



Southern Arizona Koi Association

Organized by those with the interest of raising and improving the quality of Nishiki Koi, and its culture. Promote better community and international relations for the better understanding of brotherhood among members through a common interest. To improve and promote the technology and education of Aquaculture

February 2019 Newsletter

PONDERING

Our Next SAKA Meeting:

Mar 16: Heather & Billy's Home



And subsequent gatherings:

- Apr 20th: Cathy Lindstrom's home
- May 18th: Bret Noe's home
- June 15th: Carollee's home
- July 20th: Pot Luck at The Chapel Ranch, Karen & Alan's place in Cochise

SAKA will reimburse a host up to \$50.00 for beverages and snacks served while holding a meeting. You will also be in the Annual Host Drawing for \$250 held at the Christmas Party each year.

Our February meeting was called to order about 1:30 PM. There were 17 members that participated in today's meeting. We got a late start because we were all busy gawking at the beautiful property and home of Kinne Tevis & Rob Bracketti!



A few boxes of records were turned over to me at the last meeting. These records go back more than 10 years. Our Bylaws state that we should keep records for 7 years. I checked with the AZ Corporation Commission and the IRS. Only the IRS has any legal requirement to retain records, and that is for 3 years. In Section III d of the Bylaws under the Duties of the Treasurer, it states: "Must keep accounting records of all transactions and must keep receipts of all transactions for 7 years." I asked for, and received unanimous approval to change that to 3 years. Older records will be subsequently destroyed, and the last 3 years will be archived on the computer to eliminate the need for storing paper. This, too, was approved by the attending membership.

I have edited the By-Laws to correct a few minor errors and made the approved change. If anyone would like a copy of the By-Laws, please send me an email and I will send you a PDF copy.

We are expecting Brent back this week. Carolyn has agreed to do our Koi Show trophies, again. I need to setup a meeting with her to include Brent and Heather to finalize the details and get her quotation for the job.

AKCA has been contacted about scheduling a judge for the 40th Annual Koi Show.

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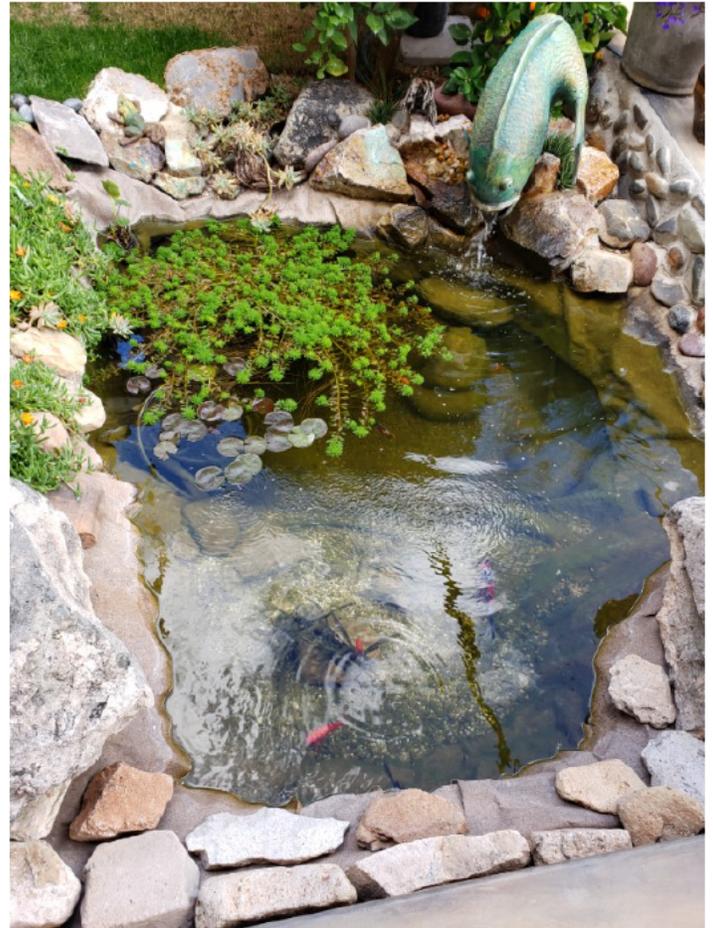
A couple of the possible judges were also at the 50th Annual Japanese Koi Show during the past 2 weeks. Brent was actually there with them. So, our show was discussed!

Heather is leading the charge on the Pond Tour. The date for the Pond Tour will be either the 6th or 20th of April. That leaves us very little time to make this happen properly. Bret and John Lindstrom have also volunteered to help Heather. Others have volunteered (including myself) to help distribute flyers to vendors and supporters. Heather has a long list, I am told. We are keeping the number of ponds to 5 and all located in the NW side of Tucson for this year. It was also agreed that the tickets would be free, although we will ask for donations at each location. We will also need volunteers to help secure the owners' property. The properties would be open from 11 AM to 3PM.

Those currently on the Pond Tour list include: John Goudy, Heather Hale, Bret Noe, Duane Kenny, and possibly Michelle's.

We want to create a generic "postcard" that could promote both the pond tours and the Koi Show. QRP codes could be used.

Here's a picture of Kinne and Rob's pond:



Advertise here— 1) join our club with a Commercial membership or 2) offer 10% discount to our members or 3) be a vendor at the show

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The pond is small, but had several small and very attractive fish that were obviously quite healthy. It is very nice!

Treasurer's Report: Checking: \$9210.68
 Savings: \$5245.49

I will pursue some nametags. My current list has 5 names on it.

Our next meeting is March 16th at Heather's at 10:00 AM.

The Meeting was adjourned at 2:08PM. Then we enjoyed some really good chips and crab meat dressing that Kinne made. It was to die for!

NOTE: We would like to get pictures of everyone's ponds and pictures that you may have from previous meetings. This will be part of our marketing effort for both the Pond Tour and the Koi Show. Please send your pictures to Heather at heather@heatherhale.com.

An email will be going out this week to all those members that have not yet paid their membership dues for 2019. You can make out a check to SAKA and mail it to me at 4235 E Placita Rancho Loma Alta, Vail, AZ 85641, or go online at sakoia.org and use your credit card online. Family membership is \$30.

Following is some information on Bead Filters.

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Tucson, AZ

Bubble Bead Filter

From LSU

By Tom Graham

Reprinted from [Koi USA](#)

[For more information on bubble bead filters click here](#)

"Building an effective biomechanical filter is not tough, making one that is easy to maintain was the challenge."

What is the single most important element to a healthy koi pond? Filtration! What often represents the most work in owning a koi pond? Filtration! Where do many pond builders cut corners? Filtration!

It has been said over and over again. The single most important element of koi keeping is water quality, and water quality is a product of good waste treatment. Somehow we must remove the waste products produced in our ponds. I recently had the opportunity to visit Dr. Ron Malone, an Associate Professor in the Department of Civil and Environmental Engineering at Louisiana State University. in Baton Rouge Louisiana. Over the past 12 years, his team of researchers have invested over \$750,000 in funding from the Louisiana Sea Grant College Program and the National Coastal Resources Research and Development Institute, studying biological filtration systems.

They have focused on the development of cost effective water treatment approaches for use with high density aquaculture production facilities. The result of this effort is a series of head filters ranging from aquarium size to a unit that can handle the largest whale exhibits.

Dr. Malone, who leads the project, spent the day with me and took me step by step through the development and operation of these new filters. He told me that when he began the project 12 years ago, they started working with flooded gravel beds, similar to what is used widely in our hobby. As they studied the workings of this type of filter, they saw that the surface area of the media was not efficiently being used, and that the systems were very difficult to clean.

In their research, they studied the entire gamut of filtration media and filter designs. (An interesting story in it's own right). The goal was to find a media that would provide a high specific surface area for biofilm development in a small amount of space (in cubic feet) and to develop a filter design that would be easy to clean and cost effective.

They found that a spherical plastic bead, approximately 1/8in diameter (half the size of a pencil eraser), was the media of choice. The beads they use are made from food grade low density polyethylene plastic and they float. The beads provide a great deal of surface area for bacteria growth - about 400 square feet of surface area for every cubic feet of beads. This compares to around 100 for typical pea gravel, and 125 for bio-balls. And, since they are very durable they never have to be replaced.

They discovered that a floating bead worked particularly well, since the beads would pack into a static bed at the top of a filter chamber, providing the pockets to trap particles and grow bacteria, much like an under gravel filter in an aquarium.

Then, when the filter requires cleaning, they turn off the pump and agitate the beads to break free the solids. The solids are then flushed out the bottom of the filter. In their commercial designs, called prop wash systems, they used a large chamber capable of holding 6 to 200 cubic feet of beads. The units are cleaned by a powerful propeller system which intermittently agitates the beads within the filter, shearing off excessive biofloc (loose bacterial colonies) and releasing captured solids. When the propellers are stopped, the beads float to re-form the filtration bed while the solids settle in an internal settling cone forming a thick sludge. The sludge is removed from a drain at the bottom of the cone. Only sludge is removed so the water loss associated with the cleaning process is negligible.

This system has proven to be quite effective in large commercial installations, where very heavy fish loads are being managed. The filters have been tested on systems holding food fish species (such as tilapia, catfish, striped bass, trout) along with a wide variety of specialized applications (including tropical fish, alligators and crayfish).

Once this system was perfected and in use, they switched their efforts to developing smaller, less expensive systems they call bubble bead filters. The new design features an hourglass shaped chamber where air bubbles are used to stir the beads, rather than a motor and prop.

The key element to the bubble bead filter is it's specially designed "washing throat". It is a constriction between the upper and lower chamber, which forces the beads to fluidized (disperse and flow like fluid) as they are gently scrubbed by bubbles which are literally sucked into the filter as the filter is drained. The bubbles move up from the lower chamber, while the water and beads flow down, causing the cleaning turbulence. The cleaning process is designed to remove captured solids without damaging the sensitive biofilms responsible for nitrification, and uses 10 - 15 gallons of water per cubic foot of beads. (A two cubic foot filter will use about 25 gallons).

These smaller systems use from 1 - 3 cubic feet of media, and stand about 4 feet tall. They are constructed entirely out of fiberglass and PVC fittings, with no moving parts whatsoever.

Deciding which system to use is determined by the maximum amount of feed (dry pellets) that is put in the pond on a daily basis. One cubic foot of beads can provide complete solids capture and nitrification for a feeding rate about 1 pound of dry pellets (35 percent protein) per day under production conditions.

For koi ponds, one cubic foot of beads can effectively process one half a pound of feed per day. At a 2 percent (of body weight) feeding rate, a cubic foot of beads will support 25 to 50 fifty pounds of koi food. Commercial food fish production facilities normally support 75 to 100 pounds of fish per cubic foot of beads, but this demands close daily management of the production system. If you compare that to even the most densely populated koi ponds, you can see these systems are extremely powerful.

Bead filters used to clean koi ponds are typically back-washed once or twice a week during the warm summer months and as little as once a month once feeding drops off in the winter. If filters are not washed they slowly clog, gradually shutting off the return flow to the pond. This decline in return flow is usually visually evident, providing a convenient reminder of the need for backwashing.

Flow rates for bead filters are dependent on the total ammonia-nitrogen excretion rates (TAN) and oxygen demand for the biofilters, which are controlled by the feed rate and pounds of fish in the system. A minimum rate of about 5-10 gallons per minute per 100 pounds of fish (or per 2 pounds of feed per day) is normally used to assure proper bio-filter operation. This means the system only requires a very low flow, low pressure pump, however, higher flow rates may be demanded for large ponds with few fish particularly when a UV light is being used for algae control. This does not present a problem for the filter since performance of the filters improves when the flow rates increase.

The bead filters are effective at removing suspended particles. as small as 10 microns, but cannot harvest the small 5-10 micron algae that often infest a pond. If this is a problem, a U.V. light sized to the ponds volume, (turning over the volume of the pond 4 times a day) will produce the desired results.

Since the small bubble bead systems proved to be well suited for ornamental fish ponds. particularly koi ponds, Dr. Malone engaged the assistance of Burt Nichols, of Water Garden Gems, in Marion Texas. Together they have developed a new model designed specifically for backyard koi ponds.. The system uses 2 cubic feet of media and the bubble cleaning design. Burt is now manufacturing and distributing these filters., which are designed to handle up to a 4000 gallon pond packed with koi. The filter can be seen at his facility, and at Koi Unlimited, in Baltimore. Maryland. The larger prop wash filters are manufactured by Armant Aquaculture (504)265-9216.

Many thanks to Dr. Malone and his associates, particularly Dr. Kelly A Rusch, Assistant Professor-Research, and Doug Drennan. Research Associate. for spending so much of their valuable time with me answering all my questions, and ferrying me all over Baton Rouge to get this story.