Tree Matters

The magazine of the New Zealand Arboricultural Association Inc.

EDITION 70 - WINTER 2016

VOLUME 18: ISSUE 2

IN THIS ISSUE...

INTERNATIONAL SOCIETY OF ARBORICULTURE 32nd CHAPTER

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E-mail: tree.matters@nzarb.org.nz
Mobile: 021 771 898

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EDITOR-IN-CHIEF
Nick Arnold
editor@nzarb.org.nz

COPY EDITOR
David Kainer
copy.editor@nzarb.org.nz

PUBLISHER
NZ Arb Assoc
nzarb@nzarb.org.nz

PRINTING
ODT Print
steve@odtprint.co.nz

www.nzarb.org.nz

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NEW ZEALAND ARBORICULTURAL ASSOCIATION

New Zealand Arboricultural Association Inc., PO Box 5596, Wellesley Street, Auckland 1141, New Zealand

Website: nzarb.org.nz

Mission Statement

To encourage, foster, improve and educate members and others in all aspects of arboriculture throughout New Zealand.

EXECUTIVE COMMITTEE

Please feel free to contact any of the Executive Committee regarding ideas, questions or concerns.

SETH THOMPSON
(President)
Managing Director
Tree Fellas Ltd
PO Box 18 232, Glen Innes, Auckland
Office: (09) 570 9674
Mobile: 027 568 2615
E-mail: seth.thompson@nzarb.org.nz

WILLIAM MELVILLE
(Vice-President)
Team Manager Arboriculture
Wellington City Council
113 Russell Tce, Newton, PO Box 2199, Wellington
Office: 021 227 8220
Mobile: 021 227 8220
E-mail: William.Melville@wcc.govt.nz

CONRAD PATTISON
(Treasurer)
Contract Supervisor
Asplundh NZ Ltd
PO Box 3179, New Plymouth 4342
Office: (06) 769 6451
Mobile: 027 242 4605
E-mail: coradp@asplundh.co.nz

JON REDFERN
(Secretary)
Senior Project Manager / Consultant Arborist
Treescape Ltd
PO Box 22 149, Otahuhu, Auckland
Office: -
Mobile: 021 281 1765
E-mail: JonR@treescape.co.nz

NICK ARNOLD
Assistant Contract Manager
Downer NZ Ltd
PO Box 50-465, Porirua, Wellington
Office: -
Mobile: 021 770 641
E-mail: Nick.Arnold@downer.co.nz

CRAIG DE DENUS
Project Manager
Arb Innovations Ltd
Wellington
Office: (04) 212 6366
Mobile: 021 810 540
E-mail: craig@arbinnovations.co.nz

DAVID JAMES
Consulting Arborist
David James Tree Services Ltd
247 Vickerman Street, RD 3, Blenheim 7273
Office: (03) 577 5430
Mobile: 021 459 139
E-mail: david@davidjames.co.nz

CAMERON MITCHELL
Arboricultural Manager
Bark Ltd (Wgtn)
10 Sydney St, Petone, Wellington 5012
Office: 0800 227 558
Mobile: 021 836 544
E-mail: cameronmitchell@bark.co.nz

JAIDEN PALMER
Arborist / Project Manager
Franklin Tree Services Ltd
PO Box 125, Tuakau 2342
Office: 0800 272 624
Mobile: 021 343 745
E-mail: jaiden@franklintreeservices.co.nz

LEON SAXON
Planning Arborist
Greenscene NZ Ltd
PO Box 56 551, Dominion Rd, Auckland 1446
Office: (09) 623 3514
Mobile: 021 281 1763
E-mail: Leon.Saxon@greenscenenz.com

CHRIS WALSH
Director
Treetech Specialist Tree Care Ltd
PO Box 35-152, Christchurch
Office: (03) 383 9370
Mobile: 027 229 7488
E-mail: chris.walsh@nzarb.org.nz

RICHARD WALSH
Director / Arborist
Nelson Tree Specialists
PO Box 1224, Nelson
Office: (03) 548 0749
Mobile: 021 296 6827
E-mail: richard@nelsontrees.co.nz

SUB-COMMITTEE/PORTFOLIO CHAIRS, LIAISONS & REPRESENTATIVES

If you have any queries regarding NZ Arb events or activities, please direct them to the appropriate contact listed below.

MEMBERSHIP COMMITTEE
Chair: David James
membership@nzarb.org.nz

CONFERENCE COMMITTEE
Chair: Chris Walsh
conference@nzarb.org.nz

BEST PRACTICE GUIDE (BPG)
Chair: Mark Roberts
bpg@nzarb.co.nz

MOU PARTNERS
Liaison: Seth Thompson
mou@nzarb.org.nz

APPROVED CONTRACTOR SCHEME (ACS)
Chair: William Melville
acs@nzarb.org.nz

EDUCATION & TRAINING COMMITTEE (E&T)
Chair: Rob Graham
education@nzarb.org.nz

CODE OF PRACTICE (COP)
Liaison: David Glenn
acop@nzarb.org.nz

CHAPTER MAGAZINE (TREE MATTERS)
Editor-in-Chief: Nick Arnold
editor@nzarb.org.nz

UTILITY ARBORIST COMMITTEE (UAC)
Chair: Mark Way
uac@nzarb.org.nz

ARBOR DAY EVENTS CO-ORDINATOR
Chair: Conrad Pattison
arborday@nzarb.org.nz

ISA CERTIFICATION
Proctors: David Glenn / David James
isa-cert@nzarb.org.nz

TREE MATTERS COPY
Copy Editor: David Kainer
david.kainer@nzarb.org.nz

NZ TREE CLIMBING COMPETITIONS (NZTCC)
Chair: David James
nztcc@nzarb.org.nz

SPONSORSHIP CO-ORDINATOR
Co-ordinator: Chris Walsh
sponsorship@nzarb.org.nz

ISA COUNCIL OF REPRESENTATIVES
NZ Arb Representative: David James
isa-rep@nzarb.org.nz

ASSOCIATION ACCOUNTS MANAGER
Manager: Lea Boodee
lea.boodee@nzarb.org.nz

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Membership is open for professional Arborists, Tree Managers, arboricultural trainees, and/or any person interested in amenity trees. To join NZ Arb contact any Executive Member above or you can find application forms online at the NZ Arb website - www.nzarb.org.nz

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The New Zealand Arboricultural Association (NZ Arb) wishes to acknowledge and thank the following organisations for offering the time, effort and services of their staff who comprise the Executive Committee Members.

Without the support of these businesses and organisations, NZ Arb would not be able to serve the Association's membership or the industry in the way it currently does. Thank you.

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Prez' Release

By SETH THOMPSON *NZ Arb President*

Correspondence to: seth.thompson@nzarb.org.nz

Seth Thompson
President

What an end to spring, it seems like the good weather just kept on giving and giving. I've only just swapped out my boardies for something a little warmer... I've even had to dig the puffer jacket out on occasion.

I can't remember a year where tree growth has been so prolific. There seems to be a lot of work around for contactors, and everyone sounds like they are busy. There is high demand for arborists and plenty of jobs and work out there for all. It really is a booming industry at the moment.

The Executive Committee held a quarterly meeting in late May which provided a forum for thrashing out plans and strategies to keep the association on track.

Additionally, the NZ Arb Conference Committee has been working hard to secure a great range of speakers; look out for announcements on these shortly via the association website, with the release of early bird tickets.

The Approved Contractors Scheme (ACS) is maintaining traction with contractors renewing their status and new companies coming on board. By all accounts, the assessments have been going really well, and the executive has been receiving very good feedback from the assessors as to the high standards these firms are achieving.

With recent changes to the Health and Safety Act, and a high emphasis on accountability at all levels, all members should be getting behind the ACS. Should you wish to become involved in the ACS, please get in contact or look to our website for an application pack.

The Auckland climbing competition was held at Wenderholm, North Auckland and it looked great. What a massive event. It was quite impressive driving into the park and seeing all the cars, pergolas and action in the trees. There was a real buzz around, what a great advertisement for our industry.

I would like to extend a thank you to the executive and all the committees, volunteers and sponsors who help keep our association running. Your support and hard work is much appreciated by the wider industry.

This will be the last edition of *Tree Matters* produced by David Kainer, who is moving on to focus on new projects. David has been instrumental in the background workings of NZ Arb for a number of years, producing *Tree Matters* and the *Monthly Mulch*. Thank you David, for all your hard work undertaken at all hours of the day and night, and best wishes for the future.

Finally this is your, the membership's, association. If you would like to be involved with NZ Arb in any shape or form please don't hesitate to get in touch.

Arbor View

Editorial: South meets North

By NICK ARNOLD *Tree Matters Editor-in-Chief*

Correspondence to: Nick.Arnold@downer.co.nz

Nick Arnold

Editor-in-Chief

As we swiftly find ourselves approaching the winter months you may have noticed bursts of autumn colour in the form of flame oranges, yellows and reds.

Those that can recollect early geography lessons may recall the main source of seasonality; the pronounced tilt of the earth on its axis. This tilt results in varying degrees of light intensity striking the earth above and below a sub-solar (or zenith) point creating seasonality in the Northern and Southern hemispheres respectively.

I find myself in the Northern of the two hemispheres at the time of publication, and (as all arborists do) inevitably taking stock of how different trees are managed in different climes.

I have been pleasantly surprised by the number of New Zealand native trees which seem to be blending in the with the North American street scape – in the San Francisco Bay Area at least.

The familiar floral display of the pohutukawa has been a pleasant surprise – complementing some of the splendid cypress, fir and of course redwood *spp*. on display.

Indeed the favorite tree of Michael Sullivan (author of *Trees of San Francisco*) – is the city's lone yellow flowering pohutukawa. The tree owes its existence to Victor Reiter, one of San Francisco's most famous and avid planters and is located outside of the Reiter family home on Stanyan Street. Reiter was one of the few Californians to obtain a cutting of a naturally mutated specimen located in the Bay of Plenty, almost 80 years ago.

Indeed the familiar New Zealand karo, lemonwood and pohutukawa can be seen dispersed throughout San Francisco's streets and parks, which stretch across the city north to Presidio Park. Presidio frames the city side entrance to the iconic Golden Gate Bridge and is home to hundreds of Monterey Pine and Cypress.

In addition to this man made forest environment (courtesy of the US military) there are the three thought provoking and tree inspired site-specific installations courtesy of noted artist Andy Goldsworthy: Spire, Wood Line and Tree Fall.

The use of New Zealand trees in this environment outlines attempts by early and contemporary planters to not only actively diversify the city's tree population but also to adopt and adapt planting plans from cities and countries of similar climes.

Whilst the introduction of exotic species must be carefully managed (across all facets of the plant and animal kingdom), it is clear that when used sustainably and in the correct setting, they can also be of great value.

The many parks and street-scapes of Auckland (both native and exotic) will be at the forefront of this year's rapidly approaching conference. Thank you again to the diligent conference committee who are, as ever, eager to receive the help and support of association members (particularly those based locally to the venue).

In other news, an additional thank you goes to William Melville and the Approved Contractors Committee, in recognition of all their recent work in maintaining and improving the scheme.

Finally, I would like to acknowledge the long standing support and contribution of David Kainer who has played a key role in the life of this publication and in his long standing services to the wider association.

Enjoy this quarter's *Tree Matters*!

References

• Michael Sullivan (2015) *Trees of San Francisco*. Wilderness Press, P.60.

What's happening in NZ Arb?

From the EXECUTIVE COMMITTEE & PORTFOLIO CHAIRS

Correspondence to: nzarb@nzarb.org.nz

The Executive Committee (EC)and other chairs report the latest key activities within NZ Arb. The next EC meeting is in August.

NZ TCC Committee

Congratulations to James Kilpatrick and Chrissy Spence for winning the respective men's and women's ITCC world titles in San Antonio, Texas earlier in March this year. Well done also to Stef White who improved her finishing spot this year, and Dale Thomas, both of whom represented NZ with skill and pride.

Earlier in the year, at The Rural Games, Tumai Laybourn took out the overall title, with Team Kiwi beating the Australians. Next year the competition shifts to Palmerston North in March. More information about this later in the year.

Coming up on 10 September the South Island regional event will take place in Christchurch, contact Toby Chapman to help.

23-24 September will be the Waikato/Bay of Plenty regional competition. Contact Andy Harrison if you can help in any way or would like to compete.

Register for either or both of these events on the NZ Arb website.

More information on these events nearer the time.

Utility Arb Committee

The UAC has continued to consider and provide support on issues arising from different sources by means of networking and gaining multiple views for decision making.

Most recently, we along with others have received the Draft Utility Good Practice Guide (alternative to ACoP Part 2) and have been invited to provide submissions on this before the final version is released.

This has been a long anticipated document and we need to recognise the work done by David Glenn in compiling the document in light of the fact that:

- WorkSafe decided they don't want to do it
- EEA decided that they don't want to do it

The final result being that we as "industry" get to contribute to what best fits "industry" wants or needs.

The UAC are hoping to hold our next ordinary meeting in conjunction with the conference later in the year.

There may be a meeting called to consider the Draft Utility Good Practice Guide dependent on feedback.

We will keep everyone posted in light of the above.

Stay safe. Stay warm.

ISA Council of Representatives update

From the ISA COR UPDATE EMAIL BLAST

Correspondence to: meagan.hanna@mail.mcgill.ca

CoR Executive Committee (EC) Seat Openings

Three seats are available on the ISA's Council of Representatives EC starting in August of 2016.

Position descriptions for CoR EC Chair, Vice Chair, and Secretary are available upon request and at the SharePoint site. We will be accepting nominations until 14 July. CoR members are encouraged to nominate themselves for the Executive Committee.

To submit a nomination please contact a current CoR Executive Committee member.

The CoR EC is committed to sending regular communication to CoR. If you have anything you would like to include please contact David James, CoR EC Vice-Chair.

Clippings

Bob Berry hits 100

By NICK ARNOLD *Tree Matters Editor-in-Chief*

Correspondence to: Nick.Arnold@downer.co.nz

Tree Matters and NZ Arb would like to recognise the services and achievements of Robert (Bob) Berry who celebrates his 100th birthday this June.

Bob is a prominent New Zealand dendrologist and founder of the Hackfalls Arboretum in Tiniroto, Gisborne, which is known for its exceptional collection of Mexican Oaks. Bob recently released the publication *'Hackfalls Arboretum information directory book'*, representing a life's work, cataloguing more than 3000 trees from the collection.

In addition to Bob's extensive work at Hackfalls he has also been significantly involved in the cataloguing of trees at the national arboretum at Eastwoodhill.

Bob is a life member of the Gisborne East Coast Branch of Farm Forestry, serving in numerous Branch Committee roles in addition to the NZFFA Executive (1968-1970). In 1989 Bob was awarded the North Island Farm Forester Award at the Gisborne EC National Conference.

Congratulations to Bob on a century of tree appreciation and care, and an additional thanks to Andreas Ross for his recognition of Bob's inspiring achievements.

ABOVE: Bob Berry attaching a label at a tree at Hackfalls Arboretum (2007).

Image / Courtesy WJV&DB - Wilma Verburg
https://commons.wikimedia.org/w/index.php?curid=5675470

Annual awards for champs of recreation

Media release NZ RECREATION ASSOCIATION

Correspondence to: james@nzrecreation.org.nz

Nominations are open for the 2016 New Zealand Recreation Association (NZRA) Awards, designed to recognise and celebrate those whose efforts have made a lasting contribution to the New Zealand recreation industry.

People who work hard to provide New Zealanders with high quality recreation opportunities deserve greater recognition, whether as individuals or organisations, NZRA Chief Executive Andrew Leslie said.

"The NZRA Awards celebrate those who are making New Zealand a better place for recreation, and helping people get active and connect with others.

"Recreation plays a vital part in making individuals happy and healthy, and communities resilient. It's important that we publicise the good work that's happening around the country and making a real difference in people's lives."

Last year's award winners included Te Ara Piko – The Meandering Pathway, a collaborative project between the Rotary Club of Plimmerton and Porirua City Council which won the Outstanding Project Award for its work in regenerating Pauatahanui Inlet through revegetation and recreation.

Sport Beyond School, a project jointly run by the University of Auckland, Sport New Zealand, Auckland Council, Sport Auckland, Counties Manukau Sport, Harbour Sport, Sport Waitakere and College Sport Auckland, picked up the award for Outstanding Community Recreation Programme for its research helping students transition into university recreation and sport after leaving school.

The Outstanding Facility award went to the Arataki Community Centre in Tauranga, while Auckland Council's Albany Lakes Civic Park received the Outstanding Park award. The Coastlands Aquatic Centre in Kāpiti received the Outstanding Pool award, and the Outstanding Research, Planning, and Policy award went to Hamilton City Council's Playgrounds of the Future programme.

Individual award winners included Emerging Recreation Leader of the Year Grant MacLeod; Richard Lindsay, who received the Mark Mitchell Memorial Trophy; recipient of the Ian Galloway Memorial Cup Chris Close, and Paul Stuart Memorial Award winner Craig Carter. Auckland Council's Tepid Baths Redevelopment and Parrs Park were also highly commended in the Outstanding Project and Outstanding Park categories respectively.

Fellowship Awards were also presented to lifelong achievers in the field of recreation Jamie Delich, Robin Pagan and John Latimer.

The 2016 Awards will be presented on 10 November during the Awards Dinner at NZRA's National Conference, which will be held at the Millennium Hotel in Queenstown from 9-11 November. Award nominations close on 15 September 2016.

For more information or to make a nomination, visit the NZRA Awards webpage under Professional Development at www.nzrecreation.org.nz.

Trees of Central Park - New York

By NICK ARNOLD *Tree Matters Editor-in-Chief*

Correspondence to: Nick.Arnold@downer.co.nz

Central Park, an inseparable part of the iconic Manhattan landscape, represents America's first formally landscaped public park. Its inception in the late 1850's helped to promote a new level of social refinement and civic duty to both its growing population and to the young country's European forebearers.

Frederick Law Olmstead and his colleague Calvert Vaux won the newly formed commissions competition to design the initial 750 acres, acquired after the displacement of approximately 1600 previous inhabitants.

Their design known as the 'Greensward Plan' aimed to keep structures to a minimum whilst providing a flowing countryside appearance that importantly allowed pedestrians and carriages to appreciate the park without disturbing each other.

After a period of city-wide urban decline and neglect was redressed in the 1980's through the 'You Gotta Have a Park' campaign', private funding increased and encouraged New Yorkers to play a more active role in maintaining the city's parks.

The park which now covers 843 acres is home to over 20,000 trees which can be viewed at the official caretakers of the park website – the Central Park Conservancy.

The tree population is numerous and diverse; European and American elms, locust, beech, oak and cherry (to name but a few) adorn the Southern lawns, walkways and centrally located reservoir.

Elsewhere throughout the park, many evergreen coniferous species played a prominent role in the early park concept but were later replaced with deciduous species. During the 1970s, Arthur Ross (a prominent New York philanthropist) sought to redress this loss through the Arthur Ross Pinetum. The four acre pinetum features 17 different species of pine sourced from Macedonia, Japan and the Himalayas.

To the park's Northern fringes can be found the North Woods: an area somewhat wild in comparison to the Southern lawns. Here, felled trunks and standing spars are left in situ so as to not strip much-needed nutrients from the forest ecosystem.

Central Park provides not only a wonderful distraction for any outdoor enthusiast, but also represents a seminal moment in the design of American urban centers. Furthermore, the park displays the importance of resident involvement in the up-keep of urban parks in order to maintain relevance, safety and ultimately an environment that is biologically flourishing.

For more information on New Yorks Central Park visit:
- The Central Park Conservancy (2016) http://www.centralparknyc.org/about/
- New York City Department of Parks and Recreation (2016) https://www.nycgovparks.org/about/history/olmsted-parks

ABOVE: Looking through elm trees at mid-town Manhattan. Image / Nick Arnold

Forestry academic wins international award

Press release UNIVERSITY OF CANTERBURY

Correspondence to: treematters@nzarb.org.nz

Dr Justin Morgenroth, senior lecturer in the New Zealand School of Forestry at University of Canterbury, has been awarded the 2016 Early Career Scientist Award, one of the International Society of Arboriculture's (ISA) Awards of Distinction.

Dr Morgenroth's research focuses on solving applied problems in forested landscapes with a specific focus on urban forests. Recently his research has included measuring tree response to changes in soil properties following Christchurch's earthquakes and modelling the structure of urban forests using satellite imagery and LiDAR data.

"I've researched urban forestry since 2008, so it's a big honour for me to be recognised by the ISA for my research. I've always felt a connection to street trees and parks – they are the green oases in a sea of grey infrastructure that includes buildings and pavements. My work has generally focused on measuring changes in tree cover in cities as well as improving the management of urban trees," Dr Morgenroth says.

ISA uses the award to recognise individuals who show exceptional promise, with high potential to become an internationally recognised scientist. Recipients demonstrate a high level of scholarship and integrity in all aspects of their work, and dedication to arboriculture, urban forestry, or a related field, and promise of outstanding achievement.

With over 20,000 members worldwide, ISA has been an active scientific and educational organisation for over 90 years, promoting the professional practice of arboriculture and fostering a greater worldwide awareness of the benefits of trees.

The international award would normally be presented at the ISA Annual International Conference, to be held this year in Texas in August. Dr Morgenroth is unable to attend and will be presented with his award in a New Zealand ceremony later in the year.

Chance to plant an ancient tree

By GILLIAN VINE *Otago Daily Times (Dunedin)*

Acknowledgement
Reproduced with the kind permission of the Otago Daily Times (online).

Online reference: http://www.odt.co.nz/lifestyle/home-garden/385473/chance-plant-ancient-tree

Tree lovers have a part to play in saving an ancient tree, reports Gillian Vine.

The oldest living kauri (*Agathis australis*) is about 2000 years old and there is fossil evidence that kauri forests were here 80 million years ago.

However, one of kauri's Australian relatives has an even more impressive history, as fossils of wollemi (*Wollemia nobilis*) have been dated to 200 million years ago.

Those fossils were all that was known of wollemi until 1994.

That year, Australian parks field officer David Noble was doing a spot of abseiling in the Wollemi National Park 150km from Sydney.

In a ravine, he saw a tree he did not recognise and took a twig to show botanists.

They, too, were confused and it was not until they returned and collected cones that they were able to declare the tree was a species thought to have become extinct millions of years earlier.

How they survived is something of a puzzle but wollemi have at least one trick to protect themselves.

When temperatures drop, the tree protects its leaf buds by coating them with a white resin and the resulting knobs are known as polar caps.

Although widely referred to as wollemi pine, the coniferous tree is not a member of the pine family but belongs to the Araucariaceae clan, making its nearest living relatives kauri, Queensland hoop pine (*Araucaria cunninghamii*) Norfolk Island pine (*A. heterophylla*) and monkey puzzle (*A. araucana*), which comes from South America.

Hardy to about minus 12°C, wollemi will grow to 40 metres but their small root systems make them versatile in cultivation, enabling them to be grown in containers as well as open ground.

The discovery of wollemi in the Blue Mountains region caused huge excitement but concern, too, as there were just two small patches totalling fewer than 100 trees and the site was in an area where bush fires were not unusual.

In addition, there was shown to be little genetic variability, meaning the trees were at risk of disease, such as *Phytophthora*, which would cause dieback if it attacked the trees.

Shortly after wollemi was found, the Australian Government stepped in, giving the trees legal protection and setting up a special nursery in Queensland to propagate wollemi.

That's where tree lovers come in. As with the dawn redwood (*Metasequoia glyptostroboides*), known only from fossils until found in China in the 1940s, the dispersing of wollemi throughout the world is of vital importance in ensuring the species' survival.

Until now, most of the wollemi in this country have been grown in parks and botanic gardens - Dunedin Botanic Garden has been given three - but a small number are currently being offered through Otago-Southland garden chain Nichol's, in an exclusive arrangement with Christchurch's Ambrosia Nurseries.

Ambrosia's Chief Executive Greg Kitson was in Dunedin recently to launch the product and traced the history of wollemi's introduction into this country.

"Getting it into New Zealand goes back about 12 years," Mr Kitson said.

The time reflected the Erma and MAF processes, and the need for iwi consultation, he said.

Ironically, at the same time as he was trying to get them into New Zealand, wollemi were being propagated by tissue culture at the Crown Research Institute's Scion Nursery in Rotorua.

However, these plants were grown in containment quarantine and sent to Australia, so in a sense were never in New Zealand, Mr Kitson said.

He worked closely with the late David Given, curator of the Christchurch Botanic Gardens, and after Mr Given's death, Mr Kitson ensured that New Zealand's first wollemi was planted to mark the gardens' 150th anniversary, forming the centrepiece of a Gondwana area within the gardens.

Nichol's is taking orders for packages containing a 1m tree, DVD and certificate of authenticity signed by wollemi discoverer David Noble. [Nichol's e: info@nicholsgroup.co.nz] Each package costs $399 and although that sounds expensive, it may be the only chance for some years for tree lovers to obtain the rare plant, as Mr Kitson is unsure whether Ambrosia will continue to produce them.

"If and when we do more of them, it would be three or four years away and [without the DVD and certificate] they would be in the $100 bracket," he said.

ABOVE: *Wollemia nobilis*. Image / Supplied

Changes ahead at The Specimen Tree Company

Press release THE SPECIMEN TREE COMPANY

Correspondence to: gordoni@specimentree.co.nz

The Specimen Tree Company Ltd which has been providing arboricultural and landscape services and growing specimen and semi-mature grade nursery trees since 1987 has announced some upcoming changes in ownership.

Gordon Ikin who founded the company and is the current Managing Director is stepping down and the business has being sold to three of the senior staff with effect from 30 June.

The business is being separated into three entities, which although being legally separate will work closely together.

Simon Batchelor, the current Tree Surgery Manager is buying the tree surgery division, Jeff Fell the current Landscape Manager is buying the nursery and landscape divisions, and Stuart Barton the current General Manager is buying the consultancy division. From July the new entities will be known as Specimen Treecare Ltd., Specimen Tree Landscapes Ltd and Arbor Connect Ltd respectively.

The three purchasers have between them more than 45 years of working for The Specimen Tree Company, and will bring a real depth of experience to their new ventures.

The nursery which has been located at 180 Princes St East, Otahuhu since the early 1990's is being relocated to Clevedon-Takanini Road, Ardmore.

The tree stock that is not being relocated to Ardmore is currently being cleared in a large sale at heavily discounted prices, as the site needs to be fully cleared by 5 August.

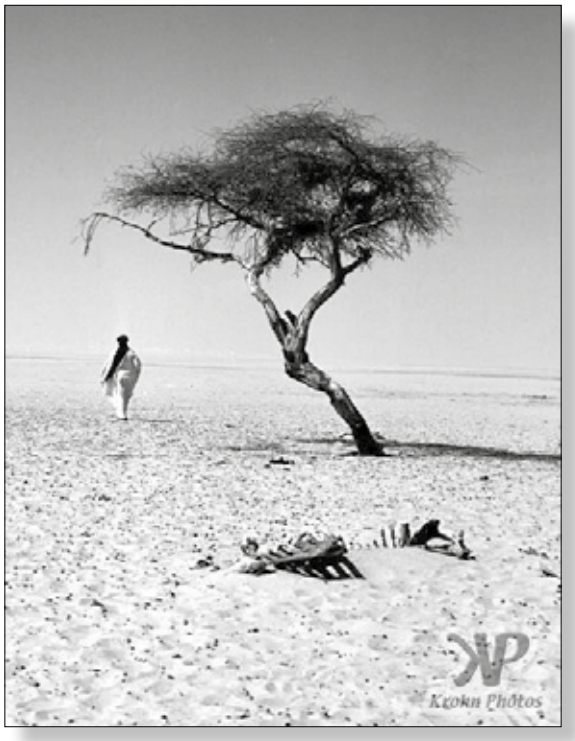
L'Arbre du Ténéré

By JONATHAN ARNOLD *Tree Mythologist (Wellington)*

Correspondence to: jbirdarnold@gmail.com

Somewhere in Niger's northeastern portion of the vast, lonely Sahara Desert stands a hulking monument to a seemingly insignificant tree constructed from dented oil drums and miscellaneous junk metal.

In an area which was once a sea, and later, in the Jurassic Carboniferous period a tropical forest, that has long since been decimated by desertification, there is now practically nought but sand. For an undetermined time up until 1973 there stood, in defiance, one of the final remnants of vegetation. This 3 metre tall acacia known locally as L'Arbre du Ténéré (the Tree of Ténéré) was visible for a considerable distance, and was a way-point for trading caravans carrying dates, salt, and grain on an otherwise desolate trade route.



In 1939 Michael Lesourd, of the grandly named Central Service of Saharan Affairs remarked 'It is the first or last landmark for the azalac leaving Agadez for Bilma, or returning.' In fact, it was perhaps the world's most isolated tree, being the only one for a staggering 400km. Perhaps the secret to the acacia's long life was the impressive root structure. In an area where a meagre 2.5cm of rain falls per year, workers were digging a well for weary travellers adjacently, and they hit tree roots at nearly 40m down, just before they hit water.

1973 proved ill-fated for this lonesome beacon when an apparently drunk Lebanese truck driver found the expanse of desert not wide enough to accommodate his delivery vehicle, and mowed it down with extreme prejudice. The lesser known 'scrap-metal tree' was constructed in 1985 as a slightly *Mad Max*-esque guidepost where the Tree of Ténéré once stood.

The Niger National Museum in Niamey now houses the frail remnants of the tree, but taken out of context, I don't think I'll be making the trip.

LEFT: The Tree of Ténéré, 1967.

ABOVE: The modern version.

Images / Supplied

Trees for urban planting: Diversity, uniformity and common sense

By FRANK S. SANTAMOUR JR.
U.S. National Arboretum (Washington, USA)

Correspondence to: treematters@nzarb.org.nz

A broader diversity of trees is needed in our urban landscapes to guard against the possibility of large-scale devastation by both native and introduced insect and disease pests. Urban foresters and municipal arborists should use the following guidelines for tree diversity within their areas of jurisdiction: (1) plant no more than 10% of any species, (2) no more than 20 % of any genus, and (3) no more than 30 % of any family. Strips or blocks of uniformity (species, cultivars, or clones of proven adaptability) should be scattered throughout the city to achieve spatial as well as biological diversity.

We need a diversity of trees in our urban forests, not only to guard against disasters like Dutch elm disease, but also to "put the right tree in the right place" as the evolution of our cities and suburbs creates new settings for tree planting.

In recent years, there has arisen a dictum that "Thou shalt not plant more than 10% of any species" in a particular area. The "10% rule" is a reaction to the possibility that some major insect or disease pest could, at some point in time, virtually wipe out the trees in a city. In general, the rule is considered a safeguard against a "new pest" that might be introduced from a foreign country.

The l0-percent solution, while it seems to be reasonable, simply does not address the realities of host-pest relationships.

If we are really going to plant and manage the urban forest to minimise potential pest problems, we must look at host-pest relationships. Pests tend to follow the taxonomic categories of host plants at the species, section, series, genus, or family levels.

Pests tend to follow the taxonomic categories of host plants at the species, section, series, genus, or family levels. Let us consider the genus as the major taxonomic category. The fact that we refer to many pests with host-generic names (Dutch elm disease, oak wilt, bronze birch borer, maple anthracnose) indicates that many species of the host genus are susceptible to those pests. Thus, the "10% (species) rule" offers little protection against potential epidemics.

If we are to plant and sustain city forests that will delight and inspire the residents and visitors in our urban centers, we need both diversity and uniformity of plant material to reduce the costs of maintenance and reduce the use of potentially dangerous pesticides.

The 10-20-30 Formula

For maximum protection against the ravages of "new" pests or outbreaks of "old" pests the urban forest should contain:

1) No more than 10% of any single tree species.
2) No more than 20% of species in any tree genus.
3) No more than 30% of species in any tree family.

Branching Out

Do we under-estimate the power of plants and trees?

By BRYAN GOULD *Training and Development Manager, Treescape (Brisbane)*

Email: bg915925@gmail.com

Bryan Gould, career arborist and NZ Arb Life Member, contributes comment and perspective on the thought-provoking wonders of trees… and tries to find answers to those "things that make you go hmm!"

Thought-provoking comment from the BBC's Science and Environment Section.

ABOVE: There are an estimated three trillion trees on earth.
Image copyright / Getty Images

Research suggests plants might be capable of more than we suspect. Some scientists – controversially – describe plants as 'intelligent'. They argue a better understanding of their capabilities could help us solve some of the world's thorniest problems.

Four experts talk to the BBC World Service's Inquiry* programme about what plants can teach us.

Plant Intelligence Is Real

Professor Stefano Mancuso leads the International Laboratory for Plant Neurobiology at the University of Florence. He said: "We are convinced that plants are cognitive and intelligent, so we use techniques and methods normally used to study cognitive animals. The main problem with plants is they move much more slowly than animals so we need to record plant movement for many days.

We did an experiment with two climbing bean plants. If you put a single support between them, they compete for it.

What is interesting is the behaviour of the loser: it immediately sensed the other plant had reached the pole and started to find an alternative. This was astonishing and it demonstrates the plants were aware of their physical environment and the behaviour of the other plant. In animals, we call this consciousness.

We don't have a clear idea of how plants are able to sense the behaviour of other plants.

Plants are much more sensitive than animals. Every root apex can detect 20 different physical and chemical parameters – light, gravity, magnetic field, pathogens and so on.

Plants distribute all along the body the functions that in animals are concentrated in single organs. Whereas in animals almost the only cells producing electrical signals are in the brain, the plant is a kind of distributed brain in which almost every cell is able to produce them.

Under-estimating plants can be very dangerous, because our life depends on plants and our actions are destroying their environments".

ABOVE: Neighbouring bean plants compete for resources.
Image copyright / iStock

The 'Wood Wide Web' Connects Trees

Professor Suzanne Simard is professor of forest ecology in the department of forest and conservation sciences at the University of British Columbia. She said: "Every tree is linked to every other tree underground – in the 'wood wide web'. Through these pathways they talk to each other and then behave in certain ways.

In our old-growth Douglas fir forests, we have trees that are 300 years old and six feet in diameter. Those are the hubs of the network because they're so massive and have roots that grow out in all directions.

ABOVE: Experiments showed that Douglas fir trees could identify trees grown from their seedlings. Image copyright / iStock

Fungi and trees form this association where the tree provides the fungus with photosynthate, which the fungus cannot acquire below ground.

We grew Douglas fir in a neighbourhood of strangers and its own kin and found that they can recognise their own kin and we also grew Douglas fir and ponderosa pine together. We injured

the Douglas fir by pulling its needles off and by attacking it with western spruce bud worm – and it then sent a lot of carbon in its network into the neighbouring ponderosa pine.

My interpretation was the Douglas fir knew it was dying and wanted to pass its legacy of carbon on to its neighbour, because that would be beneficial for the associated fungi and the community.

There are so many ways we can use this knowledge. We've treated plants as inanimate objects that are there for our use and pleasure. But we haven't treated them with respect that they are sentient beings. If we can shift our thinking, and change our behaviour, that will then be beneficial for the plants and our forests".

Plant-Inspired Robots

Doctor Barbara Mazzolai is co-ordinator of the Centre for Micro-BioRobotics at the Italian Institute of Technology and built the Plantoid. She says:

"Many robots are inspired by animals, but people never thought about plants as a model, because usually they are considered quite passive organisms – not able to move or communicate. When I started, people looked at me strangely. But then I showed people the movements in plants, that they are able to sense the changing condition of the environment. When I demonstrated that it is possible to transform these features in something that can move artificially, the story changed completely. The plantoid robot has a trunk like a real plant, with branches and leaves and several artificial roots that are able to grow through additional material used in 3D printers.

ABOVE: The Plantoid robot which mimics how plants function.

Image copyright / Italian Institute of technology

The artificial root can move in narrow spaces. It can autonomously look for oxygen or water or the presence of life. So we could use the robot for environmental monitoring, space applications or rescue under debris because it can adapt to the environment like a natural system. The robot doesn't have a pre-defined structure, but can create one on the basis of need.

Medical robotics could also be a key application. We could develop new endoscopes that are soft and able to grow inside living human tissues without damage. Plants are under-estimated. They move under the soil and it's difficult to understand the behaviour of these systems. But they have features that can really help us understand nature".

Not 'Intelligent' But Highly Useful

Professor Daniel Chamovitz is the Dean of Life Sciences at Tel Aviv University and the author of the book '*What A Plant Knows*'. He comments: "Anyone who claims they're studying plant "intelligence" is either trying to be very controversial or is on the borderline of pseudo-science. We could see in the Venus flytrap its ability to close on a leaf. I could then define that as "intelligence" but that doesn't help me understand the plant biology at all. We have to be very clear on terminology.

ABOVE: Is a Venus fly trap 'intelligent'?

Image copyright / Getty Images

We cannot talk about plants 'thinking'. We can talk about plants being aware of their environment because a plant's very exquisitely adapted to its environment. There's information being exchanged between roots and leaves and flowers and pollinators and the environment all the time. The plant is making 'decisions' – should I change 10 degrees to the left, 5 degrees to the right? Is it time to flower now? Is enough water available?

If you grow a plant with a red light on its right and a blue light on its left, it will 'decide' to bend to the blue light. The question is, did it know that it was making the decision? All this information is being integrated in the absence of a brain and that is the incredibly cool and very unknown mechanism.

We need to understand that the brain is but one amazing evolutionary solution for information processing. It's necessary to write a symphony and do linear algebra, but it's not the only solution for integrating information. We're living in a rapidly-changing environment – global warming, changes in precipitation, shifting populations. If we don't understand how a plant senses and responds to its environment and then adapts, we might find ourselves in a big problem 50 to 100 years from now. We've completely under-estimated plants. We look at them as inanimate objects, completely unaware of the amazing, complex biology that allows that plant to survive".

* The programme 'Inquiry' is broadcast on the BBC World Service on Tuesday's from 12:05 GMT. Listen online or download the podcast.

Bryan Gould is based in Brisbane. He's an enthusiastic observer of all things arboreal, willing to share his own views or pass on the tantalising research of others in an effort to generate interest and information that promotes a better understanding of the arboricultural world around us.

Feel free to contact Bryan by email at: bg915925@gmail.com

Extinction is Forever

By ROBERT J. BURROWES *The Free Press*

Source: http://freepress.org/article/extinction-forever

What do the Pyrenean Ibex, St. Helena Olive, Baiji Dolphin, Liverpool Pigeon, Eastern Cougar, West African Black Rhinoceros, Formosan Clouded Leopard, Chinese Paddlefish, the Golden Toad and the Rockland Grass Skipper Butterfly all have in common but which is different from the Dodo?

The answer is that these species all became extinct since the year 2000, that is, in the last fifteen years. The Dodo became extinct in 1662.

The one thing that all of these species have in common is that the cause of their extinction was human beings.

If you would like to watch a video which evocatively showcases some of the extinct species of planet Earth, you can do so here: 'Toll a bell on Remembrance Day for Lost Species 30th November 2015': https://www.youtube.com/watch?v=xT1vp5HfBq4

The real tragedy is that the few species mentioned above do not begin to tell the story. Recent estimates indicate that 200 species of life (plants, birds, animals, fish, amphibians, insects, reptiles) are driven to extinction each day. Every day. This rate exceeds that during the last mass extinction event, when the dinosaurs vanished 65 million years ago.

In short, planet Earth is now experiencing its sixth mass extinction event and we are the cause. How so?

Well, human activity now impacts heavily all over the planet and we are using a variety of sophisticated industrial technologies to destroy other life forms in vast numbers and this inevitably results in the extinction of some species.

In some cases we simply hunt these life forms to extinction as a result of some misguided commercial imperative. Whether it is for food (such as whales and many species of fish), trophies (such as 'big game' animals), raw materials (such as the ivory of elephant tusks) or some delusional belief in their aphrodisiac or medicinal qualities (such as the horn of a rhinoceros), we kill them with sophisticated killing technologies such as harpoons, fishing nets and guns (against which they have no evolutionary defence). To give one example: sea turtles. Six out of the seven subspecies of sea turtles are endangered, according to Wildcoast. Why? 'Sea Turtles are threatened due to the poaching and hunting of their shells, meat and eggs. Turtle eggs are sold as a snack... with the absurd belief that they possess aphrodisiac elements.' See 'Sea Turtles': http://www.wildcoast.net/programs/5-sea-turtles

But mainly, it is two things that drive species over the edge: our systematic destruction of land habitat – forests, grasslands, wetlands, peatlands, mangroves... – in our endless effort to capture more of the Earth's wild places for human use (whether it be residential, commercial, mining, farming or military) and our destruction of waterways and the ocean

habitat by dumping into them radioactive contaminants, carbon dioxide, a multitude of poisons and chemical pollutants, and even plastic. There are now 'dead zones' in several oceans of the world, not to mention the great floating garbage patches.

Consider Rainforests

In an extensive academic study that was recently concluded, the more than 150 joint authors of the report advised that 'most of the world's more than 40,000 tropical tree species now qualify as globally threatened'. See 'Estimating the global conservation status of more than 15,000 Amazonian tree species': http://advances.sciencemag.org/content/1/10/e1500936.full Why are more than 40,000 tropical tree species threatened with extinction? Because 'Upwards of 80,000 acres of rainforest are destroyed across the world each day, taking with them over 130 species of plants, animals and insects.' See 'Half of Amazon Tree Species Face Extinction': http://www.discovery.com/dscovrd/nature/half-of-amazon-tree-species-face-extinction/

Or Consider Frogs

Relatively speaking, we pay a lot of attention to big and colorful species but the species you have never heard about or which are less 'exotic' need to be valued too. Such as frogs which, among other invaluable services from a limited human perspective, eat malarial mosquitoes. 'Frogs have survived in more or less their current form for 250 million years, having survived countless ice ages, asteroid crashes, and other environmental disturbances, yet now one-third of amphibian species are on the verge of extinction.' See 'Save the Frogs!'/: http://www.savethefrogs.com/

But not all of our destruction is as visible as our vanishing rainforests and the iconic species that vanish with them. Have you thought about the Earth's soil recently? Apart from depleting it, for example, by washing it away (sometimes in dramatic mudslides but usually unobtrusively) because we have logged the rainforest that held it in place, we also dump vast quantities of both inorganic and organic pollutants into it as well. Some of the main toxic substances in waste are inorganic constituents such as heavy metals, including cadmium, chromium, lead, mercury, nickel and zinc. Mining and smelting activities and the spreading of metal-laden sewage sludge are the two main culprits responsible for the pollution of soils with heavy metals. See 'Soil-net': http://www.soil-net.com/dev/page.cfm?pageid=secondary_threats_pollutants&loginas=anon_secondary

Far more common, however, is our destruction of the soil with organic based pollutants associated with industrial chemicals. Thousands of synthetic chemicals reach the soil by direct or indirect means, often in the form of fertilisers, pesticides, herbicides and other poisons that destroy the soil, by reducing the nutrients and killing the microbes, in which we grow our food. See, for example, 'Glyphosate effects on soil rhizosphere-associated bacterial communities': http://www.sciencedirect.com/science/article/pii/S004896971530989X

Using genetically modified organisms, and the chemical poisons on which they rely, exacerbate this problem terribly. But two other outcomes of the use of such poisons are that the depleted soil can no longer sequester carbon and the poisons also kill many of the beneficial insects, such as bees, that play a part in plant pollination and growth.

And, of course, military contamination and destruction of soil is prodigious ranging from the radioactive contamination of vast areas to the extensive and multifaceted chemical contamination that occurs at military bases.

Like destroying the oceans, destroying the soil is an ongoing investment in future extinctions.

Anyway, if so far you have been unconcerned about the fate of our fellow species, you would be wise to reconsider. If you haven't checked them lately, there are lists of critically endangered, endangered, vulnerable and near threatened species. But heading all of these lists, there should be one other: homo sapiens sapiens. With human extinction now possible by 2030 – see 'Why is Near Term Human Extinction Inevitable?': http://freepress.org/article/why-near-term-human-extinction-inevitable – we do not have much time left to respond powerfully. Humans, as many ecologists have been noting for decades, are only one part of the web of life. Our fellow species make the Earth habitable. We cannot live here without them.

So the key question is not 'Do you really want to live in a world without elephants?' The key question is 'Do you really want to live?'

If you do, then you need to act. At the simplest level, you can make some difficult but valuable personal choices. Like becoming a vegan or vegetarian, buying/growing organic/biodynamic food, and resolutely refusing to use any form of poison. But if you want to take an integrated approach, the biggest impact you can have as an individual is to systematically reduce your own personal 'ecological footprint' in consideration of our fellow species.

If you wish to consider such an approach, you are welcome to ponder joining those participating in 'The Flame Tree Project to Save Life on Earth': http://tinyurl.com/flametree which outlines an easy series of steps for reducing your consumption in seven key resource areas by 10% per year for 15 successive years while simultaneously building your self-reliance. You can also consider signing the online pledge of 'The People's Charter to Create a Nonviolent World': http://thepeoplesnonviolencecharter.wordpress.com which obviously includes nonviolence towards our fellow species.

In addition, you can participate in ongoing campaigns by a multitude of organisations that campaign to preserve one or more threatened species from extinction. If we can save enough other species, we might just save ourselves.

Extinction might be howling outside our door but we don't have to cower waiting for someone else to save us. What you do personally makes a vital difference.

And here's one final thought. Four billion years ago there was no life on Earth. Then, in what can only be described as a miracle (and you can decide your own preference about the nature of that miracle), a single cell came to life. Perhaps this miracle was then repeated in subsequent years.

But however and how often it occurred, every living organism since that time, including every organism that lives today, is linked in an unbroken chain with that first living cell (or those first living cells). Four billion years of evolution which includes you as a unique individual.

There may be life elsewhere in the Universe. But it does exist here, on Earth. And it has had time to evolve to a complexity that includes us.

Until we understand, as Gandhi understood, that all life is one, we live disconnected from the most fundamental truth of our existence. If we kill something else, we kill a part of our self.

Down to Earth

Husqvarna Auckland Regional TCC 2016

By DAVID STEJSKAL *Arborist, Auckland Council (Auckland)*

Correspondence to: David.Stejskal@aucklandcouncil.govt.nz

Shaun Hardman, Johno Smith and Jed Copsey from Auckland region qualified for the 2016 National Tree Climbing Competition at the recent Auckland Region TCC.

The Auckland Region TCC, held in Wenderholm Park over the weekend of 7-8 May, was a huge success.

For the first time in our region, we tried to run the competition over the whole weekend, with setup on Saturday and the competition on Sunday. The reason behind this was to attract volunteers to help without having to take a day off work. We also took the opportunity to educate our arb community through interesting workshops on Saturday afternoon after the setup.

Having the ability to camp in the park's campground on Saturday night further enabled our group to bond and to 'talk trees'.

The set-up on Saturday started at around 8 in the morning and we had all events set up after lunch. There was a great group of volunteers available which made the set-up enjoyable and efficient.

Four free- of-charge workshops followed in the afternoon. We had Scott Forrest and Dale Thomas talking about aerial rescue and Andreas (Rossy) Ross enlightened us with his talk on PPE inspection. The next two workshops were touching on tree health, Simon Cook with his Dutch Elm Disease summary and Freddie Hjelm with a great talk about Kauri Dieback.

All the workshops were well accepted and the audience asked some tricky questions. This showed to us that our wide arb com-

ABOVE IMAGES: Action from the Auckland Regional TCC at Wenderholm.
Images / Supplied

munity is interested in education, possibly as much as in tree climbing.

We moved to the Schischka campground with the sunset and celebrated a lovely day surrounded by stars.

The competition on Sunday started early at 7:30am. Keen volunteers and judges made the gear checks as fast as possible and our first competitors were up in trees at around 8:30am.

The excellent set-up of each event and a great bunch of volunteers made the day efficient. Everyone took part in making it happen including chefs Freddie Hjelm and Tumai Laybourn preparing a tasty lunch for the volunteers.

We also completed the New Arborist of the Year competition under Mat Palmer's watch. Seb Bainbridge and Joe Davies qualified and will represent our region at the Finals in Albert Park later this year.

The competition was done at the end of the day and we all went home feeling good and recharged, ready to attend future NZ Arb events.

The following are samples of some really positive feedback that we have already received.

"Mate, was a wicked comp. Best part of Wenderholm was the vibe. The camping, workshops, coffee, sausages and the competition created an awesome weekend."

"The set-up was really relaxed and allowed for everyone to work together and get to know each other before competing. The music was awesome, as well as the food."

For those interested in the full results, please go to the NZ Arb website: nzarb.org.nz.

Thank you all for coming to Wenderholm, thanks to the volunteers, the set-up team and judges for an excellent event and the sponsors for great prizes and support. We will hopefully see you again at another great event in the near future!

Asplundh Work Climb

Place	Climber	Score
1st	Matt Glenn	70.31
2nd	Shaun Hardman	67.00
3rd	Todd Sutherland	66.47
4th	Johno Smith	63.45
5th	Chas Kent	59.44

Silky Saws Aerial Rescue

Place	Climber	Score
1st	Shaun Hardman	38.67
2nd	Tony Bennett	38.00
3rd	Jed Copsey	31.00
4th	Johno Smith	30.00
5th	Matt Glen	29.00

AB Equipment Speed Climb

Place	Climber	Score
1st	Chas Kent	20.00
2nd	Johno Smith	18.23
3rd	Shaun Hardman	18.02
4th	Rhys Sargeant	17.54
5th	Jed Copsey	17.40

Full results at nzarb.org.nz

Donaghys Secured Footlock

Place	Climber	Score
1st	Matt Glenn	20.00
2nd	Jed Copsey	16.24
3rd	Shaun Hardman	15.80
4th	Arran Turner	13.03
5th	Callum Hay	13.01

Metrogreen Throwline

Place	Climber	Score
1st	James Milcairns	27.00
2nd	Matt Glenn	23.00
3rd	Callum Hay	17.00
4th	Todd Sutherland	16.00
5th=	J Copsey & J Smith	14.00

Husqvarna Final Placings

Place	Climber	Score
1st	Matt Glenn	158.91
2nd	Shaun Hardman	147.49
3rd	Johno Smith	134.88
4th	Jed Copsey	133.28
5th	Callum Hay	116.33
6th	Arran Turner	115.79
7th	James Milcairns	114.16
8th	Todd Sutherland	110.46
9th	Chas Kent	103.77

Contract climbing or full-time employment?

By TIAGO MIRANDA *Contract Climber (Sydney)*

Correspondence to: chachiclimber@gmail.com

What are the alternatives for an individual that has completed the certification II and III in Arboriculture to choose from between job positions? Will it be full-time employment? Or sub-contract climber? What are the challenges they encounter, as soon as they put their first step into the job market? Is it so easy to become a contract climber? Are there any requirements or regulations to do so in Australia or New Zealand? What about other countries though? These are the questions we face in the arboriculture industry these days.

Our perspective comes about when we see "green" workers putting themselves in situations they think they can deal with, as a result of a full-time course or a few months experience. Is it so easy to finish a certification and get your first job as a lead climber or foreperson? Should they be out there undertaking complicated rigging jobs or felling big trees? What is the correct and safe path for those 'fresh out of the oven' to take before they engage in something dangerous and demanding such as big removals or massive pruning?

I always thought about becoming a sub-contract climber. As everybody says for such things, you would need to have several years of experience and fully understand about trees. What I see these days is people finding a gap in the trade to start their own business without considering the possibility of accumulating enough experience in the field. Is this a good or bad idea? If good, what are the benefits?

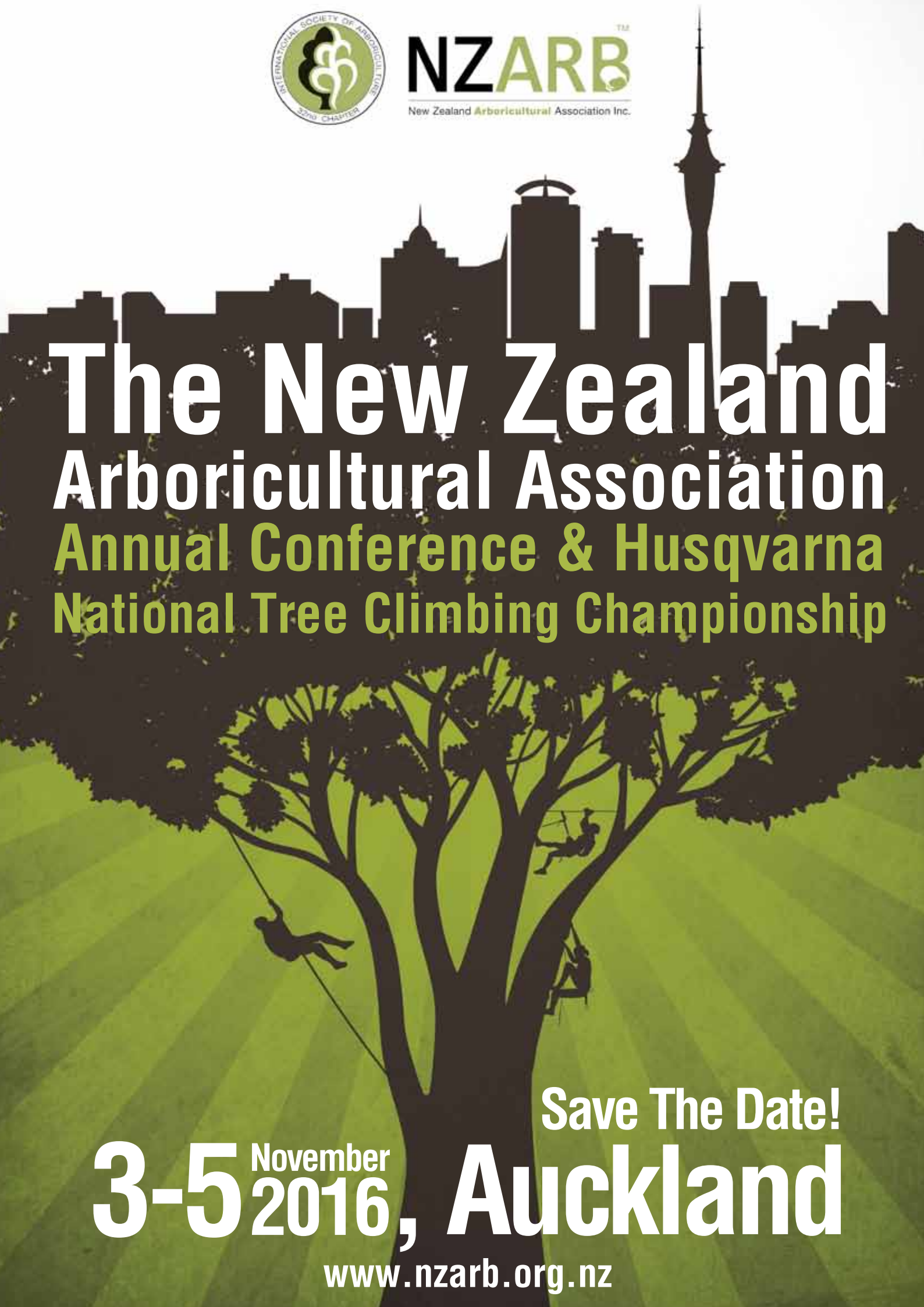
Initially, it is something to reflect about in the future; understanding that limitations always have been part of this game of cut and chop; plant and stake; rig and hope. In my mind was the concept that to get to a certain position as a contract climber, you need to be ready both physically and mentally. Maturity and experience could be the best classification, which never passed through my head six years ago. Also, you have to understand how a self-employed person needs to be organised and business wise as part of a daily routine. And realise how different companies deal with their own job schedule and understand that you are responsible for all the individuals present on site. In addtion, the presence of a secondary climber trained in aerial rescue is something not all companies can offer. Coming along with a weird perception: is it not a good idea to conceptualise?

I am a contract climber based in Sydney and I know what you can confront everyday putting yourself in this position. Pretty much being available to deal with all sorts of "pineapple" jobs (an expression to describe the most sketchy and dangerous jobs no one wants to do) and expect to finish in the predetermined time frame. Waking up every day thinking that you will risk your life for the passion and money of the industry... is it really? Indeed.

Will that be possible for someone who has just started?

The case of such companies that employ people is directly related to the guarantee of a good quality of work. Also, at the same time, gives value to someone that shows a good attitude and interest. Try to comprehend in this case, as an employee, will receive such values once they agree to respect their limits and follow instructions from someone more experienced. On the same path, we understand that progression to an extended career, including the fact of being a sub-contract climber, is affordable in a near future, once this person has completed their maturing inside this game that we all love.

So, lead climber, foreperson, team leader and company owner: What are their positions in all this? They are the ones who will improve the others whom are starting to one day do the same in a perfect cycle of progress learning.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National Tree Climbing Championship
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www.nzarb.org.nz

Tree of Knowledge

Thinking Outside the Planter Box:
The root of the matter

By MARK ROBERTS *Academic Manager, Thoughtplanters (Dunedin)*

Correspondence to: mark.roberts@thoughtplanters.com

I have a theory that trees can't read. It's just a theory because proving it is somewhat problematic; I can't find a reliable method for testing tree comprehension. But if trees can read, they must read different books from what they are supposed to. So until I can prove otherwise, I'll work on the assumption that trees can't read.

My theory is based in part because I've never seen a tree purchase a book and in part because trees don't always do what they are supposed to do – according to the many books about trees at least. I can think of several examples where trees haven't died when they should have, or where limbs should have failed according to available literature, but haven't. Sudden limb drop has the academic world all over the place with trees shedding limbs for no rhyme nor reason (thankfully they don't do it very often). But when it comes to roots it seems trees are simply playing with us, they just don't always do what they are supposed to do. I suspect the fault here doesn't actually lay with the tree at all, but us. Because we can't see roots (they are mostly underground after all) it seems that we have made some 'engineering' assumptions and then added in a bit of artistic licence.

There are some quaint notions in publications and on the Internet that seem to have no bases in reality. Tree roots do not grow as a mirror image of the above ground part of the tree, they don't have a single massive stabilising 'tap' root thrusting deep into the earth under the main trunk. Tree roots don't just stop conveniently at the outer edge of the canopy (at the drip line), there is no equal but opposite root distribution (i.e. if the majority of the canopy is to the left, then the majority of the roots will also be to the left) or is the counter loading growth theory true (that if the majority of the canopy is to the left, then the tree will put out roots to the right to counter the load). Having dug around hundreds of not thousands of trees, I can tell you that in almost every situation the convenient ideas about root placement and location are nothing but artistic guesses. While it is possible that some trees may have roots distributed in a similar fashion to the patterns above the overwhelming majority of trees won't; in fact, the overwhelming majority is so overwhelming that it's simply safer to say roots don't grow like that at all.

So if roots don't conform to some convenient pseudoscience growth pattern, engineering assumption or artistic licence, where are they?

Without digging them up there is no easy way to tell, but we can make a calculated guess, but for us to do this we need to know what roots do and don't do.

For starters, roots don't suck tree food from the soil. Tree food, as such, is a product of photosynthesis which takes place above the ground. When you fertilise a plant, you are not feeding it. Roots don't extract building materials from the soil either, the bulk of the tree is mainly carbon which comes from the air.

Roots provide stability and extract nutrients and water from the soil. Nutrients are used for metabolic pathways and processes and water for almost everything. Stability is key, not so much to keep the tree in place or stop it running away, but to keep the roots still. Roots harvest nutrients from the soil mainly through root hairs. Root hairs are single cell protrusions that grow just behind the root tip. These single cell protrusions aren't very strong as you could imagine, so if the tree is shaking and the roots are moving about in the soil the root hairs will be damaged and nutrient harvesting will stop. No metabolic pathways and processes means no growth and eventually no life either.

The other thing that we need to keep in mind, is that roots are alive; they are actively living and breathing entities - maybe not breathing in the traditional sense, but gas exchange takes place. This is really important because the further under the ground you go the less gas there is. Gas exchange is most active in the upper layers of soil so that is where the majority of the roots are too. How close to the surface will depend on the soil texture – how porous the soil is. Typically, the majority of roots sit in the first 300mm but in more porous soils this may extend down more than a metre.

Roots harvest nutrients and if all things were equal you could assume that the roots would radiate from the base of the trunk in concentric circles consuming nutrients as they go; but all things are seldom equal (especially in the urban environment). If a tree root finds a readily accessible and bountiful nutrient supply it won't necessarily invest in additional root growth to find more nutrients elsewhere or to conform to some artistic publication. It won't think to itself, 'this is nice, but I must grow some roots over there', no it will most likely respond by setting up camp and harvesting all it can with the lease effort required; which means, don't pin too much on the artistic notion of concentric circles.

So with all of this in mind and accepting that trees can't read where will the roots be?

The distance roots spread away from the trunk and into the soil is as a function of how much and what type of soil there is, how compacted that soil is, what the nutrient availability is and where those nutrients can be found. In short, it mainly depends on the soil and there is not a rule-of-thumb that holds true especially if it is based on some artistic publication; but unless removing the soil is an option a rule-of-thumb is required.

My thought here, is that we stop using the pseudoscience engineering assumptions artistic licence approach and start using Tree Protection Zones (TPZ).

Tree Protection Zones, being the radius of 12 times the stem diameter measured at breast height [TPZ radius = DBH X12].

While it is true that TPZs are also generalised models (rules-of-thumb), in my experience they are a better predictor of root placement than the artistic licence approach commonly found in books and on the internet. So until such time that trees can read and tell us otherwise, let's use TPZs to suggest where the roots are.

David Cook on TRAQ

Sent by RICHARD WALSH *Director/Arborist, Nelson Tree Specialists (Nelson)*

Correspondence to: richard@nelsontrees.co.nz

I'm Dave from Nelson Tree Specialists and I have just completed the Tree Risk Assessment Qualification (TRAQ) course thanks to the helpful nature of NZ Arb and the Rural games scholarship.

The course, presented by Mark Roberts, was a whirlwind of knowledge regarding the risk assessment of trees.

From the first day I could see that this course was going to be valuable and interesting. The relationship of tree biology to decay was probably the most interesting section to me, fungal undermining is something we see often in the field but usually have little understanding of how it can affect the safety of climbers and targets.

I would highly recommend this course for anyone in the industry that wants to upskill and/or want a better understanding of trees and the inherent risk, but also the numerous benefits they can provide.

ABOVE: David Cook from Nelson Tree Specialists.
Image / Supplied

Six tips for winter tree care

By TOM KRAEUTLER *Home Improvement Authority (New York, New York)*

Correspondence to: treematters@nzarb.org.nz

If you think your backyard trees simply hibernate during winter, think again. The show may seem over once autumn leaves fall, but there's actually a lot that trees do during winter to get ready for spring.

Take tree growth, for starters: most of the growing points in a tree are protected inside winter jackets called buds. Food reserves are carefully conserved for the coming needs of spring, and water continues to move through a tree until it freezes. Still, trees remain vulnerable during these protective stages, and they need your help to be more efficient and effective now so they can thrive in spring. The International Society of Arboriculture (ISA) suggests the following six tree-care chores for your winter maintenance list.

1. Add a thin layer of composted organic mulch to blanket the soil surface. It'll protect and conserve tree resources while recycling valuable materials.
2. Properly wrap new trees that haven't yet developed a corky bark and could easily be damaged. Chewing and rubbing by animals and mechanical injury from the environment should all be prevented.
3. Remove or correct clearly visible structural faults and deadwood. Make small pruning cuts that minimise exposure of the central heartwood core on branches.
4. Perform limited greenwood pruning of declining and poorly placed branches. Your goal is to preserve as many living branches as possible, with only a few selective cuts.
5. Fertilise in small quantities, layering needed elements over mulch to provide a healthy soil environment for root growth.
6. Water where soils and trees are cool but not frozen, and where there has been little precipitation. Winter droughts require the same action as summer droughts - just be careful not to overwater.

A tree that's well-tended now will bring you a wonderful show in spring, so invest a little time over the next few months to help yours through this challenging season. For more tree care tips, check out www.treesaregood.org, and find an ISA-certified arborist for bigger projects at www.isa-arbor.com.

Acknowledgement
Reproduced with the kind permission of The Money Pit (http://www.moneypit.com/) via the Trees Are Good website (http://www.treesaregood.org).

The New Zealand Arboricultural Association

APPROVED CONTRACTORS

An Approved Contractor is an arboricultural contracting business that has met, and maintains, a minimum standard of professional knowledge and practical ability, with a certain level of client service – as required in the NZ Arb Approved Contractor Scheme (ACS).

Arbor Care Ltd	Tauranga	arborcare@clear.net.nz	Tel: (07) 543-1775
Asplundh Ltd	Auckland	derekb@asplundh.co.nz	Tel: (09) 579-8041
Bark Ltd	Wellington	enquiries@bark.co.nz	Tel: 0800 227 558
PowerNet Ltd	Balclutha	MWay@powernet.co.nz	Tel: (03) 211 1899
Treesafe Ltd	Auckland	nick@treesafe.co.nz	Tel: 0800 754 054
Treescape Ltd	Auckland	auckland@treescape.co.nz	Tel: (09) 259 0572
Treescape Ltd	Kumeu	northern@treescape.co.nz	Tel: (09) 412 5017
Treescape Ltd	Hamilton	waikato@treescape.co.nz	Tel: (07) 857 0280
Treescape Ltd	Wellington	central@treescape.co.nz	Tel: (04) 569 5813
Treescape Ltd	Nelson	south@treescape.co.nz	Tel: (03) 544 0588
Treescape Ltd	Christchurch	canterbury@treescape.co.nz	Tel: (03) 544 0588
Treetech Ltd	Christchurch	office@treetech.co.nz	Tel: 0800 873 378
Wellington City Council	Wellington	William.Melville@wcc.govt.nz	Tel: (04) 389-0260

For more information about ACS go to the NZ Arb website – nzarb.org.nz

Biz Log / Notices

ARBORIST OPPORTUNITY

We are a small company based on the Coromandel Peninsula enjoying a reputation of quality and professionalism. We have grown rapidly over the last four years and have amassed great equipment, good policies and a solid client base.

I am seeking a climbing arborist to work with us for a year to "learn the ropes" of our business and then potentially either take over the running of the business or the ownership. I would consider financing the deal.

The right person for this will be qualified, motivated, have great people skills and have a desire to create their own path. It also helps if you have a passion to live in a beautiful playground rather than in a city.

This is a great opportunity for the right person to walk into your own business with all the guidance you could need. If you are looking for the next step in your career please drop me a line with some details about yourself.

Email: kuaotunurocks@yahoo.co.nz

The New Zealand Arboricultural Association

2016 RONALD FLOOK AWARD

CALL FOR NOMINATIONS

The NZ Arboricultural Assoc. (NZ Arb) is calling for nominations for the 2016 Ronald Flook Award.

This NZ Arb Award was established in 1993. The Award is to elevate and recognise high standards of practice in Arboriculture, including tree raising, tree health and management, and amenity tree protection or design. The recipient will have demonstrated exceptional management of trees, whether functional or aesthetic in any stage of development.

The NZ Arb have named this award after well-known, Nelson-based Landscape Architect Ron Flook for his tireless contribution to Arboriculture in New Zealand through the Notable Trees Scheme and the development of the Standard Tree Evaluation Method (STEM). The award also recognises the standard of his professional work and the way he used trees as significant features in his landscape designs.

2016 is the 22nd year that the NZ Arb Ronald Flook Award is to be presented. The successful nominee receives the gift of a bone carving and loan of the trophy for one year, together with a cheque for $500.

Nominations are to be received before 31st August 2016

and should be sent to:

The Administration Officer (Ron Flook Award)
NZ Arboricultural Association
PO Box 5596, Wellesley Street, Auckland 1141

CALENDAR

JULY 2016

Monthly Mulch eNewsletter Deadline
22 Jul: Deadline for content and adverts
Contact: Lea Boodee - lea@on-cue.org.nz

AUGUST 2016

SA Annual International Conference & Trade Show
13-17 Aug: Fort Worth, Texas, USA
Info: http://www.isa-arbor.com/events/conference/index.aspx

Executive Committee Meeting
19 Aug: Wellington Airport, Wellington
Contact: Jon Redfern - secretary@nzarb.org.nz

Tree Matters Magazine Edition 71 Deadline
29 Aug: Deadline for articles and advertising
Contact: treematters@gmail.com

SEPTEMBER 2016

South Island Regional TCC
10 Sep: Christchurch
Contact: Toby Chapman - tobychapman@hotmail.co.nz

Waikato/BOP Regional TCC
23/24 Sep: Venue To be advised
Contact: Andy Harrison - andrew.harrison@wintec.ac.nz

LATER...

NZ Arb Annual Conference & National TCC 2016
3-5 Nov: Pullman Hotel, Auckland
Contact: Lea Boodee - lea.boodee@nzarb.org.nz

Advertiser Index

FIND AN ISA CERTIFIED ARBORIST NEAR YOU

www.isa-arbor.com/findArborist/findarborist.aspx

AUCKLAND
ERICA COMMERS - Auckland
ADRIAN LAMONT - Pukekohe
PETER ROCHE - Dargaville

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ALVAR DEL CASTILLO DE AGUINAGA - Dunedin
JERRY LYNCH - Central Otago
MARK ROBERTS - Dunedin
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NICHOLAS ARNOLD - Wellington
HAMISH BROWN - Wellington
DANIEL JAMES COOPER - Paraparaumu
MURRAY MIDDLETON - Wellington
TIAGO MIRANDA - Wellington
PAUL SMITH - Wellington
KEVIN SQUIRE - Wellington
RICHARD WANHILL - Wellington

CANTERBURY
MICHAEL WINSTANLEY - Christchurch

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