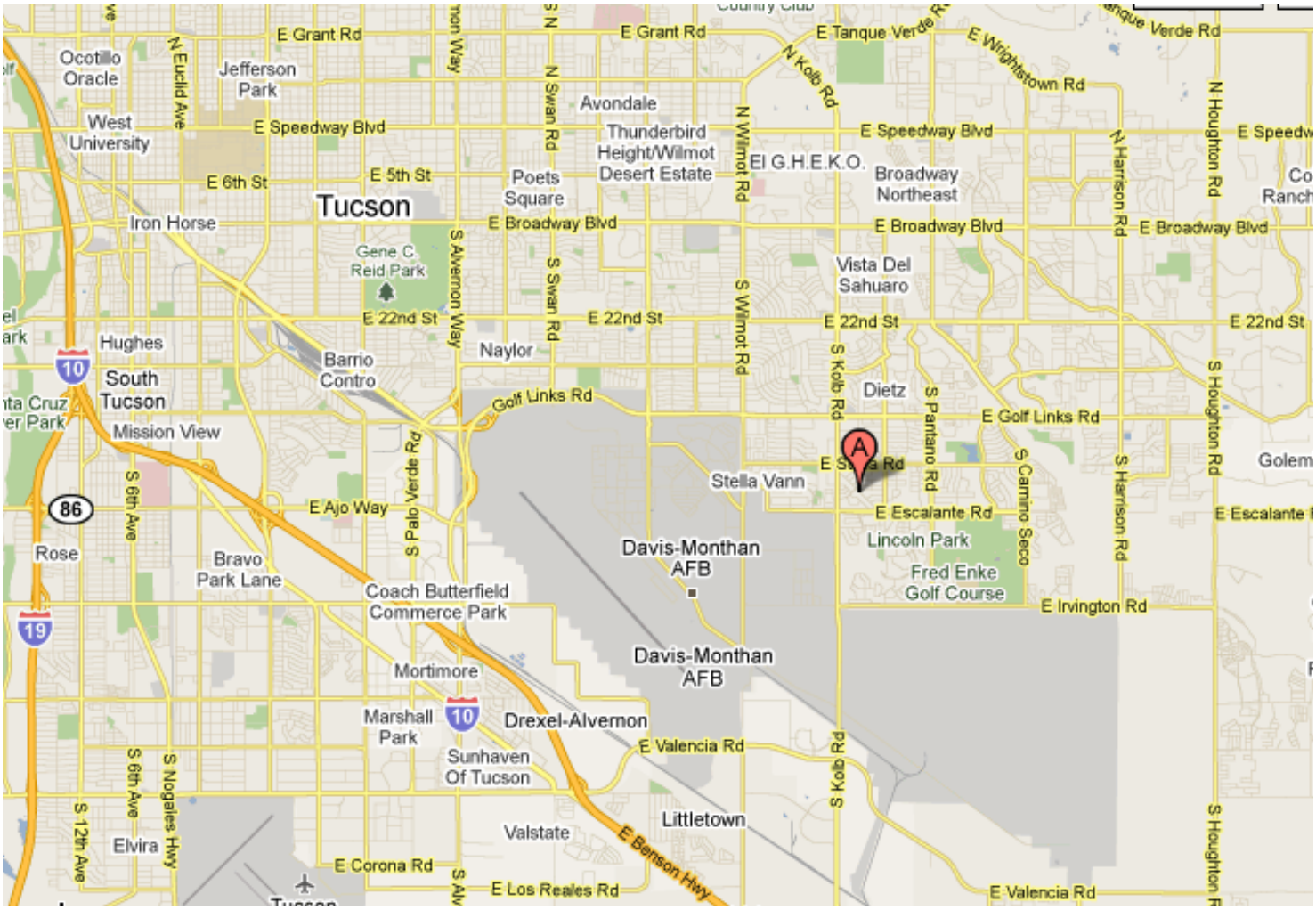

Bob and Darleen Panter's House
3552 S Chesin
January 27
520-747-7278
Starts at 3:00

From Golf Links, South on Kolb, East on Chesin to address.

Please let Brent know if you are interested in hosting a meeting. There are plenty of openings for 2013.

SAKA, Inc Club Officers

President	Bob Panter sakabob@cox.net (520) 747-7278
Vice President	David Young koiman@mindspring.com (520) 403-2949
Secretary	Karen Johnson (520) 400-2073

Treasurer	Dan and Martha Cover mardan79@msn.com (520) 297-4071

Committees/Points of Contact

2013 Pond Tour	
33rd Koi Show Co-Chairperson(s)	Brent VanKoevering bvankoevering@longrealty.com (520) 780-3980
AKCA Representative	Debby Young debbyt@akca.org (520) 682-7697
Newsletter Editor	Brent VanKoevering bvankoevering@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

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E. Benson Highway, Tucson AZ
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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 or Brent VanKoevering if you are interested in hosting a meeting.

Club Announcements

Business Meeting Minutes

Koi Meeting Minutes Dec 9, 2012
Call to order: Bob Panter

Regarding the Koi Society, they will be emailing passwords for us to be able to access their new online magazine.

Treasurers Report: Martha not here yet. Brent reports the Koi Show made $1900.00 profit and the auction brought in $2700.00

There were 11 entrants. 94 fish entered.

Sold 30 paddles with attendance down. SAKA has had 33 consecutive shows, this is exceptional compared to the national rate.

Old business: none

New business: Drawing for hosting. Members Alan and Karen Johnson drawn.

Pond liner donated to those interested. 15 x 50. Bob interested.

Meeting adjourned.

Featured Articles

Help! I Can't Breathe

by Bob Heideman
Reprinted from 1996 AKCA Seminar Binder

More fish die from a lack of oxygen than any other cause. To be educated fish keepers we must have a clear understanding of oxygen. We need to know what takes oxygen out of the water and how to put it back.

Oxygen Basics
You and I, your cat, and your canary all breathe air containing 20.9% oxygen, whereas your fish breathe water containing 0.0008% oxygen! They have evolved to be comfortable with that amount, but at 1/2 that amount, 0.0004%, they are hurting!

In garden ponds, we typically see oxygen problems only during the summer because when the water is warm all those things which consume oxygen speed up increasing their consumption of oxygen. For every 10C there is an approximate doubling of the consumption of oxygen (and production of carbon dioxide). Your fish may be happy and healthy at 20C (68F) and suffering from low oxygen stress at 30C (86F) in the same pond.

Oxygen levels can only be determined by measurement with a test kit or an oxygen meter. Submerged plants and algae take oxygen out of the water at night. Their effect can be significant when you have "green water" (phytoplankton algae and zooplankton).

Oxygen Levels

- Warm water saturation is about 8 ppm
- Continuous healthy minimum is about 6 ppm
- Low level stress and poor feeding response 4-5 ppm
- Acute stress, no feeding, inactivity 2-4 ppm
- Death 1-2 ppm

The above is a guideline only, as duration, water quality, condition of fish, level of other gasses, etc. All have a significant effect.

Low Oxygen Stress
It is important to know you have an oxygen problem long before your fish start dying. You need to either monitor it by periodically measuring it when you expect it to be low or, select and use an aerator large enough to handle the summer time conditions.

If you are stressing your fish, you are making them much more vulnerable to disease, parasites and infection. Their activity level will be reduced as well as their growth rate. Low oxygen levels will lower the oxidation/reduction potential (ORP), favor growth of disease causing pathogens and disrupt the function of your biofilter.

Solution
You can either design and maintain your pond so that oxygen never becomes a problem, i.e., clear water, few fish, little food and clean bottom. Perhaps, use an aerator, at least during the warm periods. Since every pond is unique and conditions, especially water quality and fish quantity vary greatly, I can only give you general guidelines (see oxygen budget). If you are not sure - measure the oxvgen level. Buy or borrow a dissolved oxygen test kit or an oxygen meter. Use it along with your preferred aerator until you are sure that the oxygen level will be maintained.

Aeration
Most fish keepers know they need some type of aeration. But, unless you've studied this science (and who has?) you are probably assuming that your stream, venturi, waterfall, air diffuser or fountain is taking care of your aeration needs. They may be, but are your sure? Almost anything that assists the transfer of oxygen into water could be called an aerator. But, is the aeration effect significant and is the energy expended cost effective? The oxygen content in your pond depends upon the rate of consumption vs the rate of replacement.

Oxygen Budget
The need for more oxygen comes from fish, plant respiration, the chemical and bacterial decomposition of waste matter. If you really want to read the numbers, read the following. Theoretical oxygen budget for a 1.000 gllon (3.800 liter) pond.

1,000 gallons of water at 6 ppm contains about 24 grams of oxygen. 10 lbs. of fish need about 18 grams of oxygen per hour. 1,000 gallons of water with a chlorophyll A of 20 mg/l (light green water), a B.O.D. of 10 mg/l (uneaten food, bacteria, etc.) will consume about 2 grams per hour. Feeding 3% of the fish's body weight per day will add 60 grams of food which contains 24 grams of protein, which converts to about 2 grams of ammonia, which will consume about 14 grams of oxygen in the biofilter. Pollen, bird droppings, leaves, etc. may add 2 more grams. 36 divided by 24 equals 1.5 grams per hour.

This example shows the fish consuming the most oxygen and the biofilter the 2nd largest amount, but be aware that very green water can cause a fish kill in a stagnant, nonaerated pond even if it contains only very few fish!

If you had an aerator maintaining the oxygen level at 6 ppm and you turned it off at 8:00PM, you would lose about 6% (1.5 grams) of the pond's oxygen per hour. By 8:00 AM, the next morning, the oxygen level could be as low as 1 ppm. If your aerator is your fountain, do not turn it off at night.

Aerator Performance
Following is a list of typical Koi pond aerators with estimates of oxygen transfer performance and efficiency. (Assumes 3000, clean water, 70% of saturation, power cost $0.1 0/kwh.)

Aerator	Flow rate	Watts used	Grams O2 per hour	Cost per 100 grams
Lazy Stream 12" drop	10gpm	150watts	1.2	$1.26
Babbling Stream 12" drop	10 gpm	150	2.4	.63
Waterfall 12" drop straigh into pond	10gpm	150	1.4	1.05
Waterfall 2-24" drop fallng on rocks	10 gpm	200	3.1	.65
Fountain	5 gpm	100	1.6	.63
water pump with venturi	4 gpm	100	4.0	.25
Air compressor linear type 1	1 cfm	30	4	$0.06

Summary
Make sure that your fish are not being stressed. If your fish are valuable to you, it is cheap insurance to have two aerators or separate breakers. If one fails, the other will prevent severe fish stress or mortality.

If you are building a pond, design it so you never have to worry about oxygen. Wire it so that your water pump and aerator are served by separate breakers, select energy efficient long life components. Consider that someday you will have a lot of fish, lots of algae, warm water and a broken pump.

Oxygen is the first mitigating factor in water quality. Ammonia and nitrite take days to reach crisis levels. Oxygen can become critical in a few hours.

Nymphaea - Jewel of the Water Garden

by Rosaane Conrad reprinted from Pondkeeper

I always loved water lilies. Until a few years ago, I knew nearly nothing about the except that they had a way of stopping me in my tracks every time I came across one. When I decided to PL in a pond, there wasn't any doubt as to what my firs plant would be. So after the pond was in, off I went to a local nursery, one of the few that carried aquatic plants. The nursery was owned by a Mennonite family who were very personable and eager to help. I was delighted by their selection of water lilies! They had red, pink, yellow, and "I think that one in the corner is a white, " said the owner with pride as I was perusing my options. I just couldn't decide on the pink or the yellow, they were both full of blooms and looked totally irresistible. So, I did what any rational woman would have done, I took them both.

It didn't take long before I was completely in love with these plants. Day after day, bloom after gorgeous bloom, my lilies kept me coming back for more. I couldn't get enough. They were the first things I wanted to see in the morning (as I sipped my coffee) and the last thing I wanted to see before bed.

Then one day a friend came by, and I couldn't wait to show her my lilies. She had a water garden too and knew quite a bit about aquatic plants. "Is that a Charlene Strawn or a Texas Dawn you have there? ", she asked. This left me totally stumped feeling stupid, and thinking to myself, "What the heck is she talking about." I think I responded with a less than brilliant, ... I dunno. "

That was the day that led me on my search to know more about the Hardy Nymphaea And since that day, I've realized that the more I know, the more there is to know about this "jewel" of the water garden.

I started soaking up every bit of information I Could get my hands on. Books, videos, and catalogs are more plentiful than I Could have imagined. I learned It lot just by Studying the wholesale catalogs. The

ones with full-color photos and accompanying descriptions were very helpful during that first year--and most of those catalogs were free for the asking' I couldn't believe that there were scores of hardy water lilies to choose from with names like Virginalis, Chromatella, Rembrandt, Escarboucle, and Fabiola.

HARDY VS TROPICAL

Learning about the hardy water lily was more interesting, or at least more practical, to me than the tropical varieties. I think the tropicals are stunning. but living in an area where zone 5 meets zone 6 presents its share of problems. When I learned about the scores of "hardies" available, I was convinced that my time would be better spent researching them and leaving the tropicals to my friends in the south. I decided that I could live without the electric blues. shocking pinks. and other neon colors that only the tropicals can provide, at least until my greenhouse is built!

I often go back in my mind to the day I bought I my first water lilies. Although I was impressed, at the time, by the selection of water lilies offered by the nursery I patronized, I was later disappointed that they did not know more about them. They were pegged simply pink, red, yellow, and white. I am still not completely sure about the true identity of the pink one I bought there, although I have it narrowed down to two possibilities.

DON'T 'KISS' OFF IDENTIFYING

Garden centers and retail nurseries who deal in aquatic plants need to identify their plants properly. Some retailers choose to operate on a KISS (Keep It Simple Stupid) policy when it comes to aquatic plants. This is understandable, as most entry-level hobbyists come in looking for a particular color of water lily, so the retailer will simply peg them with a "Yellow" tag rather than bother with the proper, but lengthy, N. 'Marliacea Chromatella'. But remember this. Entry-level hobbyists soon become educated hobbyists-with a yearning to know what they have (and what they're buying).

ELEPHANT IN A THIMBLE

There are a lot of things to consider when buying and selling water lilies. Size, amount of sunlight required, blooming traits, etc., all need to be taken into account. You wouldn't want to sell someone a water lily with a spread of up to 18' for a 2' container garden. would you? It would be like trying to stuff an elephant into a thimble!

Retailers need to acquaint themselves with their water lilies, (and all aquatic plants) so they can, in turn, educate their customers. A little know]edge goes a long way in the area of customer service! Provide your customers with good, solid information, and they will trust you, continue buying from you, and will recommend you to fellow water gardeners.

NYMPHAEA 101

Pronounced nim-fa ahim fa' ah the name was applied in the year 1753 (by Linnaeus) to a genus of aquatic plants within the family called Nymphaeaceae. Nymphaea comprises both hardy and tropical species, varieties, and cultivars. There are approximately 180 recognized as hardy Nymphaea in the world today!

THE ROOT OF IT ALL

To begin an understanding of the different varieties of hardy Nymphaea one should start at the root, or "rhizome". There are three accepted classifications of rhizomes including Marliac., Odorata, and

Tuberosa. There are more of the Marliac varieties than there Odorata or Tuberosa varieties, and there are two distinct types of Marliac rhizome. Hobbyists who intend to grow their water lilies in containers would be more successful growing those of the Marliac type. The spreading Odorata and Tuberosa types quickly outgrow their containers. This can be a nuisance for those not interested in transplanting their water lilies each year!

Offspring of Odorata rootstock are from the native Eastern North American water lily. They are identified by their long, fleshy, brown rhizome. Eyes develop on the rhizome, with each having the ability to begin a new plant.

Central American white water lily hybrid. The rhizome are similar to the Odorata, except their daughter plantlets are loosely attached.

The Marliac hybrids have two kinds of rootstocks. One develops a pineapple-like form crowned by a single growing tip. As the mass grows larger, it will produce eyes which are able to generate new water lilies. The second type of Marlia rootstock is more elongated. Most red hardies are of the second type of Marliac rootstock. These elongated rootstocks produce fewer eyes than the other rhizome types, while the pineapple-like Marliac produce the most. The Marliacs tend to clump rather that trail, (although this is not always the case).

THE HARDY BLOOM

Hardy water lilies come in a variety of colors and shades including red, white, yellow, pink, salmon, and changeable. The changeables are the most interesting, because they open the first day as one color, perhaps yellow-and by the end of the day, their shade may be leaning toward salmon. The second day they may be orange, then rust on the third.

Blooms vary in shape, size, and number of petals among the varieties. There are two basic shapes: cup and stellate (star). The cup shape has variations including double cup, open cup, and double open cup. A good example of a cup shaped flower is N. 'William Falconer'. A good example of a stellate bloom can be found in the N. 'Charlene Strawn'. A good example of a double cup is the recently introduced N. 'Lily Pons'.

The leaf shape, size, texture and color can vary greatly from variety to variety and from plant to plant. So can the coloring and markings of the peduncle and petiole. Water and soil pH, light exposure, plants depth, growing zone and whether the plant has adequate nutrients, all play a role in the color of the pads. Pad colors may also change with seasons.

There is so much to learn about the Hardy Nymphaea.. The best advise I can give anyone who is interested in learning more about the hardy water lily is to read, read, read! There is a wealth of information available, and you will become entranced by what you will learn.

2012 SAKA Koi Show Vendors

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520-3678-1271

GoldFishNet.com
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A's Aquarium

ULTRA BALANCE PREMIUM KOI FOOD
KOI FOOD

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Kawarigoi Korner

The new Tucson Japanese Garden opens January 19. Here is a link to their website.
http://www.tucsonjapanesegardens.com/about-yume

Click Here to see new items for sale on the SAKA Website.

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**
January 27	Bob and Darleen Panter
February 24	
March 24	Alan and Karen Johnson
April 28	Jim and Jan Daunheimer
May 26	
June 23	
July 28	
August 25	
September 22	
October 27	
November	No Meeting. See you at the show
December	

Shows, Pond Tours and Seminars

Event	**Dates/Location/Links**
Tucson Japanese Garden Opens	http://tucsoncitizen.com/community/2013/01/14/lovely-new-japanese-garden-to-open-in-tucson-on-january-19/
Valley of the Sun Koi Club Koi Show	February 9-10. Chinese Cultural Center 668 North 44th Street, Suite #201W Phoenix, Arizona

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Month year

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

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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