Searching for Survivors

CAN WE SAVE OUR SUGAR MAPLES?

20TH YEAR ANNIVERSARY
TREE CLIMB CHAMPIONSHIP

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Research Focus on Ontario Maples

12 Tar spot. Compared to other highly visible diseases in the urban environment, we know much less about maple tar spot. CTF grant recipient and ISAO conference speaker Dr. Tom Hsiang provides a report on the most up-to-date research in the province and poses questions that still require answers. See pages 12-15.

32 Searching for Survivors. Our sugar maples are not doing well. See pages 32-33 for an update from CTF grant recipients Anne-Marie Roussy, Adam Dale and Peter Kevan. They are investigating an air layering technique to create genetic copies of “tough” parent trees.

Climate Change Focus

16 Super-Cooled Beetles & Cool Lakes. From researchers trying to determine the super cooling point of invasive beetles like ALHB to ensuring low water temperatures with tree plantings. On the flip side, check out regular columnist Edward Kennedy’s take on global warming on page 24.

Protecting Global Diversity...

The Svalbard Global Seed Vault opened on a remote Norwegian island 1120 km from the North Pole this winter. It is considered an ideal location due to the island’s lack of tectonic activity and permafrost. Read more on page 20.

Columns & Other Arborist Articles

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President’s Message

Another great conference has come and gone, and already work has begun our 60th anniversary event. It was great to meet up with old friends and have the opportunity to talk with members I rarely get a chance to spend quality time with. I hope everyone enjoyed the location, meals, events, and most importantly, the speaker line-up. The education committee spends a multitude of hours over the course of a year trying to find the right speakers to cover the most current topics that fit the interests of our diverse audience. I am very proud of the committee and all of our volunteers for their hard work and devotion to making the conferences the annual successes they are. My congratulations and thanks to you all.

I am looking to my second term as president with great enthusiasm. I have an excellent board to work with, yet again, and welcome three new directors to the table. Our association is built on volunteers, and we can never have enough help with our various committees. That is exactly where I started in the early nineties, volunteering on the then called Climbing Jamboree. Volunteering is a great way to get involved, meet new people and even make some lasting friendships along the way. It is never too late to get involved. If you would like to help out, give us a call at the office and let us know your areas of interest or expertise.

Spring Renewal

Plant a Tree for Hope

“When we plant trees, we plant the seeds of peace and seeds of hope. We also secure the future for our children. I call on those around the world to celebrate by planting a tree wherever you are. Today we are faced with a challenge that calls for a shift in our thinking, so that humanity stops threatening its life-support system. We are called to assist the Earth to heal her wounds and in the process heal our own.”

Conference Evaluations

Colleen MacDonald

Where did yours go, huh?

Did you shred that piece of paper for hamster bedding? Or did you start your wood stove with it? Maybe it wound up in your recycling bin. I know for sure that very few of you can say that you filled out your “Conference Evaluation Form” with valuable feedback information and returned it to us. That’s what makes me wonder – where did yours go?

I have very recently been elected to be on the board of directors for ISAO and at our first executive meeting of the year, one of the important topics discussed was the planning of next year’s educational conference.

We know it will be held in London, Ontario. We know that it will be attended by many of the same people who attended the 2008 conference in Niagara Falls. What we don’t know is – did you benefit from the subject matter presented this year? Are there other topics you would like to see addressed? Do you have any suggestions that would benefit the membership as a whole?

I feel that it is not only our right, as financial contributors of this organization to provide this feedback, but it is our responsibility. This information will form the future direction of conferences to come.

There were 339 delegates in attendance at the conference this year. Do you know how many returned completed surveys? Not very many. To those of you who did make the effort to simply scratch out some comments – you know who you are – I want to say thank-you on behalf of the Board of Directors. I assure you that any and all feedback will be considered when planning next year’s event.

To those of you who forgot to submit or maybe lost your form in the strong winds in Niagara Falls, I’d like to tell you that we are still listening. Send us your comments, please! Email us, fax us, or send it by carrier pigeon. We want to hear from you.

Without your input we may introduce topics that don’t address your needs at all – how about Origami for Beginners?? It’s a related topic, you know, paper, trees....

This is our Diamond Anniversary coming up – 60 years. Any great ideas out there for a theme associated with this would be welcomed as well.

“Send us your evaluation form and you will be entered to win $50 off next year’s conference registration. Lost it? Visit www.isaontario.com to download a copy from the home page.”

OK, I feel obligated to tell you the number. It’s 13. Yes, that’s the number of surveys that were returned. Lower number than you imagined? Yeah, me too. ISA Ontario is one of the largest and active chapters worldwide. How can this be? ♦

The lucky 13 people who already gave us their feedback will have their name automatically entered twice in the draw. For the rest, please fax, email or snail mail your form to the ISA Ontario office (see adjacent page for contact info) by MAY 30, 2008.

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Federal Order Placed on Toronto

The entire city is under ministerial order restricting the movement of ash tree material to control the spread of EAB. The order issued by the Ministry of Agriculture and Agri-food Canada restricts the movement of nursery stock, trees, logs, wood, rough lumber including pallets and other wood packaging materials, bark, wood chips or bark chips from ash trees and firewood in Toronto.

The order is similar to the one issued for the counties of Elgin, Lambton and Middlesex and the Municipality of Chatham-Kent, where EAB has been spotted. Regulated materials can be freely moved within a regulated area, but can’t be moved outside of a regulated area without prior written permission from the Canadian Food Inspection Agency (CFIA). Anyone violating this requirement may be subject to a fine and/or be liable for prosecution.

According to a briefing note sent to all city councillors, the bug is expected to infest and kill an estimated 27,000 street trees and another 180,000 trees in parks and ravines. The note pegs the cost of removing and replacing just the 27,000 street trees at $40-million. The new rules also require the city to grind ash wood in yard waste down to chips of less than 2.5 centimetres before taking it outside Toronto, something that could cost the city an extra $3-million to $5-million per year.

— excerpts from CFIA and National Post

EAB Confirmed North of Turkey Point

Last fall, logger Ed Boterberg harvested red pine on behalf of a Kirkland Lake firm in a county woodlot north of Turkey Point. It was a tall order – 4,000 trees in all – and Boterberg was running out of room to pile poles. There was a good spot in a clearing for more storage. Trouble was, a solitary ash tree was in the way of his skidder.

“I took a good look at it from top to bottom and noticed there were lots of holes in it – something I had never seen before in ash trees,” Boterberg said. “I’ve been working in the bush since 1979. So I cut it down and circled the holes.”

The next day it was confirmed that the dreaded emerald ash borer had arrived. The site was inspected and, sure enough, most every ash tree within 10 acres was infested.

Boterberg’s find came as a big shock. The emerald ash borer was believed to be confined to extreme southwestern Ontario, with pockets of infestation extending east into London. Its arrival in Norfolk was thought to be some distance in the future.

Norfolk and the Canadian Food Inspection Agency are confident the pest arrived in wood from outside the county because the infestation is confined to an isolated pocket. Campfire wood is a leading suspect. Across the road from the infestation on Charlotteville Road 2 is The Point Tent & Trailer Park, which draws campers from across Ontario.

The presence of ash borers in Norfolk has Boterberg and other loggers worried about what will happen in Oxford County. As diverse as Norfolk’s forest mix is, ash still accounts for one in four of the county’s trees. The prevalence of ash, however, is much higher in Oxford County, especially west and north of Tillsonburg.

— excerpts from the Simcoe Reformer, February 25, 2008
In Memory of Craig Huff

Huff, Craig Edward, R.P.F. Manager, City of Ottawa – Forestry Services. With his loving wife by his side, Craig passed away peacefully at the Ottawa Hospital General Campus after a courageous battle with cancer on Monday March 17, 2008 in his 52nd year. Loving husband of Glenda (nee Becksted). Proud and loving father of Miles and Emma. Cherished son of Colin and Claudia Huff of Lennoxville, Quebec. Dear brother of Cary. Special son-in-law of Glenn and Donna Becksted and brother-in-law to Dawn and Scott. He will be sadly missed by many aunts, uncles, cousins, friends and colleagues. A special thank-you to all those who provided care and support at the time of Craig’s illness. In lieu of flowers, donations can be made to the Canadian Cancer Society or the Tree Canada Foundation. A tree grows – memories live.

2008 Student Poster Competition

Present your work as a poster at ISA’s annual conference this summer! Here is your chance to showcase your hard work to the urban forestry and arboriculture community.

ISA’s Student Activities Committee and AREA are now accepting student poster abstracts on research and community outreach topics for presentation at ISA’s 84th Annual International Conference and Tradeshow in St. Louis, Missouri. Top posters will be rewarded fiscally.

Abstracts must include: title, author(s) (underline presenting author), phone number (home or cell phone), mailing, and e-mail address. Abstracts must be in MS Word format, 500 words or less and be received electronically by Steve Bevil on May 1, 2008 by 5 p.m. CST. All submitting authors will be notified of results of abstract review by May 12, 2008.

Topics to include either scientific research, community outreach/extension projects, or novel teaching activities from arboriculture, urban forestry, or landscape horticulture students at 2-year and 4-year undergraduate institutions and graduate students at universities throughout the world.

There is no limit to the number of papers submitted by a club or institution, and third worker, part of a tree trimming crew, died working with a wood chipper.

UVHC, a coalition of arborists, urban foresters and tree care professionals, is urging everyone to take essential steps before hiring anyone to trim a tree or attempting to do that job themselves. These steps are:

• Check credentials and references.
• Check for a contractor’s license.
• Confirm that workers are covered by workers’ compensation and liability insurance.
• Seek professional guidance, especially when planning to trim trees on one’s own.

— United Voice for Healthier Communities

Warning: Check Credentials!

Several autumn fatalities linked to dangerous tree care practices are prompting a coalition of arborists and urban foresters to urge contractors and others to hire only certified tree-care professionals. Landscapers who are not trained arborists risk legal consequences if injuries result from pruning or other dangerous tree work.

Called United Voice for Healthier Communities, the group includes the California Urban Forests Council and the Western Chapter of the International Society of Arboriculture.

“Property owners and others who don’t understand the dangers involved in tree care are hiring unskilled workers who are dying to trim their trees,” said Andy Trotter, Chairman of UVHC.

This past autumn, two men died trimming palm trees in Southern California. A resident in Fullbrook died after being trapped by palm fronds in a tree on his property and a worker in Cerritos died after he sustained fatal injuries working on a palm tree some 40 feet above ground. A

IMMEDIATE JOB OPENINGS FOR A PLANT HEALTH CARE SPECIALIST & ARBORIST CLIMBERS

Van Dyke’s Tree Care Ltd. is a respected industry leader and has developed a formidable reputation for providing valued added customer service with exceptional quality to its customers in the GTA for past 48 years. We offer a safe work environment and utilize the most up-to-date equipment, technology, and training in the industry. Our continued profitable growth has resulted in the immediate requirement for a Plant Health Care Specialist and two Arborist Climbers. In addition to the very competitive compensation package including paid benefits, company provided safety equipment and uniform allowance; we provide the opportunity to become an integral part of the continued growth of our organization.

To qualify for these full-time positions, visit www.isaontario.com and click on the Employment Opportunities link in the left blue side bar to see the necessary qualifications. Qualified applicants should fax their resumes to R. Van Dyke at 905.888.1910 or e-mail them to vandykestree@xplornet.com.
Maple Hill Tree Services
Employment Opportunities: Climbers/Consulting Arborists

Maple Hill Tree Services is a year-round, leading-edge tree care company dedicated to the preservation of trees in the Greater Toronto Area for over 30 years. We are serious about doing our share to help slow global warming – if you are an environmentally minded individual and you are serious about learning more and sharing in the traditional art and modern science of Arboriculture, we are interested in talking to you.

The people at Maple Hill are our greatest resource, so we offer – on top of a competitive salary and full benefits package – opportunities for personal and professional growth through our regular seminars led by industry professionals and our in-house training programs. We are committed to continuous team-building through company-sponsored extra-curricular activities such as rock-climbing, dog sledding trips, wilderness retreats and attending conferences.

CLIMBING ARBORIST
We are currently seeking to expand our team of dedicated Climbing Arborists. The following qualifications would be an asset:

• Urban Forestry graduate or graduate of an equivalent program.
• ISA Certified Arborist and/or Certified Tree Worker or working towards certification.
• Experience in the safe operation of Arboriculture equipment.
• Good verbal skills, personable, polite and a professional customer-service attitude
• Reliable, responsible, honest, friendly.
• Serious about a career in Arboriculture
• Good driving record
• A passion for trees, the environment and the natural world

CONSULTING ARBORIST
We are currently seeking to expand our team of dedicated Consulting Arborists. The successful candidate should have a strong interest and or knowledge in the following:

• Dendrology, forest entomology and pathology
• Microsoft Office
• Report writing such as hazard tree evaluations and tree preservation on construction sites.

The following qualifications and skills would be an asset:

• Urban Forestry graduate or graduate of an equivalent program.
• ISA Certified Arborist or working towards certification.
• Good organizational skills.
• Ability to meet deadlines.
• Enjoy talking to people, friendly and confident.

Please send your resume to: Maple Hill Tree Services, c/o Greg Hill, President
6302 9th Line, RR 2, Hornby, Ontario L0P 1EO
Fax: 905-824-1561; Email: contactus@maplehilltree.com; Phone: 905-824-2100
Emergency registration for emerald ash borer

Just before Christmas, the Ontario Ministry of Natural Resources applied for an emergency use registration for a product that may help protect un-infested ash trees against emerald ash borer (Agrilus planipennis). The proposed product is TreeAzin, an injectable version of neem (azadirachtin) using their patented Ecoject™ system. Neem is a plant-derived insecticide that comes from a tropical tree species (Azadirachta indica) found in Africa, Asia and India.

Neem works by interfering with the molting process of immature insects. This means that the insects will discontinue feeding and eventually die. Neem is both an anti-feedant and a systemic insecticide, which means that it has to be absorbed by the plant and insects need to feed on suck juices from plant tissue that contain neem in order for it to work. Neem seems to have a huge range of uses; everything from therapeutic and various insecticides (imidacloprid, azadirachtin) over the last few years. Holes are drilled into the trunk of the tree and TreeAzin is injected into the tree using an enclosed canister and plunger system. The granting of this emergency use is significant because neem is not yet registered as a pesticide in Canada. The niche for this product will most likely be for high value trees such as ornamentals and golf courses. It could also be used as part of control programs, such as to treat trees on the perimeter of a known infestation.

Horticultural Oil in Spring

I know I mention this every year, but the effectiveness of the correct use of horticultural oils can not be downplayed. They provide a physical barrier which restricts both the respiration and movement of many overwintering insects (e.g. adelgids, scales, mite eggs). To avoid foliar damage, horticultural oil is best used when daily min/max temperatures remain somewhere between 5 and 15°C during the first week or so after application. This is especially important on evergreens since their foliage is always present and always susceptible to injury.

Try to make applications when conditions will facilitate rapid drying of treated twigs. A horticultural oil suspension that remains wet on the plant can cause phytotoxicity under freezing temperatures or hot, sunny conditions. Avoid mixing oil solutions with sulphur and other fungicides as plant damage may result. And above all, keep solutions of horticultural oil agitated as often as possible to prevent over application, especially on evergreens.

Applying the dormant rate of horticultural oils provides an excellent opportunity for suppressing populations of many overwintering insects and mites. Spruce spider mite, maple mite and European red mite all overwinter as eggs on twigs and buds and are susceptible to horticultural oil applications at bud swell. Several species of scale insects (magnolia, euonymus, lecanium scale, etc.) will also be smothered by horticultural oils, especially where application equipment has been adjusted to target the undersides of twigs and stems (where the scale insects can be found).

Always read the label carefully since many plant species are sensitive to horticultural oils (see below). Avoid spraying red delicious, matsu or empire cultivars of Malus as bark injury may result (I’ve actually seen this). Do not apply to Malus or Pyrus after green tip. I’ve had professionals tell me that they have used horticultural oil on Taxus and Thuja for years and never had a problem. Others have seen quite a bit of burn on those two genera – yikes. Remember, oil and water do not mix. You will need to agitate the mixture constantly in order to ensure even coverage (yes, I know I already said this so it must be important!). If over-application occurs and extreme temperatures are experienced within a week or two, damage may result. Applications should be made during mild mornings when no rain is in the forecast to facilitate drying.

Plants Sensitive to Dormant Oil

Acer palmatum (Japanese maple), Acer rubrum (red maple), Acer saccharum (sugar maple), Carya (hickory), Cryptomeria, Juglans sp. (walnut), Juniperus (blue cultivar selections), Picea pungens glauca (blue Colorado spruce), Pinus strobus (white pine), Quercus rubra (red oak) Taxus (yew) and Thuja (cedar).

Other, Less-Sensitive Plants

Cercis canadensis (redbud), Fagus (beech), Ilex crenata (Japanese holly), Picea abies (Norway spruce), Picea glauca (white spruce), Pseudotsuga menziesii (Douglas fir).

Jen Llewellyn, Ontario Ministry of Agriculture & Food & Rural Affairs (OMAFRA) Nursery Crops Specialist
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Nursery & Landscape Report
An Annual Good Time WAS HAD BY ALL!
The Changing Climate of Arboriculture

ISAO’s 59th Annual Educational Conference & Trade Show • February 13-15 • Niagara Falls

Photo Captions Adjacent Page
Clockwise From Top Left
Jim Young, Woodland Oak Tree Preservation Committee with Joyce Burnell, 2008 Honorary Membership recipient, and fellow Oakville Residence Sharon Dean, journalist with the Oakville Beaver and Marianne Hawthorne, good friend and photographer, all having a great time at their first ISA Ontario conference.

Richard Ubbens, Director, Urban Forestry, City of Toronto, accepting the Arboriculture Award of Merit on behalf of TREE Canada from ISAO Past President Karen Moyer.

Karen presenting Dean Davidson from Hydro One with the 2008 Supporting Membership Award.

Jim Skiera, Executive Director, ISA International.

Featured Wednesday speaker David J. Nowak and speaker and ISAO board member John McNeil.

The Plowmans. Mike, Liz, Victor (recipient of the Honorary Life Membership award) and Shayne.

Linda Hawkins (left) presenting a gift to Marianne Karsh & Joan Klaassen from Environment Canada.

This Page Clockwise From Top Left
Karen presenting Debbie Lean with the Chapter Volunteer Award.

William and Judith Gardiner from Arnprior, owners of Gardiner Tree Trimming and Removal Ltd.

Stephen Anderson (left), Stihl Limited, with Maple Leaf Award winner John Wilson.

The Special Achievement Award was won by Mike Bradley. OTCC Chair Paul Kobold accepted on his behalf (no photo).
Tar Spot of Maple
WHERE DID IT COME FROM AND IS IT GETTING WORSE?

Tom Hsiang, Lynn Xiuling Tian & Coralie Sopher, Department of Environmental Biology, University of Guelph

What are those polka-dot trees? Questions like these one are becoming more common with our recent outbreaks of tar spot on maples in southern Ontario and neighbouring areas. Many visitors come to this region in the fall expecting to see the golden red hues of our national emblem, but instead are greeted with big black splotches on yellowing leaves of Norway maple. The black blotches belong to a disease called tar spot.

Tar spot is a fungal disease. A large variety of plants have their own tar spot diseases such as maple, willow, holly, tulip tree, oak, and even goldenrod. The disease looks similar on these plants with a thickened black layer on the upper side of the leaf blades. The size of the circular or elliptical spots can range up to several cm across, depending on host and pathogen species.

In 1998, studies at Cornell University (Hudler et al. 1998, Mycotoxicon 68:405) revealed that the fungus *Rhystisma acerinum* is the cause of tar spot on Norway maple (*Acer platanoides*). Both the plant host and the fungal pathogen were imported from Europe. A native tar spot species, *R. americanum*, occurs on the native red and silver maples (*A. rubrum* and *A. saccharinum*).

The researchers also stated that tar spot of Norway maple was found most commonly in the American Northeast, and southern Ontario (Hudler et al. 1987, Plant Dis. 61:75). Norway maple is thought to be the most common street tree in these areas, partly because it was so extensively planted after countless shade trees were lost to Dutch elm disease in the mid-1900’s (Nowak and Rowntree 1990, J. Arboricult. 16:291).

Where did this disease come from?

In Europe, tar spot is found on a variety of maples, including Norway maple and sycamore maple (*A. pseudoplatanus*), which are two most common maple species. There have been several scientific studies on maple tar spot in Europe starting in the late 1800s (Müller 1893, Wissenschaft. Bot. 25:607; Müller 1912, Central. Bakter. 36:67; Jones 1923, Ann. Bot. 39:41; Schweizer 1932, Planta 16:367). After those reports, there was very little research activity on tar spot in Europe until the 1970s, when air pollution effects on tar spot were reported in Britain (Bevan & Greenhalgh 1976, Env. Pollut. 10:271; Vick & Bevan 1976, Env. Pollut. 11:203).

In the last 20 years, tar spot of maple seems to have been increasing in frequency across the eastern Great Lakes Region and most of the American Northeast. For such a noticeable disease, there has been amazingly little scientific research done on tar spot in North America. Extension specialists in New York were first alerted to the presence of large black spots on Norway maple in 1983 in upstate New York (Hudler et al. 1987). In searching through American records, Hudler et al. (1998) found that this disease on Norway maple had been first reported in Ohio in the 1940s, and an extension report (counties.cce.cornell.edu/niagara/hort-news-fall-98.html) from
Cornell University speculates that the fungus was introduced into North America in the late 1930s.

When did tar spot arrive in Ontario?

The tar spot of native maples has probably been here since maples reclaimed their territory after the last ice age. These native tar spots show fluctuations in severity from year to year, depending on rainfall at the time of spore dispersal and infection, and there is some anecdotal evidence that they are becoming more severe.

As for tar spot on Norway maple, a report from 1957 states that “tar spot was moderate in a small plantation of *A. platanoides* near Kingsville, Ontario” (Can. Pl. Dis. Surv. 37:116). At the University of Guelph, we noticed that Norway maple trees on campus were showing very high levels of tar spot in the late 1990s.

A documented report of the first appearance of tar spot on Norway maple comes from a research study on an island in Lake Huron where the disease was first noticed in 1998 (Webster et al. 2005, For. Ecol. Mgt. 208:85). The fungus may have been in Ontario prior to 1990, but noticeable outbreaks on Norway maple did not seem to occur until after the mid-1990s.

Is tar spot of maple becoming more severe?


In some of these reports, the tar spot epidemics on Norway maple were said to have caused premature defoliation, while other reports have found tar spot to be merely an aesthetic nuisance without seeming to cause any serious effects. There are also some anecdotal reports that the native tar spot on red and silver maples is increasing. Some people have speculated that the increased levels of tar spot in the last 15 years are a result of increased pollution emission controls. There are studies which indicated that tar spot is sensitive to air pollutants such as sulfur dioxide (Bevan & Greenhalgh 1976; Vick & Bevan 1976), although another study has contradicted this finding (Leith & Fowler 1988, New Phytol. 108:175).

Is there any research in Ontario?

In the mid-1960s there was some early research on the native tar spots on red maple and mountain maple, cause by *R. americanum* and *R. punctatum*, respectively, conducted at the University of Toronto (Duravetz & Morgan-Jones 1971, Can. J. Bot. 49:1267). Although Norway maples were certainly around at that time, there was no mention made of disease on this host. This provides some indirect evidence that *R. acerinum* was not noticeably present in southern Ontario at that time.

In 2006, we received funding from Landscape Ontario for a study on tar spot. The purpose of this work was to examine the epidemiology of this disease, by gathering overwintered maple leaves from multiple locations in southern Ontario weekly from March through August in 2006 and 2007, and inspecting them for the presence of spores of the tar spot fungus.

We found that spore release from tar spots on Norway maple occurs over a four-week period, from late May to late June, and that the start of the spore release period coincided with full leaf expansion in Norway maple.

Another objective of this research was to confirm the genetic identity of the organism causing tar spot on Norway maple in Ontario, as well as its relationship to tar spot on other European maples and North American maples.

We used DNA sequencing to confirm that tar spot on Norway maple in southern Ontario is indeed caused by the European species, *R. acerinum*, by comparing the sequences to sycamore maple samples obtained from Germany and England. We also found that native maple species such as red maple and silver maple have tar spot caused by *R. americanum*, and that the speckled tar spot caused by *R. punctatum* is found locally on striped maple (*A. pensylvanicum*) as well as on big-leaf maple (*A. macrophyllum*) samples obtained from Vancouver Island.

How do the tar spot fungi survive through the year?

The tar spot fungi share similar life cycles. Fallen leaves bearing the tar spots will overwinter. With the onset of warmer weather in spring, the black spots begin to produce spores internally. After extended
rainfall or prolonged wetting, the black spots absorb moisture, and the spore producing bodies open (Figure 1) to eject tiny, thin sticky spores which are carried by wind to newly expanded maple leaves. These tiny spores infect the leaves and a few weeks later, small yellow spots become visible (Figure 2). The yellow spots expand slowly, and begin to develop small black spots. Here the pattern of develop differs between tar spot on silver maple and that on Norway maple. On silver maple, there is more commonly a single or just a few black spots within a larger yellow spot that merge and expand in size up to 1.5 cm across, forming a fingerprint pattern (Figure 3). On Norway maple, there are many distinct black spots starting at a pinhead size (Figure 4) and expanding to a few millimeters across. These individual black spots generally grow together and form large spots (Figure 5). The third species, which is found on striped maple, forms a speckled pattern where the individual small spots never merge into a large spot (Figure 6). The spots continue to enlarge through the growing season but often reach their full size before the end of the August in southern Ontario. After the end of June, no new spots are initiated. Our preliminary work with fungicides on Norway maple in summer 2007 indicates that existing spots will continue to develop in summer even with the use of systemic fungicides that can penetrate into the leaf tissue. This suggests that fungicide applications after the infection period in late May through late June are probably ineffective at normal rates applied for foliar diseases of woody ornamental plants.

How can maple tar spot be managed?
The most common recommendations for controlling tar spot involve reducing the amount of overwintering fungus by collecting as much of the fallen leaves bearing tar spots as possible. This management system is effective only if everyone in the neighbourhood participates, and if no one attempts to compost some leaves in their back yard. Homeowner composts rarely reach the very high temperatures which are necessary to kill off fungal spores and other overwintering fungal growth. Furthermore, the thick tar-like fungal growth of tar spot fungi may be more resistant to degradation during composting than common fungal growth found on vegetables and flowers. Also, it is becoming increasingly popular to mulch leaves by using mower adapters to chop up leaves into smaller bits to allow them to break down over winter and act as a natural fertilizer in the spring. However, the end products of this mower mulching process are well-dispersed small bits of leaf tissue still bearing recognizable tar spot tissue, which may survive through winter. Whether composting in the back yard or mulching in the front yard or even composting by municipalities, research is needed into the survival of the tar spot fungi, and ways to promote its decomposition.

The 1998 extension report from New York mentions that in an outbreak near Cornell University with premature defoliation of maple leaves bearing many tar spots, there were also other fungi involved in causing the leaves to fall. Our observations are that even very heavy levels of tar spot on Norway maple leaves (more than 5 spots per leaf) have not seemed to cause premature defoliation in many cases.

Norway maple is notorious for hanging on to its leaves much longer than native maple species, and this probably has to do with the more northerly locations and shorter daylengths where the stock originated. From our research, we have found that the tar spot fungi are obligate parasites which means that they requiring living plant tissue to feed on, and are not easily grown on artificial media. Obligate parasites that have co-evolved with their hosts, such as R. acerinum on Norway maple, are often in tune with their hosts such that they do not drive their hosts to extinction. In theory, tar spot diseases on Norway maple and native maples are aesthetic nuisances and do not cause excessive damage on their hosts. It is only when the host plant species have been extensively altered, such as by breeding, or
when placed in a unsuitable growing environment, that their obligate parasites become more than a nuisance.

What future research is needed?

Other questions that still remain to be answered include the following:

a) Which pathogen causes tar spot on sugar maples (Acer saccharum)? We have some preliminary evidence that the Norway tar spot fungus (R. acerinum) is able to infect sugar maple, but need to confirm this by more research.

b) Which fungicides are effective in preventing infection or eradicating infection? There are no fungicides registered for tar spot control in Canada. Hudler et al. (1987) found that the disease could be controlled by spraying with benomyl, mancozeb, or triadimefon at budbreak and twice more at 15 day intervals, while copper hydroxide at the rate used was not effective. Benomyl and triadimefon are not registered for any crop in Canada. There is a need to test the efficacy of newer fungicides such as the demethylation inhibitors (e.g. propiconazole in Banner or myclobutanil in Nova), as well as the strobilurins (trifloxystrobin in Compass or azoxystrobin in Heritage).

c) Why is tar spot increasing in incidence and severity across the Northeast region?

This question is often asked, but the answers have all been speculative (e.g. decreased air pollution, global warming, wetter springs, etc.). There is a need for a systematic survey of the literature and statistical correlation with environmental variables such as weather and pollution indices to see whether some strong relationships exist.

Compared to other highly visible diseases in the urban environment, we know much less about maple tar spot diseases. More research is needed on the biology of the fungal pathogens to provide management options for this disease, and to give a better understanding of these fascinating organisms.

Editor’s Note: See “What’s Bugging Your Trees” in the November issue of the Arborist for more info on tar spot from Jen Llewellyn.

* This article has also been published in a recent issue of Horticulture Review.

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Figure Captions

TAR SPOT IN MAPLES

Figure 1. An overwintered leaf of Norway maple with a tar spot that has soaked up water and opened up the slits to release spores in late May.

Figure 2. Norway maple leaf in mid July with two yellow spots which developed from infection by spores of the tar spot fungus a month previously.

Figure 3. Silver maple with fingerprint textured tar spots in mid September.

Figure 4. Norway maple in mid August with discrete black heads with larger yellow patches caused by the tar spot fungus.

Figure 5. Norway maple in late October with large tar spots.

Figure 6. Composite image of the speckled tar spot on striped maple (left) and big-leaf maple (right).

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SPECIALIZING IN ALTEC EQUIPMENT
Will sub-zero temperatures kill the beetles that are killing Canadian forests?

Sadly, these pests may turn out to be freeze-resistant, at least in our climate. Dave Roden, an entomologist with the Canadian Forest Service (CFS) at the Great Lakes Climate Focus Research Centre in Sault Ste. Marie, has been studying the “super cooling point” of the Asian long-horned beetle (ALB). That’s the point at which the last drop of water freezes in living tissue.

Roden believes the super cooling point for the ALB is –26 C. As the weather turns cold, the insects undergo biochemical changes and produce glycol, or sugar, which prevents them from freezing unless they reach the super cooling point. “Just like the antifreeze you put in your car.”

“Insects die when ice crystals form and destroy the cell walls.”

But, he adds, some insects are “freeze-tolerant.” “They quite happily freeze. You can take the temperature down to where you want, and when the temperature comes back up, they come back to life.”

Roden has exposed some beetles to temperatures as low as –40 C for 24 hours and seen them revive, mature and reproduce the next generation of insects.

His research is new, and he’s finding it difficult to get enough specimens to test. “We’re not 100 per cent sure, but it looks like the ALB is freeze-tolerant.”

In Edmonton, Barry Cooke, also an entomologist with CFS, has observed a 14% mortality rate among beetles in the service’s outdoor “beetle garden” during the early part of the winter.

But after January’s cold snap, when the temperature plunged to –39 C outside their lab, he found a 93% mortality rate. Researchers also measured beetle mortality in their lab and found that at a temperature of –37 C, 50% of the beetles died.

“They started dying the moment they crossed the lethal threshold,” he says.

Cooke notes, some mountain pine beetles have survived temperatures of –46 C. “We don’t know what accounts for the unusual cold hardiness, but there is potential for these (northern Alberta) populations to start to evolve cold tolerance on a wide scale and become the founders of a new race or sub-species of mountain pine beetle.”

On the plus side, the extreme cold will likely stem the beetles’ widespread progress through the province. “We have a temporary reprieve because of the cold,” says Cooke. “We were facing an impending disaster in Alberta. Now we are facing a situation of heightened uncertainty.”

At the University of Northern British Columbia, forest entomology professor Staffin Lindgren says the pine beetles, which have left the pine forests an eerie rust colour, adapt themselves to the cold as the winter progresses. At the end of the summer, they start preparing for winter by producing glycol in concentrations that increase through the fall and winter.

The beetle populations tend to crash if there is a sharp cold snap early in the fall, more so than in the deepest winter. Says Lindgren, “A temperature of –30 C in October is much harder to deal with than –40 C in January.”

— Leslie Scrivener, Feb. 17, reprinted with permission – Torstar Syndication Services
How to cool lakes while the world warms...

Despite global warming, water temperatures in lakes may be lowered significantly by planting trees, research from York University shows.

Clearwater Lake, a small lake on the outskirts of Sudbury, Ontario, has cooled dramatically since the 1970s, in part because of a massive tree-planting program in the area, according to the study “Cooling lakes while the world warms,” published in the January 2008 issue of *Limnology and Oceanography*.

“We wanted to find out why the lake was cooling despite regional climate warming,” said lead author Andrew Tanentzap, a former York student who led the study with York biology Professor Norman Yan.

“What we discovered was that, over the years, the growth of all those trees lowered wind speeds in the area, which reduced mixing between warmer and cooler layers in the lake, allowing more of the bottom of the lake to stay cool.”

More than eight million trees were planted in the Sudbury area from the mid-1970s to mid-1990s to address massive deforestation due to sulphur dioxide emissions from Sudbury metal smelters, which had also acidified thousands of lakes.

“As Clearwater Lake recovered from acidification and the level of dissolved organic carbon increased, water clarity was reduced,” said Yan. “That was a good thing because it meant less light could penetrate into the lake and warm it. However, I suspected reduced water clarity might not be entirely responsible for the lake cooling, so I asked Andrew to study the joint effects of wind speed and water clarity on the lake’s cooling pattern.”

Ontario Ministry of the Environment data for Clearwater Lake from 1973 to 2001 reveals a profound pattern of deep water cooling in the lake. Daytime surface temperatures did not change over the nearly three decades, but bottom temperatures dropped by seven degrees, from 15 to 8 C, and the cooler layer of water had grown substantially. This occurred despite a longer ice-free season, an important sign of global warming. However, at about the same time, local wind speeds had dropped dramatically, by 34 per cent between 1975 and 1995, and Yan wondered if there was a link.

Using a model developed by the University of Western Australia’s Centre for Water Research, Tanentzap was able to simulate lake mixing and heating processes in the lake. For expertise on wind, he looked down the hall at York to an international expert in another discipline, Professor Peter Taylor, in York’s Department of Earth and Space Science & Engineering, who specializes in atmospheric science.

By recomputing existing data, Taylor discovered that wind speeds at greater heights had not changed, but wind speeds at ground level had fallen substantially. This decrease in wind speed had reduced mixing between warm surface water and the cooler waters below, Tanentzap found. Tanentzap and Taylor’s study “On Sudbury-area wind speeds – a tale of forest regeneration,” in the October 2007 issue of the *Journal of Applied Meteorology and Climatology*, demonstrates conclusively that deforestation in the Sudbury area was the major cause of reduced wind speed near ground level.

The reduction in water temperature in Clearwater Lake over the past 30 years or so has created habitat for lake trout, a clear indicator of the improvement in water quality since the 1970s. As important, Tanentzap’s study shows that it is necessary to understand all factors that can affect water clarity and wind speed in order to predict the effects of global warming on our lakes, said Yan. Taylor’s findings on reforestation and wind speed are equally important, with implications for many things ranging from the biology of lakes, to home heating costs and wind energy potential.

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The ISA Certification Department signed the Computer Based Testing (CBT) contract in February and is pleased to be able to offer this service for all five credentials. Paper and pencil exams will still be offered for certified arborist exams, but you will find the convenience of testing close to home to be a great alternative.

Testing locations will be available all over the world and this means no seat limits. In the meantime, conference calls are taking place between ISA and Pearson-Vue (the testing vendor) to discuss implementation and we are hoping that we will be up and running within about 90 days.

Computer based testing will also take some of the burden off of chapter volunteers and ISA hopes CBT will help with proctor burnout.

**Hot Off the Press!**

The Municipal Arborist Certification Study Guide has just been released. This is the book you need if you plan to take the Municipal Specialist exam.

Eight chapters cover the following topics: 1) Municipal Arboriculture and Urban Forestry; 2) Planning the Urban Forest; 3) Assessing and Quantifying the Urban Forest; 4) Planting the Urban Forest; 5) Maintaining the Urban Forest; 6) Managing Risk in the Urban Forest; 7) Protecting the Urban Forest; and 8) Administrative Duties of the Municipal Arborist. Contact the ISA Ontario office to order your copy.


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**20 Year Milestone**

**TREE CLIMB CHAMPIONSHIP**

Planning is underway for the 2008 Ontario Tree Climbing Championship (OTCC). This year will mark the 20th anniversary for this unique event, and we are proud of the past performances of Ontario’s tree climbing community.

**Send us your OTCC memories!**

To celebrate this important milestone, the OTCC organizing committee would like to hear from past competitors, champions, organizers, volunteers and spectators regarding their OTCC experiences and memories. Please email info@isaontario.com your short story or thoughts (with photographs if you have any) or mail them to the ISAO office at: ISA Ontario, 200 Consumers Road, Suite 701, North York, ON M2J 4R4 Attn: OTCC Memories.

Your submissions will be compiled and be part of a special anniversary feature in an upcoming Ontario Arborist issue. Any and all recollections of our past championships are welcome.

The OTCC organizing committee is currently recruiting new members. Anyone interested in sitting on this committee is encouraged to contact committee chair Paul Kobold at 416-396-5123 or pkobold@toronto.ca. Serving on the OTCC committee involves attending approximately six meetings annually as well as helping at the event itself.

This year’s event will be held at Harrison Park in Owen Sound. Potential climbers should watch for the OTCC registration form in June. It will be posted on the ISA Ontario website at [www.isaontario.com](http://www.isaontario.com).
Global Safety Net for Tree Seeds

PROTECTING GENETIC DIVERSITY IN PERMAFROST

The Svalbard Global Seed Vault was opened by the Prime Minister of Norway, Jens Stoltenberg, on February 26. The seed vault, which is established in the permafrost in the mountains of Svalbard, is designed to store duplicates of seeds from seed collections from around the globe. Many of these collections are from developing countries. If seeds are lost, e.g. as a result of natural disasters, war or simply a lack of resources, the seed collections may be reestablished using seeds from Svalbard.

The Svalbard Global Seed Vault is located on the Norwegian island of Spitsbergen near the town of Longyearbyen (population 2,075) in the remote arctic Svalbard archipelago. The island is about 1,120 kilometres (700 mi) from the North Pole.

The Seed Vault is managed under terms spelled out in a tripartite agreement between the Norwegian government, the Global Crop Diversity Trust and the Nordic Genetic Resource Center (previously named the Nordic Gene Bank, a cooperative effort of the Nordic countries under the Nordic Council of Ministers). The Norwegian government has funded all of the approximately $8 million construction cost. The Global Crop Diversity Trust has played a key role in the planning of the seed vault and is coordinating shipments of seed samples to the vault in conjunction with the Nordic Genetic Resource Center. The Trust will provide most of the annual operating costs for the facility, and has set aside endowment funds to do so, while the Norwegian government will finance upkeep of the structure itself. The Bill & Melinda Gates Foundation has provided approximately $750,000 to assist developing countries and international agricultural research centers to package and ship seeds to the vault.

The seed bank is constructed 120 metres (394 ft) inside a sandstone mountain. The bank employs a number of robust security systems. Seeds are packaged in special four-ply packets and heat sealed to exclude moisture.

Spitsbergen was considered ideal due to its lack of tectonic activity and its permafrost, which will aid preservation. The location 130 metres (430 ft) above sea level.
will ensure that the site remains dry even if the icecaps melt. Locally mined coal provides power for refrigeration units that further cool the seeds to the internationally-recommended standard -20 to -30˚C. Even if the equipment fails, at least several weeks will elapse before the temperature rises to the -3˚C of the surrounding sandstone bedrock.

Prior to construction, a feasibility study determined that the vault could preserve seeds from most major food crops for hundreds of years. Some seeds, including those of important grains, could survive far longer, possibly thousands of years.

Approximately 1.5 million distinct seed samples of agricultural crops are thought to exist. The variety and volume of seeds stored will depend on the number of countries participating – the facility has a capacity to conserve 4.5 million. The first seeds arrived in January 2008. Five percent of the seeds in the vault, about 18,000 samples with 500 seeds each, come from the Centre of Genetic Sources, part of Wageningen University, Netherlands.

The Svalbard Global Seed Vault’s mission is to provide a safety net against accidental loss of diversity in traditional genebanks. While the popular press has emphasized its possible utility in the event of a major regional or global catastrophe, it will certainly be more frequently accessed when genebanks lose samples due to mismanagement, accident, equipment failures, funding cuts and natural disasters. Such events occur with some regularity. In recent years, some national genebanks have also been destroyed by war and civil strife. There are some 1,400 crop diversity collections around the world, but many are in politically unstable or environmentally threatened nations.

— excerpts from the Government of Norway (www.regjeringen.no) and online dictionary Wikipedia (http://en.wikipedia.org/wiki/Svalbard_Global_Seed_Vault)

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Hug a tree and see… (ever heard of a tree whisperer?)

Have you ever hugged a tree? Last fall, I went away on a weekend retreat with my husband. There were many workshops being held at the beautiful facility located in “Middle of Nowhere, USA”. At lunch one day, we happened to sit at the same table as one of the presenters.

“So, what is the topic of your presentation?” asked Damir making polite conversation.

“Trees,” answered our new acquaintance. “I’m a Tree Whisperer.”

“I see...” said my husband hesitantly, his soup spoon hovering in the air as if he wasn’t quite sure what to do with a spoon given this new information.

“Do you talk to them? Or do they, uh...talk to you?” asked Damir as I leaned in for the answer.

“Both,” said the Tree Whisperer. I leaned back abruptly hoping no one would notice that I was choking on my baby greens.

“And...what do they...say?” My husband clearly shared my digestive difficulties!

“They tell me how they feel,” said the man. The spoon suddenly fell to the table with a clatter, as did my husband’s jaw...as did mine.

“Take that Catalpa over there,” continued the Tree Whisperer with a soft smile, “Five years ago it was dying and no one could figure out why, so they called me in. The tree was suffering from geopathic stress, likely due to its proximity to these buildings. We corrected the energies with minerals and rocks and addressed the nutritional imbalance. It’s been thriving ever since!”

By the time we finished our lunch, we had been presented with a new concept of trees as sentient beings that have the ability to communicate with one another and other species.

I pondered this with a little curiosity and a lot of incredulity as Damir and I walked back to our cabin. Then I remembered something I had been told by a tree farmer when I was out shopping for trees for our backyard a few years earlier.

“You know,” I said to my husband, “the idea of tree consciousness may not be as crazy as it sounds.”

“How is that?” he asked.

The tree farmer had described an amazing phenomenon.

“Whenever there is an attack on a row of trees – a disease or an infestation,” he said, “we see the first few trees take the worst of...”
INTRODUCING PEOPLE TO TREES

The Aurora Community Arboretum occupies 100 acres of parkland in the heart of Aurora (see map on our website www.auroraarboretum.ca). It is a centre for passive recreation – for walking, cycling and experiencing nature. The Arboretum Board is a voluntary group working toward developing a variety of eco-niches within the space. A large part of the arboretum is reserved for specimen trees and shrubs, another portion is bottomland forest, there is a meadowland area, and a native area. Around the perimeter we are planting a shelter belt so that views from the walking trails will be of trees rather than buildings.

We have been in existence for just over 10 years, so most of our plantings are still young. During that period we have planted some 3,000 trees and shrubs toward our goal of 30,000 over the next 10 years. This year we hope to plant another 1,000. The land we occupy is town parkland, and was farmed some 100 to 150 years ago. The tree Cathy referred to in her article is one of those planted by the initial farmers.

The objects of the arboretum are to introduce people to trees, to model tree selection and environmental responsibility and to inspire people as to what is possible in their own gardens. We see ourselves as having a strong educational mandate, as well as providing a pleasant natural park experience in Aurora.

We are planning further trails so that it will be possible to enter at any entry point and walk a loop (with no backtracking). We have installed one self-guiding trail last year and will install a second this year. We are currently planning educational signage to encourage respect for nature and for trees in particular.

We have been in existence for just over 10 years, so most of our plantings are still young. During that period we have planted some 3,000 trees and shrubs toward our goal of 30,000 over the next 10 years. This year we hope to plant another 1,000. The land we occupy is town parkland, and was farmed some 100 to 150 years ago. The tree Cathy referred to in her article is one of those planted by the initial farmers.

— Reprinted with permission of the author. First publ. in the Auroran, March 11. Cathy welcomes e-mail at ccaurora@rogers.com.
The Bottom Line

Climate change – a mass hysteria media item

Political correctness is everywhere, in organized religion, in “Follywood,” in the MSM (mainstream media), in politics, and NOW in ISA Ontario. It’s latest flavour of the month (i.e. focus on climate change) is pushed by pseudo experts commenting in ignorance, enjoined by the (dis)United Nations, tarnished stars/starlets and the education system. In essence, climate change has become a mass hysteria item where dissent is disallowed and those with alternate opinions are met with the labelling by those who appear to have succumbed to mass delusions and even more massive guilt — you don’t care about the planet, the children, or the future if you question us, let alone disagree with us about global warming.

“I believe current conditions are natural, the Arctic ice caps will not melt, polar bears will not become extinct, and focusing on the flatulatory habits of elephants, kangaroos and penguins will do nothing to affect the big picture.”

Defending the Indefensible

Much of the information on climate change is simply wrong, with alarmists making extreme and illogical forecasts that are disproven at every turn, yet ignored by the stampeding herd driven hard by carbon credit proposals and their rush to halt what is not happening.

Defending the indefensible did not stop extremists several years ago from pontificating about the coming global ice age or decades ago about the impending world food shortage. One has to seriously wonder at the purpose of all this disinformation coming at us from every direction.

I would ask all of you have we so soon forgotten the memory of the late and great Dr. Alex Shigo when he stated, “Education begins when you doubt something. Education occurs when you resolve your doubts.”

From the beginning, I have doubted many of these theories. I also reject global warming, based on many things, many experts, and many proofs including the following.

The Myth of Global Warming

Professor Tim Patterson of Carleton University in Ottawa pointed out last year in the Financial Post that, “Ten thousand years ago, while the world was coming out of the thousand-year-long “Younger Dryas” cold episode, temperatures rose as much as 6 degrees C in a decade – 100 times faster than the past century’s 0.6 degrees C warming that has so upset environmentalists. Happening as it did before the dawn of civilization, it was, of course, entirely natural.”

Dr. David Whitehouse, who has a doctorate in astrophysics and is a world preeminent climatologist, has stated: “The fact is that the global temperature of 2007 is statistically the same as 2006 and every year since 2001... global warming has temporarily or permanently ceased… for the past decade the world has not warmed… global warming has stopped… it’s not a viewpoint or a skeptic’s inaccuracy… it’s an observational fact… scientists must never bend their desire for knowledge to any political cause… we are fools if we think we have a sufficient understanding of such a complicated system as the Earth’s atmosphere’s interaction with sunlight to decide… we know far less than many think we do or would like you to think we do…” (9/12/07, The New Statesman).


The Saviours of Humanity

In this as in so many things, extremists are defining the limits, and in the process, setting themselves up as the saviors of humanity, the favoured ones who alone have the knowledge to save us, claiming that only they understand and we must do things their way. If you happen to notice the similarities to any one of the hundreds of existing cultic claims, you will wonder, as I, how anyone could blindly embrace such a dogmatist delusional bent.

If you want to know how whacko the movement really is, note the following.

PR Newswire Association LLC (UK) cites the Washington DC based Center for Science and Public Policy: “Some voices on the political left have called for the arrest and prosecution of skeptical scientists [i.e. those who question whether human-produced carbon dioxide is causing a climate crisis]. The British Foreign Secretary has said skeptics should be treated like advocates of Islamic terror and must be denied access to the media.” This sounds to me like the “inquisitors” of old.

A Natural Phenomenon

Since global warming is nature produced, we stand accused of wasting money on preventing global warming, an impossible objective, while ignoring the very real and non-associated problem of pollution. While temperatures fluctuate, droughts and floods interchange with the other, glaciers advance and retreat, climate change is a constant. Far too much is being imposed relative to climate change that has no foundation in truth.

I believe current conditions are natural, the Arctic ice caps will not melt, polar bears will not become extinct, and focus-
Russian scientist says Earth could soon face new Ice Age

ST. PETERSBURG, Jan. 22. Temperatures on Earth have stabilized in the past decade, and the planet should brace itself for a new Ice Age rather than global warming.

“Russian and foreign research data confirm that global temperatures in 2007 were practically similar to those in 2006, and, in general, identical to 1998-2006 temperatures, which, basically, means that the Earth passed the peak of global warming in 1998-2005,” said Khabibullo Abdusamatov, head of a space research lab at the Pulkovo observatory in St. Petersburg.

According to the scientist, the concentration of carbon dioxide in the Earth’s atmosphere has risen more than 4% in the past decade, but global warming has practically stopped. It confirms the theory of “solar” impact on changes in the Earth’s climate, because the amount of solar energy reaching the planet has drastically decreased during the same period.

“A year ago, many meteorologists predicted that higher levels of carbon dioxide in the atmosphere would make the year 2007 the hottest in the last decade, but, fortunately, these predictions did not become reality,” Abdusamatov said.

He also said that in 2008, global temperatures would drop slightly, rather than rise, due to unprecedentedly low solar radiation in the past 30 years, and would continue decreasing even if industrial emissions of carbon dioxide reach record levels.

“By the mid-21st century the planet will face another Little Ice Age, similar to the Maunder Minimum, because the amount of solar radiation hitting the Earth has been constantly decreasing since the 1990s and will reach its minimum approximately in 2041,” he said.


EDITOR’S NOTE

Many people in the media (and elsewhere) use the terms “climate change” and “global warming” interchangeably, as if they were the same thing. But there are differences between the meanings of the two terms. The following definitions are from www.grinningplanet.com. If you want to explore this further, simply Google “differences between global warming and climate change.”

Global warming is an overall warming of the planet, based on average temperature over the entire surface. Climate change is changes in regional climate characteristics, including temperature, humidity, rainfall, wind, and severe weather events.

There is an abundance of conflicting evidence on whether we are experiencing continued global warming, but I think the fact that climate change is having a global impact (positively for some areas and negatively for others) can not be disputed. Furthermore, our role in this changing climatic experiment can not be underplayed. To do so is to provide each of us with a convenient excuse for not making positive changes in our lives. More to come in the May Ontario Arborist...

EDWARD’S IN THE NEWS...

Russian scientist says Earth could soon face new Ice Age

ST. PETERSBURG, Jan. 22. Temperatures on Earth have stabilized in the past decade, and the planet should brace itself for a new Ice Age rather than global warming.

“Russian and foreign research data confirm that global temperatures in 2007 were practically similar to those in 2006, and, in general, identical to 1998-2006 temperatures, which, basically, means that the Earth passed the peak of global warming in 1998-2005,” said Khabibullo Abdusamatov, head of a space research lab at the Pulkovo observatory in St. Petersburg.

According to the scientist, the concentration of carbon dioxide in the Earth’s atmosphere has risen more than 4% in the past decade, but global warming has practically stopped. It confirms the theory of “solar” impact on changes in the Earth’s climate, because the amount of solar energy reaching the planet has drastically decreased during the same period.

Expertree is a fast growing professional tree service operating in the Barrie area. We are a service oriented company looking to safely manage the growing concerns of our client base. We provide a positive energetic work environment, training, competitive wages, benefits, uniform program and up-to-date equipment. If you are a team-oriented, dedicated individual looking to advance your career in the arboriculture industry we are looking for you.

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September 23-26
8TH CANADIAN URBAN FOREST CONFERENCE

Michael Rosen, President of Tree Canada, is pleased to announce that Strathcona County, Alberta, will host the 8th Canadian Urban Forest Conference (CUFC8) from September 23-26, 2008. The conference will take place at Millennium Place in Sherwood Park, just 25 minutes from the Edmonton International Airport. The formal announcement was made at a special award ceremony hosted by the Lifford Wine Agency who has funded more than $50,000 worth of tree planting through its plantatreewine products (see the January Ontario Arborist or visit www.plantatreewine.com).

This conference will be dynamic and practical, presenting the most recent innovations in urban forestry under the theme Healthy Trees, Healthy People. “The link between human health and trees is real and needs to be explored,” says Sheila Flint, Arboriculture/Horticulturalist for Strathcona County and Chair of the CUFC8. “With 80% of its people living in cities, it’s essential that Canada showcase one of its greatest assets to the world – its urban forests”.

David Suzuki will kick-off the conference with a keynote address offering a compelling look at the state of our environment. Both inspiring and realistic, he offers leading-edge insights into sustainable development and how we can live well and still protect our environment. To register or learn more, visit www.cufc8.ca or call 780-467-2211.

Four Seasons Tree Service

EMployment Opportunities

Enjoy living and working in a progressive area without the traffic and other hassles of the big city. A busy tree care company in the Kitchener-Waterloo area has immediate openings for 2 full-time permanent climbing positions. We are looking for experienced climbers familiar with all aspects of tree pruning, removal and rigging with one or more year’s experience.

Pay is $25 per hour depending on experience. Additional training opportunities available.

For further info or to send a resume, contact Tony Newton at 519-632-7771 or 519-572-9720 (cell) or fax 519-632-8113. Evening calls are accepted.

Ontario Arborist Event Calendar

April 25-27
Green Living Show, Exhibition Place, Toronto, visit www.greenlivingshow.ca for further information.

April 26
Certified Treeworker Exam, Lindsay, visit the certification link on www.isaontario.com for details.

May 3
Certified Arborist Exam, Vandorf, visit the certification link on www.isaontario.com for details.

May 9-14
ISA Inaugural Asia Pacific Conference & Tree Climb, Brisbane, Australia, www.isaac.org.au/conference

June 8
Canadian TREE Fund Annual Toronto Island Bike Ride & Scavenger Hunt, email whoselto@toronto.ca for details.

June 16-18
European Congress of Arboriculture, Turin, Italy, visit www.isa-arbor.com for details.

July 26-30, 2008
84th Annual ISA Conference & Trade Show, Gateway to an International Arboricultural Experience, St. Louis, IL, visit www.isa-arbor.com for details. Tour des Trees 2008 takes place from July 21-27 and as always, Team Canada welcomes your support! Early bird registration savings ends May 26!

August 17
Canadian TREE Fund Annual Harold Van Dyke Memorial Golf Tournament. Location to be announced. For more details on any CTF events, contact the TREE Fund at 416-984-7025 or visit www.isaontario/treefund.
Do you have a business succession plan?

Many small business owners don’t have a business succession plan in place leaving them unprepared for retirement, disability or death. A business succession plan determines how your business will be transferred to others and outlines the steps necessary to prepare for the transition. A good succession plan ensures that your wishes will be carried out if you should die suddenly or can no longer run your business. It can also help you ease into retirement or provide a retirement income.

Should you have a business succession plan? If you own a business, the answer is yes. When you’re building and running a business, thoughts of selling it or passing it on to others are often far from your mind. However, that day will eventually arrive, and as in all business matters, the earlier you plan, the more successful the transfer will be. Business succession planning is really an extension of your personal estate planning but with a focus on the future operations of your business.

Thinking about succession planning requires asking some tough questions:

- When you die, how will you fairly and equally divide your estate amongst your family?
- Who will take over control of your business?
- What other assets do you have and who will receive them?
- How much control over the business do you want to retain when you retire?
- When will you release control completely?
- Where will the money come from to fund the purchase of your business and fund your retirement?
- How will your family retain their standard of living when you die?
- How will you ensure your business continues to run smoothly?

Every business and personal planning situation is different. Every succession plan is also different. Taking the time to think through these six key steps will help you start your business succession plan.

1. Assess your current situation
2. Understand your goals for your business and your family
3. Identify and prioritize action plans
4. Select the best action plan
5. Document your decisions
6. Implement your plan

If you would like a more detailed checklist to help you identify your needs, please contact Kell Sewell via email Kelland.sewell@freedom55financial.com or call 705-761-1395.
Ontario Apprenticeship Programs

Mike Greer

Answers to frequently asked questions...

There is a great shortage of qualified workers for the arboricultural trade in Ontario. One way to ensure competent employees is having them enrolled in a Ministry of Training, Colleges and Universities (MTCU) apprenticeship program. This article will answer some of the more frequently asked questions that are posed to the ISAO Board.

What is an apprenticeship program?
Apprenticeship programs are MTCU managed programs with a standardized level of training for all workers enrolled. The spin-offs of an apprenticeship program are trained and competent workers, increased safety in the workplace, and providing a career path for workers in Ontario. Apprenticeship programs are developed and updated through the related Industry Committee. Industry Committee members are appointed by the Minister of TCU representing equally employers and employees in the specific trade. There is an Arborist and Utility Arborist Industry Committee. Contact with the relevant Industry Committee can be accomplished through the local MTCU office.

Who is eligible to enter the programs?
Anyone who is interested in a specific trade should contact their local MTCU office to inquire if there is an apprenticeship program available. For the arboricultural trade there are two: Arborist 444 or Utility Arborist 444B. The differences between the Utility Arborist and the Arborist are that the Utility Arborist works very close to energized electrical apparatus at all times. The worker initially requires to be employed with a willing employer who will agree with the MTCU requirements for the program.

What are the expectations in an apprenticeship program?
The expectations are that the employer provides opportunities for the apprentice to learn the “off the job” portion of the program as well as to provide opportunities for the apprentice to learn the specific “on the job” skills from other qualified workers. The expectation of the employee is to capitalize on these learning opportunities to become a better tradesperson.

What are the program requirements?
Apprenticeship programs are broken into “off the job” and “on the job” skills. For the arboricultural programs, the “off the job” portion is broken into two levels with the first level common with the Arborist and Utility Arborist program. The second level of “off the job” is specific to the differences in the trade. The “on the job” portion of the program is competency based and may require different time periods to complete. Once a required skill is mastered, the apprentice and the sponsor sign off the apprentice’s Skill Set book for that skill set. After all skills are signed off, the apprentice can challenge the final examination. The duration for both of these programs is approximately four years.

What is the difference between Certificate of Apprenticeship and Certificate of Qualification?
Certificate of Apprenticeship is granted when the required skills are obtained as an apprentice. The Certificate of Qualification is granted when the required skills are mastered and the apprentice or non-apprentice with the required skills challenges and passes the Certificate of Qualification examination.
How are apprenticeship programs different than the ISA certification?
The ISA certification is, for the most part, knowledge based, with exception of the Tree Worker Certification which involves a demonstration of skills. The apprenticeship program is a learning program with on and off the job skills.

I’ve been working in the trade for many years; can I be grandparented into the program?
No. The Utility Arborist program had a grandparenting clause; however, as of October 30, 2007, the clause expired. The Arborist trade never had a grandparenting clause. If you have many years in the trade and would like to challenge the Certificate of Qualification exam, you would need to provide proof of competency through hours worked in the trade and make an appointment to take the exam at a local MTCU examination centre.

Can I train my workers and not send them to a training facility?
Yes. In house training can be granted by the MTCU. Contact the local MTCU office for further details.

What are Exemption Exams?
Exemption Exams are available for workers who feel they have sufficient knowledge to be exempted from either Level 1 or 2 or both off the job learning sessions. To assess whether the worker has acquired sufficient knowledge to be exempted, the worker makes an appointment with a MTCU testing location to take the exam for the level wanting exemption from. Failure of the exemption exam requires the apprentice to enroll in the appropriate off the job level.

Are the Arborist or Utility Arborist programs mandatory to work in Ontario?
No. Currently the two programs specific to arboriculture are not “regulated” or mandatory trades under any legislation. However, there may be situations where a contract specifies that a MTCU certificate or equivalent certification is required and clearly at that time certification is required.

With a Utility Arborist certificate can I work closer than 3 metres (10 feet) to wires?
The Controlling Authority of the power system will determine whether you can or can not. With all tree work that is closer in proximity than 3 metres (10 feet), the Controlling Authority must be notified (Electrical Safety Rule Book). At that time, the Controlling Authority will deem whether the worker is qualified to work closer than proximity. The Controlling Authorities criteria to determine those qualified may vary with each utility and as such, designation as a Utility Arborist alone may or may not be sufficient.

Where can further information be found on apprenticeship programs?
Contact your local Ministry of Training, Colleges and University office. Phone numbers can be found in the Blue Pages of the telephone directory.

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We surpassed our 2007 fund raising goal!

To begin this issue’s TREE Fund article, I would like to make a personal note to say thank you to Karen Moyer and the committee who chose to select me for the 2007 Maple Leaf Award. It is always nice to be recognized and a real honour to have my name listed along with so many great arborists who have gone before me and for whom I have immense respect. I always have and hope to continue to enjoy my work with ISAO. While it can sometimes be frustrating, as we never seem to be doing enough or moving fast enough, the work we do accomplish can be enormously gratifying. Over the course of my ISAO volunteer career, my life has been truly enriched by the quality people I get to interact with and the opportunities I have been entrusted with.

Speaking for the Trees
One of my greatest thrills six times a year is to receive my hard copy of the Ontario Arborist, knowing that I contributed in some way to making it happen! While I don’t always practice what I preach, I believe we should all try and do the best we can with what we have. As tree advocates and certified arborists, that means taking pride in what we do, being professional and playing a role in assisting with the advancement of our science. After all, aren’t the health of our trees and how effectively and safely we apply our trade directly related to how much we know? What could be more noble than promoting the benefits of trees and professional tree care through research and education?

Someone once tried to put what we do in ISA in perspective by saying that while trees are truly amazing living things that do so much to improve the quality of our environment, the one thing they can’t do is speak. If we don’t speak for them who will?

Conference Notes
Speaking of the advancement of arboriculture, I am happy to report that the 59th Annual ISAO Education Conference and Trade Show was a positive and successful event for the Canadian TREE Fund. Much appreciation goes to all who participated in CTF events – whether you volunteered, donated an item for the silent auction or contributed through your purchases, your efforts all go towards the cause. While the final tally is yet to be determined, proceeds will be close to $7000, which is a good start to our fund raising goal of $50,000 for 2008.

If you weren’t able to attend the conference, we officially concluded our 2007 campaign by announcing we surpassed our $50,000 goal by $7000 and recognized all our donors at the various contribution levels. We also very proudly announced that we were able to completely fund five of the nine Jack Kimmel Grant proposals we received and award $500 to Katie Burles from White Horse, Yukon Territory, as the 2007 Harold Van Dyke Memorial Bursary recipient. Katie was not able to attend the conference to receive the bursary in person but sent a personal note to say thank you. The bursary will aid Katie as she intends to pursue a Masters degree in Forestry at the University of Lethbridge and with that hopes to do future research and studies in developing a better understanding of the effects of natural disturbances such as wildfires, mountain pine beetle, and climate change on forest resources.

Of special note, a big Thank-You goes out to Jan Hoselton of Hoselton Studios who donated the exclusive aluminum tree sculptures for our platinum donors. In addition, Hoselton Studios will be working...
with the TREE Fund to look at ways they can contribute to our cause with proceeds from future sales of the tree.

CTF Summer Events

See the calendar of events on page 26 for our upcoming activities. In closing, I encourage anyone who is curious in the TREE Fund to give us a call at 416-984-7025 or visit our website (linked from the ISAO site at www.isaontario.com). We welcome your questions, concerns or suggestion on how we can improve on what we do or make your contribution experience more meaningful.

Photo Captions This Page

Top: Board member John Wilson (far left) with platinum donors Greg Hill, Maple Hill Tree Services; Marion Makar, Voorheis & Co. LLP; and Debbie Leon. The platinum tree sculptures were donated and created by Jan Hoselton, Hoselton Studios (second from left). Above: Gold Level Donors. From left to right, Laura Catalano, Nisco National Leasing; Alastair Fyfe, Allan Fyfe Equipment; John Ranson, Arboriculture Canada Training & Education Ltd.; Jonathon Arnold, Shady Lane Expert Tree Care; Cor Beultena, Eloquip; Stephen Anderson, Stihl Canada. We owe Stephen an apology for mistakenly calling him Andrew Stephens when called up to the podium to receive his gold donor certificate.

Photo Captions Page 30

Middle: Mike Gray accepts a platinum tree sculpture on behalf of James Doyle of Davey Tree, three time platinum donor, who was unable to attend the annual conference. Bottom left: John Wilson presents Debbi Lund with a certificate of appreciation for her work on the CTF Board. Bottom right: Platinum donor Frank Matos, Landscape Ontario Inc., proudly displays his tree sculpture.

Auction Donors

THANK-YOU EVERYONE!

Donated items with a value >$300

- Allan Fyfe Equipment Ltd.
- Arboriculture Canada Training & Education Ltd.
- Eloquip Ltd.
- Hoselton Studios
- Husqvarna
- Shepherd Forestry Supply
- Vermeer Sales and Services

Donated items with a value <$300

- Altec Industries Ltd.
- Arborvalley Urban Forestry Company Inc.
- Bartlett Tree Expert Co.
- Bio Forest Technologies Inc.
- Bruce Tree Expert Company Ltd.
- Commercial Solutions Inc.
- Cressman Tree Maintenance & Landscaping Ltd.
- Debbie Leon
- Eagle Ridge Tree Movers
- Four Seasons Tree Care
- Graves Oak Tree Care
- Heather & Randy Lidkea
- Maple Hill Tree Service
- Mark Vanderwouw
- Maximum Arrest Force Inc.
- Niagara Durable Workwear
- Nisco National Leasing
- Nitro Industrial Sales
- Oregon Distribution Ltd.
- Patricia Thompson
- Shady Lane Expert Tree Care Inc.
- Solo Small Motors
- Stihl Canada Ltd.
- Warren Hoselton
Have you noticed the poor condition of sugar maples in towns and cities and along Ontario’s roadsides? Many have dead limbs. For some, half the tree is gone. Why? You may hear some saying they are simply old trees that have lived their best days. Well, the truth is that most roadside sugar maples are only about 80 to 90 years-old, which isn’t old for this species. Healthy sugar maples can live 300, some say even 500 years.

One of the major reasons for sugar maple decline, in health and numbers, is pollution, including salt, carbon monoxide and other airborne pollutants from vehicles. Another reason for their poor health is direct physical damage from root-pruning during excavations, when clearing out ditches, and when tillage extends under their canopies. Sugar maples have up to 90% of their roots within the top 10 cm of soil so whenever plowing, ditching or other excavations occur, the roots are cut. With frequent disturbances to their root systems, a portion of the trees’ ability to take up nutrients and water is jeopardized. Soil compaction is another problem along roads, lanes and in parks. Compact soil is poorly aerated, prevents percolation of water to roots, and inhibits the activities of soil animals that are so important in fertility and nutrient cycling.

The Value of a Maple
Sugar maples are not doing well in our changing urban and roadside environments where they are valued highly for their shade and beauty. Other trees could fill their niche, so why is there such concern about this particular roadside tree? The reason is clear – the problems exhibited by roadside sugar maples are a reflection of what is going on in our natural forests. On a broad environmental scale, pollution is impacting complete ecosystems. On a more localized economic scale, Canada is a world leader in maple syrup production. Finally, even the trees growing outside forest stands and sugar bushes are important to the economy in many ways. Think about how many places cash in on their vibrant fall colour displays. Sugar maples are a quintessential Canadian icon.

Searching for Survivors
So what are we doing about it? Well, first we have been looking for, and identifying, sugar maples that are surviving the environmental stresses that have confronted them for a good many years. These trees are all older than 80 years and are
growing on roadsides exposed to road salt and car exhaust. They are the survivors as many others in the same age bracket have already died from these various stresses. Can we propagate tough trees from them? We have designated potential “selected parent trees” as those survivors that have a single stem or trunk and have an even, healthy-looking crown.

Using the selected trees, we are developing ways to clone them by rooting some of their twigs. Typically, twig cuttings from younger trees will root when treated with rooting hormones and placed into moist soil. But twig cuttings from older sugar maple trees, our potential parents, we found after much work, do not respond to the treatments and fail to root. We have adopted “air layering” and some success has been achieved. We are now refining our experiments to find out where and how to air layer for best results.

Rooting in the Canopy

Air layering is a technique by which one places some peat moss, or other rooting material, around a twig that is still attached to the parent tree. Our twigs are those in the canopy and a mobile lift is needed to reach them (Figure 1). The soil is held in place in a plastic sheath (Figure 2). The cells in the bark respond to the soil and start the process of creating roots. Usually after 6 to 8 weeks, roots grow into the peat moss within the plastic sheath (Figure 3). Once the roots are established, the twig off is cut off, unwrapped, and can be planted.

The result is an exact genetic copy of the parent tree, and many can be obtained from a single parent. Now that we have had some success in obtaining clones from selected, tough parents, the project can proceed.

Once we have enough clonal material (air-layered twigs or ortets) from a good number of parent trees growing and over-wintering as nursery stock, they will be grown for several years until they start to flower. Once they start to flower, controlled pollinations will be used to produce “plus” seeds carrying the genes from both tough old parents. It is these seeds, resistant to pollution and stress, that will be grown in open conditions for restoration of roadside sugar maple avenues, for horticultural markets, for afforestation (trees planted on land where no trees grew), and reforestation (planting of trees where trees have just been removed such as a clear-cut or thinning) efforts.

Acknowledgements. We are grateful to the Canadian Tree Fund, Forest Care Ltd., Escarpment Biosphere Reserve, Gramat Investments Limited and the Industrial Partnership Scholarship program of the Natural Sciences and Engineering Research Council of Canada for financial assistance.

Photo Captions
Adjacent Page Main Pic: Air layering of sugar maple.
Inset: New roots on an air layer after 10 weeks.
This Page: Air layering in the upper canopy of sugar maple.
Happy Spring From the Ontario Arborist!

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- To work with knowledgeable people who are interested in helping me succeed.
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- To have a benefit package that includes paid holidays, dental and R.R.S.P. contributions as well as insurance coverage on and off the job.
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- To learn to be a “Tree Doctor” covering all aspects of arboriculture and to work with the latest in technology and equipment.
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To apply for either of these positions, please send us a resume and cover letter, quoting the File #, using one of the following methods: **online**: through our website, www.toronto.ca/employment, or **fax**: 416-397-9818, or **mail to**: Employment Services, Human Resources, City of Toronto, Metro Hall, 55 John Street, 5th Floor, Toronto, ON M5V 3C6. **Please do not send duplicates.** Applications must be received by **April 25, 2008**.