The Prairie Arborist

The Official Publication of the ISA Prairie Chapter Issue 1 2019

After the Storm
Photo by Keith Anderson

FROM THE PRESIDENT


Mimi Cole President

How's everyone doing out there?

Wow that was some February. There was enough cold weather for a whole winter in that one month, this year. Frigid arctic winds keeping the temps cooler than we'd like and shutting down operations due to wind chill values.

The board had their annual budget face-to-face in Edmonton in January and did planning for the year...TCC, conference, TRAQ and other items so please stay tuned for updates. A big thank-you to Bonnie for the fabulous meals and for arranging the site. Thank you, City of Edmonton, for once again allowing us to invade your space.

We are facing some challenges - I.S.A.'s move to Atlanta is causing some delays in book orders and organizational hiccups which are to be expected. Please bear with us!

On a different note, I would like to ask each of you to give some thought to becoming involved with YOUR chapter - serving on the local board is not a huge and scary thing. The board is here to bring forward concerns of our membership and liaise with the parent body. YOU can make a difference! We need fresh ideas and insight.

Stay warm, stay safe

M.J."Mimi" Cole,

I.S.A. Prairie chapter President

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Meet your Board Members

Jean-Mathieu Daoust

Jean-Mathieu found his passion for plant life and arboriculture at the young age of 9. He decided that his career would be related to botany in one form or another.

He got his first job in the industry was at the age of 16 at a local garden center where he worked the tree lot for four years.

Upon graduating high school he immediately enrolled in the Ornamental Horticulture program at Olds College in Alberta, where he obtained a Diploma in Arboriculture. He continued his studies and earned a Bachelor of Applied Science Degree in Landscape Management.

He successfully started, ran and operated a Tree Care Company for over 15 years in Calgary. Jean loves sharing his lifelong passion, experience and knowledge with anyone he interacts with. He is involved in the ISA Prairie Chapter Board of Directors, serving as Secretary Treasurer. He also sits on the Board of the Society for Commercial Arboriculture.

He is has been an active participant in local ISA Tree Climbing Championships.

Jean's other qualifications and certifications include ISA Certified Arborist, Tree Risk Assessment Qualification and Alberta Licensed Pesticide Applicator.

He volunteers for local garden groups by providing education around tree care and risk assessments. He was recently involved with the City of Calgary's initiative to retree YYC after the 2014 snow storm that devastated the City of Calgary's urban forest as a presenter by stressing the importance of proactive tree care.

He looks for any opportunity to provide sound tree care advice for the benefit of the tree.

Manitoba Elm Pruning Ban
April 1st to July 31

For Trees
Your Tree Care Experts

Employment Opportunities

Experienced Arborist – Crew Leader

Experienced Arborist required. 2-3 years min Climbing / Aerial truck operation. ISA certified preferred but not mandatory, Air brake endorsement preferred. Motivated, able to work 40-50 hrs/ week.

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Suitable applicant must have 2-3 years experience planting trees and shrubs, operating skid steers & tractors, and driving truck & trailer combinations.

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Motivated, able to work 40-50 hrs/ week.

Supervisory skills, and mechanical aptitude an asset.

This is a Seasonal position (April – October weather permitting) with possibility of extension

Please Submit resume to :
john@fortrees.com

Saskatchewan Elm Pruning Ban April 1st to August 31

CERTIFIED ARBORIST ISA

Save the Date

The next written Certification Exam in the Prairie Chapter is

May 4, 2019 at Olds College

Enroll by April 17

www.isa-arbor.com/Credentials/Exam-Information

ISA QUALIFICATIONS

Save the Date

Watch this spot for the next Tree Risk Assessment (TRAQ) Workshop and TRAQ Renewal

Or go to: www.isaprairie.com
click on: TRAQ 2019

TREE CLIMBING CHAMPIONSHIP ISA
Prairie Chapter

Save the Date

The Prairie Chapter Tree Climbing Championship will be August 23,24,25 in southern Alberta

Exact location
to be determined soon.

Save the Date
The Prairie Chapter Annual Conference

"URBANITIS"
Finding the Cure

Will be in High River October 28, 29

Join the Prairie Chapter Board

Have you ever considered giving some of your time to the operation of the Prairie Chapter?

The Board

The Prairie Chapter is operated by a volunteer Board. Many of the volunteer Board members have served for several years. To keep the Prairie Chapter current and meaningful, there must be new volunteers from different sectors of the industry willing to pitch in.

The Board is made up of:

President: Currently Mimi Cole
Vice President: Currently Vacant
Secretary Treasurer: Jean Mathieu Daoust
Manitoba Director: Matt Vinet
Saskatchewan Director: Derek Barr
Alberta Director: Toni Marie Newsham
Director at Large: Troy Miller

What's Involved?

The Board meets face to face twice per year. Once at the annual Chapter conference and once in January to establish goals and budgets for the year. Other than that, they meet by conference call once per month for an hour or less.

Will I have out of pocket expenses to participate on the Board?

No, all meeting expenses are reimbursed by the Chapter and, Board members attend the annual conference for half price.

Contact Keith at the Prairie Chapter office for more information 866-550-7464

Sapsucker Ecology is pretty tough on trees.

ArborCare Tree Service is proud to congratulate **Corrine Winfield** on achieving certification as a **Board Certified Master Arborist.**

A member of the ArborCare family since 1999, Corrine continues to exemplify skill, dedication, and professionalism.

BOARD CERTIFIED MASTER ARBORIST ISA

Way to go, Corrine!
Certification # PR-1687B

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Quick Facts

submitted by, Janet Feddes Calpas

The Society to Prevent Dutch Elm Disease (STOPDED) was incorporated in 1993 and since 2005 STOPDED has taken a leadership role in the development and delivery of the Alberta Provincial Dutch Elm Disease Prevention Program, in partnership with the Government of Alberta (GOA), most specifically with Agriculture and Forestry (AF).

From 1976 to 2004 AF delivered this program on behalf of Albertans to safeguard Alberta's elm trees from the Dutch elm disease (DED) pathogen and the beetles that vector the disease.

The DED pathogen and beetle vectors are named pests in the Pest and Nuisance Control Regulation under the authority of the Alberta Agricultural Pests Act.

In Saskatchewan (SK), DED is regulated under the authority of the Forest Resources Management Act and Dutch Elm Disease Regulations. In-Manitoba (MB), invasive forest pests which includes DED, are regulated by The Forest Health Protection Act and the associated Forest Health Protection Regulation.

Alberta (AB) has the largest stand of DED-free elms in North America. This accomplishment is on par with the success of the AB rat control program and AB's healthy honey bee population.

Agriculture and Forestry's pest control legislation has been successfully applied to safeguard AB's rural and urban elms from the most devastating disease of elms, DED. Cost of this program has been $110K per year since 2005. A low-cost, high impact program.
The City of Edmonton spends another $135K per year on prevention. Edmonton's elms are valued at $250 million.

In comparison, Manitoba (MB)has DED and is involved in control and prevention. The City of Winnipeg alone spends $4.2 million annually which includes $1 million from the province on removal of dead elms and replanting.
The Province also supports 38 communities through a cost share program to remove trees and employees 2 full time staff for DED management.

Saskatchewan spends $150K annu-

ally on DED surveys and diseased tree removals and employs 2 fulltime ministry staff to work on DED control. The City of Regina's DED prevention and control budget is $516 K per year.

STOPDED Partnerships

STOPDED has strong network of partners including rural and urban municipalities, Canadian Border Services. Canadian Food Inspection Agency and Industry Associations and private businesses, (Urban Foresters and Arborists) that support the aims of the program and follow the accepted best management practices for preventing DED. This level of participation in a province-wide control program is practically unprecedented.

Alberta has a very strong nursery industry. Farm gate value is about $125 million dollars per year. Elm would be estimated at nearly $40 million of that per year (approx. 1/3).

Equal figures to ash. With no suitable replacements for street trees on a massive scale, the introduction of DED to AB could cause massive crop loss in the short term and eliminate the market completely.

The Canadian Food Inspection Agency administers the Plant Protection Act which regulates the movement of disease from DED infected provinces to DED free provinces. Once a province is infected with DED, CFIA prohibits industry from selling or moving elms out of that province.

Alberta grown street trees are important as they need to be the hardiest to survive the adverse conditions in our cities. Without them we severely reduce the urban forests ability to help us reduce the impacts of climate change (urban heat island effect, flooding, erosion, etc).

In 2017 the provincial American elm inventory was updated, and demonstrated that there are at least 600,000 elms growing in Alberta municipalities, rural properties, shelterbelts and provincial parks.

These elms are valued at over $2 billion dollars. Valuations are made according to the standards developed by the Council of Tree and Landscapes (CTLA) and is used by the International Society of Arboriculture (ISA).

Removing and replacing DED infected trees, pushes the costs associated with losing valuable trees even higher, as it can cost over $500 dollars to remove a mature tree. This equates to an estimated $300 million for tree removal alone in Alberta and the additional cost of replacing the removed tree.

Up to 50% of the trees planted in municipal landscapes are elms, the other 50% are ash. American elm and green ash are the only two large shade trees that are adapted to surviving the Alberta climate and this is why they dominate the planted tree scape across rural and urban Alberta.

Emerald Ash Borer

STOPDED has also taken the lead in supporting AB's rural and urban municipalities to avoid the negative economic, environmental and social impacts from other invasive alien tree pest species including emerald ash borer (EAB), which has the potential to destroy all ash trees in the AB tree scape.

Trees have measurable health benefits

There are considerable documented human health and societal benefits associated with trees in peer reviewed scientific journals.

In June of 2018, Dr. Kathleen Wolf, Research Social Scientist at the University of Washington (Seattle), presented on this topic to the Canadian Institute of Forestry National Electronic Lecture Series.

➡ A lack of trees in the urban environment has been associated with significantly higher deaths from cardiovascular disease and lower respiratory disease. Higher birth weights have been associated with increased tree canopy cover within urban neighborhoods.

➡ It has also been found that 11 more trees in a city block resulted in decreased cardio-metabolic conditions.

➡ Adults suffering from major depression demonstrated cognitive and affective improvements after walking in the presence of trees in a park setting compared with an urban setting. When dementia patients were


Google Image

provided the opportunity to access wander gardens and horticultural therapy there was a 10.5% reduction in the amount of medications used at the dementia facility and 30% fewer falls, accompanied by a reduction in fall severity.

Dr.Wolf reports that in the last 40 years there has been over 5,000 peer reviewed publications documenting the benefits of "nearby nature" including trees on human health. Trees have demonstrated positive effects on human health, reduced crime, community economics and active living.

The evidence of the positive health and social impact of trees has been driving Policy and planning changes integrating greening science with community change.

STOPDED's work in-partnership with Agriculture and Forestry represents a significant component of the impact that the Department has on making life better for Albertans.

BARTLETT TREE EXPERTS
SCIENTIFIC TREE CARE SINCE 1907

PRESS RELEASE

Industry Leader Acquires Tree Frog Tree Care in Alberta and Pavey Tree in Ontario

February 5, 2019 – Victoria, B.C. – Bartlett Tree Experts has entered the Alberta market for the first time with the acquisition of Tree Frog Tree Care in Calgary. The company has also grown its presence in the Muskoka region of Ontario by acquiring Pavey Tree. A leading provider of scientific tree and shrub care, Bartlett now has over 120 locations worldwide, including eight offices in Canada.

Tree Frog Tree Care has grown steadily as a front-runner in providing high quality tree care to the Calgary, Alberta region since Jean-Mathieu Daoust opened the business in 2002.

The Tree Frog staff joined Bartlett as a result of the acquisition, with Daoust taking on the role of Local Manager of the office. "I believe that with this transition to Bartlett we can offer an elevated level of service, and it has always been our mission to raise the bar high within the industry when it comes to professionalism and customer service," said Daoust.

In addition to entering new markets such as Alberta, Bartlett is also strengthening its presence in existing service areas through acquisitions. After successfully running Pavey Tree in the North Muskoka-Algonquin Park region of Ontario for twenty years, owner Phil Pavey has transitioned into a new role in the arboriculture industry as an independent consulting arborist and technical field advisor.

The Pavey Tree staff joined Bartlett's Bracebridge office, which was already serving the Muskoka area.

According to Noah Violini, Vice President of Bartlett's Canada Division, "Bartlett has been committed to further developing our presence in Canada since we began serving clients here over twenty years ago. The acquisitions of Tree Frog Tree Care and Pavey Tree are both very valuable for our business and move us toward that goal.

We're proud to have their teams on board, and we look forward to showing our newly acquired clients what Bartlett has to offer as a leader in science and safety in our industry."

About Bartlett Tree Experts

The F.A. Bartlett Tree Expert Company was founded in 1907 by Francis A. Bartlett and is the world's leading scientific tree and shrub care company.

The organization's current chairman, Robert A. Bartlett Jr., represents the third generation of Bartlett family management.

Bartlett has locations in 27 U.S. states, Canada, Ireland and Great Britain. Services include pruning, pest and disease management, fertilization and soil care, cabling and bracing, tree lightning protection systems and tree/stump removal.

Its corporate offices are located in Stamford, Connecticut.

To find out more, visit the company's web site at www.bartlett.com or call: **1-877-BARTLETT (227-8538).**

BARTLETT Tree Frog Tree Care
A DIVISION OF BARTLETT TREE EXPERTS

National Office Relocation Update

Relocation

ISA Executive Director Caitlyn Pollihan reported that the ISA staff will move to their new permanent offices by the end of April.

CEU's

Additionally, the ISA customer service team is still working to stay up-to-date with member requests. CEUs are processed at nearly 1,600 per day and they are now working on CEU forms received around 19 February.

They are currently caught up with examination scheduling and application approval.

Product orders are being fulfilled within 24 hours with the exception of backordered items. The call volume remains high - between 200 and 500 per day.

Mail continues to be forwarded from the Champaign office as pertinent forms are being updated with new address and phone information.

Educational Products and Services update

Guide for Plant Appraisal, 10th Edition update
Purchasers of the Guide for Plant Appraisal, 10th Edition have been notified that the second printing, which was previously scheduled to be sent in late February, will now be mailed to all purchasers of the Guide free of charge by the end of April 2019.

ISA is taking the necessary time to carefully review and prepare this second printing of the Guide for Plant Appraisal, 10th Edition. It is important for ISA, as the publisher of this book written by the member organizations of the Council of Tree and Landscape Appraisers (CTLA), to do everything possible to ensure the high quality of the final product.

As noted, the previously released Corrigendum (click here to download) includes the critical revisions that you can insert into your current version.

Components who sold this publication should plan to forward these replacements to any individuals who purchased through their websites or stores. Unsold copies are not required to be returned to ISA. Contact Eduardo Aliskevich, ISA director of educational products and services, at ealiskevich@isa-arbor.com with any questions.

Pruning BMP

ISA's new Pruning Best Management Practices (BMP) will go into production before the end of March 2019.

Z133 workshop

A one-day workshop of the Z133 is being designed as part of a grant from the U.S. Forestry Service.

ISA is currently looking for any component executives who are willing to provide feedback on how these workshops can best be executed and marketed. Anyone interested in learning more and providing feedback should contact Eduardo Aliskevich at ealiskevich@isa-arbor.com.

Backordered items

ISA is working to restock backordered items. A list is being compiled and will be distributed to component executives in the coming week.

ASCA TPAQ

ASCA officially launched its Tree and Plant Appraisal Qualification course at the Morris Arboretum. Both the Kentucky and Mid-Atlantic chapters are hosting events as well. This qualification is being run and managed by ASCA and ISA has not been involved in the creation of the qualification or the curriculum. The ASCA website notes that this is a certificate that delves into the concepts in the Guide for Plant Appraisal, 10th Edition. Please see the ASCA website for more information.

ISA Elections

Ballots for the ISA general elections were sent to all ISA voting members that allow them to submit their choice for three vacancies on the Board of Directors and two on the Nominating and Elections Committee. Votes will be accepted through 11:59 p.m. ET, 30 April. The email sent to each member has a unique URL embedded so that it cannot be shared, forwarded or used to vote multiple times.

Questions about the elections can be directed to Sheilah Trail at:
strail@isaarbor.com

Thanks to our Sponsors

A big thanks to all the generous sponsors of the 2018 PCTCC in Winnipeg

we could not have done it without you!

ISA PRAIRIE CHAPTER

Winnipeg

ISA International Society of Arboriculture PRAIRIE CHAPTER

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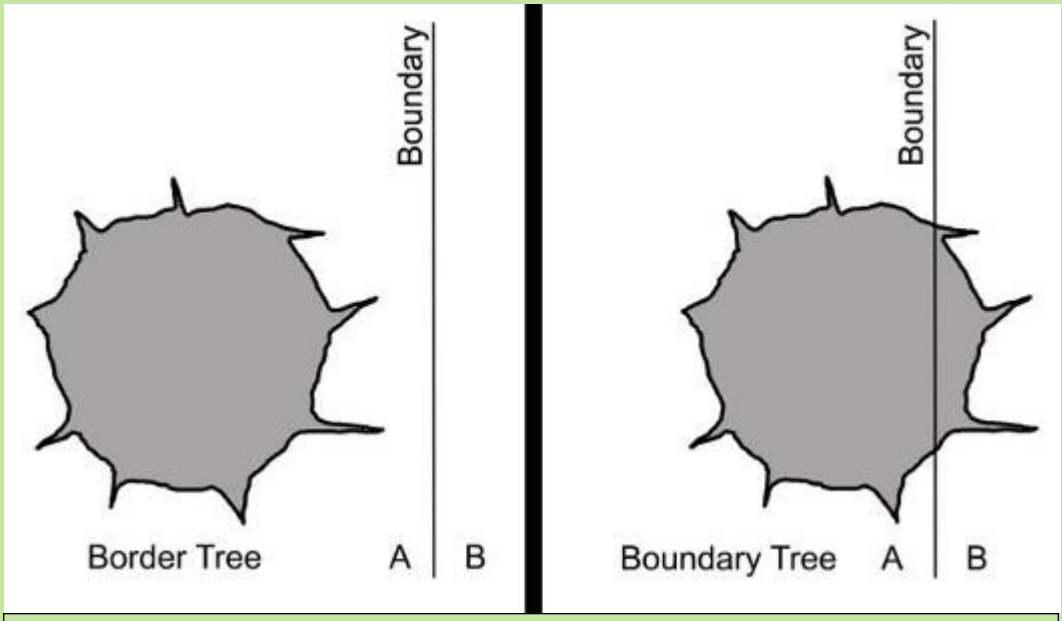
Straddle trees and boundary trees

Straddle trees and boundary trees.
Reprinted with permission
by Julian Dunster
30 October 2018

A boundary is a theoretical line without width. It defines the extent of property ownership whether the property be public or private. The boundary may be based on natural features such as a river or rock formation. Or, more typically, it will be based on a series of artificial lines set up to demarcate ownership. In all cases, boundaries are established by reference to known control points, long established and accepted by governments, in the form of survey markers attached to the land. These will be seen as monuments, iron pins, or lead plugs in rocks or sidewalks.



A border tree has its entire trunk and visible (above ground) root flare entirely on one side of the boundary line — that is, the entire tree base grows close to but not over the boundary. A boundary tree has part of the trunk or part of the visible (above ground) root flare crossing the boundary line, that is, it is not merely by the boundary but demonstrably growing across it.

Case law clearly shows that private or government land owners should not rely on the alignment of a fence to be a reliable indicator of the actual boundary line. Fences should be seen as a general indicator, but not necessarily an accurate indicator, of the exact boundary. Fences are

Straddle trees and boundary trees

often installed inside a boundary to ensure that the fence itself does not trespass or they can be placed quite incorrectly in the first place. Years later the neighbours, mistakenly seeing the fence as the boundary, remove vegetation and find they have in fact trespassed.

The usual reason given for trespass is that the boundary was not where it was thought to be. The common fact pattern is that A was cutting down trees thinking they owned them. B arrives and claims that they own the trees, not A. In routine cases, the court simply notes:

- You knew or ought to have known the boundary was close to or in the vicinity of where you were working;
- You could have and should have, checked the exact boundary location to ensure you did not trespass;
- You did not check for whatever reason;
- You did trespass and will now have to pay some damages.

Not all incidents of trespass involve cutting trees well beyond the actual boundary. Many focus on the precise location of the tree relative to the exact location of the property boundary. Issues of ownership arise in most trespass cases involving boundary trees. Case law has added some confusion by using various terms including: boundary, border and straddle trees. Later decisions use the words differently.

For clarity it is suggested that a border tree has its entire trunk and visible (above ground) root flare entirely on one side of the boundary line — that is, the entire tree base grows close to but not over the boundary.

A boundary tree has part of the trunk or part of the visible (above ground) root flare crossing the boundary line, that is, it is not merely by the boundary but demonstrably growing across it. How the tree came to be in that location, did it slowly grow over the line or was it planted on top of the line, is of less consequence. At the time of the claim it straddled the line and is therefore a boundary tree.

In Quebec and Ontario there are statutes affecting boundary trees. Ontario has a long legislative history of discussing trees on or by boundary lines. The issue of where to define the presence or absence of the tree relative to the boundary line, regardless of where the original tree grew, arose in Hartley vs Cunningham et al., 2013. One side claimed sole ownership of the tree because at ground level the trunk was almost entirely on her side of the boundary. She claimed the tree was dangerous and needed to be removed. The court settled on the tree trunk rather than previous standard used, which was

(Continued on page 12)

Straddle trees and boundary trees

(Continued from page 11)

the base of the tree, which might include the root crown or flare.

Using the tree trunk, the tree in Hartley was then found to be a boundary tree within the meaning of the Forestry Act [1], and was therefore jointly owned. Any work on the tree required consent of both owners. While some have seen this decision as a move forward, it is not clear quite how much difference it makes. In practice, it is not uncommon to find no well defined transition point on a typical tree where it can be definitively stated, "This is trunk and that is root crown." If the line between trunk and root crown is to be defined as a matter of centimetres, it is doubtful that there would be widespread agreement among technically qualified people as to where the trunk starts and the base stops in most trees. There is simply too much variation in trunk form to have a simple definition of that unless one accepts a tolerance of say, plus or minus 10 centimetres i.e. a general area not an exact line on the trunk. If such an approach was adopted who would choose the 'right' answer and on what basis? Arguably, either side would choose whichever interpretation favoured their case.

So, while Hartley satisfied the case at hand with respect to the Ontario Forestry Act, it entirely fails to resolve the technical issues. Merely stating that the determining point is the trunk not the base, adds little in the way of clarification. Precisely the point made in Koenig v. Goebel, 1998 where the Judge stated ". . . no logical basis exists for drawing a distinction between the trunks and roots of a tree, save for Consensual Straddle Trees." Where on the trunk should the critical point be measured? At a nominal point close to but not at ground level? Higher up? In Demenuk v. Dhadwal, 2103, it was suggested that 1.4 metres would be the correct point.

The use of a standard reference point is termed diameter at breast height (DBH). DBH is a forestry term and is the reference height above ground used when measuring tree trunk diameters to calculate timber volumes. In Canadian forestry practice the standard height for DBH is 1.3 metres, which is the standard set by the International Union of Forest Research Organizations (IUFRO) and is commonly used around the world. The United States uses 1.4 metres as a standard height for DBH. Occasionally the term is seen as DSH meaning diameter at standard height, but Cullen (2015) points out that is not a correct use of the term as DSH generally refers to diameter at stump height.

Municipal bylaw requirements often use DBH to define what is or is not a bylaw-sized tree, though the height above ground varies. Once the diameter threshold is set, trees can then be measured at the prescribed height to see if they are or are not within the purview of the bylaw. However, using DBH or any other reference point on the trunk to determine if a tree is or is not crossing the boundary line, is very uncommon, realistically an aberration, not common practice.

Notwithstanding Koenig, Hartley or Demenuk, common practice is still the base of the tree where it meets the ground as was seen in Kelley, perhaps because it eliminates other issues that arise if the trunk is used. This is noted in Mynors (2002) as well. "The basic rule is that a tree is part of the land (soil) surrounding the base of its trunk."

Defining ownership may matter less for a tree trunk that is standing vertically but a tree trunk with a lean raises far more complicated issues. It would not be uncommon to find that the base and lower trunk of a tree grew on one side of a boundary, and the rest of the trunk and much of the crown grew over the other side of the boundary. It may be that regardless of where delineation of ownership occurs — the base or the trunk — the person whose land is occupied by the overhanging portion may want to abate the nuisance it creates. If they did so by cutting the tree down, above and beyond the boundary, so that no trespass occurred, are they then liable for destroying the tree? Surely not. They have simply abated a nuisance without trespass.

Applying an arbitrary trunk height, indeed any trunk height, as a legal test for boundary trees seems bound to yield perverse and clearly unwanted challenges. Future cases may need to defer to the court to decide this issue on a case by case basis, but the long established practice of taking the root crown at ground level as the test of ownership would appear to be far more logical than using DBH — a reference point never intended for use as a demarcation of ownership.

Extracted from Trees and the Law in Canada.
Now available at www.treelaw.info
Julian Dunster

Beaufort Scale of Wind Force

Beaufort Force	Description	When You See or Feel This Effect	Wind (mph)	Wind (km/h)
0	Calm	Smoke goes straight up	less than 1	less than 2
1	Light air	Wind direction is shown by smoke drift but not by wind vane	1-3	2-5
2	Light breeze	Wind is felt on the face; leaves rustle; wind vanes move	4-7	6-11
3	Gentle breeze	Leaves and small twigs move steadily; wind extends small flags straight out	8-12	12-19
4	Moderate breeze	Wind raises dust and loose paper; small branches move	13-18	20-29
5	Fresh breeze	Small trees sway; waves form on lakes	19-24	30-39
6	Strong breeze	Large branches move; wires whistle; umbrellas are difficult to use	25-31	40-50
7	Moderate gale	Whole trees are in motion; walking against the wind is difficult	32-38	51-61
8	Fresh gale	Twigs break from trees; walking against the wind is very difficult	39-46	62-74
9	Strong gale	Buildings suffer minimal damage; roof shingles are removed	47-54	75-87
10	Whole gale	Trees are uprooted	55-63	88-101
11	Violent storm	Widespread damage	64-72	102-116
12	Hurricane	Widespread destruction	73+	117+

Engineer Diary (www.strleng.blogspot.com)

Trembling Aspen Leaves inspire Energy Harvest Design

This article by Michael d'Estries March 27, 2019, 8:25 a.m. is from the Mother Nature Network. To see the complete article in its original form, go to: https://www.mnn.com/earth-matters/space/blogs/aspen-leaves-inspire-new-energy-harvester-fit-mars?

Quaking aspen leaves inspire an energy harvester fit for Mars

The mesmerizing flutter of a quaking aspen's leaves has inspired a new kind of energy harvester that could one day provide backup power to future rovers scouring the surface of Mars.

In a paper published in the journal Applied Physics Letters, researchers at the University of Warwick in Coventry, England, say they looked to the aspen because of the way its leaves dramatically oscillate even under extremely low-wind conditions. By studying the mechanisms behind this natural quiver, they were able to engineer a new kind of wind harvester capable of operating in the harshest of environments.

The gentle rhythmic beauty of quaking aspen leaves have inspired a new energy harvester that may one day be used to help power rovers on Mars.
(Photo: Brett Taylor Photography/Shutterstock)

"What's most appealing about this mechanism is that it provides a mechanical means of generating power without the use of bearings, which can cease to work in environments with extreme cold, heat, dust or sand," lead author Sam Tucker Harvey, a University of Warwick PhD engineering researcher, said in a statement.

While the energy generated would be small, Harvey says it would be more than enough to power autonomous electrical devices.

"These networks could be utilized for applications such as providing automated weather sensing in remote and extreme environments," he adds.

Beyond applications on Earth, the scientists say their "galloping energy harvester" could also be used to help sustain rovers on Mars. One of the key obstacles faced by robots operating on the red planet is surviving extreme nighttime temperatures in excess of minus 146 degrees Fahrenheit. Adding a low-wind quiver to future rover designs could utilize Mars' winds to generate enough power to keep internal systems warm and avoid the frosty fate suffered by the Opportunity rover last summer.

"The performance of the Mars rover Opportunity far exceeded its designers' wildest dreams but even its hard-working solar panels were probably eventually overcome by a planetary-scale dust storm," co-author Dr. Petr Denissenko said. "If we could equip future rovers with a back-up mechanical energy harvester based on this technology, it may further the lives of the next generation of Mars rovers and landers."

As for the design of their mechanical blade, the researchers said they stopped short of incorporating all of the clever natural engineering behind the aspen leaf.

"In nature, the propensity of a leaf to quiver is also enhanced by the thin stem's tendency to twist in the wind in two different directions," the press release states. "However, the researchers modeling and testing found that they did not need to replicate the additional complexity of a further degree of movement in their mechanical model."

In an interview with Sky and Telescope, the team says their next step will be to scale the system to something that could be deployed in larger arrays; in particular for regions where solar energy potential is low. According to Denissenko, the design of the aspen leaf will likely inform blade design going forward.

"We reckon most of the actual wind energy harvesters will be blade-shaped like ours," he said.

ISA PRAIRIE CHAPTER EXECUTIVE & DIRECTORS

ISA Prairie Chapter Executive

PRESIDENT
Mimi Cole
Rocky Mountain House, AB
403-844-3571
rockytreegrl@gmail.com

VICE PRESIDENT
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SECRETARY TREASURER
Jean Mathieu Daoust
403-861-6013
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EXECUTIVE DIRECTOR
Keith Anderson
Phone 1-866-550-7464
Fax 1-866-651-8423
office@isaprairie.com

CERTIFICATION LIAISON
Codie Anderson
trees@arborcare.com
403-273-6378

Provincial Directors

ALBERTA
Toni Marie Newsham
Didsbury, Alberta
403.415.5709
tmn200@gmail.com

SASKATCHEWAN
Derek Barr
Regina SK.
306-545-2462.
derek.barr@gov.sk.ca

MANITOBA
Matt Vinet
Winnipeg, MB
204-471-8640
mvinet@greendrop.com

DIRECTOR AT LARGE
Alberta
Troy Miller
778-321-1550
tsm67@telus.net

EDITOR
Keith Anderson
Box 757
North Battleford, SK S9A 2Y9
866-550-7464
keithmcand2934@gmail.com

ISA Prairie Chapter Office

Suite 53 - 1500, 14 St. S.W. Calgary AB T3C 1C9
Phone 1-866-550-7464 Fax 1-866-651-8423 office@isaprairie.com
www.isaprairie.com

Advertising Information

Full Colour	Member	Non Member
Full Page	475	575
Half Page	250	290
1/3 Page	165	190
1/4 page	125	150
Bus card	75	85

(10% discount for ads in all 4 newsletters)
Newsletter submission deadlines

Issue Dates:	Submission Deadline
March	February 27
June	May 31
September	August 31
December	November 30

The Prairie Arborist is published four times per year and is the official publication of the International Society of Arboriculture—Prairie Chapter.

Submit articles, ads, letters and written requests to:

Keith Anderson

Editor, The Prairie Arborist
Box 757
North Battleford, Sask. S9A 2Y9
Phone: 866-550-7464
e-mail: keithmcand2934@gmail.com or office@isaprairie.com

QUALITY AT WORK

The dependable **MS 261 C-M** and the NEW **MS 462 C-M** chain saws are perfect for arborists and forestry workers. These chain saws demonstrate an impressive array of power, that assists when harvesting wood. Both are equipped with STIHL's impressive M-Tronic™ electronic engine management system, regulating the ignition timing and the fuel supply. This system ensures optimal engine performance, constant maximum speed and excellent acceleration. Thanks to M-Tronic's ability to electronically distinguish between a cold or warm start, there is now only one start position on the Master Control Lever™, ensuring that fuel flows in the exact amount required. When you turn off the machine, the Master Control Lever™ automatically jumps back into the operating position thanks to the momentary stop button function. This results in a particularly simple start after a short break from work. They also provide a minimum of 50% fewer exhaust emissions and 20% lower fuel consumption than a standard two-stroke engine.

- Long-life air filtration system with air routing and HD2 filter element
- Professional anti-vibration system allows the user to maintain control and work longer
- Smooth, even starting with the STIHL ElastoStart™ handle and decompression valve
- Side-mounted chain tensioning reduces the need for contact with the sharp saw chain
- Tool-less fuel and oil cap eliminates the need for tools when refueling

Additional features of the MS 462 C-M

- Infinite regulation of the oil flow with the Ematic™ S oil pump
- Optional STIHL ROLLOMATIC® ES lightweight guide bar, more compact chain sprocket cover and crankcase, and weight-optimized flywheel
- Better ergonomics – Bumper spike to grip the timber better, improved chain sprocket cover with integrated bumper strips and cutting sight to assist with felling and limbing

MS 261 C-M

Displacement	50.2 cc
Power Output	3.0 kW
Weight[1]	4.9 kg/10.8 lb

MS 462 C-M

Displacement	72.2 cc
Power Output	4.4 kW
Weight[1]	6.0 kg/13.2 lb

[1]Dry, without guide bar and chain.

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