Camellia Koi Club

Koi Ahoy

Volume 14 Number 2 * February 2013 * www.camelliakoi.com

President's Message

By Jean Jahr

It was my first meeting as President. I learned a lot listening to Jim tell us about alkalinity. I still don't completely understand it all but, I know I'd better listen. That is why I joined this club in the first place – to learn. KoiUSA magazine heard about Jim's article and will print it in their next issue so everyone can learn from it. Sharing information is their primary goal. I think we may need to have Jim present it again when we can give him more time for questions and answers. We need to know these things. I am amazed at the wealth of knowledge in our club that is available to our members from the more experienced people who share with us their love of this hobby and their experience.

Inside this Issue

One of the meeting topics was whether to have a Koi show this year. Again, I don't know as much as others and I want to learn. Anthony Quintero will give a video presentation on how the Japanese have Koi Shows without setting up all those tanks. I'm told it is very simplified and much less work to produce and I am anxious for all of us to learn about it. We may start seeing more of this type of one day show around the country in the future.

Jerry reminded me to start thinking who we want to honor as Koi Person of the Year for 2012. We need to decide and let AKCA know our choice. Think about it. I feel there are a lot of good choices in this club. What do you think?

Michelle Reeser will host the meeting this month. She wants to build a Koi Pond on the ranch property. It is a horse stable and I was raised around horses and stables. My Mom and Dad both had horses and for the last umpteen years I lived on a farm in Round Valley, CA. Please plan to attend so Michelle can pick your brain for ideas. That's what we do – learn and share the knowledge..

Jean

Camellia Koi Club Report to AKCA

February 2013

A new year, new members, and a new president means new energy. The CKC has not had a Koi Show the last two years and is considering something new to us to get back to what we are all about. The club is strongly considering a different idea from Anthony Quintero of Koi Enterprise. Rather than the heavy work demands of all the tank requirements of a large Koi Show where the winners are the usual high end koi owners, a Bag Show limited to smaller sizes to encourage newer member beginners with newer, younger koi has raised interest. Keeping sizes to; under 6, 6 to 9, 9 to 12, 12 to 15, and 15 to 18 allows koi to be brought to the show, bagged in fresh water with oxygen, and placed on blue poly tarps. Listening to judges comments will be a great learning experience for beginners and a good refresher for older members. We should have more information by next month.

CKC Club Dues

CLUB DUES FOR 2013 ARE DUE @ $30/family
Personalized ID pins are available at $10/ea.

We have 59 families but a few of them have yet to renew. Reminder - send me a check or go to PayPal on our website, or pay at the next meeting, I'd appreciate it (Georgia). Let us know if you would like a personalized ID pin or two.

My address:

Georgia V.
881 Greenridge Ct.,
Lincoln, CA 95647

Photos from the January meeting

Submitted by our official CKC photographer Pauline Sakai

We had a fun time with Leslie and Gus. It was enjoyed by all. We hope you can make it to February's meeting.

	The Koi at the Cubillo mansion (LOL) greet CKC visitors.		Wide view of the pond.
	CKC members view the pond and its habitants.		Now that we have viewed the pond and munched, Jean prepares to call the meeting to order.
	Jim chats about water quality (see article in this month's issue).		Bob eyes the bounty. Decisions, decisions.

View of pond from inside the Cubillo home.

Leslie and Gus chat with Mary Beth on the deck.

Members share ideas.

The Cubillo scalies swim peacefully in their pond.

Tranquility is the Kanji symbol and the theme of the yard.

Contact your Board Members at:
CamelliaKoi@GMail.com

KoiUSA Rates Going Up

Do you enjoy seeing our club in KoiUSA Magazine? Have you noticed the broader range of articles with more focus on local clubs and ponds? Members Jim and Jerry will both have items in the next issue. The subscription rate will be going up by $5 in May so get your renewal in asap. Subscribe or renew your current subscription for two years and save $10. It needs to be done now.

Next Meeting

Anthony Quintero of Koi Enterprise will present a film presentation on a Japanese style Koi show using bags on a tarp and the advantages of such a presentation. This is something that is becoming very common in Japan. The Japanese judges like being able to move fish from different categories next to each other for best comparison. Such a show is also budget conscious.

Bring your munchies to share, a folding chair and a guest. If it is too wet or cold, we will be indoors.

12:00 noon Board of Director's Meeting
1:00 General Club Meeting

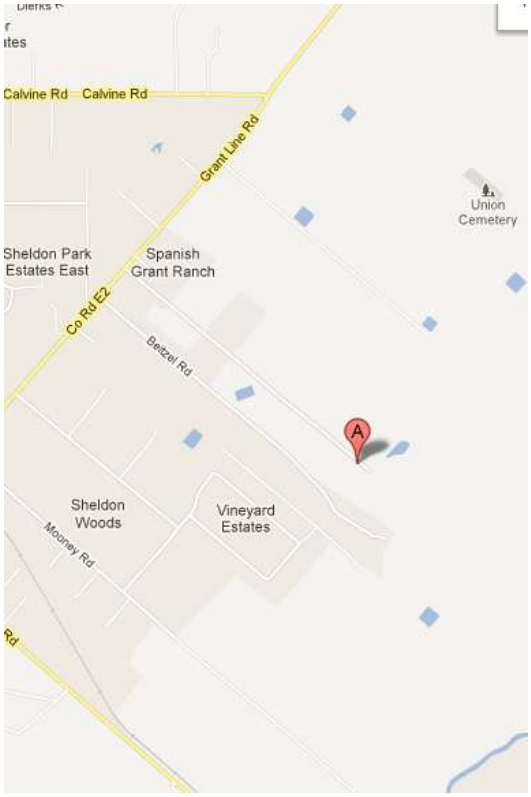
Everyone is welcome to join the Board of Director's Meeting. Come tell us your thoughts and ideas.

February 24

Michelle hosting at:

Brookside Equestrian Park
11120 Bradley Ranch Road
Elk Grove, CA 95624

Click for Map and Directions



Board of Directors Minutes

CKC Board of Directors Meeting Notes
Jan 27, 2013

Attendance:

Jean Jahr – President
Georgia Vonk – Treasurer
Sam Niebank – Secretary
Jim Phillips – Resident Water Master
Bob Haugland – Director
Jerry Kyle – Director (Past President)

1. Bank Account steady at $8200 – There have not been any major purchases for sometime

2. Show Discussion
    a. Small Fish Show w/Anthony Quintero
        - Based on size of fish
        - Would help club get back in to the swing of putting on a show
        - Low/No Cost to club
        - Would like to see size range from 6-18 inches – need to discuss with AQ
        - Motion carried to bring to the club membership for a vote
        - Motion Carried by membership to partner with AQ on Small Fish Show, date, location and details TBD.

    b. Put on a CKC Show
        - Cost to club is high – Would have to pay for everything (Venue, Chemicals, Water, etc…)
        - Would have to coordinate judges and their accommodations
        - Would need lots of volunteers - Lots of work
        - Have all the needed tanks
        - Could be overwhelming for club since there are only a few with past show experience

    c. Pond Tour

- Need to have 5-10 ponds in a general geographic area to limit the travel time between ponds
- Limited cost to club – Depends on what the club decides to sponsor
- Can be done in same year as a Show
- Hard to organize but has been done with success

3. Web Site
    a. Do we want to continue with ads
    b. Items to discuss with membership
        - Koi Ahoy articles
        - Commercial advertising
        - Policies and info on how to submit articles and classifieds.
    c. Website commercial advertising policies – have been posted on the site

Financial Report End January 2013

Reminder - If you haven't renewed, please send me a check, go to PayPal or pay at the next meeting, I would appreciate it (Georgia). My address is:

Georgia V.
881 Greenridge Ct.,
Lincoln, CA 95647

Beginning Balance	$8186.77
Income*	120.00
Expenses**	-42.34
Ending Balance	$8182.66

* Membership renewals

** January host fee ($40), PayPal fees ($2.34)

Did You Know?

Bog Gardens

By Garry Chin

Bog gardens are an ideal water feature if one has a small yard but would like to have a water feature. A bog garden is a water feature that is also not as complex as a fish pond. Small areas are generally easier to create and maintain as a bog garden. A bog garden is one of many kinds of rain gardens. They are shallow ponds, often with natural bottoms that are located in a low part of the yard. If you do not have a low spot in your yard, you can easily have one just by using a shovel. Building a bog garden is a great way to conserve water and add another element to your garden if you have a perpetually damp place in your yard that you've always considered a problem area, don't despair. Whether it's an area that doesn't drain well, floods periodically, or borders a pond or stream, let that unique situation become an intriguing, one-of-a-kind garden spot (as well as a wonderful habitat for wildlife) by selecting plants that thrive in moist places. A bog garden will work best in a partly shaded area (at the edge of woods, for example) but will also be fine in a sunnier place as long as the soil never dries out. Choose a site that remains moist but not soggy or flooded for extended periods.

While bog gardens cannot support water lilies or fish due to the lack of sufficient water depth, they can make an amazing showplace for a wide variety of marginal plants. In addition, bog gardens attract a variety of wildlife that adds as much interest as the plants do. A bog can exist independently or as an addition to a conventional water garden. While most bog gardens use flexible liner construction, you can transform naturally wet ground into an impressive bog garden.

Besides beautifying the landscape, bogs perform environmental benefits. They reduce runoff and help limit erosion by binding the soil together with their extensive root

system. Some homeowners employ bogs to disguise leech fields for septic systems. The bog's marginal plants work as nature's highly effective filter. Finally, bogs make habitat for wildlife.

Bog gardens require the least maintenance of water features and water gardens discussed in this series. Pruning, thinning, and dividing plants encourage vigorous growth. Pay attention to invasive marginal that strive to take over the bog. During long dry periods, natural bogs might require watering to prevent plant damage. Remember that bogs can be a mosquito breeding ground. Use an environmentally friendly aquatic insecticide to address this situation.

Designing a Bog Garden

Materials and Tools You Will Need in Designing a Bog Garden

- 50 feet of garden hose, stakes and string to plot the layout
- Large newsprint pad (18 by 30 inches) for sketching the design
- Books and magazine articles about bog gardening to evoke ideas
- Soil samples from your selected site

Step 1 - Choose the Location

A general rule for locating any water feature is locating it so that it can be viewed from the house which will increase your enjoyment and allow you to supervise it. **Be sure to control access to the water garden to ensure the safety of children.** A good view of the water garden will also help you spot unwanted visitors such as predators.

Decide if you want to grow sun- or shade-loving plants and can be made mostly level. The main viewing area (path) should be from the south side. When choosing the site of your bog, keep it above the lowest elevation of your property to prevent flooding. For a shady bog, pick an area of your yard near tall pines or other conifers, on the east or southeast side of your yard. For a sunny bog, consider an area on the south or west side of your property, not shaded by any trees. Take a soil sample from the area to determine the soil composition; dig down at least 3 feet. A loamy soil with a high clay percentage is best suited to a bog garden.

You can use rope or garden hose to mark an outline which will be the perimeter of the bog. Leave a 6-8 foot space on the north side of this bog if you plan on using large background plants such as Iris pseudacorus, Hibiscus coccineus, etc. Large plants must not shade out the bog. Bog gardens also can be placed along the edge of a water garden. Another consideration is the placement of a footpath of substantial flat stones that will facilitate gardening chores and leisurely strolls.

Step 2 - Sketch the Shape of Your Bog and Outline It on the Ground
On a newsprint pad, sketch an outline of your bog. A randomly curved shape will be most interesting. The bog bed can be terraced, so plants which prefer the driest conditions will be at the top and those that like the dampest conditions at the bottom. Include paths through your bog garden to make weeding, deadheading and thinning easier. You can use stepping stones to mark paths in the finished garden. Use the garden hose, stakes and string to outline your bog in its proposed location.

To be continued next month.

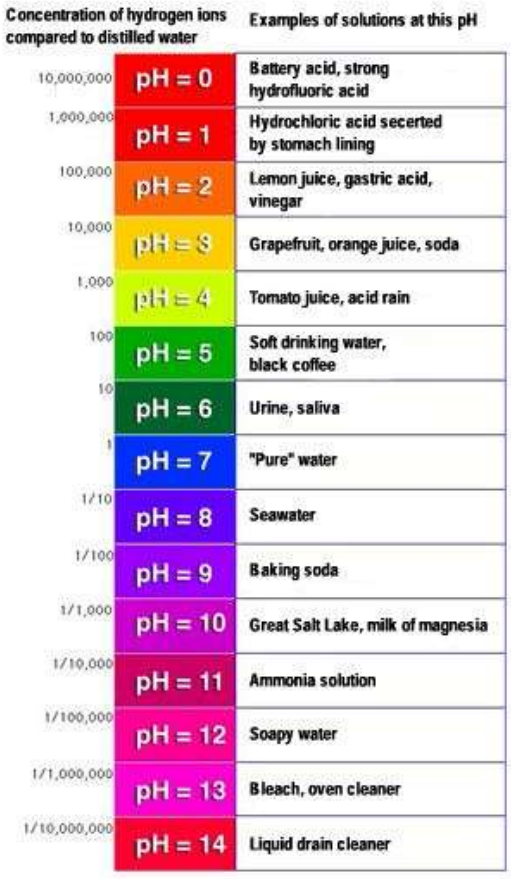
Do you have any questions?
Contact Garry at: scvkoi@yahoo.com

A few Koi swimming in the sun

Alkalinity, pH and Acid Rain

By Jim Phillips, KHA
February 2013

Until last year, I thought I was a pretty competent pond keeper. I was, after all, Mr. Water Quality for my club. Maybe Arrogant Mr. Water Quality would have been more appropriate. Until last winter, I was certain that because I had a gunite pond, I was protected from pH crashes because gunite ponds leach out carbonates that buffer against low pH. Consequently, when my club would send out emails warning people to check their pH before and after large rain storms, I would ignore them. This arrogance cost me dearly as I had a pH crash and lost a lot of fish before I could figure out what was wrong and fix it. So what happens during the dreaded pH crash? The total alkalinity of the pond drops to a point that it can no longer buffer pH. When the pond reaches a pH of 6.5, the nitrification bacteria in the bio-converter, or as some would refer to it, the bio-filter, begins to shut down and ammonia begins to climb.



Ok, so what is pH, really? From the World English Dictionary: "potential of hydrogen; a measure of the acidity or alkalinity of a solution equal to the common logarithm of the reciprocal of the concentration ions in moles per cubic liter of solution. Pure water has a pH of 7, acid solutions have a pH less than 7, and alkaline solutions a pH greater than 7." Wow, that was a mouthful. I could never stay awake to the end of that in my chemistry classes. Please note in this definition the word alkaline is used. Alkaline and base can be used interchangeably to describe the chemical properties of a substance. It is not the same as total alkalinity. My version of pH is derived from what I found on the Science Buddies website. Please keep in mind that this is as it relates to our koi ponds. In water, some of the water molecules dissociate or split up. After the molecules dissociate, you have hydrogen ions (H^+) and hydroxide ions (OH^-), in addition to the regular water molecules. In pure water, which is seldom the case, you have equal numbers of hydrogen ions and hydroxide ions; the solution is neither acidic nor basic. So what, really, are acids and bases? Acids donate or give up hydrogen ions. When an acid is dissolved in water, there is a surplus of hydrogen ions and the solution is considered to be acidic. A base is a substance that accepts hydrogen ions. When dissolved in

water, a base accepts, or soaks up, hydrogen ions resulting in a solution with a surplus of hydroxide ions. This solution would be considered a basic solution.

So what are the extremes? The strongest acid solution has 100 million million more hydrogen ions than the strongest basic solution. That would be a 1 with fourteen zeroes behind it. Remember that common logarithm of the reciprocal thing? There is no coincidence that the pH scale goes from 0 to 14. It gives us a chance to assign values to substances without any of those fourteen zeroes. For standard solutions and normal atmospheric pressures, we would expect all substances in solution to fall between 0 and 14 on the pH scale. It is possible in laboratories under artificial conditions to exceed these limits, values less than 0 and greater than 14. On the pH scale, every change of one number is a tenfold change in ions. Every time you move one number on the scale, one of those fourteen zeroes appears or disappears depending on what direction you are moving. At the mid-point of the scale, pure water, at a temperature of 25°C, would hypothetically have a pH of 7 and a hydrogen ion concentration of zero. At pH 0, concentrated sulphuric acid has ten million times as many hydrogen (H^+) ions as pure water. At the other end of the scale, pH 14, sodium hydroxide which is a primary ingredient in drain cleaner has one ten millionth as many.

For our ponds, a pH between 7 and 8.5 is desirable. Our koi can become accustomed to levels as low as 6 and as high as 9, but will not thrive at these levels. Also note that at a pH level below 7, the bioconverter will not be working well and ammonia must be dealt with.

Now checking your pH will tell you one of two things: either your pond is ok; or it isn't. There really is not a middle ground when checking this water parameter. After the problems encountered last winter, I did a little research. I knew from reading Norm Meck's article on alkalinity, that total alkalinity plays an important part in pH stability. I am now a firm believer that checking and knowing on a month to month or even bi-monthly basis what your total alkalinity is, is far more important than knowing only your pH level. It is very important to know the total alkalinity of **both your pond and your source water**. Keeping on top of your pond's total alkalinity levels will enable you to know when a pH crash is about to happen.

So, just what is alkalinity? Please note that there is a difference between a substance or solution being labeled alkaline and what this article refers to as alkalinity or more properly total alkalinity. Additionally, there is a distinct difference between alkalinity and hardness. For our purposes, alkalinity is associated with the carbonate portion of calcium carbonate. Hardness is a measure sometimes used in aquaculture but most commonly used to determine how much detergent to put in the laundry given the parameters of your local water. It specifically deals with divalent ions such as calcium, magnesium and iron. During my research for this article, I found various different

definitions for alkalinity. I feel that the following definition is the most appropriate for our needs and is an excerpt from the Student Watershed Research Project from the University of Portland, Oregon and deals specifically with water in lakes and rivers. "Alkalinity is a measure of the capacity of water or any solution to neutralize or buffer acids. This measure of acid neutralizing capacity is important in figuring out how buffered the water is against sudden changes in pH." Total alkalinity is properly referred to as a measure of milligrams of calcium carbonate (or equivalent) per liter of solution. This measurement also equates to parts per million (ppm).

Carbonate and bicarbonate ions are the primary sources of alkalinity in water. The carbonate ion, $(CO_3)^{2-}$ is the most effective naturally occurring source of alkalinity as each carbonate ion neutralizes two hydrogen ions (H^+) which are acids. The bicarbonate ion (HCO_3^-) is less effective at neutralizing acid as it will only neutralize one hydrogen ion, but will also neutralize one hydroxide ion (OH^-), which is a strong base.

One source of alkalinity is calcium carbonate ($CaCO_3$). When water seeps into underground aquifers through layers containing limestone, calcium carbonate ($CaCO_3$), leaches out of the limestone and is dissolved into the water. For our purposes, calcium carbonate is the best source of alkalinity. It can do two things, bolster total alkalinity and raise pH somewhat. When dissolved in water, calcium carbonate produces molecules of calcium, and carbonate ions. The carbonate ion can then react with water molecules for form bicarbonate ions and hydroxide ions which are both negatively charged and will attract and bond with positively charged hydrogen ions, thus absorbing or neutralizing the acidic hydrogen ion.

In areas where water supplies come from rivers and lakes fed by rain and melting snow from the mountains, where the water moves quickly downstream and little time to erode the volcanic mountainsides, the water has virtually no alkalinity from mineral sources.

Here are some typical ranges for various water sources:

Typical surface water	20 to 200ppm $CaCO_3$
Surface water from regions with alkaline soils	100 to 500ppm $CaCO_3$
Ground (well) water	50 to 1000ppm $CaCO_3$

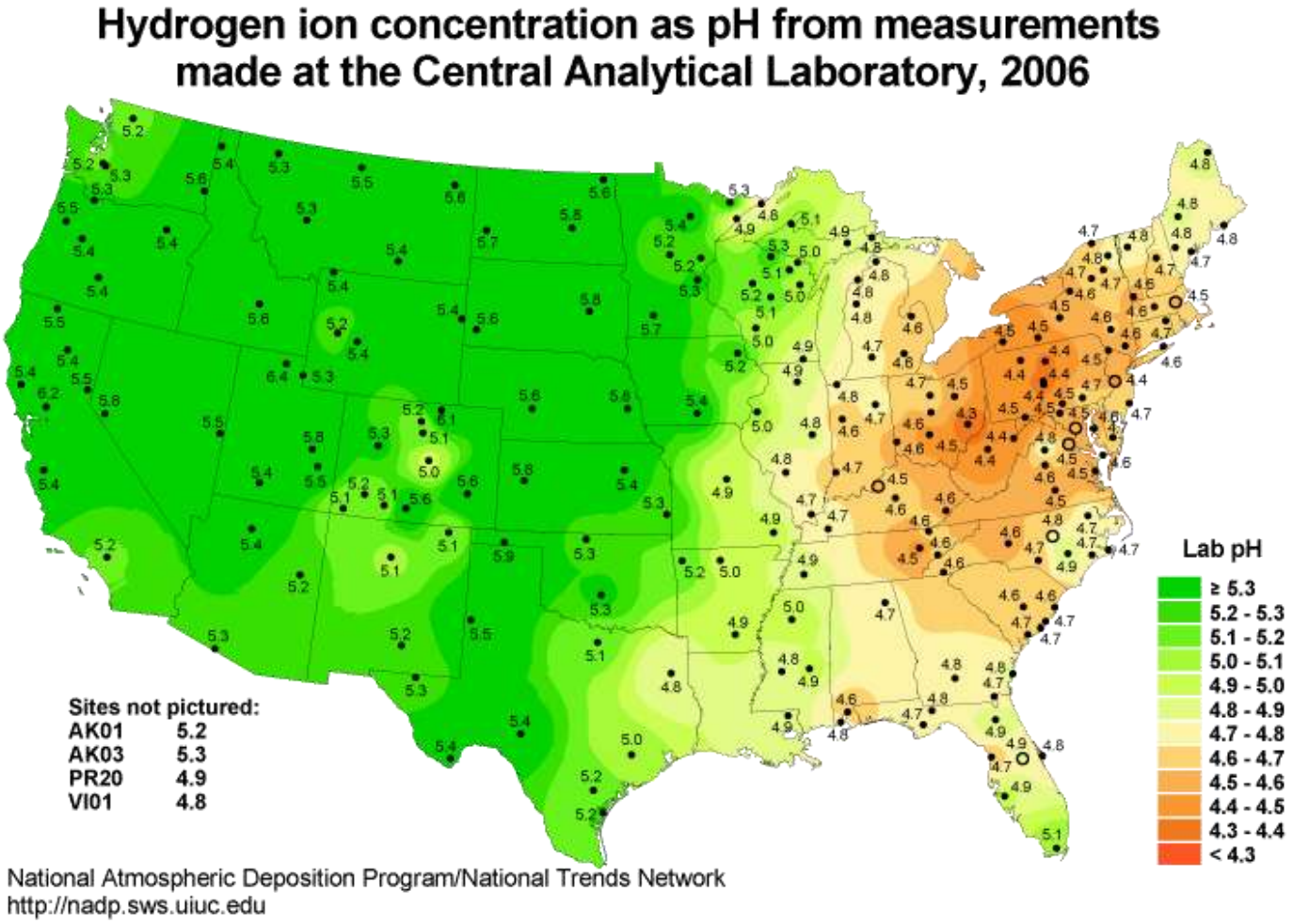
Please note that quite often, there is a great deal of carbon dioxide dissolved in ground water producing water that has greater amounts of alkalinity but is also somewhat acidic. Agitation or the use of degassing columns will remove the carbon dioxide.

Typically, water coming from rivers and lakes in non-alkaline soil areas, which is basically all of the Western United States, will not only be low in total alkalinity but will be slightly acidic as well. The slight acidity is due to the respiration of oxygen consuming organisms in the water. Animals living in the water consume oxygen and produce carbon dioxide. Carbon dioxide is extremely water soluble and produces carbonic acid, which acidifies the water; this will be discussed in more detail a little later. The end result of this is that water utilities in an effort to reduce corrosion will artificially raise the pH of the water and in doing so, impart a small amount of alkalinity to the water. My municipal water comes from the American River and after treatment to raise the pH, still only has a total alkalinity of less than 30ppm. So what I'm trying to say here is the source water for your pond just might be grossly inadequate for protecting your fish.

"Acid rain" is defined as precipitation with a pH of less than 5.6. Acid rain is not a recent phenomenon. It has been around virtually forever as a natural occurrence. Every time there was a volcanic event, large amounts of sulphur compounds were spewed into the atmosphere only to turn into sulphuric acid and return to the ground. The term "acid rain" as we know it, was coined by the Scottish chemist Robert Angus Smith in 1872 in the book Air and Rain: The Beginnings of a Chemical Climatology. This book was the result of a study that began in 1852 when it was noticed that the forests downwind from industrial areas were markedly declining.

As mentioned earlier acid rain can and does have natural origins. The primary cause of "acid rain" or more properly acid deposition, is air pollution from burning fossil fuels. Acids are not directly released into the air, but large amounts of acid precursors are released. These precursors are primarily sulphur oxides (SOx) and nitrogen oxides (NOx). Although great strides in air pollution reduction have been made in the United States, acid deposition remains a problem, particularly in the Northeast primarily due to the density of coal fired industry and weather patterns that concentrate the resulting pollution. Modern day research has shown that acid rain actually has two forms; dry deposition and wet deposition. Dry deposition occurs when acid producing particles (SOx and NOx) bind with atmospheric dust particles and fall to the ground. Later, when there is precipitation, these acid precursors combine with moisture to form acids. Approximately half of the acids in the atmosphere return to earth in this manner. Wet deposition occurs when these acid precursors combine with water in the air and fall to earth in the form of fog, rain, mist or snow. When fossil fuels with sulphur impurities are combusted, the sulphur is oxidized to form sulphur dioxide

(SO_2). The sulphur dioxide rises into the atmosphere and is again oxidized by atmospheric hydroxyl ions to form sulphur trioxide (SO_3) which reacts with moisture in the air to form sulphuric acid (H_2SO_4). Sulphur dioxide is responsible for nearly 70% of acid deposition. Nitrogen oxides are also formed during fossil fuel combustion in the form of nitric oxide (NO). Nitric oxide is oxidized in the atmosphere to nitrogen dioxide (NO_2) which then reacts with hydroxide ions in the atmosphere to form nitric acid (HNO_3). Nitrogen oxides account for approximately 30% of acid rain.



If acid rain is a phenomenon particular to the heavily industrialized areas of the country and those areas downwind in the North East, shouldn't the rest of the country have rain with pH values approximating that of pure water? After all, isn't rain essentially distilled water with a pH of 7? I'm sorry, but it is not, all rain is acid rain, it's just a matter of how acidic it is. Researching this article, it was an eye opener to learn that distilled water, exposed to air, will quickly become acidic. "Why is that?", you ask. Pure, distilled water has no alkalinity, and thus, no ability to buffer or neutralize acids. The carbon dioxide in our air is highly water soluble and combines

with water molecules to form carbonic acid. This would explain why normal rain, with a total alkalinity generally of nearly 0mg/liter $CaCO_3$ generally has a pH value of about 5.7, much more acidic than our ponds. If your pond normally has a pH of 7.7, rain at pH 5.7 would be 100 times more acidic than your pond water. That is how the logarithm works as it relates to pH, each change of one whole number on the scale represents a tenfold change. In other words, if the pond was pH 6.7, the rain at 5.7 is ten times more acidic. But just mixing pond water with a pH of 6.7 and rain at 5.7 does not necessarily mean a significant change to the pond pH. If your pond has sufficient total alkalinity, say, a minimum of 100 mg/liter $CaCO_3$ or 100 ppm, the rain will have minimal effect. If the total alkalinity in your pond is very low, a large amount of rain will cause problems.

Also, if you live in an area where your municipal water source has very low total alkalinity, you may need to be vigilant about your total alkalinity levels. For instance, my own source water, at the tap, only has at the most 30 ppm $CaCO_3$, if I artificially boost my total alkalinity to 100 ppm and then do a water change, I have effectively reduced my total alkalinity in the pond. If my total alkalinity is already low, I may now be placing myself in a dangerous situation.

Who is most at risk? The person most at risk would be someone with a liner pond and water with low carbonate alkalinity. The next risk level would be a person with an older gunite pond with water that has low carbonate alkalinity. A newer gunite pond with low water alkalinity is not so much at risk as the gunite will leach carbonates into the water for several years. There is a point at which the gunite shell just doesn't have any more to give. My pond is at that point. I must constantly monitor the total alkalinity levels of my water, as just doing water changes or adding fresh water is not enough. My test kit of choice is the LaMotte 4491DR. It is not the cheapest out there but gives very precise results.

So what does this kit tell you? It tells you that a precipitous drop in pH may be looming. One would say but my pH is fine, what's to worry? The need for caution is that as total alkalinity is decreasing, it still protects you from big pH changes although your pH might be dropping ever so slightly. When the total alkalinity drops very low, even small additions of acid may produce large changes in pH. Do you need to stay vigilant in dry periods? Yes, very much so if you have moderate to large stocking densities and source water with low alkalinity. Rain or dry deposition of acidic particles is not the only source of acid in your pond. The carbon dioxide produced by the fish and the action of the bio-converter alone is a substantial source of acids. Aeration, either from waterfalls or air stones will reduce carbon dioxide levels, but the bioconverter produces plenty of acid by itself.

In retrospect, my pond was probably well on its way to a pH crash without the rain. But who knows, were those large rain storms the proverbial straw that broke the camel's back?

How to protect your pond

Baking soda can be your best friend. It is relatively cheap, easy to apply and most importantly, won't burn you like some other strong alkali substances used by very experienced people. I get mine at Sam's Club in 13lb bags. One pound per 1000 gallons of water will give you an increase in total alkalinity of approximately 40 to 60 ppm. I have recently started using crushed oyster shells in a 300 micron bag placed in my waterfall. The results so far, have been very promising. Since late November, there have been several substantial rainstorms in my area and I have been able to maintain total alkalinity at 150ppm without having to add any baking soda. While the crushed oyster shell provides great stability, it is very slow to dissolve and won't produce quick results. When you need alkalinity in a hurry, baking soda will always be your best friend. If you are adding large amounts of baking soda to your pond, keep an eye on your pH levels as they will rise.

If you suspect you that you have had a pH crash

Check all your water parameters. You will need to especially check for ammonia. I would recommend having a salicylate type kit as opposed to a Nessler reagent kit. Using the Salicylate ammonia test kit will give you true results when using an ammonia binder as it will only show ammonia that is free or unbound. The Nessler kit will show false readings because of interaction with the aldehyde components of the ammonia binder. Often the results are weird and not even found on the color chart although in low concentrations of the ammonia binder, they may appear to show ammonia when there is none (bound or not). If you have ammonia present, you need to deal with that first. My preferred ammonia treatment is ChlorAmX in powder or liquid form. Treat the pond at the specified dosage for the amount of ammonia present. At this point, you may add the baking soda to increase the alkalinity and pH. Failing to deal with the ammonia first will harm the fish as the toxicity of ammonia is directly related to the pH of the water. When the total alkalinity and pH have stabilized, the filter should begin to cycle again. All those bacteria that couldn't do much at the low pH will kick in and rapidly get things back to normal. All water parameters must be monitored, especially ammonia. Additional small doses of ChlorAmX may be needed during this start-up period.

For further reading, Norm Meck of the Koi Club of San Diego, has published an excellent series of Water Quality articles. These can be found on the internet at www.KoiClubSanDiego.org/library My thanks to Norm for his assistance in helping verify the information in this article.

This Month In the Koi Pond

SAVE A KOI LIFE—PAY ATTENTION TO KH

By Jerold Kyle, KHA
February 2013

My water came out of the tap at pH 7.8 and alkalinity close to 100. Can't remember how many times I confirmed that. Been the same for years. Cold snap first of year took water temperature down to 46* F and I stopped feeding with plans to continue to not feed all month even if temperature came up a little. No feeding and bio-filter does not use up alkalinity so still not concerned about KH (alkalinity). Water temperature had climbed up to 50* F but, still no plan to feed until next month (February). Lots of us do that in winter for at least a month, even in warmer areas of the country. I also have continuing water changes via my little frog spitter who constantly dribbles in enough fresh water to amount to a 100% water change every two weeks so heavy acid rain counteracted. KH stays fine and no nitrite build up for this guy even in the summer and, boy, do they grow. No pH crash danger here. Even with heavier than normal rains. We're good. So, I had not checked my KH for a while. No real need to, right? Don't answer that.

Enter Jim Phillips at the Camellia Koi Club Meeting giving a presentation based on an article he was writing about alkalinity for KoiUSA magazine. As part of the program Jim invited members to bring a sample of their water to be tested and I did. Simply to participate. OK, and maybe to show off how good my water was.

Eye opener! Jim tested my pH at 7.6 which is only a little off of 7.8 and KH at 55ppm which was a surprise. I came home and tested pH at 7.5 and KH at 53.7. What the heck -- let's do a good clean out of everything which creates about a 10% water change and test again. KH was now under 50! Again, what the heck ? Checked KH out of tap after running water to clear the lines good and got a 35.8 reading. First drop blue and next drop yellow. Lowest reading my kit has. Most months of the year this would be pH crash time. Immediately put in a pound of baking soda and 4 hours later am back to 53.7 KH. Put another box of soda in and turned down the frog spitter a little. The 200% water change that I was so proud of for so many good reasons was not so good right then.

Spitter back to normal and KH slowly coming up to a safer level with oyster shells and a pH pill thanks to Jim and his presentation and water testing. He proved whatever we do, some won't care or pay much attention but, if you help only one, then you were worth it and I can say he was worth it. That cement in your pond will not leach carbonate into the water indefinitely. Do not learn from a disaster. Read Jim's article and tell others and you too may help someone pay attention to KH and be worth it.

Our Pond Project

Leslie and Gus' Pond – Part II

By Leslie and Gus Cubillo

Last month we talked about our first small pond and many of the errors we made. In Part II, we fix up the yard, get married, then we tear everything up and start our rebuild. Along the way, we share a few thoughts.

Leslie had a dream to be married in her own backyard so when she said she would marry me, we started planning a backyard wedding. The date was set for late 2007 and our friends were enlisted to help fix up the yard and pond for the event. Around this time, our neighbor had lost a few fish and turtles. They were taken by raccoons. Our pond had a net so when the raccoons visited us we didn't lose any of our wet pets. Following the raccoon incident we became paranoid about the net and it remained there most of the time. Folks told us the pond needed to be deeper so the koi could escape from predators. Hmmm… food for thought.

The yard was spruced up and the decks were built for the wedding. Everyone was pleased with the look of the yard. We knew the work was going to be temporary because we had greater plans for the near future. The pond environment was pretty stable which is surprising because our design was so weak. However, we learn quickly and keep moving forward. Intestinal fortitude? I think it is more like stumbling forward in the dark. Who knows.

Somewhere around this time Leslie and I attended a local Koi Show at the Placer County Fairgrounds. We had attended a couple of the local Koi shows and enjoyed them. It was something we looked forward to each year. I'm sure a few fish came home with us but we also bought raffle tickets for various items. After the show, we received a call that we had won something at the Koi show and someone was going to drop it off. We were working on the pond when a tall man came to the door with a solar powered Koi Café. He came in and introduced himself as Jerry and joined us by the pond. He was fascinating and offered us lots of insight and visited with us all afternoon. Jerry invited us to one of

the Camellia Koi Club meetings and we soon became members. Jerry Kyle is an incredible ambassador for the club and has become a wonderful friend.

The good folks in the Camellia Koi Club were wonderful to us and shared their thoughts and ideas whenever we asked questions. There were many questions and, I am sure, a few folks may have been annoyed with us, but many lessons were learned, especially how to avoid all of the mistakes and pitfalls in building a pond. It was nice to see we had done a few things right too. I just can't think of them right now.

Leslie and I decided to totally redo our pond and yard after the wedding. It was helpful for us to see what other club members were doing. Every meeting was a learning experience and we added everyone's lessons to our own thoughts. Seeing each pond was great because of the many ideas that folks incorporated. Our yard is small, but there were many ideas we could include in our pond. Over the next several months, with the help of club members and after asking lots of questions, we came up with a list of features for our dream pond.

Dream comes true

Our Dream Pond:

- 4,000 gallons – Taper to five feet deep
- EPDM liner pond
- Existing stream and waterfalls
- Gravity fed pre-filter
- Large bead filter
- Bottom drain
- In-pond jets
- Skimmer with clean out
- Secondary bottom drain
- Aeration at bottom drain
- In-pond lighting – 3 each, 300 watt lights

The list was surprisingly short, but well thought out. We decided not to ask for too much, given our limited resources and space.

For example we wanted to keep things simple so we decided to use an EPDM liner. One goal was to integrate the new pond into our existing stream, waterfalls and the rest of our landscaping. Most of the successful Ponds we had seen used more than just a bead filter. Many of them had a gravity fed pre-filter along with a bottom drain. This made a lot of sense to us although it meant extra planning and digging to install the pre-filter under the deck. All of the muck from the fish and other debris on the bottom of the pond moves through the bottom drain out to the pre-filter. The secondary bottom drain would be available to us if we needed to drain the pond completely. The skimmer would collect surface leaves, and other floating debris. Finally the Jets, the aeration from the bottom and the waterfalls would provide mixing and oxygenation of the water.

The components we would eventually need to rebuild our pond were quickly found on the internet and all of the local dealers. Leslie and I decided to purchase everything locally to support the community and take advantage of having the support of our local dealers if we encountered any problems. In the spring of 2008, we finished our design and the various drawings showing supply lines, return lines, electrical lines, air lines, and our material lists. A check with utilities confirmed there was nothing in our backyard. We slowly gathered our materials and borrowed a temporary above ground show tank and homemade filter from Jerry. In early May our wet pets were transferred to the temporary tank and the project started in earnest. Our side yard fence had been destroyed in a storm earlier in the year so the front fence was removed and a very small excavator with a tiny 12" bucket was brought in. Leslie had dug the first pond with a shovel and refused to dig the second pond by hand.

I was very careful while working next to the shade structure and Leslie worked on removing the dirt from the yard as it was brought out of the ground. Leslie was pretty incredible. Ask her to show her muscles sometime. I think she could take me six falls out of five. Uh, er… anyway we made an incredible hole in the ground with the approximate shape and size of our pond. Time to dig our hole – about eight hours.

The following morning, Leslie and I looked at the hole in the ground, looked at each other and wondered what we had done? It can be overwhelming to look at a big hole and realize the commitment that must be made to finish it. A phone call brought Jerry to visit and he was very assuring. All we needed to do was shape and refine the bowl and continue on.

Bottom Drain

The bottom drain installation was a smooth operation. A 4" drain line is used for the gravity pre-filter and the drain line slopes continuously up to the pre-filter. The 4" Wye fitting leads to the 2" bypass line and a valve which is always closed. The 2" line is only used to drain the pond. The white ½" PVC line is the air supply line for the air diffuser that sits on the top of the drain cover. The air supply line connects to the white fitting in the center of the bottom drain. The area was later back-filled with sand.

Pressure Lines

One of the earliest thoughts that was driven in to us by club members was the role played by friction and loss of water flow due to elbows and undersized pipe. Most of our pressure lines are 2" or larger. One of the tricks we learned was to heat up PVC pipe with an inexpensive heat gun from Harbor Freight (less than $15) and carefully form it to the desired shape. This took a little extra time but eliminates or minimizes the use of elbows and friction.

General thoughts

The photograph to the right shows the drain at the deep end of the pond. The tank outside the pond was our first pre-filter. It worked well but was later replaced with a larger unit. The hole for the pre-filter was made larger prior to installation. The skimmer can be seen in front of the filter. Just to the left of the shovel is a tube of water that was used as a level to determine the height of the pond. The outlet to the right will be a future jet. The bottom and sides of the pond were shaped carefully so any debris would naturally flow to the drain.

Fun with the EPDM

The scariest thing a pond owner thinks about is leaks. We worried about cutting the EPDM and making sure it wouldn't leak. Our suggestion to anyone just starting this process is to follow the *current* recommendation of your local EPDM dealer regarding gaskets and waterproof sealants and caulks. It has probably changed since our installation in 2008, but we have never experienced a leak in the pond (knock on wood). The bottom drain was our first cut into the EPDM and we worried about it for a long time. We used carpet layered in sections underneath the EPDM. It has held up well and when the light is just right, we can still see some of the edges on the bottom of the pond. The pond was partially filled just below the light fixtures and the jet outlets before they were cut out.

The Help experiences pond exhaustion

Next month – We start the new pond.

2013 Club Calendar (to date)

Date	Topic	Location
January 27	Jim Phillips – Water Quality	Leslie & Gus'
February 24	Anthony Quintero – Koi Show	Michelle's
March 24 (3rd Sunday)		Betty's
April 28		Pauline's
May 19 (3rd Sunday)		John G's
June 30	Neil Cutsinger- Novartis Animal Health KHV vaccine	Sharon & Gary
July 28		Janet & Jose
August 25	Annual Koi Auction / Ice Cream Social	Melody & Duane
September 29		Sam's
October 27		
November 24		
December 8	Annual Holiday Dinner	

If you would like to host your pond and house in 2013, please let Duane Carlson know. We will be delighted to schedule you.

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