BONSAI NEWS

September 2017

GREATER LOUISVILLE BONSAI SOCIETY

Ross Clark, editor

OFFICERS' CORNER

Greetings!

We have a special meeting planned for September 16, beginning at 1 pm. This is a get-together I'm sure you will enjoy and learn a great deal from. At that time, **Tim Weckman will doing a demonstration at Tom Holkamp's home, at 93 Walnut Grove Drive, Fisherville, Kentucky***. You're also invited to bring trees for critique and advice from Tim. We have asked him to bring an assortment of trees for sale to all members.

Thanks to Lee Squires for arranging this meeting. I have been in Budapest (yes, Hungary!) with my son. (That's another story . . .)

Good news! We finally have a club secretary! Bob Williams has agreed to serve as our Secretary. This is important position in the club that has been unfilled for quite some time. THANKS, Bob!

Our Board of Directors met August 2, and accomplished a great deal of organizing and planning. Our Board is doing a terrific job.

I would like to thank Ross Clark for his continuing work on our fine newsletter. And you might want to check out our new web site (see next page).

Best wishes to all,

Earl Ekman, President

***Editor's note:** As best as I've been able to tell, 93 Walnut Grove Drive (Tom Holkamp's home) is located out in very nice country, southwest of Shelbyville, near where Shelby, Jefferson and Spencer counties meet. You might need GPS or Google Earth to find it. We hope to see you there!

Golden larches, *Pseudolarix amabilis*

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WEB SITE **Louisvillebonsai.org** **or** **Louisvillebonsai.com**
Check out our **NEW** web site. Many thanks to Lee Hatcher!!

2017 MEETINGS OF THE GREATER LOUISVILLE BONSAI SOCIETY

(all meetings in Louisville, Eastern time, unless otherwise indicated)

SEPTEMBER 16, Saturday, 1 pm. Tim Weckman demo and critique; see page 1.

OCTOBER 19, Thursday, at Bon Air Library. Building of **bonsai show stands**. Sharpen your tools!

NOVEMBER 8, Wednesday, at Bon Air Library, time tba. **Important business meeting**. We will vote on our revised constitution and by-laws and plan 2018 meetings and events.

DECEMBER 2, Saturday, time and place tba. Annual **holiday party**.

Additional details will be published in this newsletter as they become available.

SOME 2017 SIGNIFICANT BONSAI EVENTS, EASTERN NORTH AMERICA (listed by date)

Additional events and details will be posted in this newsletter as details become available

Mid-Appalachian Bonsai Kai Show, Sept. 9-10, **Gray Fossil Site** (near Johnson City, TN)

Carolina Bonsai Expo, Oct. 13-15, North Carolina Arboretum, Asheville

An Evening of Bonsai with Rodney Clemons, Thursday, Nov. 2, 6-8pm, **Waterfront Botanical Gardens**, Sawyer Hayes Community Center, 2201 Lakeland Road, Louisville. This is actually an annual membership meeting of the WBG, but they are inviting folks interested in bonsai to join them. Admission: WBG members, free; general public $20; students with ID, $5. Information on how to obtain tickets and other details of this event will follow in a future issue of this newsletter.

Winter Silhouette Bonsai Exhibition, Dec. 2-3, North Carolina Research Campus, Kannapolis, NC

2018

American Bonsai Society Convention, April 19-22, Collinsville, IL (suburban St. Louis). DON'T MISS IT!
You could register today.

SOME THINGS WE KNOW ABOUT ROOTS AND SOME THINGS WE DON'T

by Ross Clark

Over the last few months, we've touched on the subject of the effects of temperatures on bonsai roots. So, I decided to dig a little deeper, even into the technical scientific literature, to see what else I could learn about it. I certainly haven't looked everywhere, but have looked in quite a few places. And what I found and not found is interesting.

I thought that soil temperature information for forests like the ones our bonsai come from would be all over the place. But I was wrong. I have looked high and low, in all kinds of places for hard data on soil temperatures in Temperate forests. I found useful information about urban, Australian, tropical, Canadian, European, high altitude forest soil temperatures, and a number of studies on what global warming might do to soil temperatures. There are a few places I did not look, because I would have needed to write for permission to download, and I didn't want to spend the time jumping through loopholes. For instance, Oak Ridge National Lab has data which is available, but not openly accessible to everyone.

However, I did find a little bit of information on the web at **www.asecular.com/forests/soiltemperatures**. Dr. Robert F. Mueller was a retired geologist who died a few years ago. For three years, he measured soil temperatures in three types of forests in Ramsey's Draft Wilderness Area, northwest of Charlottesville, VA (more or less due east of us) His results were published online under the title of "Forests of the Central Appalachians Project." His measurements were taken five inches below the soil surface. Measurements were taken in early April and mid-August. April soil temperatures (converted to Fahrenheit from his measurements) were in the mid- to high-40s. Mid- to late-August temperatures at five inches below the soil surface varied from 71 to 73°F over the three types of forest. Apparently, mid-winter temperatures were not measured because Dr. Mueller was in his 70s, and conditions were not favorable for being out in the woods in winter. What strikes me about his measurements is how consistent the summer readings were from one type of forest to another over a three-year period, and that the temperatures were no higher than the low 70s. This is a bit of direct experimental evidence that indicates the warmest soil temperatures that healthy roots of many bonsai species are adapted to are well below 80°F. That, of course, should make us realize that our bonsai root systems probably are under stress much of the time in the summer.

As far as I can tell, there have been no long-term studies about how temperatures affect tree root systems in their natural habitats. As far as I can tell, there have been absolutely no scientific studies of the temperature tolerances of bonsai root systems. There have been some spot-checks, but no situations where reliable scientific experiments have been conducted. Short-term spot-checking sometimes gives interesting results but does not give results that other people can rely on. The vast majority of studies on roots and temperatures have been done on a few cultivated plants, such as tomatoes, soybeans, corn and especially marijuana (imagine that . . .). Most of the temperature-root studies have focused on low temperatures, not high temperatures.

Here are some other things that we know about roots and related topics. We know that the root cells responsible for absorbing water and minerals are alive. They require oxygen; and apparently roots that are well-supplied with oxygen can absorb minerals (including essential fertilizer ions) more efficiently. That seems to be a logical argument, backed by scientific experimentation, that porous soil mixtures will keep roots healthier. Experiments with cultivated crops indicate that soil temperatures in the 60s to mid-80s seem to be a good range for roots. BUT, we should be aware that the crop plants that were investigated are all tropical and subtropical herbs, not temperate trees. There have been a few experiments with spruce seedlings that indicate that temperatures near freezing cause roots not to function well. However, on the other hand, it is also known that seedlings are much more susceptible to environmental extremes than more mature trees are. It is known that the efficiency of root absorption varies with temperature and is less efficient at low and high temperatures, but there are no specifics because all plant species react differently. (Similar to the fact that different people react differently to identical environmental stresses – I'm hot, you're cold; I get the flu, you don't, etc.) Because of global warming, there have been several studies over the last couple of decades on the effect of increased carbon dioxide on plant growth. Those studies have focused mostly on economically important crop plants. Some doubled carbon dioxide experiments have been conducted on trees and forests. The results I am aware of indicate that plant growth will increase, but that under warmer and higher CO_2 conditions, insects and diseases could become more of a problem. No surprises there.

Back to soil temperature, for a moment. Most of the outdoor bonsai we grow in our region have come from natural ecosystems that we call forests. We know that the temperatures of forest soils are buffered as to temperature. That means, forest soils do not change temperature rapidly, and the temperature swings in soils are not as extreme as daily air temperatures. Also, forest soils are insulated from the full effects of the sun by foliage and dead vegetation, such as dead leaves. Along the same line of thinking, when trees grow in rocky environments, the temperature of the rock mass doesn't change rapidly or much. And there is a lag time in how soil and large rock mass temperatures change. Our warmest air temperatures are in July, but the soil warms more slowly. And in fall, forest soil cools more slowly than the air. **All of these things are different in a bonsai container:** soil temperature changes are rapid; the temperature of the soil tends to approach the air temperature; if the container is in direct sun, the soil temperature will change more rapidly and become hotter; the temperature swings in smaller containers are much more rapid and extreme. We can reduce the extent and speed of soil temperature changes by several means, including making sure the soil remains moist, so it can cool by evaporation, blocking the sun by using empty pots, putting mulch on soil, white cloth, aluminum foil, setting containers on shaded masonry or the ground, or moving them into shade during hot periods. Another factor to consider is that some plants, such as spruces, larches and most birches live in soil that is never "warm", and that change temperature very slowly. It is very important that we know the natural environmental origins of the plants we grow. **The maps at BONAP are very helpful for estimating where all higher plants in the U.S. grow.** (The foregoing is a link you can click on.) And all you have to do to find out roughly how hot and cold it gets where s species grows naturally is to Google the climate data for a city where your species grows naturally.

From experience with nursery plants and bonsai, we know that roots are more sensitive to low temperatures than trunks and twigs are. It works best for fully temperate plants if the soil temperature slowly drops through the fall and into winter, instead of changing suddenly. Most fully temperate plants will tolerate root temperatures down to the mid-20s, IF the low temperatures are reached gradually and stay there for a while. However, again, all plants are different. For instance, I have found that at my location in east-central Kentucky, *satsuki* azaleas are not fully hardy outdoors in a mulch bed, but *kurume* and *kyushu* azaleas are fully hardy outdoors. Species such as limber and ponderosa pines and larches do better if the period of cold soil temperatures lasts longer, as it does in their native environments. Frozen winter soil for a couple of months would probably benefit them. So, a cooler outdoor location in both winter and summer would be a good site for them. For all outdoor bonsai, we need to let soil temperatures drop normally and gradually in the fall, and remain low as possible until after mid-February, when the sun begins to turn winter around. Fluctuation of soil temperatures in mid-winter is a potential enemy of hardy bonsai.

What we really need to minimize all this guesswork is a billionaire bonsai person who will fund some valid experiments on the environmental tolerances of bonsai grown in containers. And I'd like a magic carpet, and three wishes . . . and maybe a walk-in cold room where I could winter some bonsai., to avoid winters that become too warm and sudden cold snaps . . .

MISCELLANY

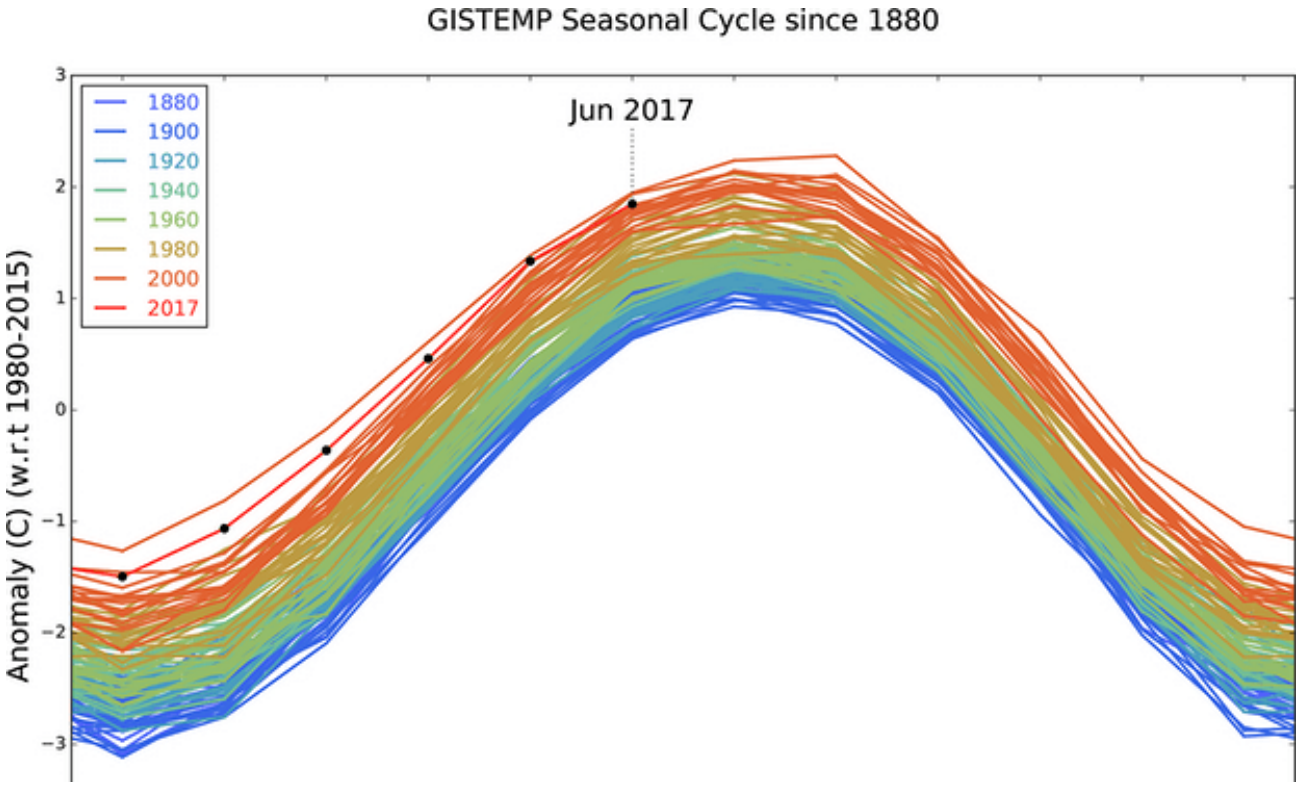
Can you spot the one who didn't pay the workshop fee? (Enlarge if necessary.)

From a troll of the internet . . . For sale, only $1300. A much 'nicer' $1300 tree than most, don't you think? What do you think, Dick Blayney? Hmmm...

SEASONAL SUGGESTIONS

It's hard to believe that another growing season is almost over. Those of us in central and eastern Kentucky have been lucky this year. They've had terrible droughts in some places, and terribly high temperatures in Europe, out West and in the central U.S. Hereabouts, we've gotten off without a severely long stretch of high temperature, and we've had plenty—maybe on the edge of too much—rain. One thing is certain: next year won't be exactly the same. Like farmers, we have to be prepared for anything, and keep alert to what might be coming down the pike.

I thought you might be interested in this **remarkable chart of yearly temperatures for the years 1880 through part of 2017** in the U.S. It was published by *The Guardian* (a British newspaper), but the data are from NOAA (your taxes at work, at least since 1915). To make it easier to interpret, each line is a whole year; imagine the months marked off on the bottom line of the graph. So, the first of January is on the extreme left and the 31st of December is at the extreme right. On the vertical axis, the "anomaly" scale is the difference between the normal temperature for months (for the entire 137 years!) and the actual average U.S. temperature for that month. Remember that each Celsius degree = 1.8 Fahrenheit degrees. So, what does this graph show? Well, to me, it shows clearly that the U.S. climate has consistently warmed since 1880, and that it is getting warmer faster now than it did earlier. It shows that recent winters have become **much** warmer than they used to be. Over on the right side of the graph, it seems to possibly show that it is staying warmer in the fall for a longer time than it used to – and this seems to be a recent development. We are fortunate to see this graph; perhaps it is politically significant that it was not published by a U.S. newspaper. But we're not about politics here. The temperature records in the graph simply show what they show.



FALL STEM THICKENING. September is a time when daytime temperatures remain rather high, but nighttime temperatures are beginning to drop consistently into the low 60s and 50s. Even though old leaves are not as efficient at photosynthesis, the day-to-night temperature spread helps plants conserve more of the food they make. This is the time of year when starch is accumulating more rapidly in roots and stems. This starch surplus is used to get plants through the winter and power next spring's burst of growth. The surplus food produced this time of year is also very important in the noticeable thickening of trunks and branches we see this time of year. So, if you have young trees, hold off pruning or trimming them until next month and that will give them more time to thicken.

FERTILIZER. Plants are getting ready for winter now, so you should hold off on the nitrogen fertilizer. In fact, beginning in early September, you might try leaving out the nitrogen entirely. Many bonsai growers omit nitrogen completely this time of year. 0-10-10 fertilizer is available from several sources. Phosphorus and potassium help fall root growth, help to harden tissues, and boost flower bud formation (think azaleas). By October, outdoor plants need no fertilizer at all.

CANDLE PRUNING. Contrary to what you might have heard, it is not too late to prune pine candles. In fact, September and early October are not bad times to prune them. If you prune in mid-summer and fertilize normally, new shorter candles with shorter needles will mature by late fall. However, if you prune pine candles in September and early October, new buds will develop through the fall and winter, which will produce needles of normal length next spring. Either way should encourage ramification or more branching.

FALL PESTS AND DISEASES. Don't neglect inspecting for disease and pests. This time of year, old leaves are ageing, so it is normal for more leaves to be shed. However, keep a sharp eye out for fungal infection. Late summer and fall also is a time when defoliating moth and butterfly larvae can strip a small tree of leaves in a couple of days. My advice is just pick 'em off and squash 'em instead of swatting 'em with powerful chemicals. Continue your choice of treatment for pine needle cast.

WINTERING PLANS. This is a good time to think carefully about where your plants will spend the winter. Outdoor plants will do best in a sheltered location that is not sunny and that has good air movement. Lack of direct sun in the winter will allow the soil temperature to drop normally and stay cool until spring—unless we have a crazy winter with some hot spells, which unfortunately is becoming more and more likely each year. Some plants, especially broadleaf evergreens such as satsuki azaleas, pomegranates, figs and other tropicals will need to be brought in. And some of the latter will need a dormant period, while others are capable of growing all winter under artificial light. So, it's time to plan for wintering.

A wonderful Ezo spruce in the U.S. National Collection (March 2017)

Have you seen these in your neighborhood yet? (The flesh-and-blood ones, not the bronze ones) If you haven't seen them yet, you probably will see them soon, most likely as road kill. Don't mess with them: they are known to carry leprosy. You heard it here . . .

This heat will soon cool—
And then some withered petals
May fall together rc

ADVERTISING (free to members)

SPECIMEN BONSAI FOR SALE

Sometimes it's worth it to take the time, expense and risk of traveling hundreds of miles and/or incurring big shipping expenses to buy a bonsai that has no special connection with GLBS. However, if a nice tree is available and the price is right, please also consider buying from fellow GLBS members. You might get a lot more for your money that way. It's one of the great ways to enhance your bonsai collection.

Trident maple grove (*Acer buergerianum*), five years in training, approximately 22″ spread, 28″ tall. Lovely Tokoname pot is approximately 18 × 12 × 2.5″ oval, glazed, Oribe with copper accents. $260. Contact Ed Stanton at (859) 552-8215 or <Stanton@uky.edu>

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To encourage advertisers to review and update their ads, we require advertisers to contact the newsletter editor at least once per year to request that an ad be continued or modified. All ads for specific trees should be accompanied by photos no more than six months old.

The Board has approved a new policy for commercial advertisers which will begin with the New Year. Additional information will be included in this section beginning with the next newsletter issue.

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