



Alan & Karen Johnson

7145 N Hot Desert Trail

Meeting begins at 3:00, May 20, 2012

From I-10, west on Ina, South on Wade, West on Picture Rocks, North on Pelto Path, East on Ina, South on Hot Desert Trail to address.

SAKA, Inc Club Officers

<i>President</i>	Bob Panter sakabob@yahoo.com (520) 747-7278
<i>Vice President</i>	Burt Ballou burtb@socal.rr.com
<i>Secretary</i>	Lynn Riley (520) 825-9066
<i>Treasurer</i>	Dan and Martha Cover mardan79@msn.com (520) 297-4071

Committees/Points of Contact

<i>2011 Pond Tour</i>	
<i>31st Koi Show Co-Chairperson(s)</i>	Brent VanKoeving bvankoeving@longrealty.com (520) 780-3980
<i>AKCA Representative</i>	Debby Young debbyt@akca.org (520) 682-7697

Newsletter Editor	Brent VanKoeving bvankoeving@longrealty.com (520) 780-3980
Koi Health Advisor	Noel Shaw koidoc@noelshawdc.com (520) 400-0335
Membership Chairperson	Faye Hall (520) 297-1253
Education Committee	TBD

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.

SAKA, Inc 10% Discount

With your SAKA, Inc Membership Card at:

Boyd Equipment Center

3625 S Country Club Road
Tucson, AZ
(520) 792-2244 or
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Mountain View Koi Fish & Aquatic Plants

3828 E. Keeling Road
Hereford, AZ 85615
(520) 378-3710

Oasis Tropical Fish

3865 N. Oracle
Tucson, AZ
(520) 408-9700

Patty's Water Plants

By Appt Only
E. Benson Highway, Tucson AZ
(520) 294-0748

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 or Brent VanKoeving if you are interested in hosting a meeting.

Club Announcements

We are looking for hosts for our August, September and October meetings in 2012. Please contact Brent VanKoeving if you are interested.

Business Meeting Minutes

Koi Minutes April 22, 2012

Bob Panter call to order.

Previous Minutes Correction: Martha read February's balance instead of March.

Accepted as written.

Treasurers report: Balance in checking \$12,085.26

Savings balance \$5,199.00

Correspondanc: None

AKCA: Ballot sent, dues due sooner. July 1, 2012 due date or penalty.

Chairman of AKCA Christine says Ray resigned as well as did Patty.

The AKCA koi site will be down as of May 8, 2012

Politics and difficulties in AKCA, regarding regions dispute and control issues.

Koi Person of the Year nominations: Dan and Martha Cover as well as Dave and Debby Young

Vote taken: Dan and Martha Cover selected.

Committee Reports: None

Old business: The Friendship Awards...Tom Ayres has them.

Shade covers for trailer wheels...Bob Panter has some.

Shade screens for the tanks: Martha volunteered to get pricing. Thank you Martha!

New Business: Erin resigns as Secretary. Karen Johnson new Secretary.

Announcements: Saturday April 28 if Mountain View Koi Anniversary Event. Starting 9AM. Contact Brent for Car Pooling.

There are three large tiles for sale. See Jim Daunheimer.

Motion to adjourn.

Featured Articles

Bio-converters (Biological Filters)

By Don Harrawood

- A bio-converter is a dedicated area of a pond system designed to provide the proper environment for large colonies of beneficial bacteria to grow.
- A bio-converter develops one type of bacteria that converts ammonia (toxic to fish) to nitrites (toxic), and another type of bacteria that converts nitrites to non-toxic nitrates, which is great for plants.
- Nitrifying bacteria that convert ammonia to nitrates have an optimum pH range from 7.8 to 8.5.
- The bacteria that colonize our bio-converters are unique in that they have a need to attach to something. They are not free floating. This fact dictates that their food and oxygen supply must be brought to them (through water flow). They cannot move around and seek their own nourishment.
- A bio-converter needs three things in order to establish itself. These are oxygen, bacteria, and a water flow with a source of nourishment (ammonia secreted by fish).
- The number and size of fish you can maintain in a pond is directly related to the size and efficiency of the bio-converter. The larger the pond bio-conversion, the more ammonia that can be tolerated in the water.
- When removing media with a bacterial colony from the pond, it can be kept alive for several hours by keeping the media moist with pond water, and adding an air stone for oxygen. When cleaning bacterial media, flush it with pond water, do not use chlorine laden city tap water. The chlorine will kill the beneficial bacteria.
- Bacteria begin deteriorating when for a period of 6 hours or so, water ceases to flow through the bio-converter.
- Fluidized bed bio-converters are the most efficient in removing ammonia and nitrites. They respond most rapidly to changes in ammonia and nitrites when adding fish to the system.
- Pressurized filters, such as bead filters maintain a mass media that provides a very large surface area for bacteria to colonize. They become among the best source for colonizing bacteria, since all the pond water generally pass through this filtering media.
- To provide additional bio conversion, one can place bags of media (beads, ultima media, or small size black lava rock) inside a waterfall basin or other area where there is water flow.

Water Quality

by Debby Young

Water quality is one of the primary factors affecting the spread of parasites and diseases. Many abnormal behaviors exhibited by fish can be attributed to poor water quality. Upon determining that your fish has a problem, the first thing to suspect is your water quality.

pH

Pure water is made up of millions of H₂O molecules. These water molecules are always in motion.

Sometimes, a hydrogen ion (H⁺) will become separated from the water molecule leaving this hydrogen ion and the hydroxyl ion (OH⁻) to bond with other ions. pH is a measure of free hydrogen ions. At a pH of 7, considered neutral at 600F, there is 1 free hydrogen ion out of 10,000,000 (1/10⁷) hydrogen ions. Conversely, at this same pH there is 1 free hydroxyl ion out of 10,000,000 hydroxyl ions. Consider a pH of 8. Here there is 1/100,000,000 (1/10⁸) free hydrogen ions and 1/1,000,000 (1/10⁶) free hydroxyl ions. There is 10 times less hydrogen ions at pH 8 than at pH 7 and 100 times less free hydrogen ions compared to pH 6. All values above pH 7 are termed alkaline and all values below pH 7 are termed acid. Koi can live in a wide range of pH, but 7.2 to 7.8 is ideal. pH is the single most important water quality parameter. It can affect the toxicity and quantity of several of the other components of your pond water. To lower the pH of your pond you can add a water softener, try reverse osmosis, and decrease splash aeration by by-passing the waterfall. To raise pH increase splash aeration, add oyster shells, or lime.

Ammonia

75% of the total ammonia present in a pond is from one of the bi-products of fish respiration. Ammonium (NH₄⁻), is the ionized form of ammonia. If the pH of the pond water is acid, the ammonium molecule remains intact and non toxic. If the pH of the pond water is alkaline, the ammonium molecule releases one hydrogen ion and becomes ammonia (NH₃), the non ionized form. Ammonia is toxic to your fish. The amount of toxicity depends on how alkaline the water is. As pH increases above 7, the amount of ammonium transformed into ammonia is exponentially related to the pH. Water test kits measure the combined total of ammonia and ammonium. A test for ammonia should always read 0.0 PPM. (See Chlorine/Chloramines for ammonia tests after adding a dechlorinator.) To reduce the toxic ammonia content, make a water change but be sure to add a dechlorinator, decrease feeding amount, add zeolite (never combine with salt additions), reduce fish load, add more filtration area, add a commercially prepared ammonia remover.

Nitrites/Nitrous Acid

Nitrite (NO₂⁻) is the by-product of Nitrosomonas bacteria breaking down ammonia in alkaline water. Nitrous Acid (HNO₂⁻) is the by-product of Nitrosomonas bacteria breaking down ammonium in acid water. These reactions are the first steps in the Nitrogen Cycle. There is again an exponential relationship with pH. As pH decreases below pH 7, the amount of nitrous acid increases and becomes more toxic. A test for these molecules should read 0.0 PPM. To reduce toxic nitrous acid, make water changes, reduce the fish load, reduce the feeding amounts or adjust the pH. Add salt at the rate of 0.2% to inhibit the intake by the fish of nitrous acid.

Nitrates/Nitric Acid

(NO₃⁻) (HNO₃) respectively are the molecular by-products of Nitrobacter Bacteria breaking down Nitrites and Nitrous Acid respectively. This is the second step in the Nitrogen Cycle. Unless found in large quantities, both are considered non toxic. To control the amount of nitrates and nitric acid, make water changes or add plants.

Water Hardness

Hard water is due to an abundant number of salts such as calcium and magnesium. Koi can cope with a wide range of hardness. There are two major benefits to having hard water in your Koi pond. First, very hard water can bind some toxic metals such as lead. Secondly, hard water reduces the workload of the koi for osmoregulatory functions. A reading of 0 to 75 PPM is considered soft, from 75 to 150 PPM is moderately hard, from 150 to 300 PPM is hard and above 300 PPM is very hard. If it is necessary to increase your hardness you can add crushed oyster shells, coral or any substance that will increase the amount of calcium.

Total Alkalinity/ Temporary Hardness

A large amount of bicarbonates in the water will result in a high Total Alkalinity reading. Also known

as 'buffers', these bicarbonates dissociate and then combine with the Hydrogen ions produced by the Nitrogen Cycle and the other acids produced by the fish and organic decomposition. When Total Alkalinity is low, or is 'used', the water will become more and more acid. Combining a low Total Alkalinity with submerged plants or algae can cause a day time alkaline pH and a night time acid pH. This 'pH shift' is stressful to your fish and can lower their resistance to disease if the situation continues. Total alkalinity should be kept above 80 PPM to avoid these potentially dangerous shifts. To increase alkalinity, add sodium bicarbonate, change the water or add a commercially prepared pH Buffer.

Temperature

Water temperature has an inverse relationship to the amount of oxygen contained in that water. The higher the water temperature, the lower the oxygen saturation level. The 'saturation level' is the maximum amount of oxygen in water at a given temperature. Water temperature also affects the metabolic rates of the fish. Fish, being cold blooded, slow their bodily functions as temperature decreases. This affects all circulatory systems. If you need to reduce the temperature of your water you can add more shade, add a misting system, bypass the waterfall during the day and utilize the waterfall only at night. To increase your water temperature, add a heater, bypass the waterfall at night and reduce the shade.

Oxygen

Oxygen is needed for the normal day to day functions of a fish and by the bacteria necessary for the breakdown of the fish's waste products in the nitrification process. Factors affecting the amount of oxygen in the water are temperature, fish load, organic load, medications, and the turn over rate. All of these factors affect oxygen inversely except the turn over rate. Minimum levels of oxygen should be 5 PPM. To increase the oxygen content, add venturis, increase the turnover rate, reduce the organic load (rid the pond of any organic matter that is sitting on the bottom). Do not add aquatic plants, they will use oxygen at night.

Carbon Dioxide

A by product of respiration by fish is the bicarbonate molecule (HCO_3^-). When this molecule attracts a Hydrogen ion (H^+), it becomes carbonic acid (H_2CO_3) and drives the pH lower. Aeration causes the carbon dioxide (CO_2) part of the molecule to be stripped to the air and a hydroxyl ion (OH^-) remains. This by definition creates a more alkaline water. To decrease the amount of carbon dioxide, add plants or increase bubble aeration. To increase Carbon Dioxide, remove plants and decrease bubble aeration.

Chlorine & Chloramines

These chemicals are often added by water companies to make water more potable for human consumption. The toxicity of these treatments depends on the residual chlorine. Treated water will lose much of its chlorine by exposure to sun light and a time period of a few days. This is not the case for chloramines which are much harder to break down. Adding substances such as thiosulfates to bind the residual chlorine is recommended for any major water change. If you use tap water treated by these chemicals it is recommended that the residual should not be more than .003 PPM when mixed in your pond. Tap water treated with chlorine or chloramines should be added at the sump area or as far away from the fish as possible. After adding a chloramine remover, you must use an ammonia test kit that uses a Salicylate reagent and not a Nessler reagent or the ammonia test will continue to read the presence of ammonia even though it is now bound in a non toxic form and will be removed by the filter.

Toxic Metals

Most natural waters contain chloride, sulfate, carbon, calcium, magnesium, sodium and potassium. These ions serve a vital purpose in the mineral metabolism of all animals. If these ions are found in high concentrations, their toxicity is dependent on water hardness, pH, temperature and the presence of

other dissolved substances. The solubility and toxicity of zinc, lead, aluminum and copper have a direct relationship to increases of pH and water hardness. To remove heavy metals, use activated carbon filtration, amquel® or aqua safe®.

Organic Compounds

Oil and grease, organic carbons, phenolic compounds, and detergents are included in this group. Much of the pollution from these organic compounds is due to runoff entering the pond. Make water changes.

Other Toxic Gases

Hydrogen sulfide is the result of anerobic bacterial action on organic matter in the pond. Ozone is being used to disinfect water in some areas. Make water changes and clean out the mulm under the filter or in the bottom of your pond.

Pesticides & Insecticides & Herbicides

These are usually introduced into the pond by runoff, precipitation or accidental spills. Make water changes.

SAKA Emergency Supply Stations

Due to high cost, large quantity packaging or local unavailability of some koi supplies; SAKA has decided to stock some supplies for the benefit of club members.

Dechlorinators, along with oxidizers and treatments will be available, for a donation to SAKA, for our club members starting March 1, 2012. Please check on line at www.sakoia.com to see a complete list of supplies.

There will be 3 Emergency Stations set up around town for your convenience, see www.sakoia.com for phone numbers and emails of the stations.

Pick Up only.

Bring your own baggies and jars.

Call or email the Station for availability.

You must do your own research on your pond's problem.

You must know your pond's volume.

You must calculate your needed quantity of a supply.

Stations are NOT responsible for diagnosing your pond's problem.

Stations are NOT expected to recommend a product.

Stations are NOT expected to calculate dosages or needed quantities.

In order to take advantage of the SAKA Emergency Supply Stations, you must accept and sign a Hold Harmless Agreement (www.sakoia.com) and be a current member of SAKA (a current membership card must be presented at time of pick up).

If you have any suggestions for other supplies, please contact Debby Young
koicountess@mindspring.com

Kawarigoi Korner



[Click Here](#) to see new items for sale on the SAKA Website.

May 20, 2012

ANNUAL AQUATIC PLANT SALE, 8:00-1:30 p.m., southwest corner, Reid Park. Terrific selection of plants for your pond Sponsored by The Tucson Watergardeners. 760-1036

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

Upcoming SAKA Education and Business Meetings

Date	Location
May 20	Alan and Karen Johnson
June 24	Noel and Debbie Shaw
July 22	Curt and Lisa Ogren
August 26	
September 23	Rick Shook
October 28	
November	No Meeting. See you at the show
December	

Shows, Pond Tours and Seminars

Event	Dates/Location/Links
Watergardener's Plant Sale	May 20, 2012. 8:00-1:30 p.m., southwest corner, Reid Park



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<http://www.sakoia.org>
 Annual Membership

Dues are \$30.00 per family from March 1 to February 28 or 29 of the next year.

Membership Type

_____ Renewal
 _____ New Member

Name: _____

Address: _____

City: _____

State: _____

Zip: _____

Phone #: _____

E-mail _____

Today's Date: _____

of Koi _____

Years Keeping Koi: _____

Pond size: _____

Would you like to host a meeting?

Would you like to serve on a committee?

_____ If yes which one?

Make Checks payable to: SAKA, Inc.

Mail to: Martha and Dan Cover
 2841 W. Puccini Place
 Tucson, AZ 85741