



# Oak News & Notes

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## The Oaks of Anlaby: the Forgotten Oak Treasures of South Australia's Barossa Valley

Present day Anlaby is the oldest continuing merino sheep stud farm on mainland Australia. It is currently 200 ha/500 ac in size. It is located about 100 kilometers/60 miles north of Adelaide in South Australia's Barossa Valley. Founded in 1839 by Frederick Hansborough Dutton (1812-1890), in its early history the property extended to 65,000 ha/160,000 ac. Anlaby was continuously owned by the Dutton family until the last portions of the property were sold by a descendant in early 1978.

The Anlaby Heritage Tree Project (my study of the heritage tree collection at Anlaby) began in 2012. It resulted in 620 heritage tree specimens being registered by the National Trust of South Australia under 60 heritage registrations. Anlaby currently is the largest collection of National Trust registered heritage trees in one location under private ownership in Australia.

The 620 specimens include Australian natives and exotic tree specimens from around the world. Some trees were sourced from Australian and overseas nurseries, but many were wild-sourced. The Dutton family were passionate tree collectors. This passion began as soon as the property was founded in the early 19<sup>th</sup> century and continued into the 20<sup>th</sup> century. The gardens in their heyday were noted nationally and internationally.

Of the 60 heritage registrations, 19 registrations cover oak specimens. These 19 registrations in turn cover 64 oak specimens.

However the diversity of oak taxa is minimal – currently eight are the predominant taxa used repeatedly throughout the property. Most date from the 19<sup>th</sup> century. These include *Quercus canariensis* Willd., *Q. canariensis* × *Q. robur* L., *Q. cerris* L., *Q. ilex* L., *Q. ithaburensis* subsp. *macrolepis* (Kotschy) Hedge & Yalt., *Q. robur*, *Q. suber* L. and *Q. ×coutinhoi* Samp.

The harsh environment of Anlaby oscillates between years of drought and flood. The Dutton family, their Station Managers and Head Gardeners planted and tested many oak species over a great period of time. The existing oaks, after decades of neglect, floods, droughts, storms, and weather extremes, have proven their durability, adaptability, and basic toughness. These proven oaks of Anlaby are indeed a testament to oak survival.



*Quercus x coutinhoi* with John David Morphet, photographed summer 2014. Photo: Charlie Buttigieg

There are many heritage planting styles of trees on the property. Solitary specimen plantings, windbreaks, avenues, main carriageways, auxiliary carriageways, memorial plantings, and many other such planting styles can be seen throughout the property. Anlaby has oaks planted in several styles and as specimen oaks in the outer pastoral land to create an "English-style" landscape. Many of the specimens planted in the outer pastoral land created agricultural microclimates for the merino sheep under the harsh conditions.

Some notable examples of the oaks of Anlaby include:

The Oak Carriageway is one of three attempts to create avenue-like tree plantings leading to the main residence from the surrounding countryside. The existence of this Oak Carriageway is





*Q. xcoutinhoi* acorns. Photo: Charlie Buttigieg

due to the foresight and pioneering work of Henry T. Morris, third Station Manager (from 1865 to 1890) and Australian Representative of Frederick Hansborough Dutton. It was planted between 1865 and 1870. Originally 44 oak specimens were planted. The pattern of planting included 11 *Q. robur* on the south end of the planting, 29 *Q. canariensis* in the middle of the planting and 4 *Q. canariensis* × *robur* on



*Q. ithaburensis* subsp. *macrolepis*. Photo: Charlie Buttigieg

the north end of the planting. Unfortunately, 10 *Q. canariensis* specimens have died in the middle of the planting. Currently there are 19 *Q. canariensis* specimens still living and in excellent health, along with the 11 *Q. robur* and 4 *Q. canariensis* × *robur*. This Carriageway is planted with two rows of oaks on a north-south axis leading towards the main residence. It is 256 meters/280 yards long.

The World War One Memorial Oaks were three *Q. canariensis* planted in 1918 to commemorate the three farm workers from Anlaby that went to the First World War and lost their lives. (See *International Oaks*, No. 25, pp. 93-102.)

A *Q. xcoutinhoi* in an outer paddock was planted c.1900 as part of the “English-style” planting scheme of the outer pastoral land surrounding the main homestead. This specimen was Australia’s first officially identified and verified mature example of this hybrid. (See *International Oaks*, No. 25, pp. 35-42.)

One specimen of *Q. ithaburensis* subsp. *macrolepis* stands in the main garden. In June 1879, Mr. George Cunnack, a tanner from Castlemaine, Victoria, had two Wardian cases (sealed protective containers for plants) made up in London and sent to Smyrna, Turkey. J.H. Maiden, a former Director of the Royal Botanic Gardens, Sydney, recorded that acorns and twenty rooted seedlings of valonia oak were collected and sent to Mr. Cunnack in Castlemaine. The imported acorns grew successfully in 1880. They were distributed “here and there,” including the Macedon State Nursery in Victoria. They grew so well at Mr. Cunnack’s tannery in Castlemaine that within 13 years the trees produced valonia, the dried acorn cups used in tanning leather. By 1893, the new source of acorns was further distributed both in Victoria and interstate. The largest numbers went to Ballarat, Victoria, but many also went to New South Wales. There are 14 of the original trees still growing on the original site of Mr. Cunnack’s Tannery at Winter’s Flat, Castlemaine. There are also 24 specimens planted in a grid pattern at Glenaroua Homestead, near Broadford, Victoria. This was the former property of Michaelis, Hallenstine & Co., a Melbourne tannery, from 1880 to 1890. This is the largest known planting in Victoria. The specimen at Anlaby was planted c.1900 when the garden was managed by Thomas Leslie, Henry Dutton’s Head Gardener

from 1890 to 1917. Before his employment by Henry Dutton, Thomas Leslie worked for many large private gardens and nurseries in Melbourne’s inner and eastern suburbs. He became well connected with Melbourne’s horticultural elite and nurseries. It is possible and plausible that these connections gave him access to this new oak species when it was available in Victoria.

The Holm Oak Carriageway (an auxiliary carriageway to the homestead). Originally nine specimens of *Q. ilex* were planted. Currently there are eight living specimens. One specimen died in 2012 after having its roots severed while an underground water



World War I Memorial oaks. Photo: Charlie Buttigieg

pipe was fixed. These specimens are located on the west side of the English Oak Carriageway into the main garden and residence.

Numerous specimen plantings of *Q. ilex* are found within the main garden and in



*Q. ilex* planted as specimen tree in Analaby, John David Morphet next to tree for scale. Photo: Charlie Buttigieg



the old plantation area located behind the main garden. These specimens are located southeast of the main residence and east of the water tower/garden folly. Two notable specimens are located southeast of the main residence and east of the garden folly in the old plantation area. They were planted c.1890-1910. The western specimen is 15.8 m/52 ft tall with a canopy spread of 17 × 14.5 m/56 × 48 ft.

*Q. cerris* is also found in the old plantation area behind the main garden. This species has proven to be a real performer in the hot dry conditions on the property. The specimens in these outer areas were planted c.1890-1900.

These few examples indicate the extensive use and understanding in the 19th century pastoral world of the potential for selected oaks to thrive in harsh landscapes. Their survival in the long term provided protective microclimates for merino sheep. These old oak plantings in South Australia's pastoral heartland were forgotten and neglected for a long time. Currently, dried herbarium specimens from selected Anlaby oaks are on the way to Portugal to be examined by oak taxonomists to see whether the species I have identified are in fact hybrids or species other than what we in Australia recognize. This is a new chapter in the research on the oaks of Anlaby. Any new identification will lead onto different pathways of research and new oak stories will emerge.

Charlie Buttigieg

## Oak Red Listing Project

In collaboration with BGCI and the IUCN/SSC Global Tree Specialist Group, The Morton Arboretum has launched a project to complete threat assessments for all of the world's oak species for the IUCN Red List. It is known that many oak species are under threat from habitat destruction, climate change, invasive pests and pathogens, and competition from invasive plants. However, to date less than half of the world's oak species have been evaluated for the Red List. Given the great global economic, ecological, and cultural value of oaks, it is important to understand the threats they face.

To complete the Red List assessments, we will be gathering extensive data on oak distributions, threats, population trends, and human uses. To obtain this often diffi-

cult to find information, developing relationships with the global network of oak experts is a key initiative for us. The International Oak Society network is a valuable resource for the oak red listing project and we look forward to hearing the input that IOS members can contribute to this effort.

A major milestone in the oak red listing project will be presenting the assessments at the 8<sup>th</sup> International Oak Society Conference, which is being hosted by The Morton Arboretum from October 18-21, 2015. Immediately following this Conference will be a meeting of the IUCN/SSC Global Tree Specialist Group. We hope that these two meetings will act to strengthen the global network of oak experts, generate new information to contribute to the assessments, and evaluate the data gathered thus far.

For further information on the oak red listing project or to contribute data, please contact Dr. Murphy Westwood, Tree Conservation Specialist at The Morton Arboretum: [mwestwood@mortonarb.org](mailto:mwestwood@mortonarb.org)

Murphy Westwood

## Chasing Oaks in the Italian Bootheel

On Sunday, October 19, 2014, a small group of 13 people (nine from Belgium, two from the Netherlands, one each from Italy and France) gathered in Bari, Italy for a tour of the bootheel of the Ital-



Putative hybrid of *Q. coccifera* and *cerris*, tentatively named *Q. xcaroppi*. Photo: Gert Dessoy

ian peninsula. The tour officially started on Monday morning, but most of us were already there on Sunday morning so we gathered for a short briefing of the tour by IOS member Christof Van Hulle, from Sylma Nursery in Belgium. Christof's wife is from Martina Franca, so he knows the Puglia region very well. On Sunday afternoon, we strolled around Bari and in the crypt of the Basilica of St Nicolas we were stunned by the singing of a wonderful Eastern Orthodox a cappella women's group.

On Monday morning, we were all present when the bus arrived and headed north for



Quercia dei Cento Cavalieri (Oak of the 100 Knights): *Quercus ithaburensis* subsp. *macrolepis* (Kotschy) Hedge & Yalt. Photo: Gert Dessoy





The group poses in front of *Q. xcaroppi*. Photo: Gert Dessoy

the Foresta Umbra in the Gargano, about two and a half hours driving from Bari. We made a quick stop at the salt lakes where huge heaps of dazzling white salt were waiting to be transported. From time to time we saw flamingos and small herons. Soon we arrived at the Gargano where a group of pigs were foraging under *Quercus ilex* L., *Q. cerris* L. and *Q. pubescens* Willd. As we gained altitude, we gradually saw *Acer opalus* Mill., *Fagus sylvatica* L. and *Taxus baccata* L., some of which were really big, like the Tasso dell'Ispettore, an ancient yew. We had a delicious picnic in the middle of the Foresta Umbra and in the afternoon we followed Sentiero N°1; a



Masseria Madonna Dell'Arco in Alberobello. Photo: Dirk Benoit



*Quercus ithaburensis* subsp. *macrolepis* acorns. Photo: Dirk Benoit

path where some of the trees were labeled. After a short ride, we arrived at the Convento dei Cappuccini, a monastery where we were awed by an ancient *Q. ilex*. That night we slept in Il Rifugio Sfilzi, a cozy hotel in the middle of the forest. We were spoiled with delicious local Italian food and wine.

The next morning, the sun was shining again and we set off for Martina Franca, where we arrived at lunchtime. Just like the day before, Christof's brother-in-law Renzo

made all the arrangements for the picnic and we had four different kinds of focaccia and fruit and wine and pies. In the afternoon, we set off for a long hike in Le Pianelle where many trees had been coppiced for fuel during the two World Wars. Still, there were lots of big *Q. ilex*, but we also saw nice specimens of *Q. pubescens*, *Q. trojana* Webb, *Q. virgiliana* (Ten.) Ten.<sup>1</sup>, and *Q. robur* subsp. *pedunculiflora* (K. Koch) Menitsky. On the forest bed there were thousands of flowering cycla-

men. We also noticed some *Carpinus orientalis* Mill., *Ostrya carpinifolia* Scop., and *Prunus mahaleb* L.. After a shortcut through the dense forest, we headed back for the bus and drove to Martina Franca, where we went for a short walk in the town center. That night we slept in Madonna dell'Arco, a converted farm with various *trulli*, the typical old stone houses of the region.

On the last day of the trip we drove all the way down to Tricase in the bootheel of Italy to see the big *Q. ithaburensis* subsp. *macrolepis* (Kotschy) Hedge & Yalt. This impressive oak with a circumference of 425 cm/167 in made everyone silent in admiration and we were just in time to see the big acorns with their conspicuous cups. The next stop was a site called Il Bosco Monotipico di Tricase, where a nice population of *Q. ithaburensis* subsp. *macrolepis* under a conservation program.

Other oaks at the site were *Q. virgiliana* and *Q. coccifera*. We had our last picnic in the small harbor of Tricase and then drove off to meet with Oreste Caroppo, who proudly guided us to a new hybrid that he has found. It is a putative hybrid of *Q. cerris* and *Q. coccifera*, which has been tentatively named *Q. xcaroppi* (nom. ined.), in his honor. We were lucky to find some acorns, but since there was *Q. coccifera* L. around, I doubted if the acorns would come absolutely true, so I took a few scions to graft them in early January on our Hot Callusing Pipe Unit. At three other locations, Mr. Caroppo showed us nice populations of *Q. coccifera* trees, *Q. frainetto* Ten. and oaks that we thought were *Q. virgiliana*. During these three days we had wonderful warm and sunny weather, but it rained all the way back to Bari. During our last supper together, we all thanked Christof for the wonderful organization of this trip and people made suggestions for a future tour (northeast Turkey, southern Spain, Cyprus...), because each of us had a such a good time and wanted to meet up again.

A full report will be published in the upcoming issue of *International Oaks* by Bruno Van Puyenbroeck.

Dirk Benoit

<sup>1</sup>*Q. virgiliana* is maintained in the article as many still consider it a separate species, however it is now accepted as a synonym of *Q. pubescens*.

## An Investigation of Rapid White Oak Mortality (RWOM) in Missouri

White oak (*Quercus alba* L.) grows throughout eastern North America and is one of the most abundant species in



Peeling bark to look for insect damage. Photo: Sharon Reed





Symptomatic *Q. alba*. Photo: Sharon Reed

forests distributed from the prairie on the west to the Atlantic Coast, and from southern Ontario southward into the Coastal Plain. White oak trees are a long-lived species, up to 600 years, that tolerate shade and can be found on a variety of sites from wet to dry but are most commonly found on moderately moist to moderately dry sites. In Missouri, the nuts of white oak are highly valued as a food source for wildlife and the timber for saw logs and barrel staves.

In 2011, Missouri's Department of Conservation started to receive reports that white oaks were rapidly dying in Missouri. Seemingly healthy tree crowns died within a few months and leaves remained attached to twigs. Foresters reported that mortality was greatest on the lower half of hillsides and on better quality sites. The number of reports received yearly has declined since 2011, but reports are still being received. The mortality is mostly in southeast and central Missouri and is occurring on federal, state, and private lands with or without active management.



Taking soil samples to test for *Phytophthora cinnamomi*. Photo: Sharon Reed

Oak decline is common in Missouri but mostly affects Red Oaks (section *Lobatae*) growing on thin soils on dry, upper slopes. Scientists at the University of Missouri (Dr. Reed, Dr. Muzika, Dr. English) cooperated with National Forest Service scientists (Dr. Kabrick, Dr. Spetich) and individuals from Midwestern state agencies during 2014 to better understand this new pattern of oak mortality. In the short term, scientists would like to know the causes of white oak mortality. Their larger goal is to identify other locations at risk of RWOM and determine if applying management can reduce severity.

Foresters and landowners in Missouri, Iowa, and Arkansas have aided scientists by filling out survey forms with questions about mortality. From these forms, scientists have determined that mortality in Arkansas is more similar to traditional oak decline, whereas some reports of mortality in Iowa share similarities with white oak mortality in Missouri. They also learned that *Q. stellata* Wangenh. near affected white oaks were also dying, but *Q. muehlenbergii* Engelm. were not. In addition, the trees affected most tend to be the largest trees on the lower half of hillsides, especially shallow hills.

Scientists looked closely at trees and soils at two white oak mortality sites in Missouri to identify organisms associated with dying trees. One major finding was that a fungus-like organism, *Phytophthora cinnamomi*, was present in the soils at both locations. This finding is important because *P. cinnamomi* is a pathogen that has been associated with oak decline on lower slopes in Ohio and outside the US. Scientists also found *Armillaria* sp., a fungal root rot that is commonly associated with Red Oak decline on some declining and dead white oaks.

Insects may play a role in the death of stressed white oaks as well. Scientists are peeling logs to look for insect damage as well as insects emerging from logs. So far, a wood-boring insect, *Xyleborinus gracilis*, native to the southeastern US, has emerged from logs taken from multiple locations with RWOM. Some evidence of damage from two-lined chestnut borer has also been observed.



Aerial view in southern Missouri showing large pockets of dead oaks. Photo: Sharon Reed

Information about the ages of dead trees and their growth rates over time is being collected. This information will tell scientists if dead trees are similar in age and if the trees were stressed and growing slowly for a long period of time. Preliminary data shows that some affected trees were growing very slowly for a number of years prior to their death, sometimes even 20 years.

Scientists have applied for additional funding from the Missouri Department of Conservation and USDA-Forest Service to continue their research. During 2015, scientists plan to continue their current research efforts and look at more sites. Part of this effort will be comparing sites with and without RWOM to better understand which site and stand characteristics are associated with mortality, especially severe mortality. Scientists also plan to incorporate historical weather data into their study to determine if some weather events may have disproportionately affected locations with RWOM.

*Dr. Sharon Reed*

Plant Sciences Division, University of Missouri

## Oak Open Days at Trompenburg Arboretum

IOS Board member Gert Fortgens welcomed around 30 participants to a most enjoyable two-day Oak Open Days event at Trompenburg Arboretum in Rotterdam, Netherlands, on August 28 and 29, 2014.





Photo shoot for *Quercus xlibanerris* 'Rotterdam' acorn. Photo: Gert Fortgens

Both days consisted of a well-balanced mixture of lectures or forums with time spent outdoors in the Arboretum. After registration Gert gave a talk on the arboretum and its oaks, planted largely since the latter 1930s by staunch IOS member the late Dick Van Hoey Smith on the bones of an 1820s garden on which his father had commenced planting at the beginning of the 20<sup>th</sup> century. We were delighted that Dick's wife Riet was able to join us for drinks in the evening. Many plants raised in the garden have since become widely known and propagated, such as *Quercus* Pondaim Group van Hoey Smith and *Q.* 'Macon' van Hoey Smith. Both the high water table in the garden and the climate seem to suit the many oaks which have attained large size here, even those such as *Q. alba* L. which are not supposed to thrive in northern Europe; also to my surprise we saw sizeable specimens of the evergreen Japanese *Q. acuta* Thunb., which survives the winters here, and a

Himalayan *Q. oxyodon* Miq. which has endured since 2008.

A forum on oak grafting added to the discussions of last year's OOD at Dirk Benoit's Pavia Nursery. On the second day Jeroen Braakman made a presentation on two subjects: "Hybrid Oaks" and "Oaks on the Internet" (Jeroen facilitates an oak page on Facebook). A blog by Jeroen giving fuller coverage of this event can be found on the IOS website (<http://www.internationaloaksociety.org/content/oak-open-days-trompenburg-1>). After further time outdoors we were honored to be given illustrated lectures by two participants from Taiwan, Professor Fuh-Jiunn Pan and Dr. Li-Ping Ju, the former on the *Fagaceae* of Taiwan, the latter on the rare (non-oak!) *Fagus hayatae* Palib. ex Hayata,



Professor Fuh-Jiunn Pan delivering a presentation on distribution of *Fagaceae* in Taiwan. Photo: Gert Fortgens

of which she generously provided seed. We then saw a fascinating exhibition of the variation displayed by oak wood, and we were each given a specimen of 4,000-year-old 'bog oak' (resurrected after being perfectly preserved in peat). The day was concluded by a plant sale and acorn exchange. Our warm thanks go to Gert and all his team for organising such an excellent event, on which a fuller report by Dirk Benoit will appear in the IOS Journal.

*We will be running a reduced tour program in 2015 in order not to de-*

*tract from the Conference in Illinois in October, together with its associated tours (visit the IOS website for latest information on the Pre-Conference and Post-Conference Tour). However, in July 2015 Lloyd Kenyon will be showing us his splendid collection of oaks (and viburnums!) at Gredington in the UK, and it is planned to add a second day and venue to this event, probably over the weekend July 11/12.*

*Shaun Haddock*

IOS Tour Director

## This Is Our 21<sup>st</sup> Year!

In 1994 a small group of like-minded Quercophiles, seeing both need and opportunity, gathered for the purpose of formally creating an organization they named International Oak Society. And from its earliest days, having no paid staff, our Society has relied upon the skills and energy of both members at large and the Board of Directors.

This year, we participate in one of our most important triennial functions. From a slate of volunteer candidates, it is our responsibility to elect members of the Board which, with the help of committees, performs all duties required for proper functioning of the organization. The election is conducted by mail (postal service) during the summer and will be finalized during the October Conference at The Morton Arboretum in Illinois, USA.

At this time, the Election Committee is inviting submissions for the slate of candidates for the Board.

Candidates for Board positions should be members in good standing with the desire to serve the Society by working with others toward furthering our common goal of appreciation and preservation of the genus *Quercus* and its ecosystems. The Society has benefited from the enthusiasm of an active Board made up of individuals that represent the international character and the diverse interests and skills of the membership.

Any IOS member who would like to be named on the ballot should send a brief résumé to the Election Committee along with a note giving reasons for desiring to be a Board member and in what areas contributions can be offered. Candidates with experience in website design, financial management, and membership administration are especially encouraged to apply,



Participants in the Oak Open Day at Trompenburg Tuinen & Arboretum. Photo: Sophie Kling



but all members willing to volunteer their time and skills, whatever they may be, will be very welcome.

Actively joining in the life of the Society can take many forms, and new ideas are welcome. We want you to let us know your vision for the Society, and to encourage your colleagues in the Society to consider Board participation.

Given the great distances that usually separate Board members, candidates need to have an e-mail address and be willing to communicate electronically. Correspondence regarding candidacy and the election should be sent to any Board member (contact information can be found on the web site), or to Diana Gardener.

*Diana Gardener*

Election Committee Chairperson  
P.O. Box 284  
Silverton, Oregon 97381 USA  
mail to: [quercusgardener@gmail.com](mailto:quercusgardener@gmail.com)

## The War Memorial Oak in Adelaide, Australia

The 100-year-old oak in Creswell Gardens in the city of Adelaide in Australia was planted to commemorate the First World War, and as such is one of many trees standing as memorials to the Great War. This oak, however, is special in that it is very likely to be the first ever living memorial to WW1: it was planted on August 29, 1914, only a month after the war began with Austria-Hungary's declaration of war with Serbia, and a mere 25 days following the United Kingdom's entry into the conflict on declaring war on with Germany on August 4, an act which



The War Memorial Oak in Adelaide, Australia: probably the first living memorial to the First World War. Photo: David Lawry

implied also the initiation of war for Australia.

The planting was an initiative of the South Australia branch of the Australian Wattle Day League, an association founded to establish wattle blossom (*Acacia* sp.) as the national emblem of Australia. At a meeting on August 22, 1914, the President of the League W.J. Snowden spoke of the people of all nationalities that composed the League, and especially of those British-Australians who "by reason of their original nationality suffered now the conflict of emotions only natural when they knew that men near and dear of them were probably being slain on the battlefield every day." He proposed to invite the Governor of South Australia, Sir Henry Galway, to "plant in a prominent position on Wattle Day a memorial English oak—the tree which, with its slowly but surely developing soundness, strength, solidity, and restful beauty, so well typified the characteristics of the British nation."

The young *Quercus robur* L. was planted in Creswell Gardens, and around it were planted eight wattles to symbolize the eight States and Territories of the young Commonwealth of Australia. The wattles have been lost, but the oak still remains, its canopy now spreading across a diameter of approximately 30 meters/100 feet and the circumference of its trunk exceeding 3.5 meters/138 inches.

The War Memorial Oak is part of Avenues of Honour 1915-2015, a national project to preserve and promote Australia's Avenues of Honour. These arboreal memorials are a popular form of public commemoration of military service in Australia. The earliest were created in response to Australia's participation in the Boer War, but most were established during and after the World Wars. The year 2015 is a landmark for these memorials as this year will see the centenary of the Gallipoli landings, Australia's official entry into World War I, when ANZAC forces landed on the Gallipoli peninsula in Turkey. (Also in these forces was trooper Douglas Cook, founder of New Zealand's Eastwoodhill Arboretum, who in fact lost a finger to an enemy bullet in Gallipoli—see *Oak News & Notes*, Vol. 18, No.2, and the article "The Oaks at Eastwoodhill"

on the IOS website.) You can read more about the Avenues of Honour 1915-2015 project on their website [www.avenuesofhonour.org](http://www.avenuesofhonour.org).

The War Memorial Oak was intended as a memorial to the Great War itself, and it is remarkable that those planting it were so aware of the importance this war would have on world history, even when it had barely started. It continues to serve its purpose, as those who planted hoped, commemorating "during centuries to come... for many generations of their children's children the greatest War Year and the most critical time of national trial that the world had ever known." Long may it continue to do so; as Sir Henry Galway said in his address at the planting ceremony: "Planted in war, might the oak flourish in the years to come during continual peace."

*Roderick Cameron*

## Species Spotlight: *Quercus rotundifolia* Lam.

*Quercus rotundifolia* Lam. has a range restricted to the western-most quad-



*Q. rotundifolia*. Photo: Francisco Vázquez

rant of the Mediterranean basin. It is a rugged species that can survive temperatures below -20 °C/-4 °F, and can live in conditions with temperatures that on occasion reach 47 °C/117 °F during summer months. It adapts to all types of soil: poor, rich, deep, skeletal, sandy, lime, clay, neutral, alkaline, and acid. In its natural habitat it is a rustic tree, with bark that varies from dark grey to ochre. The grey-blue canopy is umbrella-shaped, and the small to medium-sized leaves have entire margins or are slightly spiny and very tomentose. The tree flowers in spring and very frequently again in autumn, when tempera-



A mature specimen of *Q. rotundifolia*. Photo: Francisco Vázquez

tures become spring-like. An outstanding feature of this species is the connection it has had with humans. There is evidence that its fruit has been used for human nourishment since the Neolithic era (7,000 BCE): the inhabitants of the southern Iberian Peninsula 9,000 years ago collected acorns of *Q. rotundifolia* in autumn (November), gently toasted them in order to preserve them throughout the year, ground them in manual granite mills, and ingested the flour in soups or breads.

This species is closely related to *Q. ilex*, and in Spanish they share the same common name: *encina*. There is disagreement amongst taxonomists, for although it is generally agreed that they are separate taxa, some consider them to be separate species, whereas others classify them with subspecies rank.

The acorns of *Q. rotundifolia*, which come in a wide variety of shapes and sizes, are used to fatten Iberian pigs and other domesticated animals. Eight different varietal forms have been named<sup>1</sup>, based on differences in acorn morphology (for details and descriptions, see *International Oaks*, No. 11, 2000, pp. 39-52). Amongst the varieties of acorns worthy of mention are *Q. rotundifolia* var. *macrocarpa* (Cout.) F.M. Vázquez, S. Ramos & S. García, with large acorns that can weigh up to 35 g/1.2 oz (fresh weight) and *Q. rotundifolia* var. *avellaniformis* (Colmeiro & E. Boutelou) F.M. Vázquez, S. Ramos & S. García, with small acorns (resembling hazelnuts) that don't exceed a fresh weight of 4 g/0.1 oz.

*Encinas* form an essential part of the forestry and livestock system known as *dehesa* in Spain and *montado* in Portugal, consisting of woodlands where the forest has been domesticated: most of the shrub-like elements have been removed to promote grasslands, and oaks have been cleared to

improve soil illumination and herbaceous growth. Furthermore, the trees have been domesticated: the *encinas* have been pruned to form umbrella-shaped canopies, with principal branches parallel to the soil, of medium height (up to 8m/26 feet), and the inside of the canopy has been cleared to allow the access of sunlight, all to benefit fruit production. The *encinas* belong to a forestry system that has been intervened, which holds a cultural patrimony and preserves ancient traditions, and

which has been adapted to human needs during each era of the last 10,000 years of mankind's existence.

<sup>1</sup>Several forms of *Q. rotundifolia* have been observed, but to date only two have been officially recognized. All others are still considered synonyms.

Francisco Vázquez and  
Roderick Cameron

## Unraveling the Mystery of *Quercus ×introgressa* P.M. Thomson

This unusual hybrid was described by Paul Thomson in 1977 from a location in Lafayette County, Missouri. Thomson discovered a hybrid swarm of 17 oaks; three hybrids of *Q. muehlenbergii* Willd. × *Q. prinoides* Engelm., one *Q. bicolor* Willd., and 13 putative hybrids of this unique mix. *Q. ×introgressa* was distinguished on the site by long peduncles bearing small, rounded fruit. Its leaves were found to be fairly narrow and long. Individuals ranged from 39-65 ft/12-20 m tall, and were between 18-33 in/46-84 cm in diameter.

Thomson described the complicated matter of the similarities between *Q. muehlenbergii* and *Q. prinoides*. *Q. muehlenbergii* was once considered a varietal form of *Q. prinoides* (*Q. prinoides* var. *acuminata* (Michx.) Gleason). This was thoroughly examined in the study and the morphological differences well explained. The research leaves little doubt as to the certainty of the three-way hybrid.

However, since this research was carried out, this group of trees was cut down (sometime during the 1990s) for reasons unknown to me. I have searched for a few years to find anyone who may have grafts of one of these original trees. Many in the area have grown seedlings that supposedly

originated from this grove (the Missouri Department of Conservation has even offered seedlings for sale), but these are now F<sub>3</sub> or F<sub>4</sub> trees, allowing for ample opportunity for outcrossing with other species. I found one local nurseryman who had a grafted plant and he was gracious enough to share cuttings with me. However, as I found out later, this tree was a seedling found at the site after the original trees had been removed, so it is not totally clear if this remaining tree is a fair representation of this hybrid. My speculation is this plant was from one of the seedlings found across the fence, out of reach of cows and pigs



Grafted plant from last surviving seedling at original site showing clear *Q. bicolor* influence.

Photo: Ryan Russell

that grazed this property. Thomson describes this situation in his research. My tree bears characteristics morphologically in line with *Q. bicolor*. Not surprising as *Q. bicolor* did represent 50% of the genetic makeup in the original hybrids. It is only about 3 ft/1 m tall but bore 15 acorns this past fall. Perhaps this is because I grafted mature wood, but not knowing how old the remaining tree is, it is possible that this is a trait inherited from *Q. prinoides*, a species well known to produce flowers and seed in three growing seasons. Hopefully my search will yet yield a grafted plant of one of the original trees from Thomson's study, and I continue to track down possible leads. This hybrid may exist elsewhere, and it likely does, but given the similarities in the parent group, especially between *Q. muehlenbergii* and *Q. prinoides*, it would take a very discerning eye to spot it. My goal is to find a remnant plant and make sure its genetics are preserved.

Ryan Russell



## Book Reviews

***The Bur Oak Manifesto: Seeking Nature and Planting Trees in the Great Plains.*** Jack Phillips, Prairie Fire Press, Lincoln, NE 2014. 121 pages.



This sprightly little volume consists of 20 chapters and an appendix. Many of the 20 chapters are essays which appeared singly between 2010 and 2014 in the regional journal *Prairie Fire*.

The book is divided into three named sections, each equipped with an appropriate comment from a writer on the subject of Nature. The sections are entitled “Seeking Nature,” “Planting the Plains,” and “Native Oaks for Native Places.” Section Three is the heart of the book, and it concludes with the author’s main argument, “The Bur Oak Manifesto.”

What is the Bur Oak Manifesto? It is the charge from Phillips to his readers to “plant native oaks into the communities that created them.” Actually, his charge is much broader than the quote suggests: the manifesto is his plea that *all* plantings, everywhere, should be of plant material native to the area, propagated by seed collected in the wild. Plants of all species are best adapted to the region where they have evolved through countless eons. They are minutely adapted to the local conditions, and providing that they are properly planted (and Phillips has a number of strongly-held opinions about what that means, presented throughout but especially in Section 3). If any plants are to survive in particular areas, those with the best chance are those with relatives growing nearby. This is an astute horticultural application of the old adage “If you can’t be near the one you love, love the one you’re near!”

It is a real pleasure to read this volume; the essays are short, pithy as well as witty, and are particularly interesting for the way the author weaves together seemingly disparate phenomena, e.g. tree planting and salamanders, oak savannahs and wild cranes, wolves, hot coffee, and walking, usually with a quirky or wry observation. Phillips is a sophisticated humanist and talented writer, a knowledgeable naturalist (as well as an elemental tree-hugger), and the subtext of his account is surely that ecology is

everything: a functioning ecosystem is one in which all of the elements are integrated through long co-existence, which selects the most successful arrangement. For a plantsman to succeed, this paradigm must be discovered and honored. Surely this is the point of “touching trees”, isn’t it?

The book concludes with a useful list of suggested readings, which range over all of the topics mentioned in the book.

(A fuller review of this volume, by A. S. Krug of *Prairie Fire*, appears on the website of the International Oak Society.)

*Allan R. Taylor*

***Hillier: The Plants, the People, the Passion.*** Jean Hillier, Outhouse Publishing, Winchester, Hampshire 2014. 224 pages.



This wonderful account of the Hillier family traces its roots back to the late 18<sup>th</sup> century. The Hillier family began their love affair with plants with Sir Harold Hillier’s grandfather Edwin, founder of Hillier nurseries.

Edwin began his career as a journeyman gardener at fifteen, and after a decade of honing his horticultural skills, was able to buy his first track of land and open his own nursery. His sons, Edwin Lawrence and Arthur would take over the business and it was Edwin Lawrence who began planting collections, beginning with a Pinetum at Shroner Wood. They grew the business and the collections through two World Wars and economic downturns. Edwin Lawrence traded plants with botanic notables such as Charles Sargent, Ernest Wilson, and Lionel de Rothschild. Harold would join his father and uncle as a junior partner in 1932, just as the Great Depression had tightened its grasp on the world economy. Success at the Chelsea Flower shows and the innovation of moving large trees further set Hillier’s apart. Harold purchased Jermyns house in 1951 and began buying surrounding property. It was here that Harold began his personal collection. Readers are treated to Harold’s globe-hopping trips to collect rare and unusual plants, the establishment of the arboretum, and publishing of *The Hillier Manual of Trees & Shrubs*. This book is a

thorough account of the 150-year tradition of Hillier’s and treats readers to the people, the places, and the plants that gave rise to this great nursery and gardens known throughout the world and shows that such success only comes through hard work, perseverance, and a love for what you are doing.

*Ryan Russell*

## Vegetative Propagation of Oaks in Iturraran

The genus *Quercus* includes around 450 species distributed across the Temperate and Subtropical Zones of the Northern Hemisphere. Many species are practically unobtainable in commercial nurseries, and for that reason it is very difficult to create new collections that include species other than the more ordinary ones.

The best way to obtain new specimens is to travel to the countries where they grow and collect the acorns in their habitat of origin. Many collections have been formed in this way, including that of Iturraran, but today it is much harder since the Nagoya Protocol<sup>1</sup> has set up barriers to obtaining seed in many countries, requiring a permit that is practically impossible to obtain.

Another method is trade with other collectors who travel in search of new species. In Iturraran we have received plants from individuals such as Allen Coombes, and have exchanged material with other collections, such as the Arboretum des Pouyouleix and Arboretum Chocha. These collections face the same difficulties when attempting to obtain new accessions of the rarer species.



Rooted cutting of *Q. planipocula* Trel.  
Photo: Fracisco Garin





One of the trees at Iturraran from which cuttings are taken: *Q. costaricensis*. Photo: Francisco Garin

It is therefore necessary to look for another way for collections to grow, using existing plants to obtain vegetative material and attempt to clonally propagate it.

The system that is most used is grafting, and there are nurseries that specialize in this technique, often successfully, though not always. In these cases the problem is finding compatible rootstock. Even within species of the same section, the rootstock may exhibit delayed incompatibility. An example is *Quercus rysophylla* Weath. and *Q. rubra* L., where the latter is sometimes used as a rootstock for *Q. rysophylla* 'Maya', a cultivar with new growth of bright red leaves. After several years the graft can be lost due to delayed incompatibility. In other cases I have seen an oak in the *Protobalanus* section, like *Q. tomentella* Engelm., grafted on *Q. rubra* (Lobatae) or a *Q. hinckleyi* C.H. Mull., of shrub-like habit, grafted on *Q. robur* L.<sup>2</sup>

Another possibility is to root cuttings with the help of hormones, but commercially this method is less desirable, because a couple of years are required for the cutting to form a significant root system that will allow it to be planted in the ground. With grafts, one already has the radical system of the rootstock, which accelerates the possibility of commercialization.

We have been fortunate in being able to count on the experience of Jacky Pousse, a French specialist in plant reproduction who

also travels to remote place to seek and introduce new species. When we visited his home we were able to see how, with rudimentary means, he has been able to propagate via cuttings many species of plants, including *Quercus*. This has encouraged us to do the same in Iturraran, and we have found that it works better with evergreen species.

We have tried the method with several species in the Iturraran collection, with varying degrees of success, between 20 and 60%, but it is always exciting when one obtains a new plant of a hard-to-find species. In this way we have obtained new specimens of the following *Quercus* species:

*Q. insignis* M. Martens & Galeotti  
*Q. tarahumara* Spellenb., J.D. Bacon & Breedlove

*Q. costaricensis* Liebm.  
*Q. cupreata* Trel. & C. H. Mull.

*Q. delgadoana* S. Valencia, Nixon & L.M. Kelly

*Q. acatenangensis* Trel.  
*Q. humboldtii* Bonpl.  
*Q. obtusata* Bonpl.



*Q. delgadoana*. Photo: Francisco Garin

We have also tried *Quercus* from other collections, and in this way have incorporated to our collection three species from Arboretum Chocha in Ustaritz, France:

*Q. cortesii* Liebm.  
*Q. planipocula* Trel.  
*Q. tuberculata* Liebm. (deciduous)

At the moment, we are rooting cuttings from Arboretum des Pouyouleix, including

*Q. miquihuanensis* Nixon & C.H. Mull. and *Q. pumila* Walter.

The method used in Iturraran is quite simple. We wait until the new sprouts on the oaks have hardened, which at our location in northeast Spain occurs between August and October. We prefer short cuttings, which in general yield better results. For oaks with small leaves and short internodes, we make cuttings about 5cm/2 in long; we use longer ones (up to 15 cm/6 in long) for oaks with larger leaves and longer internodes. With large-leafed species it is important that the leaves are cut to reduce their size. The hormone we use is indolebutyric acid (IBA) at 1%. Once the cuttings are impregnated with the hormone we place them in pots with sterile substrate. We then dampen the substrate and cover the pots with transparent plastic and place them on a heated pad.

We open the plastic periodically to check the humidity of the substrate, removing the dried leaves and cuttings that have failed, and we apply fungicide before closing it again. Normally the cuttings that survive have rooted by the following spring and they can be planted in the next spring after that. These cuttings normally grow well after planting, producing well-developed plants.

<sup>1</sup>The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity is a supplementary agreement to the Convention on Biological Diversity. It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources. (For further detail: [www.cbd.int](http://www.cbd.int))

<sup>2</sup>Editor's note: Other rootstocks may be used with greater success, though there is always a chance plants may be lost due to delayed incompatibility. For more on the advantages of grafting for commercial production, see "Clonal Oak Propagation" by Dirk Benoit, *International Oaks* No. 20, 2009.

Francisco Garin and  
 José Almandoz

Jardín Botánico de Iturraran, Spain

Translated by Roderick Cameron

## *Quercus rysophylla* article

Allen Coombes is compiling information about *Q. rysophylla* Weath. for an upcoming International Dendrology Society article. If you have interesting information about the species, or its hybrids in the wild



or in cultivation, contact Allen at [allen.coombes@hotmail.com](mailto:allen.coombes@hotmail.com)

## *Quercus georgiana* M.A. Curtis Conservation Genetics Project

*Quercus georgiana* is an endangered US endemic oak species that exists in only a few scattered populations on granite outcrops of the Piedmont region in the



*Q. georgiana*. Photo: Ryan Russell

southeastern US (GA, AL, NC). The largest and best documented population is from the type locality on Stone Mountain, GA. It is suspected that the last remaining population in North Carolina is down to just five individuals, and the remnant populations in South Carolina, part of the historic range of this species, are now extirpated. It is also believed that the scattered remaining populations are introgressing with other sympatric and more abundant red oak species. *Q. georgiana* is ecologically important in the Piedmont region as a source of food for many birds and mammals. It also has great potential horticultural value with glossy leaves, brilliant fall color, drought tolerance, and resistance to deer browsing.

*Q. georgiana* is an “exceptional species” in that its acorns cannot be seed banked through conventional methods. Thus, *ex situ* conservation collections of this species must be through living individuals, requiring the involvement of botanical gardens and arboreta in conservation efforts. Previous research has found *Q. georgiana* is maintained in *ex situ* collections at 30 institutions around the world, 15 of which are in the US. Within these collections, there are only 26 accessions of known wild

origin, most of which are from the same population of individuals on Stone Mountain, GA.

Scientists from The Morton Arboretum and Chicago Botanic Garden are now conducting a conservation genetics project that employs nuclear microsatellite and chloroplast markers to compare levels of genetic diversity between *ex situ* collections and individuals sampled from remaining wild populations of *Q. georgiana*. The results of this analysis will reveal how much genetic diversity is currently being captured by existing botanical garden collections and inform the strategy for future collecting trips. The analysis will also elucidate the reproductive population dynamics of the wild populations and help identify those populations harboring the most valuable genetic diversity for prioritizing conservation action. Additional outputs of this study will be to refine the known distribution of this species through population surveys and to complete an up-to-date assessment for the IUCN Red List of Threatened Species.

The overall mission of this project is to build on the previous research by R. Topila and A. Kramer to gain a complete understanding of the geographic distribution and genetic diversity in *Q. georgiana* to ensure that *ex situ* collections are capturing as much of the gene pool as possible.

In spring 2015, I will be contacting garden curators across the US and abroad to request leaf samples of wild-collected *Q. georgiana*. Many US gardens have already been sampled, but no collections from outside of the US are yet included in this study. If you have wild-collected *Q. georgiana* accessions in your collection and have not yet contributed samples to this study, or if you have knowledge of wild populations outside of Stone Mountain, GA, please contact me at mail to: [mwestwood@mortonarb.org](mailto:mwestwood@mortonarb.org) and I will provide you with sampling and shipping information.

Murphy Westwood

## Utilizing Urban Timber

The urban forest provides municipalities, homeowners, business owners, and visitors with many wonderful benefits, but it can also present unique problems. Urban trees may reach proportions matching those found in the wild and when grown in tight spaces, as is common in



Author milling a salvaged urban log (*Q. palustris* Münchh.). Photo: Ryan Russell

cities, they can be very difficult to remove when the time comes. The issue then becomes what to do with all of the wood? Many cities are not equipped to handle large quantities of wood.

This is a real problem many US cities are now facing with the advancement of the Emerald Ash Borer (*Agrylis planipennis*), which is wiping out thousands of acres of urban and rural ash trees (*Fraxinus* sp. L.), and the new threat of Thousand Cankers disease threatening to decimate black walnut (*Juglans nigra* L.) populations. Now, Rapid White Oak Mortality (see page 4) is threatening tens of thousands of white oaks. Red oaks (section *Lobatae*) have already been hurt by Oak Wilt and other ailments such as bacterial leaf scorch and Hypoxylon—which usually finishes stressed trees off. All of these issues, when



Bandsaw style mill at a local municipality. Photo: Ryan Russell





Beautiful coloration in boards of a salvaged urban log (*Q. palustris*). Photo: Ryan Russell

combined, could mean tens of thousands of dead and dying trees (realistically many more than that) will need to be dealt with. New construction (often called bulldozer blight) also kills numerous trees annually by changing grades or compacting root zones of existing trees. Much of the wood can be chipped and used for mulch, if chipped finely enough, or used as a source for firewood or biofuel as a coal substitute. But what about the logs? Many times these are too large to chip and most municipalities are not able to sell these logs. A good alternative is to use them for lumber. However, most commercial sawmills will not accept urban timber as they are concerned these logs will contain nails, wire, etc. and often they do.

Fortunately, a few independent mill operators can be swayed to take a chance on a nice urban log. Occasionally, they are will-



Salvaged urban lumber in Kansas City, Missouri. Photo: Alan Branham

ing to take partial trades of the milled lumber in exchange for cheaper rates. Recently, independent “urban” timber companies have begun springing up around the country. These mills specialize in urban lumber and many even retail this lumber to home builders and wood workers. They will often offer hard-to-find lumber like *Zelkova*, *Gymnocladus*, *Morus*, *Platanus*, etc. These independent mills are usually portable and are either band, blade, or occasionally chain saw mills. The great thing about these mills, besides the portability, is that many times you can hire a mill operator to mill one log or multiple logs. Some communities have seen the need to utilize urban timber and have begun purchasing portable mills of their own. Band and chainsaw operated mills are great for slabbing large pieces of wood and blade mills are great for dimensional lumber. The lumber can be sticker stacked outdoors and covered, then used later (usually about a year depending on species) or a kiln can be made to dry lumber quicker (a few weeks to a month). Some enterprising communities have also begun selling lumber as a way to supplement budgets. Of course local regulations need to be consulted, but this can be a great way to handle urban timber and boost a sagging budget. Arboreta and gardens should also look into milling lost trees as they could certainly have unique species, not often found. This wood can be used for benches, plaques, artwork, etc. and is a great way to utilize urban wood. An internet search can be helpful in finding independent mill operators in your area, or you can contact your local forester, and they should be able to put you in touch with an operator who will work with you.

Ryan Russell

### Did you know?

It is speculated that Europe’s oldest oaks are the King Oak (Kongeeen) from Denmark and Bulgaria’s Granit Oak. Both of these ancient *Quercus robur* L. are somewhere between 600 and 1,000 years old. North America’s oldest oaks are considered to be the Angel Oak (*Q. virginiana* Mill.) off the coast of South Carolina and California’s Pechanga Oak (*Q. agrifolia* Née). These senior citizens are both estimated to be more than 1,000 years old. The world’s oldest clonal oak colony is thought to be California’s *Q. palmeri* Engelm., at more than 10,000 years old.

## 8th Triennial Conference of the IOS at The Morton Arboretum in Lisle, Illinois

**\*Registration opens March 16\***

Current IOS members will have one week to register for the Conference and the Pre- and Post-Conference Tours before registration is opened to a wider audience, so act fast! Space is limited to 50 people for the Tours and 150 for the Conference.

Get ready to register at <http://www.mortonarb.org/courses/international-oak-society-8th-triennial-conference>

A link to important information for those who wish to participate in the seed exchange can be found on the same page.

*2015 Conference Planning Committee*

## European Tree of the Year 2015

A 150-year-old *Quercus robur* L. in Estonia has been crowned the European Tree of the Year for 2015. This tree is growing in a most unusual place; right in the middle of a football (soccer) field. It has an interesting history as well. Supposedly, troops were sent by Stalin to pull it over. The cables on their tractors kept breaking and they gave up. The tree still bears the marks on its trunk. This tree garnered nearly 60,000 votes in the win over such historical trees as the 800-year-old Major Oak (*Q. robur*), the Nail Tree, an *Aesculus hippocastanum* L. dated to the Middle Ages, and an 800-year-old chestnut (*Castanea sativa* Mill.) from Italy.

### Points of Contact

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