Karen Wilson's House
June 26, 2010
Education Starts at 3:00

4905 N Via Entrada
Tucson, AZ 85718
Address Service Requested

Important Notices: We are looking for a host for our August meeting. We also have the October meeting available, as well as our Holiday party in December. You may host a meeting if you are a current member in good standing. Please contact Brent VanKoevering at 780-3980 or Bob Panter if you are interested in hosting a meeting.

Going forward the newsletter will be distributed via e-mail only, unless requested otherwise. If you do not presently get the newsletter electronically, or if you wish to continue receiving it via snail mail, you must contact Brent VanKoevering at 780-3980 or bvankoevering@longrealty.com.

SAKA, Inc Club Officers

President	Bob Panter sakabob@yahoo.com (520) 747-7278
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Secretary	Lynn Riley (520) 825-9066
Treasurer	Dan and Martha Cover mardan79@msn.com (520) 297-4071

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Education Committee	Erin Riley elriley@aol.com (520) 818-6490
Librarian	Jeanmarie Schiller crankyjean@msn.com (520) 299-1876

Editor's Note: Articles published herein are intended for the enjoyment of all and come from a variety of sources. The articles are not intended to replace veterinary advice. Pond owners, and not the club, are responsible for the health of their koi, water changes, what to do, and how to treat their pond. Reasonable effort is made to review these articles for accuracy before including them in the newsletter.

Presidents Corner 6-17-10

June, the heat is on, and I will bet the temp of your pond is up as well.
Speaking of your pond, how are your koi? Better yet what is the quality of water they live in? Have you checked your water lately?

SAKA meetings, what are they? They are a time for education and a time for business. They are also a time for koi enthusiast to get together and share their knowledge with each other, and learn from one another. Come to a meeting and see what we are all about. We have fun, shouldn't you?

For the love of Koi,

Bob Panter, President SAKA, Inc.

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Club Meetings

Hosting Meetings: For those wishing to host an upcoming business/education meeting, the club will reimburse the host up to $50 (with receipts) toward food/beverage for the meeting. **We would like to see your pond!** Please contact Bob Panter if you are interested in hosting a meeting.

Club Announcements

May Business Meeting Minutes

Date& Location: May 23, 2010, at Julie and Kevin Black's in Tucson, AZ

Call to Order: Meeting called to order by Bob Panter at 4:06 PM.

Minutes: Motion made to accept and second the April 2010 Minutes with correction that the 2010 Show and Auction Report should be changed to Pond Tour Report.

Number of members in attendance: 17 members.

Treasurer's Report: Current checking account balance: $8670.24 . $1027.00 was taken of which $897.00 was from our Pond Tour. Expenses from the month were $247.28.

Membership: Current total is 38 with three new members from Pond Tour.

AKCA: Debby Young reported that if you are ordering from AKCA Bookstore, the phone number is no longer a working number. AKCA has eight students graduating this year. KHA and Project KHV are going to be sharing web site with AKCA. The Seminar in Nashville had 144 people registered for it and next year it will be held in Indianapolis, Indiana, in the Spring.

Correspondence: No correspondence.

2010 Pond Tour: Jean-Marie McGinnis reported that 242 tickets had been sold with a profit of $412.00. One of the SAKA signs is missing – if you have it, please bring to one of the meetings and give to Jean.

2010 Koi Show and Auction: Bob Panter reports that it will be held on November 13th – 14th and everything is on schedule. If you have suggestions for Judges Dinner or Banquet, please contact Bob.

Old Business: Dave Young reported he found some show tanks in the catalog for $500 - $1000 and these will be considered. Bob asked for volunteers to help move our tanks and trailers to Martha and Dave Cover for storage. Noel Shaw mentioned that the trailer had been overloaded last time and Bob has a lead on a "new", used trailer. Another 8-foot tank was returned to the Club from a previous member. Bob also reported that he has two other tanks and some pumps that were given to us by Everett Kolt.

New Business: Noel Shaw has requested interesting pond stories to be sent to him via email. Jean-Marie reminded everyone about the Club Library.

Adjournment: The meeting adjourned at 4:36 PM.

Educational Talk: Kevin Black presented a talk about the building of his pond.

Lynn Riley
Secretary

Featured Articles

Pond Leaks:

Ponds are subject to losing water through leakage. Leaks lose water and water is money, so we need to find and stop water leaks. The majority of water leaks are not found in the pond proper, but are usually found in the waterfall or streams leading to the pond. It is very simple to determine if the pond leaks, not so simple finding the leak.

Does the pond leak? To determine if there is a pond leak, turn off all makeup** water and establish a point on the bank at the top surface of the water Wait 24 hours (with pumps running) and find the reference point to see the water level change. In 24 hours it is common to see a ½ inch drop in water level due to our high rate of evaporation. If you see any more leak than the ½ inch, there is a pond leak present.
**Most ponds have a float valve that maintains a fixed water level in the pond. These must be shut off during the leak test.

Where is the leak? First, determine whether the leak is in the pond proper, or in the waterfall. ith the makeup water valve shut off, establish a reference point on the pond bank at the top surface of the water. Turn the pump off and after 24 hours, check the reference point for water level. If the level goes down more than ½ inch, there is a leak in the pond proper. Determine how many inches water loss has occurred during this period.

If the water level is around ½ inch, then the leak is in the waterfall. Note: It is possible to have a leak in both the pond and the waterfall. In this case, with the pump off, mark the reference level to see how much the pond leaks, then remark the reference level and turn on the pump to see how much additional water is lost with the pump running in 24 hours. In most cases, the pond proper does not leak, but the leak is in the waterfall.

Finding and fixing the leak. This is generally the hard part. Look for moisture around the pond bank or outside the waterfall. The presence of wetness may lead you to the source of the leak. Leaks generally start from a crack or a hole in the sealing material inside the pond or waterfall. If the pond is concrete, holes and cracks can be filled with Pond Epoxy. This material is the consistency of putty and comes in two parts that must be mixed well before use. The mixture can be applied under water and will harden under water in about an hour. In some cases the surface to be patched must be dried and resurfaced with pond plaster or coated with pond epoxy paint. This epoxy comes in clear or in colors. Do not attempt to patch a waterfall leak from the outside wall. Find the leak point inside and patch it there. Patches on the outside will not generally permanently stop a leak.

If the pond leak is in a liner pond, look for water overflowing the top or the liner around the pond bank or inside the waterfall. If water is running over the liner, raise the liner at the leak point and back fill behind the liner with dirt or rocks so the top of the liner stays higher than the water level. If a hole or split is found in the liner, the liner should be dried off and patched with appropriate liner patching materials.

Note: Do not turn pond pumps off for 24 hours when the water is warm without supplying oxygen to the pond with an aerator.

Don Harrawood
SKAPA

IS YOUR POND RUNNING ON EMPTY? (OR THE IMPORTANCE OF THE CARBONATE CYCLE)

reprinted from akca.org

We all know what happens when our automobiles run out of gas. Actually several things happen, and none of them are good, a long walk to a gas station, water in fuel injectors, etc. The results in your pond can be even more drastic if your pond runs out of one of its major ingredients. That ingredient is carbonates and the results of running out of carbonates in the pond can be a drastic drop in the pH, followed by a great rise in toxic compounds like ammonia as the biological filter shuts down due to the low pH. This is followed by death of the fish. I have seen cases where every fish in a pond died suddenly due to these effects and all because the pond ran out of carbonates.

This phenomenon is not discussed much in the Koi literature because most of the books and magazines come from the West coast where the water is much different than what we have here in the East. The water out West naturally has three or four (or more) times as much dissolved carbonates as our water here in the East. Also, most of the ponds in the West are made of concrete, which is rich in carbonates, while almost all of the ponds being constructed now on the East coast are made with plastic or rubber liners which provide none of these vital ingredients. So the folks out West can pretty much take carbonates for granted, and not think (or write) about them much. As a result, we here in the Eastern USA haven't had much to go on with regard to carbonates. Yet carbonates form a vital, life giving and life saving part of our ponds' existences. We have a tendency to operate all the time on the very ragged edge of running out of carbonates in our ponds, and when we do step over the edge, disaster is right behind!

O.K., you say, so what is this carbonate stuff all about, what does it do, and how can it have such a big effect on my pond: If it's so important, how come I have gotten along so far without knowing anything about it: First of all, carbonates are absolutely essential to a biological filter and even to the fish themselves. I have been saying carbonates when I mean the family of carbonate compounds. In this family, the most important one is the bicarbonate ion (HCO_3^-). It is one half of the old familiar sodium bicarbonate ($NaHCO_3$) or Baking Soda. That's the Arm & Hammer stuff we all have used to raise the pH of a pond or aquarium or to remove odors from a refrigerator.

The bicarbonate ion is actually a buffer in a pond, able to raise the pH if it is too low or less well-known and more remarkable, to lower the pH if it is too high. How can it do that: The normal process in a pond is for the bicarbonate to keep pH stable by "absorbing" the acidic ions (H^+) that are produced by the bacteria in the biological filter. When this happens, we get water and carbon dioxide. The carbon dioxide is driven out of the pond by our aeration devices (waterfalls or air stones) and the water is left behind. The chemical formula is: $HCO_3^- + H^+ = H_20 + CO_2$ (bicarbonate + acid = water + carbon dioxide).

Notice what a nice balance there is. There are three oxygen atoms on the left side of the equal sign, three on the right side. Two hydrogen atoms on each side, and one carbon. Nothing is lost; we have as much of each after the chemical reaction of "absorbing" the acid ion as we had before. What is lost, however, is the bicarbonate ion. The bicarbonate has been transformed into carbon dioxide (CO_2) and driven off as a gas. We also lost the acid, which had been produced by the bacteria in the biological filter, but because the bicarbonate is consumed in the reaction, we must continually replace it.

But how can the bicarbonate act as a buffer-to go the other way, lowering the pH if it is too high? In that case, which we don't normally see in a pond, the bicarbonate ion would give up its hydrogen as an ion, thus adding acid, lowering pH, and becoming a carbonate ion (CO_3^{--}). Thus, $HCO_3^- = CO_3^{--} + H^+$ (bicarbonate = carbonate + acid).

The carbonate ion tends to unite with a calcium ion (Ca^{++}) becoming a solid, calcium carbonate. That is the stuff oyster shells, marble chips and concrete are made of. Notice again that everything balances on both sides of the equation, all the H, O, and C atoms are equal in number on each side, and the plus and minus signs are also in balance. I have written both equations with an equal sign "=" for simplicity. Actually, a chemist writes both of these equations with a "<=> " symbol to show that the chemical reaction can go both ways. Whether they go from left to right or from right to left depends on the relative concentrations of the compounds involved and on the pH of the water (and on other things as well). Many pond keepers add oyster shells or marble chips to the filter in order to get the benefit of the last equation going from right to left--that is the oyster shells or marble chips tend to dissolve (absorbing a hydrogen ion in the process) and providing the needed bicarbonate ion to "absorb" another hydrogen ion. If you have a concrete pond, this happens fast enough so that you might never have to worry about the carbonate balance in your pond. I first added marble chips in3/4" size to the filters in my liner pond and now I have replaced them with whole oyster shells in an attempt to increase the bicarbonate level. I can't honestly say how much help it has done, or how fast they dissolve (not very fast to be sure).

So we see that bicarbonate acts as a buffer in the water. The complete equation (from Fish and Invertebrate Culture by Steven Spotte) is $CO_2(gas) <=> CO_2(Ag) + H_2O <=> H_2CO_3 <=> H^+ + HCO_3^- <=> 2H^+ + CO_3^{--}$ (carbon dioxide <=> carbon dioxide + water<=> carbonic acid <=> acid + bicarbonate <=> acid + carbonate).

He says the reaction is extremely pH sensitive. This means that the carbonates will react quickly to a shift in pH and will work to bring the pH back to the proper range. This range is about 7.4 to 7.8. This means that this is the range you should find in your pond. If it's lower, you probably don't have enough bicarbonate. If it's higher, it is not a concern, because it will be stable at that level. If you add something with acid in it to lower the pH, you won't see any lowering of the pH because the carbonates will resist any change. The only thing that will happen is that you will be destroying some of the bicarbonate in the pond. Add enough acid, and all of the bicarbonate becomes exhausted, and the next drop of acid, from the biological filter or from your addition will cause the pH to plummet with all of the damages described in the beginning of this article! So, never add anything to your pond to lower pH, NEVER. Spotte also says the equation above shifts to the right as pH increases. The action in a pond, however, is from right to left due to the steady addition of the H^+ acidic ions from the biological filter. The carbonate ions (CO_3^{--}) and bicarbonate ions (HCO_3^-) "absorb" the acid ions -- so long as these carbonates are present in the water. When they run out, the acid builds up and trouble begins!

Proper Levels of Bicarbonate

How do you know if you have enough bicarbonate ions in the water? The test involved is called "total alkalinity." I think that is a terribly obscure description of what we are looking for, but that's what we're stuck with! It's further complicated by having about six (!) measuring scales to describe how much of the stuff is in the water! The one I'm going to talk about is parts per million (ppm)*

The starting point in talking about total alkalinity (might as well get used to the term) is that you should not go below about 40 parts per million in the pond as a minimum. Steve Meyer said at the AKCA 1990 Seminar that the desired range is 50 to 100 ppm. In the book, Practical Koi Keeping, volume I, published by the AKCA, Joe Cuny says that the level shouldn't go below 15 ppm. I think that is pushing things way too close to the edge. In a more recent edition of KOI USA, July-August 1989, Dr. Bob Vessey says total alkalinity between 40 and 120 ppm is acceptable and below 40 ppm is dangerous. I try to maintain at least 40p pm in the pond at all times and accept anything above that. This level of bicarbonates can be maintained here in the Virginia suburbs of Washington D.C. if water changes are done often enough as the tap water has about 70 - 90 ppm. Allan Hobron reports that his tap water in Staten Island, N.Y., ranges from 12 to 32 ppm so water changes alone won't let him maintain an adequate level of bicarbonate. He adds a spoonful of Arm & Hammer every day to his 750-gallon

pond to maintain 80 ppm. Bob Vessey, in Florida, reported in the May-June 1990 issue of KOI USA that a member of his club who used well water was having trouble keeping fish alive. Bob tested the well water for total alkalinity and found it contained only 10 ppm of total alkalinity. Bob called such toxic water chemistry the "unseen killer."

Testing for Total Alkalinity

There are several test kits to determine your pond's total alkalinity level. The Mardel Company makes a chemically impregnated plastic strip that you dip in the water. A color change gives a reading for total alkalinity. The reference colors are 0,80,120,180,240, and 300 ppm. If your goal is to stay above 40 ppm, it is very difficult to tell from these "Dip and Read Strips" if you are above or below that level. Other members who use that test kit add enough Arm & Hammer baking soda to bring the level up to 80ppm.

The folks at TETRA make a kit that includes a test for total alkalinity (they call it "carbonate hardness") that reads in degrees of hardness, where one degree of hardness equals 17 ppm.

Summary

Maintaining a proper level of bicarbonate in the pond is necessary for the proper operation of a biological filter and the health of the fish. There are simple tests to determine when your pond is running on empty and there are simple ways to replace the bicarbonates lost through the biological filtration process. Water changes replace bicarbonates if your water supply has an adequate level to begin with. In addition, you can add crushed coral, limestone chips, or oyster shells to your filter to help the replacement of carbonates. Finally you can add Arm & Hammer baking soda to keep your pond safe and healthy for your fish.

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* Officially the ppm is expressed as calcium carbonate equivalents. In case you see other measurements, here are the conversion formulae: 50 ppm = 1 Meq/L = 2.8 German degrees of hardness (DKH) = 3.5 English DKH = 5.0 French DKH = 2.92 grains per gallon.

Treating The Pond

reprinted from akca.org

One word of caution on adding medications to your entire system. Most of them sterilize, or go a long way towards, sterilizing the filter bed of beneficial bacteria that live there. Most definitely, adding antibiotics will kill large numbers of the Nitrosomonas and Nitrobacter bacteria which will result in deteriorating water quality.

Salt

Use non iodized salt. It will eliminate 7 out of 9 parasites that are commonly found in a koi pond. It can be added at the rate of 2.5 pounds per 100 gallons (yes, 25 lbs per 1,000 gallons). It should be added over a three day period in order not to "shock" the fish. Salt should remain in the system for at least 14 days. If it becomes necessary to do a water change, replace the amount of salt that would have been discarded with the water change. Overdose is just about impossible until you have tripled the given dose. Plants often do not relish this dose of salt and should be removed when ever possible.

Formalin

This is basically Formaldehyde in a water mixture. The most commonly available concentration is 37%. It is important to remember that the use of Formalin in freshwater binds free oxygen. For every 5mg/L of Formaldehyde, 1 ppm of Free Oxygen will be used. Formalin's primary use is in the treatment of fungus, odinium and gill flukes or if the use of salt will harm the plants. The dosage for continuous use is 1 cc per 10 gallons of water (25ppm). Be very careful with the use of Formalin, it is a carcinogen for humans.

Tetracycline

This anti bacterial can be used as a one hour bath at the rate of 500 mg per 2 gallons of water. Do this daily until the lesion begins to skin over.

Potassium Permanganate

Caution should be taken with the use of this drug. The correct amount to be used depends on the hardness of the water. A simple test should be performed to determine the dosage needed for your particular water. First dissolve 1.0 grams of potassium permangante in 1 litre of distilled water. This is your stock solution. In 10 jars, add 1 litre of pond water to each jar. Number the jars 1 through 10. Now add 1ml (cc) of the stock solution to jar 1. Add 2 ml (cc) of the stock solution to jar two, continue to jar ten. (Note that jar one contains 1PPM and jar two contains 2PPM) Mix each jar well and after 15 minutes compare the colors. The jar having the faintest pink color represents the proper demand. This dosage plus 2 PPM residual should be added to the pond.

Organophosphates

The Oraganophosphates are used for the treatment of Flukes, Anchorworm, and Lice. Most hobbyists are familiar with Masoten, Fenthion, Neguvon and Dylox. Malathion has the same spectrum as these other compounds. Care must be taken when using any of these drugs as toxicity and death is easily accomplished. To use Malathion, the dose is .25 ppm (based on and active ingredient of 50%) in other words 2 cc of a 50% solution for 1,000 gallons. This should be used 3 times over a 14 day period. You no not need to make water changes between additions.

Dimilin

Can be used for the treatment of Anchorworm (Learnea) and Fish Lice (Argulus). There is no need for any water changes, and it is almost impossible to overdose your fish. Add 0.1 ppm to the pond water. The half life, although in dispute, is irrelevant considering toxicity starts somewhere around 100 ppm thus, addition of this drug monthly for three months is acceptable.

Tincture of Iodine

I recommend that you swab lesions with iodine, but Malachite, Merchurochrome and Panolog all work well. Do not allow these to run under the gill cover. Swab ulcers only once as medications like Iodine are caustic and may result in deep burns if over used.

Kawarigoi Korner

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For those that are interested in water lilies, you should open the below link to discover parts of the most complete water lily collection in the world, and it is located right here in Texas at San Angelo. Ken Landon has spent his life seeking water lily specimens from throughout the world and accumulating them in his collection, Ken also creates his own varieties by crossing various lilies in his laboratories.

The collection on display is just a small amount of his total collection, which is too numerous to display for the public. The display is located at the San Angelo, Texas city park and is free to the public. Lilies are displayed in a series of large concrete ponds at the park. This is worth seeing. I saw the display a few years ago and was completely impressed with the collection. You can visit the lily display anytime, it is not limited to any time of the year. It is probably most beautiful during late spring and summer when the lilies are in full bloom. If you can find your way to San Angelo, Texas, visit this display at the city park.

http://www.internationalwaterlilycollection.com/

If you have suggestions for the newsletter or items to be included in Karawagoi Corner or the Calendar, Please contact Brent VanKoevering at 520.780.3980 or bvankoevering@longrealty.com.

Upcoming SAKA Education and Business Meetings

Date	Location
June 27, 2010	Host: Karen Wilson
July 25, 2010	Host: Mountain View Koi
August 22, 2010	Host: Open
September 26, 2010	Host: Bob and Darleen Panter
October 24, 2010	Host: Open
November	No Meeting See you at the Show
December	Host: Open

Shows, Pond Tours and Seminars

Event	Dates/Location/Links
31st Annual SAKA, Inc. Koi Show and Auction	**TBD**

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Years Keeping Koi: _____

Pond size: _____

Would you like to host a meeting?
_____

Would you like to serve on a committee?

_____ If yes which one?

_____

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