First snow of the year. Bob Anderson riding in the Angeles National Forest, San Gabriel Mountains near Little Jimmy Trail Camp, November 23. Photo by Dan Spear (ACS, Western Region). Trees are: Pinus jeffreyi (Jeffrey pine), Pinus ponderosa (ponderosa pine), Calocedrus decurrens (incense cedar) and Abies concolor var. lowiana (Pacific white fir).
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Note: Hardiness Zone references in CONIFERQUARTERLY are USDA classifications unless otherwise specified.
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The 2017 National Meeting was expertly hosted by the Northeast Region in August in Syracuse, New York. Over 200 coneheads from around the country and a few foreign countries were in attendance. The organizers of the meeting apparently had a connection with the weather because it was perfect for the entire meeting.

The gardens were of varying sizes and intricacies, but each of them was groomed to perfection and prominently featured conifers. The garden of Dr. Mango was a mature garden in town featuring water gardens, Japanese maples, and many conifers. The designer and builder of the garden was present to explain the design, the sources of the huge boulders which comprised a major portion of the garden, and also the garden's history.

The Bordoni and Craft gardens, like the Mango garden, were residential but distinct. The Bordoni garden was in town on a city lot. The front yard featured conifers and hydrangeas around the sides with a large turf front yard. The real gem of the garden was in the back. The winding turf paths were in perfect scale with the planting islands. The keystone plant was the massive yew that dominated a quarter of the landscape. Smart plantings interwove conifers with carnivorous plants, water lilies, and flowering shrubs that created suitable habitat for birds and butterflies. There were about a hundred visitors in the backyard, but the crowd did not interfere with the garden's quaintness.

The Craft garden perfectly sits on a hill overlooking a peaceful kettle lake, a feature of the area. The conifers in the back yard perch on a series of walls that spill from the back of the residence down to the shore. There was an astonishing number and variety of

Mango Garden: the gardens of Dr. Mango were mature and featured built bolder walls and water features, in addition to conifers.

The Bordoni Garden integrated carnivorous plants and water lilies alongside hydrangeas and conifers. It was a remarkable feat of garden design to host 100 people comfortably in a garden on a city lot.
conifers, but an equal representation of other woody plants and perennials. Before Ms. Craft became enamored with conifers, perennials captivated her. As a lover of perennials, her collection is outstanding and grows happily alongside the conifers.

The largest garden was Sycamore Hill. The group had two chances to visit its rambling gardens. Sycamore Hill is a private and very well maintained collector’s garden with innumerable conifers and hydrangeas. A sunken Chinese garden, a tower ruin, a daunting maze, water gardens, and sculptures were only part of the charm of Sycamore Hill. The garden was named for the large sycamore which greets visitors. It was growing at the time of the Revolutionary War.

The Craft Garden was a series of terraces that spilled down into a peaceful lake.
I am sure everyone who has heard my nonsense knows that the best companion for a conifer is another conifer. If you were to pick one, the best one to pick is your favorite. Of course, my favorite is whichever one I happen to be standing by at the moment. Right now, I happen to be standing by Abies koreana ‘Cis’, so that is my favorite at this moment. My garden is small, so to get 350 conifers in there you have to like small. Now can you believe people like other things besides conifers, even me, so that is where the other companions come into their own. I like to break it down into five categories trees, shrubs, perennials, (somebody told me rock garden plants were really perennials regardless of how small), hardscape, and people, yes, people.

First, are the trees. I don’t like many as “Conifer Companions,” but I like some and I bet you can add some to my list. To start, I like small trees. There are not many of those, but an Aralia elata ‘Variegata’ fits the bill. You don’t see many in the U. S. and I like things that not everyone has. Heptacodium miconioides flowers very late into September and the sepals, which are after the flowers, are better than the flowers. It also has white bark which gives it winter interest. Another small tree you don’t see too often is the Chionanthus retusus which I call my olive tree. If you have a female plant, it will get green fruit, (the olive part) that turns a very pretty blue. I like this tree quite a bit. My brother and I also have several Acer palmatum, but they are in a pot, which we bring in on our unheated enclosed patio to keep them somewhat warmer in the winter. You see, they are not hardy in our part of Iowa. My favorite tree is our Stewartia koreana, which is the best tree we have in the garden. It flowers around the 4th of July, has great fall color, and the bark is outstanding year around.

There are many shrubs and I like to stay to the smaller size. The small daphnes are outstanding, and I have about thirty of those. Also, the small heaths and heathers work well. Heaths for spring bloom and heathers for late summer bloom are both evergreen for year-round color. Stay with the smaller ones as some of the larger ones are too big for companions. You may be surprised, but some of the rhododendrons work well. Rhododendron ‘Purple Imp’ and Azalea ‘Red Elf’ are two that come to mind, plus they are evergreen. Now if you like a challenge, Cassiope, Phyllodoce, and X Phylliopsis are what you want to give a try. They are very hard to find. They like acid soil and cool temperatures, which make them very difficult for me to grow in Oelwein, Iowa. There are other small shrubs that work well such as Gaylussacia brachycera, Kalmia latifolia, Pieris floribunda and many others that I bet you have given a try.

Now for rock garden plants, or is that perennials? It’s up to you. There are so many of these it is hard to know where to start or stop. To make it easier, I have a rule of thumb; the foliage cannot be taller than six inches. The flowers can be taller, but the foliage no more than six
inches. We can’t have that foliage hiding our small conifers, can we? A few that I like are Androsace primuloides ‘Yunnanensis,’ Aquilegia jonesii, Draba athor, Erigeron hybrida ‘Canary Bird,’ Gentiana acaulis and of course, the saxifragas. One that I especially like is Saxifraga ‘Rose Marie’ maybe because the flower stem is so short there is no chance to hide the conifer foliage. Now of course, there are many others that meet my stringent demands, but these are a few rock garden pants that I like.

From a gazebo to a path, everything that is not a plant is hardscape to me. You might have a fire pit, gnome house, bench, or a stream, that all qualify. My favorite we have is a teaching tree. Many things can be hardscape, but I think our teaching tree says it all. You can have a garden with a lot of neat plants, but you need hardscape to make it a true garden.

Finally if you remember, I said in the beginning you need people. You have to have people to make the gardening experience complete. These may be friends you have made at a regional or national ACS meeting. It might be those that have visited your garden. Or it may be friends at a Rendezvous in the Bickelhaupt Arboretum. Wherever you make gardening friends, they are the best friends you will ever have. So even though it seems impossible, there are other things besides conifers you can have and I hope you have a few.
Conifers in California? Who knew? There are many images that the mention of California conjure up. Some good, many bad I am sure, but conifers are probably not at the top of everybody’s list. As it turns out, California has more native conifer species than any other state, numbering 52, well ahead of second place Oregon, with 32 species. Several of these are endemic to California, not growing in the wild anywhere else.

In August 2016, 20 ACS members from the Western Region that either knew this, or took a leap of faith and joined for a three-day trip to the Eastern Sierra Nevada and White Mountains. This was the second Conifer Road Trip organized by the Western Region. We made the Owens Valley town of Lone Pine, which rests between these two 14,000+ feet mountain ranges, our base camp. Lone Pine is best known as the gateway to both the highest and lowest places in North America; Mount Whitney reaches 14,505 feet above sea level, and Death Valley is at 282 feet below sea level.

One of the requirements for these trips is to make them accessible for all fitness levels. There must be paved viewing areas, places to sit and rest, and they must have both easy walks and more strenuous walks to attract members of all ages and inclinations. We opted to carpool instead of hiring a bus which gave people scheduling flexibility, and fewer hassles. It was also less costly.

After a Friday evening get together in this hot, high-desert town, we started off early Saturday morning heading east to the White Mountains, home of the ancient bristlecone pine forest and Pinus longaeva (Great Basin bristlecone pine). Our destination was the Schulman Grove, at the end of the paved road at about 9,800 feet above sea level, where one can see 3,000 to 4,000+ year old Great Basin bristlecone pines. Getting there is a treat. You have to drive through the pinyon-juniper woodlands. These foothills of the higher mountains are covered in Pinus monophylla (single-leaf pinyon pine) and Juniperus osteosperma (Utah juniper). It was a banner cone crop year, and both pine and juniper were completely covered in female seed cones.

I am amazed by single-leaf pinyon pine and the differing shapes it
takes: fastigiated, conical, round, low-spreading. The diversity in shapes is amazing. Given that this pine comes in just about every shape imaginable, it is odd that the blue-green color is generally very consistent. Among the mature specimens, we noted a handful of witch’s brooms and dwarf seedlings. We also had breathtaking views of the Sierra Nevada Mountains to the west, home of the Palisades Glacier, the southernmost glacier in the United States.

Once we arrived at Schulman Grove, we checked in at the Ancient Bristlecone Pine Visitor Center and met our docent David Hardin, aka. Ranger Dave. Almost immediately we asked about the witch’s broom just across the dry creek from the visitor center. (I’m assuming this is the source of the named cultivar ‘Schulman Grove’) Ranger Dave gave a good presentation on the Great Basin bristlecone pine. He discussed the discovery of the truly old trees, and how researchers have been able to use both living and dead trees to go back over 11,000 years by overlapping tree rings from younger trees to older trees to dead wood on the ground, back and back. At this elevation, with the dry weather and very low precipitation, dead trees do not decay, but rather erode. The old dead trees littering the ground appear to have been sandblasted, giving them a remarkable texture. Dating trees like this back so many years also enabled researchers to calibrate carbon dating of other ancient finds. It turns out the carbon dating model was considerably inaccurate, and archeologists now have coneheads to thank for the improved model!

After Ranger Dave’s presentation and Q&A, he brought out his ring borer and allowed us all to do some coring on the witch’s broom. Participants also requested seed cones for growing once the cones had ripened. Ranger Dave obliged several months later, sending cones from the host tree, and one cone from the broom. ACS member Paul Warnick, Arboretum Horticulturist at the University of Idaho, was successful in growing some seedlings. According to Paul: “Dave did send me one seed cone from the bristlecone broom. It only had a few weak looking seeds, so probably not too surprising that we only got one to germinate. We do have several seedlings from the parent tree and the other two cones he sent, so we should at least end up with some Pinus longaeva in the Arboretum. And, the single surviving broom seedling looks good so far, so there is still hope there as well.” Success! I guess it helps when you have an expert like Paul, not your typical hobby gardener like me.

It appears the ancient bristlecone pine forest is mainly a draw so people can see the oldest living things on earth, but their beauty is stunning. The forest is almost exclusively Great Basin bristlecone pine, with an occasional Pinus flexilis (limber pine). Nearly every tree is unique in shape and sculptured appearance. Portions of a tree often will die, while other parts continue to grow. Sometimes it appears that 90% of the tree is dead wood, with one branch keeping this ancient tree alive. The cones are also gorgeous. Female seed cones have a purple cast, while the male pollen cones look like ripe raspberries, sometimes completely covering the tree.

There are several trails one can walk and see these trees at the Ancient Bristlecone Pine Visitor Center. Some are short, easy strolls. The longest, Methuselah Walk, is four miles and has an 800 feet elevation change. Halfway through the Methuselah Walk is Methuselah Grove where the oldest trees live. Sadly they do not identify which is Methuselah, but it is very obvious these are some seriously old trees. Methuselah was over 4,600 years old when University of Arizona dendrochronologist Edmund Schulman discovered it in 1957.

For the really adventurous there is the Patriarch Grove, which is another 13 miles down the now-dirt/rock road, at an elevation of 11,000 feet. These trees are not as old as at Schulman Grove, but are truly spectacular. We chose to spend the day at Schulman Grove hiking, resting and picnicking, before heading back down the mountain to Lone Pine and dinner.

On Sunday morning, we went west into the Eastern Sierra Nevada Mountains. Our planned destination of Horseshoe Meadows had to be changed as the area was closed because of a forest fire, so we chatted about some options and came up with a plan that would allow us to see all of the same trees. We first stopped in the Alabama Hills, a brown granite formation with the appearance of weathered sandstone, complete with animal shapes and arches! We were fortunate enough to see all of the same trees.

Pine longaeva with witch’s broom 'Schulman Grove'

Bristlecone seedlings at 6 months.

Photo by David (aka Ranger Dave) Hardin
to have ACS member Don Antrim in our group. Don, a retired geologist, took time to explain how this entire formation lifted at one time, not over several periods, and how all of these amazing formations took shape. We did a short walk to Mobius Arch for a photo session before the high desert morning heat drove us up to higher elevations and back to our beloved conifers.

Our trek up into conifer country led us to Whitney Portal, the area at about 8,400 feet where there are campgrounds, and the trailhead to Mount Whitney. This lovely forest is home to *Abies concolor* var. *lowiana*, (Low fir), and *Pinus jeffreyi*, (Jeffrey’s pine), among others. The cascading Lone Pine Creek was still flowing, and the cool mist was a welcome relief to the high desert heat. We were able to lounge around taking in the scenery until it was time for lunch, under the firs and pines. We were surrounded by hikers who had just finished their trek down from the highest peak in the U.S., and the ever-present Steller’s jays looking for handouts.

After lunch, we drove back down into the valley and headed north 16 miles to the even smaller town of Independence, and turned west, up into Onion Valley. It is best to take this steep, twisting road slowly for safety, but also for the views into Onion Valley. The entire northeast face of the canyon—a couple of thousand square feet at least—is covered in green lichen. The green, steep granite cliffs with scattered pines and firs is a sight to be seen. While Schulman Grove is nearly a monoculture, Onion Valley has diverse selections of conifers. We strolled around looking at *Abies magnifica* var. *magnifica* (California red fir), *Pinus balfouriana* subsp. *austriana* (foxtail pine), *Pinus contorta* var. *murryana* (lodgepole pine), *Calocedrus decurrens* (incense cedar), Jeffrey’s pine and various witch’s brooms. The picnic tables were an ideal place to get out of the sun and enjoy the mixed berry pie from the Alabama Hills Café that morning. What a treat!

We had dinner in town that night and said our good byes, but only after talking about possible locations for our next road trip. Maybe you would like to join us April 27 – 29 in Southern California for the Rim of the World tour through the San Bernardino Mountains? We will spend Saturday night in the mountain resort town of Big Bear Lake, and Sunday visiting Bluff Lake, one of the few places in Southern California to see *Pinus contorta* var. *murryana* (lodgepole pine). You will also see *Pseudotsuga macrocarpa* (bigcone Douglas-fir), a California endemic, Low fir, Jeffrey’s pine, *Pinus ponderosa* (ponderosa pine), single-leaf pinyon pine, and even *Sequoiadendron giganteum* (giant Sequoia), not even close to its native range, about which I have a story to tell. Your only cost to join us is just your hotel, food and drinks, and transportation.

Maybe you would like to plan one of these trips in your own unique area? They are a lot of fun, both to plan and attend, provide great comradery, and very educational, for the host and the participants. In fact, many coneheads brought along spouses or friends, who, while not conifer aficionados, love the outdoors, are avid birdwatchers, or like to hike. They soon joined the conehead ranks.

Every region has interesting and iconic stands of native conifers. Plan your conifer trip today!
In the 2017 Fall Issue of CONIFERQUARTERLY, we looked at the threat invasive species pose to our environment and some of the economic costs. We also discussed our experience with some invasive species, and the importance of early detection if we are going to be successful in controlling, suppressing or, preferably, eliminating new invasive species. This article focuses on two invasive species that can affect a very large geographic area of North America.

Hemlock woolly adelgid (Adelges tsugae) was first reported in the eastern U.S., in Virginia in the 1950’s. Feeding on the sap of hemlocks, HWA increases in numbers until the health of the tree declines, the needles drop, and the tree dies. This can take as little as two years. The range of HWA is now Maine to South Carolina and west into Ohio, Pennsylvania, Kentucky and Tennessee, with an expansion rate of about 15 miles per year. Both northern hemlock (Tsuga canadensis) and Carolina hemlock (Tsuga caroliniana) are preferred hosts for the woolly adelgid, which has now killed tens of thousands of trees. In some areas, over 80% of the native hemlocks have been killed. DNA evidence indicates the HWA found in eastern North America likely came from Japan, not from the western U.S.

Hemlock woolly adelgid was first reported on western hemlock (Tsuga heterophylla) in the 1920’s. Western hemlock and mountain hemlock (Tsuga mertensiana) appear to be resistant to HWA. Some spruces (Picea) of Asian origin are reported to be alternative hosts, but seldom are.

Winter is the best and easiest time of the year to see hemlock woolly adelgid. Simply look at the base of the needles, where they meet the twig, for the distinctive white tufts. If you are monitoring in mature forests with large hemlock trees, binoculars can be helpful. If you are in an area that does not have an established population, and you discover HWA, please take photos and inform your state Department of Agriculture, the Sentinel Plant Network, or the National Plant Diagnostic Network.

In many areas, hemlocks are under quarantine and cannot be moved unless certified to be adelgid-free. Please respect such quarantines and prevent the more rapid distribution of hemlock woolly adelgid.

Asian longhorn beetle (Anoplophora glabripennis) is a more recent introduction to North America, first identified in the U.S. in 1996. Asian longhorn beetle has been discovered and suppressed many times in areas including Chicago, Illinois, New York City, Cincinnati, Ohio, Boston, Massachusetts, and New Jersey. The introduction of ALB is usually associated with solid wood packing materials from Asia, and the beetle can be moved in logs, firewood, and other wood products.

Asian longhorn beetle attacks at least 18 species of hardwood trees, including maple, birch, horse chestnut, poplar, willow, elm, ash, and black locust, with maples the preferred host. ALB attacks both stressed and healthy trees. Tree mortality is the most readily identifiable symptom, but bark cracks and branch dieback usually are apparent before death.

Female adult ALB lay eggs...
in divots they chew in the bark. Larvae develop in the sapwood and then move into heartwood where they mature into adults. The sapwood feeding interferes with xylem and phloem transport of the host trees, eventually resulting in the death of individual branches or the entire tree. Emerging adults leave distinctive holes about 3/8 inch in diameter, a little larger than the diameter of a pencil. Exit holes can be virtually anywhere on the tree and can number in the hundreds. The adults emerge usually between June and October. While seldom seen unless the host tree is cut, larvae are yellowish-white grubs of up to 2 3/8 inches long and of up to 3/8 inch wide.

Adults beetles are very large, from one inch to one and one-half inches long and have banded black and white antennae at least as long as their bodies, and usually longer. The body is shiny-black with white spots. In some regions of North America, there are other borers that can look similar. Capturing an adult and providing it to the National Plant Diagnostic Network is the best way to affirm its identity.

You can help in monitoring for invasive insects by being aware of what is happening in your garden. If you see something that looks suspicious, take a photo and then contact a Sentinel Plant Network member garden for help in identifying the insect or disease. The USDA provides additional information, educational modules and trainings at https://firstdetector.org/

To learn more about either hemlock woolly adelgid or Asian longhorn beetle, please call any of the Sentinel Plant Network member gardens of the American Public Garden Association, or visit www.bugwood.org

The Center for Invasive Species and Ecosystem Health at the University of Georgia provided much of the information for this article.
Of late, I have been experimenting with conifers not rated as hardy for my USDA Zone 5. Some say I live now in Zone 6, but I am not certain of this.

All I know is that conifers that are “soft” to my zone have been appearing at my usual conifer haunts. They include: *Cupressus x leylandii* ‘Irish Eyes’, *Pinus thunbergii* ‘Thunderhead’, *Cedrus deodara* ‘Electra Blue’, *Cedrus libani* var. *stenacoma* and *Cupressus glabra* ‘Blue Ice’. I could not hold back on buying them. Their texture, color and shape are way too enticing to pass up. Then, of course, is one of my all-time favorites, *Sciadopitys verticillata*.

‘Irish Eyes’ Leyland cypress has been in the ground for three winters; this will be its fourth. It’s a beauty with wispy foliage, almost lime-green in color. The first season I wrapped it in burlap. For the second winter, I protected it with stakes and a burlap screen. When the third winter approached, I wished it “good luck” and did nothing. Each year after spring arrived, ‘Irish Eyes’ came back bigger and even more colorful. Last winter, it lost its top three inches to frost. However, the plant was undeterred. It flourished this past spring and summer.

My conifer confidant, Jon Genereaux, told me to wrap the Japanese umbrella pines (both of which came to my garden via ACS meetings) in burlap. Those two little trees are my 7th and 8th attempts at growing the...
plant in my garden. Attempt #7 made it through last winter. It was planted behind a giant, sculpted *Pinus sylvestris*, which I had bare-root planted in 2002. I moved the umbrella pine away from a brick wall which caused it to burn a bit because of reflected, radiant heat. It’s still protected today by its bigger brothers and sisters, as is #8.

The idea of “protected planting” has become the basis of my experiment. I use other Zone-suitable conifers as wind and sun blocks. Two ‘Thunderhead’ black pines have been happily flourishing and growing nestled among other conifers for three years. A very large one succumbed to the polar vortex of 2014. It was 7’ tall and magnificent. That winter burned it totally all the way down to the snow coverage. It subsequently went to the burn pile. The two nestled ones are so pretty and have been vigorously growing for three years.

I have left the ones I worry most about until now. ‘Electra Blue’ and ‘Blue Ice’ could become victims if another polar vortex sweeps in. ‘Blue Ice’ is awaiting its second winter. It stands with a very large *Abies concolor* between it and the southern wind and sun. Last winter it did suffer some winter burn to its older foliage, but it continues to glow that lovely powdery-blue. ‘Electra Blue’ is really pushing the envelope. *Cedrus deodara* in Zone 5? I adopted it while protesting its chances with my local nurseryman. Time and Old Man Winter will tell. *Fortsezung folgt* as Martin Luther once said. (More to follow) in the spring.

I left cedar of Lebanon second to the last. In The Harper Collection at Hidden Lake Gardens there stands a very large *Cedrus libani* var. *stenacoma*. Jack Wikle, former curator of The Harper Collection, tells the story of its first winter as a rough one. It lost all its needles and
looked dead. Then came spring. It came back strong and hasn’t wavered since. My *stenacoma* is protected in my garden, surrounded by other conifers. Winter is the test.

The last conifer out of my zone and in my care is *Dacrydium cupressinum*. She came to me from the West and lives now as a winter-houseplant until spring comes. “Her” provenance is New Zealand. She could be a “he”, in that the plant is dioecious. It is now living in a moderately heated room with light on every sun angle except South. Its care is delicate. It requires average light and a moist soil. That all sounds rather labor-intensive, but, until spring comes, winter provides just the right contemplative time to fawn over *Dacrydium*. Once again, we will have to wait until spring to see if my newest conifer has found a comfortable home.

Why, you might ask, would I spend time and money trying to fit a square peg into a round hole? It’s the challenge and the desire to rescue conifers and then to test them. I am, after all, on the edge of a change of USDA zones. Our webeditor, Sara Malone, tells me that my Zone 5 is now 6a. That may help the plants that otherwise would not be able to survive in my neck of the woods. I suspect that some of you have planted conifers that push the envelope in your USDA zone. I would appreciate hearing of both your successes and failures; my greatest and most expensive failure being *Araucaria araucana* growing indoors, to which my friend Tom Cox said I was “touched” (in the head), meaning “crazy”. Tom, you were right. The monkey puzzle tree succumbed. A three hundred pound disaster!

As always, your contributions to *CONIFERQUARTERLY* are informative and valuable to our membership. Plus, I always enjoy reading them.
How the ACS found me: When I moved to Olympia in 2000 and started design on my landscape, I soon realized that dwarf conifers not only have year-round appeal with their endless array of colors, textures and form, but they are also highly collectable. I’ve always liked obsessively to collect things.

As luck would have it, as I began collecting plants in earnest, I discovered that ACS Founder, Bob Fincham, and his Coenosium gardens were within an hour’s drive of my home, and, coincidentally, that an ACS regional conference was to be held that same year in Olympia. The rest is history.

My relationship with plants: Legend has it that I was planting things in my parents’ back yard as a toddler and became interested in growing food as a teenager. After taking 20 years off for an Army career, I retired from the service and came back to plants with a vengeance.

My favorite garden: Without a doubt, my favorite place on earth to interpret and walk among outstanding plants is the Jean Iseli Memorial Garden in Boring, Oregon. Without the ACS, I would never have had access to these grounds.

My favorite conifer: I’m a huge fan of the Mediterranean firs, particularly Abies pinsapo, the Spanish fir, and Abies numidica, the Algerian fir. Their needles are unlike anything anywhere, more like a plastic hair brush than a plant. To challenge my inner artist, I’m extremely fond of the Japanese Black Pine, Pinus thunbergii. That’s a plant that simply begs to be pruned.

My most disappointing conifer: This has to be Abies veitchii, or Veitch’s fir. I’m convinced that it doesn’t like the climate of the western U.S. where summers are hot and dry. Its native mountains of Japan are much cooler and much, much rainier, and this plant doesn’t seem to tolerate it any other way. This is a shame, because it’s a magnificent tree.

My roles within the ACS: I see myself as the consummate conduit. My favorite aspect of the Society is the opportunities for networking — the ability to connect really cool people with really cool plants. I try to do this for others whenever possible.

I look at the ConiferBase as my legacy to the world. Obviously, it’s a huge project that, by its very nature, will never be completed. However, within a few years, it’s going to be an amazing, concise, always up-to-date reference that will be of great value for generations to come.
Just as becoming a member of a book club might expose us to literary genres we may not have explored, belonging to a generalist plant group such as one of the hardy plant societies can open a garden gateway to unfamiliar genera. Our Hardy Plant Society membership has led Pat and me to join other garden clubs and plant societies that have more focused interests. Over the years we have dabbled in daylilies, flirted with ferns, and tinkered with tulips. We are now contented members of the American Conifer Society and recently attended the three-day Western Regional Conference held at the Oregon Garden Resort.

The very well-run conifer confab included learned lectures, fabulous food, awesome auctions, detailed demonstrations and transported tours to key conifer sites. The opportunity to visit the Jean Iseli Memorial Garden would itself have been incentive to sign up. Iseli access is strictly controlled. Their internet homepage declares: “Thank you for visiting Iseli Nursery on the WEB!”; however, their mature three-acre display garden abutting the business building is not open to the public. This is a disappointing but reasonable management decision.

The Iseli staff was warm and welcoming for our walk around and each of us left with a living souvenir. With over four decades in business, over 100 acres, over 100 employees, Iseli is an over-the-top provider of “well-mannered landscape plants”. The garden itself is a living product catalog of current and past offerings. For retail buyers, seeing an Iseli tie-on tag on a plant is a reassuring sign of excellence.

The hub of the conference was the one-acre conifer display within the Oregon Garden. It is a living museum of *Pinophyta*. Drop-ins here are highly encouraged, and lucky visitors may encounter de facto curator and head cheerleader Doug Wilson, constantly
improving an already remarkable site. Though it occupies only a small percentage of the property, the conifer collection is a destination unto itself. This is a generous garden, the consequence of uncountable gifts of time and materials. Have you made the acquaintance of *Abies pindrow*, the west Himalayan fir? I had not. *Pindrow* sports soft narrow needles on long pendulous limbs, seasonally ornamented with oversized blue-gray upright cones. This fussy fir wants lots of rain, is frost-tender, and is infrequently found in gardens. The good-sized tree was donated by one of the many nurserymen, gardeners, collectors, and enthusiasts who selflessly contribute to Wilson’s Wonderland.

The American Conifer Society has been collaborating with accessible conifer collections throughout the United States to increase public awareness of their namesake. Currently, 40 Conifer Reference Gardens have been designated nationwide with only nine of these located west of Missouri. These are truly gardens for everyone. Plants are clearly labeled. Educational exhibits entice visitors to explore more. The Oregon Garden collection is a college of conifers set amongst a collage of companion plants.

Nathan Miller is chief of stuff for Fresh Start Nursery, his conifer conatus, co-located with Miller’s Manor Gardens, in Canby, Oregon. The ultimate delight in visiting Fresh Start is that not only will you see hundreds of different rare and unusual conifers, but you can even take them home. These plant wonders could not exist without the science of grafting, and Nathan is a crafty grafter. The survivability of a grafted plant depends on the skill of the propagator, just as the survivability of a medical patient may directly correlate to the skill of the surgeon. Nathan’s conifer competence is widely acknowledged, and the scene of swarming coneheads descending from the tour buses and thronging toward Nathan’s tiny treasures was reminiscent of a packed pond full of koi being thrown handfuls of Cheerios.

We came away from Fresh Start with several gems including *Cedrus atlantica* ‘Sapphire Nymph’. I love this plant. It makes me think of waves crashing on coastal rocks. This rigid sea-blue dwarf will grow a foot high and thrice as wide in 10 years, or it can be staked to grow higher and then deep. The American Conifer Society has selected ‘Sapphire Nymph’ as a Collectors’ Conifer of the year for 2018, the MVPs of the “Garden Bowl”.

What about those awesome auctions? Silent and live auctions are common fare at fund raisers, but the enthusiasm level among confessed coneheads for an ACS auction easily rivals that at Christie’s or Sotheby’s. Pat and I get giddy over strange species. *Pinus tabuliformis*, the Chinese red pine,
was a new species for us. *Tabuliformis* is uncommon outside of China and rarely found in western gardens. At home this table-shaped tree (thus its name) grows quickly to 60 feet and has uses ranging from construction to constipation relief. This got even better. Shouting at me from its three-gallon pot on the preview table was *Pinus t.* ‘Jiuzhaigou Valley’ a witch’s broom, a living anomaly from its parent tree. Not only was this specimen happy and healthy, but it was a conifer with a connection. The Jiuzhaigou Valley is a nature preserve in Southwestern China, named by UNESCO in 1992 as a World Heritage Site. A literal translation from the Chinese is “nine village valley” from the nine Tibetan villages originally sited there. The valley is treasured for its other-worldly landscape and is a favorite place of our wandering son. ‘Jiuzhaigou Valley’ is a pyramidal dwarf that will only grow two to three inches each year.

Silent auctions require strategy, skill, and spirit. Live auctions are much more straightforward. When the auctioneer asks for an opening bid, you put your hand up. You leave your hand up until the room is quiet, then you pay for your prize. We hope our plant will enjoys its transition from Sichuan to Salem.

The American Conifer Society will hold its 2019 national meeting at the Oregon Garden Resort. We will be there. You come too! Don’t miss the national meeting in Charlotte, North Carolina, either.
As some of you are aware, several years ago I was diagnosed with a rare muscle disease which is slowly taking its toll on my ability to travel, garden and perform normal daily functions, such as walking. While reluctant to do so, I only mention this in order to bring context to this article.

As many of our members can relate, age in and of itself gradually slows us down. If you are like Evelyn and me, and love to travel, the notion of a “bucket list” starts to dance around in your head. You begin to ask yourself, in the time I have left, where do I want to visit and how much can I pack in? How do we balance cultural activities with the unending desire to visit gardens and travel into the wild in order to observe plants in their natural environment?

Evelyn has always been keen to attend the Australian Open Tennis Grand Slam in Melbourne, Australia, and I have wanted to visit some of the gardens in and around Melbourne, Sydney, and Hobart, Tasmania. This would require some delicate balancing of competing interests. For starters, I am a member of the International Dendrology Society, and one of the Australian members put me in touch with a fine gentleman named Alistair Watt. Alistair is noted as having the best conifer collection in Australia. After a brief introductory email exchange, we were invited to spend our first night in the country with him and his wife Julie. After our arrival in Melbourne, we picked up a car and headed south on the Great Ocean Road to a small town where they live, named Lavers Hill. The scenic drive along the coast through the picturesque towns of Lorne and Apollo Bay took over 4 hours. This drive was highly recommended by fellow ACS members Joe and Jan Hallal and did not disappoint. Along the way, we would spot our first Koala bears and several colorful bird species.

Upon our arrival, both Julie and Alistair warmly greeted us in their driveway. Any concerns about intruding were quickly vanquished. These were down-to-earth people who appeared genuinely happy we were visiting them. All around us were conifers from the four corners, and most were mature; suggesting Alistair had been at it for a number of years. Outside of Bedgebury, their garden represented one of the best conifer species collections I had ever seen. While many were familiar, there were some from areas such as New Caledonia and Fiji which had never crossed my path, except as conservatory plants in places such as Edinburgh, Scotland, and Atlanta Botanical Garden. I am guessing he was Zone 8b and in some pockets Zone 9.

Alistair related that most all the material in his collection was wild, collected with a specific focus on species from the Southern Hemisphere; having made many collecting expeditions to New Caledonia, Chile, Fiji. He also cultivates a large number of conifers from the Southern Hemisphere.
All too soon the sun disappeared, and we were being summoned to an Australian family home cooked dinner. This was so much nicer than eating in a restaurant. Conversation ran the gamut from plant collecting, to history of Australia and everything in between. It became obvious that Alistair and Julie were well read.

The next morning, after a delicious breakfast, the Watts drove us to a rain forest where we were surrounded by huge ferns and other angiosperms. It was here we encountered our first glimpse of wallaby which remotely resemble kangaroos. Mid-morning we returned to their home for a quick good-bye to this splendid place. They invited us to extend for two more nights, but holding to the commitment I promised for balance, we regrettably headed for Melbourne.

On a final note, Alistair is writing a book on the great plant explorer Robert Fortune, for which I hope to offer a review. For those interested in further world exploration, here is an excerpt from my most recent e-mail from him regarding travel in China.

The highlight at the end of our trip was a visit to the fabulous Tianmushan to the southwest of Shanghai. Here at 1,100 meters there are huge Ginkgo growing wild in a superb forest also with gigantic 1,000-year old Cryptomeria with Torreya, Emmenopterys henryi, Liriodendron chinensis, and evergreen oaks. However, I must confess that the best for me was seeing the wild Pseudolarix amabilis at 45meters in height. The best bit is that we did not have to walk up to 1,100 meters -- there is a tourist road and tourist shuttle buses up to that altitude, made of slab paths through the forest! However, we did decline to hire the mountain sedan chairs.

Our next stop was Melbourne, where we spent four exciting days. Significant among the activities was attending the 2015 Australian Open Grand Slam tennis event. This is a well-organized venue, and transportation to and from the stadium was easy via a train near our hotel. No visit to Melbourne would be complete without a visit to the Royal Botanic Gardens (RBG). Upon our arrival, we were met by Ms. Jenny Happell, who works as a guide, and Dr. Roger Spencer, Senior Horticultural Botanist, who happily had arranged for a motorized cart. The grounds are vast, and the cart afforded the opportunity to see the entire property.

Knowing that we had a special interest in conifers, great care was given to make sure we saw the extant specimens. This is a species garden with the largest examples of Keteleeria fortunei (China), Cupressus torulosa (India, Bhutan and China) and Pinus patula (Mexico) I had ever encountered. These were trees, the size of which one only reads about in plant books. The garden offers the visitor an opportunity to see a number of rare conifers as well as flowering trees and shrubs. Like all gardens we visited, RBG Melbourne is well maintained, the plants are well labeled, and the setting is stunning.

After a brief plane ride, our next stop was the beautiful city of Sydney. I tend not to be too excited these days by large cities, but Sydney was an exception – great restaurants, hotels, friendly people, and always a sense of feeling safe.

Upon arrival, we were met at our hotel by Stuart Read (also a member of the International Dendrology Society), who is in charge of city planning for Sydney. This turned out to be a most fortunate contact, as Stuart approves all tree selections and planting as well as all architectural designs. As such, he has a unique view of all things horticultural. After arranging a harbor tour on one of the ferries, we took a casual stroll through beautiful tree-lined neighborhoods where he pointed out significant trees and buildings. Later we went to dinner in some obscure back alley with hundreds of decorative birdcages strung across the street – which one would only find were one in the know. At the conclusion of dinner, Stuart presented me with a

non-coniferous genera including rhododendrons from China. I was particularly impressed that he was the founding President of the Australian Conifer Society and served in that capacity for many years.

He has freely shared material with other botanical institutions within Australia. Significant in his plantings were large specimens of Araucaria laubenzelsii, A. montana and Agathis ovata, as well as a large collection of Mexican pines such as Pinus patula. On the very rare side, were conifers such as Dacrydium guillauminni, Acropyle sahniana and Neocalitropsis pantheri. For me this was rarefied air, and I felt fortunate to be in the midst of a conifer giant in a one-on-one environment.
handwritten list of conifers we should see the next day during our visit to RBG Sydney.

It is funny how, if you’ve been at something for a long time, people re-appear in the most unusual settings. Way back in the late 1990’s I visited the Dallas, Texas, arboretum and established a relationship with their senior director, Jimmy Turner. Jimmy is now the Director of Horticulture at RBG Sydney. The Royal Botanic Gardens is a major botanical garden located right in the heart of Sydney. Opened in 1816, the garden is the oldest scientific institution in Australia and one of the most important historic, botanical institutions in the world. Its stunning position is on Sydney Harbor, overlooking the Sydney Opera House and a vast expanse of large public parklands.

While Evelyn toured the Sydney Opera House, I was escorted around the gardens; taking great care to see their magnificent collection of conifers. This was the equivalent of a hop-on/hop-off tourist bus, except better. Like the other Royal Botanic Gardens of Australia, this is a species collection which is comprised of conifers from around the globe. Of particular note was a well-formed specimen of **Glyptostrobus pensilis**, which is native to subtropical southeastern China and northern Vietnam. The species is listed as critically endangered and is nearly extinct in the wild due to overcutting for its valuable decay-resistant, scented wood. Most specimens I have observed (even in China) tend to be rangy and not particularly garden-worthy. The lone exception are trees growing at the Lovett Pinetum in Angelina, Texas, which was started by ACS member, Dr. Bob Lovett. As an aside, if you ever find yourself in east Texas, this is well worth a visit. We also grow several specimens here at the Cox Arboretum, to include one which is getting on nicely after a bear climbed it and broke off the top 6’.

Many of the extant conifers at RBG Sydney are clustered in an area very near the café where Evelyn and I enjoyed coffee with several of the arboretum’s staff. It was then on for my tour with their top conifer expert, Peter Sweedman. As he whisked me from plant to plant in a motorized cart, it was — Conifer overload!!!

We spent a total of 4 days in Sydney and, thanks to a great transportation system to include the hop-on/hop-off sightseeing bus, we covered much of this leafy city. It was a thrill to visit the famous surfing area on Bondi Beach, which was heavily planted with **Araucaria columnaris** (Cook pine) and **A. heterophylla** (Norfolk Island pine).

Our final stop in Australia was on the island of Tasmania and the capital, Hobart. Regrettably, we only scheduled 3 days here, which was not nearly enough time to explore. As was the case in previous cities, the highlight was our day at the Royal Tasmania Botanical Gardens. While this is the second oldest garden in Australia, it seemed much older than Sydney. As I reflect back, Sydney had more modern structures where this garden oozed with old-world charm.

For starters, there are the Historic Walls, which were constructed in 1829 as a measure to shelter more frost tender plants. Constructed by convicts, the walls provide structure and unique heritage value to the Gardens. Other significant structures include the Anniversary Arch built in 1913, and the cast iron entrance gates constructed in 1878. The garden is widely known for its collection of conifers that was started around 1859, with certain conifers arriving almost at the same time as they were introduced into England (for example **Sequoiadendron giganteum**). It was a special moment to see ancients such as Wollemi pines (**Wollemia nobilis**) flourishing alongside **Metasequoia**.

If you travel to Hobart, be sure and allot time for a drive up to the top of Mount Wellington for a spectacular view of the city. Rising 4,163 feet, there is a narrow road (Pinnacle Road) you take to the summit. The day we went, the weather was cool and windy, and we were the only visitors. The flora and terrain were quite varied as we made our way to the top. At some point, we climbed past the tree line and into a dense fog, punctuated by a rocky, tundra-like landscape. Reminding us of Nothing, this place is definitely unique and worth the time. On the way back, we stopped at the Cascade Brewery which was established in 1832, and is the oldest continually operating brewery in Australia.

Tom’s trip continues in Russia in the Spring issue of **CONIFERQUARTERLY**.
The ACS Southeast Region will host the **National ACS Meeting from June 14-17, 2018**, followed by a **post-meeting tour from June 17-18, 2018**. Our host city for the meeting is Raleigh, NC, and we will stay at the Embassy Suites-Raleigh Durham Research Triangle in Cary, just outside of Raleigh. We have some beautiful gardens and events lined up to see and do. This article only highlights these events.

To learn more about the speakers and gardens, see the related articles in this issue or in the Summer and Fall editions of the *CONIFER QUARTERLY*. This information also appears on the ACS website, your up-to-date all-inclusive source of meeting information!

Raleigh is the capital of North Carolina and is known as the “City of Oaks”, for the many oak trees which line the streets of the city’s center. It is one third of North Carolina’s famous Research Triangle and leads the nation in many recent “quality of life” rankings. Its Southern cuisine is famous and is augmented by craft brews and delightful music. Raleigh is rich in history, culture, education and beauty, and is a destination in itself. We encourage you not only to come to the national meeting, but also to add a day or two on either end and explore Raleigh and its environs.

**Thursday, June 14**

If you get in early and want to see two great private gardens to start off your weekend, stop by Amelia Lane’s and Brandon and Ashlee Duncan’s gardens. We just could not fit these great gardens on our tour, so we hope that you can. Information on these gardens is on the website.

Our meeting officially starts with no-host cocktails and dinner on Thursday night. Dr. David Creech from Steven F. Austin State University gardens in Texas will speak about *Taxodium distichum* (bald cypress). David spoke at the Southeast Region meeting in 2015 in Chattanooga. Many of us are now
growing plants he brought with him to that meeting to test performance in other areas of the country. David will give us an update on his work.

The silent auction will open on Thursday evening, too, and you will be able to bid on some very rare and unusual plants. The SE Region has 20 official reference gardens and many fine conifer nurseries that generously supply our auctions with wonderful plants.

**Friday, June 15**

Friday morning, after a delicious, made-to-order breakfast, we head to the Chapel Hill area to see the Unique Plant Gardens and then on to the Sarah P. Duke Gardens where we will stop for lunch. Make sure to look for the huge *Metasequoia* while at Duke, reported to be one of the original seedlings brought to the US from China and planted in the early 1940’s. After lunch, we will tour nurseryman John Monroe’s private garden. John is owner of Architectural Trees, a nursery that in the past was one of our go-to spots for conifers (they now specialize in other plants). Dinner will be at the hotel, and Tony Avent, of Plant Delights Nursery and Juniper Level Botanic Garden, will inform and entertain us with “Landscaping for Collectors”, a topic we can all put to use, as we plant our winnings from the auctions! Tony is one of the world’s most respected plantmen, and articles on his discoveries and exploits abound. You will find reports from Martha Stewart, articles in *The New York Times* and books he has authored, if you want to learn why hearing him speak and visiting his nursery are reasons enough to attend this national meeting!

**Saturday, June 16**

If you haven’t had enough to eat yet, you will have yet another opportunity with the hotel’s made-to-order breakfast. Afterward, we will tour the gardens of members Harrison Tuttle and SER newsletter editor Sandy Horn. Both gardens are unique and truly amazing. We will then visit J.C. Raulston Arboretum for lunch and a tour of the gardens. After that, we will go to the

John Monroe’s Garden. Photo by John Monroe
world famous Plant Delights Nursery and Juniper Level Gardens for the afternoon. We will tour the gardens and shop at Plant Delights, but save some money for the auction. Don’t worry, you will still have time to bid on those silent auction plants. The silent auction will end around dinnertime. Dinner will be followed by Mark Weathington’s presentation, “Collecting Conifers Around the World”. Mark is Director and Curator of Collections at the J.C. Raulston Arboretum. Mark, too, is well worth hearing, and we think you will enjoy his presentation.

The final event is the much-anticipated LIVE AUCTION, where some of the finest and rarest plants at the conference will be up for bid. Then comes the crazy half hour in which all of the silent auction plants are distributed to their new owners, who can leave with their prizes and whatever change remains in their pockets.

**Sunday, June 17**

The meeting is officially over Saturday night, but many regions have something called the “Morning After Sale”. We can’t talk about it here, as it is not officially sanctioned by the ACS, but, if you ask veteran members, they will tell you all about it.

We are looking forward to seeing everyone. Please check out the articles and website for additional information.

If this has not sent everyone into conifer overload, take a peek at what we have planned for the post-meeting tour in Asheville!

If you have any questions, please contact Jeff or Jennifer Harvey at 615-268-7089 or email: jeff@dirtdawgnursery.com.

**Convention Hotel
Embassy Suites Research Triangle**

201 Harrison Oaks Blvd, Cary, NC 27513
1-919-677-1840  Code: American Conifer Society
ACS rate of $132 + tax (guaranteed until – May 14th or sold out) includes breakfast. Online reservations can be made using the link on the ACS website
This year’s post-meeting tour is in a different part of the state from the national meeting—Asheville, NC! You drive about four hours across the great state of North Carolina along I- 40, into the Great Smoky Mountains. I-40 is better known to coneheads as the “conifer highway”, because there are so many gardens and nurseries along its length. There will be time to stop at a few, but not all, so plan ahead!

Why Asheville? First, because Asheville is one of the top vacation destinations in the country. Nestled in the mountainous region of western North Carolina, an area nicknamed “Land of the Sky”, Asheville is home to the Biltmore Estate, the largest private home in the United States, which offers a fabulous tour of the house and grounds. Asheville is also a vibrant arts community and has received accolades from national publications for a multitude of delightful attributes, from “Hippest City in the South” (Fodors, 2013) to one of “America’s Best Beer Cities” (Conde Nast Traveler, 2015) and one of the “10 Most Beautiful Places in America” (Good Morning America, 2011). Asheville should be on everyone’s bucket list!

ACS member Missy Galloway approached our planning group and asked if she could host a tour of her garden. She wanted it to be on tour in 2018, but the national meeting was already planned for Raleigh, and the tour gardens were already lined up. However, we needed a post-meeting tour location, so, here we come, Asheville!

Sunday afternoon, after we arrive at the Doubletree Hotel, in downtown Asheville, we will board buses to go to Chuck and Eileen Hutchison’s garden. Chuck was an NFL football player for the Cleveland Browns before he became a plant lover. We will spend the evening in his gardens and enjoy the dinner the Hutchisons are hosting.

On Monday morning, after breakfast, we will get on the bus for a fun day at Mr. Maples Nursery and the private garden of one of the owners. On the way, we will be stopping at the garden of long-time, ACS members Byron and Hazel Richards. They have been gardening on their property for 40 years. The Richards caught the conifer bug early and have been active members ever since. They have a wonderful collection of mature specimens!

Finally, we move on to the reason for holding the post-meeting tour in Asheville—Missy and Wayne Galloway’s gardens, where we will spend the rest of the afternoon. The Galloways have been working on and planning their summer retreat just outside of Asheville, on the top of a mountain, for
the last eight years. They have recruited help from our members and from great nurserymen Bruce Appledoorn, Michael Balogh, and Larry Stanley. Not only will we be seeing one of the most spectacular conifer gardens anywhere, but the Galloways will host us for a farm-to-table dinner on Monday night. To top it all off, Larry Stanley will be bringing a few choice rare plants for a post-dinner mini-auction. He hasn’t said yet what they will be, but I am sure they will be spectacular. Yet another reason that by itself should make any conehead not want to miss this meeting!

How will I get to the post-meeting tour?
If you want to fly to the national meeting, and then go to the post-meeting tour, how is that going to work? You can rent a car, and have complete flexibility, or SER member Jessica Roberts, (jes.hales@gmail.com), will help you find a ride. Please contact her if you can offer to take someone to Asheville, or if you need a ride from Raleigh. Don’t wait to register for the PMT, as we are limited to the first 90. If you attend the national meeting, you get first preference.

Biltmore Tour
Finally, if you just haven’t had enough of conifers and gardens and really want to make this a trip of a lifetime, you can book a special tour of the gardens at the Biltmore. The tour includes a discount ticket and tour of the conifer gardens. If you have never been there, it is well worth it! The guided garden tour is limited to the first 40 people, but, if you don’t want to take the tour, you can get a discount general admission ticket, for which there is no capacity limit.

Post-Meeting Tour Hotel
Double Tree By Hilton
Asheville-Biltmore
115 Hendersonville Road
Asheville, NC 28803
1-828-274-1800    Code: American Conifer Society
ACS rate of $129+tax (guaranteed until May 18th or sold out) Includes breakfast
Online reservations can be made using the link on the ACS website

For questions or more information, please call or email Jennifer or Jeff Harvey, the national meeting coordinators, at jeff@dirtdawgnursery.com (615-268-7089), jrosethorn@gmail.com

Wayne and Missy Galloway’s Garden. Photo by the Galloways
The new propagation model at Hidden Lake Gardens continues to be quite an illuminating experience, in every sense of the word. With 2017 behind us and 2018 chilling us with its winter winds, we have discovered new questions about plant propagation. We are diving into an expansion of our original model, feeling some trepidation and even some fear of failure. In order to succeed, our quest is to put together the missing pieces; it is much like seeing the pieces of a jigsaw puzzle spread out before us and then solving the puzzle. The pieces of information are there. They just await discovery.

Leonardo da Vinci had once said: “It had long since come to my attention that people of accomplishment rarely sat back and let things happen to them. They went out and happened to things.” Over the years, I have begun to grapple with the molecular machinery of conifers. A conifer is so finely tuned down to the quantum level that, first and foremost, we must allow ourselves to experience the awe and wonder of what has been created and also what is hidden from eyesight. The more we work at it, the more, piece by piece, the puzzle begins to reveal itself.

Our sun is by far the largest object in our solar system. As we gaze into the sky, we should marvel at its splendor and life-giving energy. Without the sun, all life on earth would cease to exist. It is often said that the sun is an ordinary star; however, for our earth and our existence, it is anything but ordinary!

The sun’s light, which is an electromagnetic spectrum, takes exactly eight seconds as both a particle and wave to travel 93 million miles to reach earth. In a stream of constant photons, the spectrum of the sun’s light envelops the earth day after day. Sunlight consists of 50% infrared, 40% visible, and 10% ultraviolet light. As a vital source of energy, sunlight is one of the factors that significantly influences the development of plants.

Theophrastus, a 300 BCE Greek native of Athens, was the successor to Aristotle and is considered to be the father of botany. Many of his words are still valid today. He said: “We must consider the distinctive character and the general nature of plants from the point of view of the morphology, their behavior under external condition, their mode of generation, and the whole course of their life.”

So why the blue wavelength?
Conifers acquire and use the electromagnetic radiation from millions of miles away to carry out various functions of life in complex reactions in every cell. Conifer needles convert photons of light energy in their chloroplast-absorbing wavelengths of light to stimulate the electron transport chain. When sunlight strikes the chlorophyll molecule, the energy excites the electrons passing from one molecule to the next, doing the necessary work of life. In common nursery practice, we propagate conifer species vegetatively. Propagations of these cuttings are generally performed during winter months after a minimum of 350 hours of vernalization (cooling). I have found that these woody cuttings do not thrive well in light values that are too low; they lose carbohydrates, especially glucose, too quickly, and also lose auxin before many can produce a sufficient number of roots to survive.

Light-emitting diodes (LED) are changing the future of propagation at Hidden Lake Gardens. The complicated nature of light has brought innovation in artificial lighting which has created sufficient irradiance to the root growth chamber, which we like to call the “photon molecular chamber”.

Plants absorb certain wavelengths of light. Photosynthesis is fueled by blue and red wavelengths of visible light, 450 nm blue and 660 nm red. This is where photomorphogenesis begins and cellular expansion promotes stem cells to become root cells and produce roots where none existed before at an accelerated rate.

As I wrote in the Fall CONIFERQUARTERLY article, the purpose of this propagation experiment at Hidden Lake Gardens...
was to induce cellular division to initiate root primordia, callus, and new roots within 30 days. We succeeded on day 21! The pigment cryptochrome is sensitive to the ratio blue. Blue light acts as an environmental sensor. Under predominately blue light only, we are turning on a switch to make molecular changes to produce root primordia at the earliest stages of development.

By introducing carbon dioxide gas, we keep the stomata open to allow carbon and oxygen to enter into the cuttings, in order then to drive the nonphotosynthetic cells to produce auxin.

Our recent experiment at Hidden Lake Gardens has shown real promise, and I have not formed my opinion totally, as of yet, because we are still learning, and our knowledge is not complete. However, this is a new season. We have begun a journey to find the optimal illumination and then to set in motion, with cutting edge ideas, all with a childlike sense of wonder. The truth is, they’re just beyond our reach, awaiting discovery.
Winter scene in the Cox Arboretum, Canton, GA. Photo by Tom Cox
Conifer Identification Contest

This quarter’s contest: Who can name this cultivar?

Contest rules:

Identify the conifer in this photo as specifically as you can. Genus, species, variety, subspecies, cultivar, etc.

Email your answer to conifereditor@conifersociety.org, or send a postcard to

David Olszyk
P.O. Box 5631
Lacey, WA 98516

The winner will be drawn at random from all correct answers received. Only one entry per quarter will be accepted. Only ACS members in good standing are eligible to take part. ACS Board of Directors and their families are ineligible to take part in this contest. We will announce the winners on this page of next quarter’s CQ.

Each quarter, the winning entry will receive a one year extension on his or her ACS membership. In addition, all correct answers will be entered into a yearly grand prize drawing of a voucher granting the winner free registration at an upcoming ACS National Meeting (an approximately $350 value). Deadline for submissions is February 15, 2018.
ACS Conifer ID Contest Winner
Congratulations go to Jeff Rattje, McCausland, Iowa, for correctly identifying *Pinus strobus* ‘Sea Urchin’ in the first ACS conifer ID contest.

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