances, and based on the 2004 growth of the largest trees, it is expected that the average annual increase in height might approach 0.5

to 1.0 meter. These trees are growing among a natural stand of white pine and white spruce. This stand is being followed with keen interest to see how the growth of American chestnut competes with the coniferous trees. This experiment is worthy of careful and critical observation.

Middlesex County

Another modest success story comes from a planting of ten seedlings in Adelaide Township, Middlesex County. Of ten American chestnut seedlings planted in 1992, only four had survived by October 1994. After three summers of growth their average height was 1.4 meters. In February 2005 the average height of the four trees was 7.7 meters. Their average trunk DBH is now 11.2 cm. These trees grow near the edge of a woodlot on sandy loam soil. No nuts have been harvested to date.

Despite the low survival rate, these four trees may become large nut-bearing chestnuts in future years.

The CCC has neither staff nor financial resources to research reports like the foregoing. Over the last 15 years many attempts were made to establish the American chestnut in Canada. We are obliged to rely upon members and chestnut enthusiasts for updating the files.
- CD McKeen

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Membership

Membership fees and donations are tax deductible.

Membership Renewal:

Annual subscription = \$15.00 \$ _____

Donations in excess of the annual subscription will be recognized in the Newsletter in the following categories (Requests for anonymity will be honoured):

| | |
|--------------|-----------------|
| Gold Leaf: | \$1,000 or more |
| Silver Leaf: | \$500-\$999 |
| Bronze Leaf: | \$250-\$499 |
| Green Leaf: | \$100-\$249 |
| White Leaf: | Less than \$100 |

Donation: \$ _____

Total enclosed: \$ _____

**Make all cheques payable to the
Canadian Chestnut Council**

Comments:

Volunteers

We need your help! As our program grows and our activities expand, we very much need the talents and skills of our members. If you would like to contribute your skills, please tell us. We start pollinating in early summer!

I'm interested in (check all that apply):

- Membership
- Publicity
- Fundraising
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- Other: _____

Return your completed form to the Secretary:

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